THE COMPUTER DIRECTORY AND BUYERS' GUIDE, 1967

13th Annual Edition

the June, 1967 issue of Computers and Automation
Just what the doctor ordered

— and he ordered it yesterday, from an American Hospital Supply Corporation warehouse 300 miles away. He gets same-day service on 25,000 different supply items, because Bell System Data-Phone* service links his hospital to the warehouse over regular telephone lines. Prepunched cards containing order information are fed into card readers connected to Data-Phone sets which transmit the information from the hospital.

At the American Hospital Supply warehouse the information is automatically reproduced on an order form. The order is packed and shipped the same day. Because of the fast, accurate data communications, one warehouse in Atlanta serves a wide area in the South. Throughout the nation, American's automated ordering system helps hospitals reduce inventory and paper work and keeps the doctor happy.

For more information, call your Bell Telephone Business Office and ask for a talk with one of our Communications Consultants. And don't hesitate to call us early—because that way we can serve you best.

When you work with data communications, work with the Bell System.

* Service mark

AMERICAN HOSPITAL SUPPLY CORPORATION DISTRIBUTION SYSTEM
The new, small DECdisk provides 32K words extra memory for the PDP-8 for $6,000. Additional 32K DECdisk units cost $3,000 each. Since a basic $18,000 PDP-8 computer has 4096 words in core, with four DECdisk units, that could give you a high speed computer with 135,168 12 bit words for $33,000!

DECdisk is compatible with the $10,000 PDP-8/S, too. Adding four DECdisk units gives you a slightly slower computer with 135,168 12 bit words.

More memory for less cost than any other computer.

At last count, more than 700 PDP-8 computers have been sold to scientists and equipment manufacturers. The PDP-8 is, by far, the most successful and proven on-line, real time, small computer in the world. And that was before DECdisk.

DECdisk was developed, like all DIGITAL peripherals, to customize a basically inexpensive computer to special applications. Yours. DECtape was developed the same way. The unique 3½" reels of magnetic tape not only provide low cost storage, but permit you to carry your program library in your pocket. And displays — did you know that DIGITAL was the first computer manufacturer to put a CRT on a computer?

Computer manufacturers who worry about what the customer needs, worry a great deal about peripherals. DIGITAL has one of the largest lines of peripherals in the industry. Write, and we'll send you a free "Small Computer Handbook" and tell you all about our peripherals.
Neither can our programmers and analysts who have them. Because their idea of a good time means an inside discussion of compilers, of multi-programming, of real time and the world, of time-sharing and such. A way out discussion of third generation conversion, maybe.

They'd talk shop, work out ideas, 24 hours a day, if they could. And they sometimes do. That's why they're the best in the business. That's why they run the company, with and for other programmers and analysts. And run it with ability, not authoritarian decree. It's this kind of environment that turns our people on, and clock-watching off all over the world. In all of our offices anyway, from Honolulu clear through Europe.

How about you? Are you interested in hearing more about breaking out of the time clock rut? Just contact us... anytime.

656 North Sepulveda Boulevard, El Segundo, California 90245. (213) 678-0592 — Attention Harry Laur

Computer Sciences Corporation
An Equal Opportunity Employer

EXCITING IDEAS CAN'T TELL TIME
JUNE, 1967 Vol. 16, No. 6

Table of Contents


Roster of Organizations in the Computing and Data Processing Field .................................................... 7

Buyers' Guide to Products and Services in Computing and Data Processing ............................................... 41

Roster of Computing, Data Processing, and Consulting Services .............................................................. 58

Roster of Organizations Supplying Entire Equipments for Computing and Data Processing Systems ............ 62

Roster of Organizations Providing Leasing or Financial Services in the Computer Field .......................... 64

Roster of Commercial Time-Shared Computing Services ............................................................................. 66

Roster of Organizations Supplying Courses, Training, or Instruction in Computing, Programming, or Systems ............................................................... 68

Seventy Key Ideas in Computing and Data Processing ........................................................................... 72

Ranges of Computer Speeds of Commercial Computers ...................................................................... 76

World Computer Census ......................................................................................................................... 77

Characteristics of General Purpose Analog and Hybrid Computers ...................................................... 79

Roster of Programming Languages, by Jean E. Sammet ........................................................................ 80

Over 1200 Applications of Computers .................................................................................................. 83

Characteristics of General Purpose Digital Computers ........................................................................ 91

Roster of College and University Computer Centers ............................................................................ 122

Roster of Computer Associations ......................................................................................................... 132

Roster of Computer Users' Groups ........................................................................................................ 137

Advertising Index .................................................................................................................................. 137
Although we call this June's issue of the Annual Computer Directory and Buyers' Guide printed by "Computers and Automation" the 13th edition, in one sense it is the 17th edition. For, in September 1951, we issued the first roster of "Organizations in the Field of Automatic Computing Machinery". This roster was in the form of seven pages of memorandum reproduced by spirit duplicator with purple letters.

This first roster of computer organizations published in September 1951 listed about 75 organizations in the field. Among the entries were the following:

  
  Adding machines, bookkeeping machines, etc. Research division in Philadelphia has made "Testrac", electronic digital test computer.

  

- **Engineering Research Associates, Arlington, Va., and Minneapolis, Minn.**
  

- **Harvard Computation Laboratory, Cambridge 39, Mass.**
  

- **International Business Machines Corp.,** 590 Madison Ave., New York, N.Y.
  

- **Massachusetts Institute of Technology, Servomechanisms Laboratory, Cambridge 39, Mass.**
  
  "Whirlwind" electronic digital computer.

- **Potter Instrument Co.,** Great Neck, N.Y.
  
  Electronic counters. Electronic tag reader.

Nearly all the makers of today's prominent digital computers are missing: Control Data Corp., Digital Equipment Corp., General Electric, Honeywell, National Cash Register Co., Radio Corp. of America, ...

The Association for Computing Machinery had only come into existence four years earlier, in 1947. Its 20th anniversary is to be celebrated this August in Washington at the national annual meeting. I was its secretary 1947-1953.

Yet we have seen only very little of the computer revolution, about 23 years of it. The great tide of mastering the automatic handling of information is rolling on its way; the waves are destined to transform the world as we know it.

Some of the biggest progress in the future will come from a thorough understanding of software, the methods of programming computers. Nowadays, millions of Americans know what a clutch or a carburetor is, and the function of an ignition coil or of spark plugs; so in the future millions of Americans will understand a conditional jump instruction, indirect addressing, and an automatic subroutine handler. In this issue of the Directory we publish for the first time a roster of general purpose programming languages, with warm thanks to Jean Sammet.

As I think of the future, my chief regret is that I will not be able to see nearly as much of it as I would like to — 50 years from now as well as 10 years from now. At the age of 58, this editor knows full well that the time is coming fairly soon when his own software will no longer be maintainable in the normal way, and will have to be discarded (along with the hardware), and replaced by a computer from another maker with a superior software system.
ROSTER OF ORGANIZATIONS IN THE COMPUTING
AND DATA PROCESSING FIELD

(Cumulative information as of May 15, 1967)

The purpose of this Roster is to provide information about organizations in the computer field that:

1. make or develop computing or data processing machinery;
2. supply significant components used in the computer field; and/or
3. provide specialized services in the computer field.

Each entry, if complete, contains:

Name and address of organization / Telephone number / Year information was obtained / Description of the organization's main activities, main products, and any comments / Special services provided / Size (in number of employees) / Year established

Information in this Roster, as in this entire issue, is based on returns from a current mailing and information previously published in Computers and Automation. In cases where we did not have complete information, partial entries were made.

For geographical listings of organizations supplying special services in the computer field, see the following:

1. Roster of Computing, Data Processing, and Consulting Services, page 56;
3. Roster of Organizations offering Leasing or Financial Services in the Computer Field, page 64;
4. Roster of Commercial Time-Shared Computing Services, page 66;
5. Roster of Commercial Organizations Supplying Courses, Training, or Instruction in Computing, Programming or Systems, page 68.

Key to Abbreviations

S - Size (number of employees)
E - Established (year of establishment)
Eq - Organization offers entire equipments for computing and data processing
Sv - Organization offers computing, data processing, and/or consulting services
Ti - Organization offers commercial time-shared computing services
Co - Organization offers courses, training, or instruction in computing, programming, or systems
Le - Organization offers leasing or financial services in the computer field

We have tried to make each entry accurate to the extent of information in our possession. All additions, corrections, or comments will be welcome.
Computers and AUTOMATION for June; 1967

Roster of Organizations

AAA Data Processing Center, Inc., 15 East 41 St., New York, N.Y. 10017 / 212-667-8005 / *C 67
All services: systems, programming, installation, operation, complete marketing, media research, commercial applications; Univac 1050 card and tape system 16 / Eq Sv Ti / S 15 E 64
AAL Corp., York Rd., Cockeysville, Md. 21030 / 301-666-1400 / *C 67
Special purpose computers, simulations, fsv equipment, instrumentation, special purpose devices for missiles, space vehicles, military, nuclear, weapons systems, area traffic control, anti-submarine warfare, etc., based on special custom specifications / Eq S 1279 E 57
Computers using an IBM 360/30 and auxiliary equipment / Sv / S 65 E 62
Buy sell used and rebuilt equipment / Eq S 22 E 52
Acoustics Inc., 3324 Felton St., P.O. Box 3204, Lafayette, Calif. 94540 / 704-523-4316 / *C 67
Elevated flooring systems, air handling equipment for computer rooms, acoustical ceilings, movable partitions, contract installations / S 60 E 47
The Anecho Co., P.O. Box 66847, Houston, Tex. 77006, P.O. Box 13057, San Antonio, Tex. 78213 / Houston, Tex. 713-524-3111; San Antonio, 512-224-5022 / *C 67
All types of accessories, such as tape and disk storage, card files, etc. Also supplies, such as tape, control panels, wires, labels and binders / S 11 E 51
AC Spark Plug Div. General Motors Corp., 7792 S. Howell Ave., Milwaukee, Wis. 53201 / 414-762-7000 / *C 65
Design, development and production of general purpose and special purpose digital computers for space and airborne systems and other applications / S 50 E 57
General purpose hybrid computer, analog-to-digital converters, digital-to-analog converters, data acquisition and reduction systems / Eq Sv / S 300 E 57
A computer programming and consulting firm specializing in systems design, on-line control, computer graphics, data communication, and management information systems / Sv Co / S 100 E 59
Adcom Corp., 20545 Plummer St., Chatsworth, Calif. 91311 / 213-341-4635 / *C 65
Design and manufacture of computer data acquisition systems employing high-speed analog-to-digital converters, digital-to-analog, digital/multiplexers, analog memories, and hybrid interfaces / S 58 E 64
Data capture and control equipment, tape reader, optical font adding machine, 950 key data collection system, automatic character reader and sorter, mod. 7-11 / Eq Sv S 53 E 47
ADD-X Sales Corp., Div. of ADDO Machine Co., 6549 West North Ave., Oak Park, Ill. 60302 / 312-204-5231 / *C 67
ADD-X 10-key keyboard unit with 2 or 3-position automatic tabulating carriage, cable connected to ADDO-X tape punch / Eq S 15 E 64
Addressograph-Multigraph Corp. (main office), 1200 Rabbit Rd., Cleveland, Ohio 44107 / *C 67
Manufactures full line of data collection equipment including bar code scanning devices, data collection terminals are designed to capture bar code, OCR, MICR, and other fonts. Distribute full line of offset units that create copies from computer-prepared master material.also, heat transfer transfer labels, etc. / Eq S 24,000 E 1893
Addressograph-Multigraph Corp. (branch office), 5346 So. Fifth East, Salt Lake City, Utah 84110 / 801-359-2031 / *C 67
Data collection systems, optical scanners, transfer printers and labeling machines, printing and rep report reproduction systems, related plastic cards, master material, computer ribbons / Eq S 85 E 093 Ad Valorem Records Inc. 3766 Richmond Ave., Houston, Tex. 77027 / 713-621-0232 / *C 67
Service: compile tax records for schools, counties, cities on IBM System 360/20 / Sv / S 10 E ?
Advance Data Systems, 9261 W. Third St., Beverly Hills, Calif. 90213 / 213-273-7560 / *C 67
Special purpose computers, computer operated revenue control devices, i.e., money machines, gates, etc. Magnetic cards and tickets / Sv / S 150 E 61
Printed circuits: multi-layer, single-sided, double-sided, weldable, etc. / S 7650 E 59
Advanced Components Co., 119 Luther Ave., Liverpool, N.Y. 13086 / 315-472-7886 / *C 67
Anpex magnetic tape: A.C. computer and tab ribbons; Rosier and Victor tape vaults; rent tape cleaners / S 15 E / 62
Aerogen-Jersey Corp., Industrial Systems Div., Frederick Municipal Airport, P.O. Box 460, Frederick, Md. 21701 / 301-662-4181 / *C 67
Mechanized sorting and material handling systems and components / S 170 E 60
Aerojet-General Corp., Sacramento Plant, Hwy. 50 & Nimbus Rd., P.O. Box 15847, Sacramento, Calif. 95813 / 916-353-1000 / *C 67
Computing, consulting, data management, and programming services; computer based information engineering / Sv S / S 50 E 69
Aerojet-General Corp., Von Karman Center, 1100 W. Bovina Ave., Azusa, Calif. 91702 / 626-834-7880 / *C 67
Thin-film microelectronic components, computer services, computer based simulators / Sv Ti / S 5000 E 42
Aeromech (Div. of Aerojet-General Corp.) Crow Canyon Rd., P.O. Box 216, San Ramon, Cal. 94583 / 415-837-5543 / *C 67
Offers digital, solid state, electronic counters, binary line decoders, portable phasemeters, phase resolvers, thermal differential analyzers / S 50 E 47
Aero Performance, Inc., 57 Hillside Ave., Manhasset, N.Y. 11030 / 516-627-7463 / *C 67
Computing services for planning and operation of International and regional airlines: meteorological, traffic control, technical pre-flight planning / Eq S 12 E 65
Aetna Products Co., Inc., 11 Commercial St., P.O. Box 438, H Hicksville, N.Y. 11801 / 516-372-1215 / *C 67
Taped rabbits for computers; data processing, etc. / S 50 E 47
Agency Service Bureau, Inc., 10103 Bristol Ave., S.W. Tacoma, Wash. 98499 / 206-504-7211 / *C 67
Insurance agency accounting and management system financial statements / Sv S 6 E 57
AGS Computers, Inc., 485 Fifth Ave., New York, N.Y. 10017 / *C 67
Programming services including system, commercial, and scientific systems design / Sv Co / S 9 E 67
Computers and data processing services using an IBM 360/37, data drive / Sv S 10 E 62
Aircraft Armaments, Inc. - name changed to Atomic Armaments, Inc. / E 67
Airline Data Service Inc., 55 W. 42nd St., New York, N.Y. 10036 / 212-594-1921 / *C 67
Computing, consulting and programming services: punch card, key punch, sorters, verifiers, etc. / Sv S 6 E 65
Alpax Electronics, Inc., P.O. Box 04898, Fort Lauderdale, Fla. 33310 / 305-587-1100 / *C 66
Telemetry, electronic tachometry / 17000 E 59
Aladdin Electronics, (Div. of Aladdin Industries, Inc.), 701 Murfreeboro Rd., Nashville, Tenn. 37210 / 615-242-3411 / *C 67
Pulse and wideband transformers: fixed and variable inductors; filters; molded chokes; delay lines / S 600 E 63
Albert-Cort Inc., 15 Laight St., New York, N.Y. 10013 / 212-964-1745 / *C 67
List maintenance, addressing (Cheshire), inserting, mailing, equipment -- IBM 1401, 8K, 729 II drives / Sv S 30 E 57
All Data Processing Machines, Inc., 105 Hinschir St., Milloyd Springs, 111. 60480 / 312-839-5164 / *C 67
Offers all makes and models of computers, unit record equipment; supplies, such as metal files, panels, etc. / Eq Le / S 4 E 63
Manufacturers of continuous pressure sensitive pinfed labels, tags and specialties for data-processing / S 250 E 49
Allied Data Processing, Inc., 41 East 42nd St., New York, N.Y. 10017 / 212-681-5200 / *C 67
Programming services, contract computer and key punch services: application development and implementation; computer time sales / Sv Ti / S 35 E 65

Aeromech (Div. of Aerojet-GE)
teledata, instruments, value analysis, production / S 12 / E 58
ABMA Div., American Bosch Arma Corp. — name change, North Arma
ABMA Div., Arma Corp., which see: The Arnold Engineering Co., P.O. Box 4.
Marengo, Ill. 60152 / 312-566-7251 / * E 67
Magnetic materials / S 750 / E 36
The Artrostic Instrument Co., 11232
Triangle Lane, Silver Spring, Md. 20902 / 201-940-1181 / * E 67
Molded computer circuits, networks, delay lines, pulse transformers / S / E 59
Arvey Corp., Lannce Div., 3500 N.
Kimball Ave., Chicago, Ill. 60618 / 312-463-1400 / * E 66
Perforator tape; Mylar reinforced paper, foil, and metallized foil
combinations / S 300 / E 05
Astrodata, Inc., 240 E. Palais Rd.,
Anchil, Calif. 92003 / 714-772-1000 / * E 66
Analog computers, digital computers, data processors, data acquisition systems, telemetry systems, timing systems, A/D and D/A converters, multiplexers, signal conditioning equipment, discriminators, oscillators, simulators, decommutators, recorders, transducers, displays, tape search systems, power supplies, computer interface systems / E 61
Audio Devices, Inc., 255 East 42nd St.,
New York, N.Y. 10017 / 212-687-0800 / * E 67
Complete line of high performance magnetic tapes / Eq / S 500 / E 37
Audio Instrument Co., Inc., 220 E. 23rd St.,
New York, N.Y. 10010 / 212-M9-5518 / * E 65
Analog time delay devices: logarithmic converters; autocorrelation recorder / S / E 49
Auditek, Inc., 1239 Broadway, New York,
N.Y. 10001 / 212-699-8999 / * E 67
Data processing services: processing, programming, key punching, consulting / S / E 5 / E 65
Automated Data Concepts, Inc., 60 East 42nd St.,
New York, N.Y. 10017 / 212-596-8835 / * E 67
Supplies computer systems, programming and consulting services to the commercial and scientific user including personnel to solve peak over-loading conditions / Sv Ti Co / S 35 / E 65
Automated Data Associates, 1220 Lawrence St., N.J. 07005 / 201-302-2900 / * E 67
Commercial, scientific, programming: complete data processing service; real-time systems planning; computer time sharing / Sv / S 10 / E 65
Automated Data Processing Services, Inc.,
1104 Spring St., Silver Spring, Md. 20910 / 301-779-5500 / * E 66
Service bureau operations: all types of data processing and conversion services: IBM 1440, 16K, 2-tape, 2 disk, 1403 printer, 2 card read/punches, OCR 420-1 optical scanner / S 35 / E 65
Automated Information, Inc., 300 S.W.
Fourth Avenue, Portl., 97204 / 303-235-2111 / * E 66
Operation, programming, and analysis for scientific, engineering, statistical, management science, and management systems; time sharing applications on any type of digital computer. Experienced in CFS, linear programming, regression analysis, water network, earthwork, surveying applications, questionnaire tabulation. FORTRAN, SPS 360 assembler and other languages written here / S / S 6 / E 65
Computing, consulting and programming services; paper tape-to-card conversion; data preparation, keypunch verification. Equipment includes GE 415, 16k words memory, 3 magnetic tapes / Sv / S 12 / E 62
Automated Management Systems, Inc.,
1000 First Nat'l Bank Bldg., Jackson, Miss. 39201 / 601-948-2001 / * E 67
Service bureau operation / S / S 30 / E 61
Commercial computer services offered ranging from payroll to complete general ledger applications; accounts receivable (general and utilities). Also custom systems designing, programming / Sv Ti Co / S 6 / E 66
Automated Statements, Inc., 319 Alden Place, Orange, N.J. 07050 / 201-672-6637 / * E 67
Accounts receivable services including monthly statement preparation / Sv / S 5 / E 66
Auto Data Processing Service Inc., 306
West 16th St., Austin, Tex. 78701 / 512-477-9707 / * E 67
Serves: accounting, market research, programming and systems. Courses on IBM 360/20, 4 tape 2 disk systems. Contract programming: complete service bureau / Co 14 / E 64
Auto Data Corp., 200 East Hampden, Suite
220, Englewood, Colo. 80110 / 303-761-0684 / * E 67
Provides complete daily accounting and inventory exclusively for automobile dealers / Sv / S 6 / E 66
Autographic Business Forms, Inc., 45 E.
Weissln St., S. Hackensack, N.J. 07606 / 201-689-6560 / * E 66
Business forms / S / E 1893
Automated Business Records, Inc., 1601
Wyoming, El Paso, Tex. 79902 / * E 67
Serves business using IBM 1440 with 2 disk drives for business-engineering-scientific applications / Sv / S 9 / E 61
Automated Concepts Inc., 60 East 42nd St.,
New York, N.Y. 10017 / 212-986-8935 / * E 67
Used punch card and punch tape equipment / Eq / S 3 / E 65
Support test equipment / S 25 / E 57
Automatic Engineers, 344 W. State St.,
Trenton, N.J. 08610 / 201-695-2628 / * E 65
Consultants in automatic control machinery, automatic materials handling equipment, information handling equipment, and random card file equipment. Designers of specialized data processing equipment, including office machinery coupling mechanisms. Analysis of automation economics; supervision of installations / S 20 / E 42
Courses in data processing skills offered through network of fifty franchised associates. (For specific locations, please see Roster of Courses, Training, and Instruction) In machine operation, programming and systems analysis / Co / S 50 / E 56
Automation Sciences, Inc., 275 Madison Ave.,
New York, N.Y. 10016 / 212-686-7122 / * E 65
Service company: systems analysis, computer programming, engineering and feasibility studies for computer, simulation, data reduction, command control and special data processing systems / S 60 / E 65
Automation Training Center, (Div. of Honolulu Business College), 1111 Bishop St., Honolulu, Hawaii 96813 / 808-567-2744 / 808-566-312 / * E 67
In-school equipment used for training and data processing service: 7 key punchers, 3 verifiers, 1-402, 1-514, 1-85, 1-83, 1-82; IBM 360/20 with 2560, 2020, 2203 units / Sv TI Co / S 12 / E 60
Automation Training Schools, Inc., 52
Chaucney St., Boston, Mass. 02111 / 617-342-0518 / * E 67
Training in all levels of EDP: basic keypunch, tabularizing and operating computer programming on digital systems / Co / S 40 / E 62
Autonetics, (Div. of North American Aviation., Inc.), 3370 N. Tangerine Ave., Anaheim, Calif. 92805 / 714-772-8111 / * E 67
Airborne digital computers including control panels, displays, printers and sensor conversion equipment / Eq Co / S 26,000 / E 48
Auto-trol Corp., 6621 West 56th Ave.,
Arvada, Colo. 80002 / 303-421-5670 / * E 67
Graphic digitizers, X-Y coordinate plotters, photo-optical shaft encoders / Eq / S 75 / E 60
Auto Tel., Universal, 444 Sherman,
Denver, Colo. 80203 / 303-744-6305 / * E 67
Computer programming, systems consulting, service bureau processing: training in keypunching, unit record, computer operator, programming and systems work / Sv Co / S 70 / E 64
Artron Manufacturing Co., 5100 S. Buech Ave., Cleveland, O., 44105 / 216-641-8310 / * E 67
Digital measuring, indicating and control systems, including equipment for trend recording, data logging, direct communication with general purpose computers and information systems / S 110 / E 53

Roster of Organizations

10 COMPUTERS and AUTOMATION for June, 1967
Babcock Electronics Corp., 1640 Monroe Ave., Costa Mesa, Cal. 92627 / 714-710-0611 / *C
Command control and guidance systems including installation, components, encoders, decoders, signal generators and support equipment / S 1000 / E 47
Bailey Meter Co., (Div. of The Babcock & Wilcox Co.), 211 West Calf. 44992 / 216-943-5500 / *C
Data processing and computer systems for power plant and industrial processes including magnetic and electronic analog computers, digital data information systems, industrial process control computers for on-line, real-time applications and multi-computer control systems incorporating fixed-program digital, and programmable digital computers / Eq / S 2500 / E 16
Baldwin Kongsberg Co., (Div. of D. H. Baldwin - Kongsberg V.), Suite 204, Columbus Wooster Bldg., 5710 Wooster Pike, Cincinnati 4, 45202 / 513-271-3000 / *C
Automatic drafting systems; installations / S 89 / E 65
Baltimore Business Forms, Inc., 3132 Frederick Ave., Baltimore, Md. 21229 / 301-233-8000 / E 48
Continuous forms; tabulating cards in form sets / S 700 / E 16
Barron Data Systems, Inc., 3556 Monroe St., Toledo, O. 43606 / 419-241-3942 / *C
Contract computer programming, systems design consulting, personnel education / programming S systems packages / Sv Co / S 8 / E 65
Basic Systems Inc., 880 Third Ave., New York, N.Y. 10022 / 212-752-4600 / E 65
Consulting services to design custom training courses to meet client training requirements and the design of self-instructional texts for individual purchasers / S 125 / E 60
Battelle Memorial Institute, Columbus Laboratories, 505 King Ave., Columbus, O. 43201 / 614-291-5151 / *C
Analyzing and programming engineering applications, special scientific and engineering applications, special software development, business systems, and simulation. Design and implementation of special purpose digital and analog computers / Co / S 2900 / E 29
Bay State Inc., P.O. Box 31, (Div. of Systems Mfg. Co.), 536 Granite St., Braintree, Mass. 02184 / 617-848-3490 / *C
Wiring, panels, accessory equipment for data processing & computer rooms; continuous forms, cards / S 4 / E 62
Beckman & Whitley, (Div. of Technical Operations Inc.), 701 N. Whian Rd., Mountain View, Cal. 94040 / 415-968-6220 / *C
Ultra high speed laser beam scanning; recorders; character generators; and facsimile systems. Also, computer components — rotating mirror scanners, light beam modulators, and ultraviolet writing motors / S 85 (Div.), 722 (Total) / E 47
Beckman Instruments, Inc., (main office), 2500 Barlow Blvd., Fullerton, Cal. 92634 / 714-671-4048 / *C
Amplifiers; communication systems; computers; computer test equipment and components; information converters; counters; data processing, recording, reduction equipment; displays; facsimile equipment; generators; integrators; printers; readers; relays; scanners; servomechanisms; systems engineering; timing devices / Eq / S 6700 / E 35
Beekman Plaza, 7424 Santa Monica Blvd., Los Angeles, Cal. 90046 / 213-876-1770 / *C
Holders for tab cards / S 26 / E 52
Bell & Howell Division, 6800 Mc Cernick Rd., Chicago, Ili., 60645 / 312-539-7300 / *C
Microfilm recorders and readers designed to be compatible with tab printers / S / E 61
Data peripheral equipment (mainly magnetic tape transports; mail handling equipment; postal automation; document handling equipment; banking automation) / Eq / S 150 (ASD): 12,000 (company) / E 50 (ASD): 1800 (company)
Telemetry, data logging and processing components, systems and services / S 3200 / E 37
The Bendix Corp., Eclipse-Pioneer Div., 213-272-3710 / E 65
Numerical control systems / S 300+ / E 57
Benson-Lehner Corp., (Div. of United Gas Corp.), 14761 Califa St., Los Angeles, Cal. 90045 / 213-781-7100 / *C
CRT printers, CRT printer/plotters, digital drafting systems, digital incremental plotters (card input, magnetic tape input, on-line), film readers/digitizers, strip chart paper; also analytical unit
Published "Digital Control and Automation" and other publications. Scientific kits for educational purposes; Brainiac Constructor (construction kit); Probability and Statistics kit; Teaching Machines and Programming Learning kit / S 16 / E 54
Consulting services: feasibility and systems study development; programming, FORTRAN, ALGOL, C000L, PL/1 and other languages. Computer education for personnel; assistance in conversion to IBM system 360 and other computers; seminars / Sv Co / S 2 / E 65
Besco Equipment & Systems Co. Inc., 5533 Dyer St., Dallas, Texas, 75205 / 214-363-5553 / E 61
Manufacture and sales of elevators access panel type computer flooring systems; sell computer tape, wires, panels, accessory equipment / S 10 / E 60
Big-Matic Data Control Center's Inc., 232 Summer St., Boston, Mass. 02110 / 617-426-6863 / E 67
Data processing services; 1401 E4 system with tape drive; data input/output reader. Consulting on all phases of paperwork simplification; provide turn-key services for computer installations / Sv / S 52 / E 60
A service bureau (IBM 360 model 30 (32K, 6 tape drives, 7 & 9 channel); IBM 1401 (8K, 4 tape drives); 80 EAM machines / Sv Ti / S 120 / E 55
Joseph K. Blum & Co., 205 East 42nd St., New York, N.Y. 10017 / 212-686-7573 / *C
Consulting services, site preparation, system design & planning / Sv / S 2 / E 61
Bolt Beranek and Newman Inc., (main office), 50 Moulton St., Cambridge, Mass. 02138 / 617-491-1850 / *C
TELECOMP services: problem oriented, remote access time-sharing / Ti Co / S 500 / E 49
Bolt Beranek and Newman Inc., Data Equipment Div., 2126 S. Lyon St., Santa Ana, Cal. 92705 / 714-546-3300 / *C
GRAFACON: graphical computer input device. TELEPEUTIC: computer terminal device. COMPUTER INTERFACES: software, programming and hardware / Eq Sv Ti / S 350 / E 49
Consulting firm specializing in computer technology and management sciences; services ranging from conceptual system design and development through implementation and project management / S 40 / E 56
Booz, Allen & Hamilton, Inc., 135 S. La Salle St., Chicago, 111. 60603 (offices also in New York; Washington, D.C.; Cleveland; Detroit; San Francisco; and Los Angeles) / 312-346-1900 / *C
Management consultants: technical, management services in electronic and automatic data processing for integrated management information and control systems for industry, commerce, government, and research analysis; feasibility studies, systems design, equipment selection, implementation, systems conversion, EDP audit and review / Sv Sr / E 51
Bowles & Tillinghast, Inc., 3400 Peachtree, N.E., Atlanta, Ga. 30326 / 404-261-7470 / *C
H-200 machine rental: insurance data processing service; management consultants / Sv Ti / S 35 / E 65
Precision servo components and assemblies, counters, electronic devices, measurement and test instruments, solid state digital computer readouts / S 1000 (including divisions) / E 51
W. H. Brady Co., 727 W. Glendale Ave., Milwaukee, Wis. 53212 / *C
Continuous pre-printed, self-sticking pinfed forms, tab labels, key punch correction seals / S 500+ / E 14
Information systems consultants offering data processing services, training, management audit, standards, planned standard programming, EDP

Roster of Organizations for June, 1967

COMPUTERS AND AUTOMATION
Roster of Organizations

The Bunker-Ramo Corp., Div. of Martin
Marvinetta Corp., 88 Fallbrook Ave.,
Ganoga Park, Cal. 91034 / 213-346-6000
/ *C 67

Militaryized digital computers; com-
puter-driven digital control systems for
military applications; stock quo-
tation systems; reservation, banking
systems; numerical control systems
for machine tools / Eq S 71 64

S 3000 / E 64

The Bunker-Ramo Corp., Numerical Control
Systems Div., 1070 East 152nd St.,
Cleveland, 0. 44110 / 216-393-6890
/ *C 67

Numerical control systems for indus-
try / Eq / S 175 / E 59

J. H. Bunnell & Essex Co.,
Brooklyn, N.Y. 11206 / 212-N19-1717
/ *C 67

Tape punch / S 45 / E 1073

Burlingham Associates, Ltd., S10 S.
Fulton Ave., Mt. Vernon, N.Y. 10550 / 914-
M04-7550 / *C 65

Analog computers, computing ampli-
fiers and power supplies, analog rec-
orders, analog-to-digital converters,
digital voltmeters / S 40 / E 28

Burr-Brown Research Corp.,
6730 S. Toison Blvd.,
Tamarac, Ariz. 85706 / 602-94-1431
/ *C 66

Proprietary and custom analog comput-
ers and simulators, all silicon DC
operating, all vacuum, with on-line
amplifiers, analog and hybrid function
modules, power supplies and access-
ories / S 185 / E 56

Burroughs Corp., 6071 Second Ave.,
Detroit, Mich. 48232 / 313-875-2260
/ *C 67

Electronic data processing and data
communications systems and equip-
ment for every general purpose, scientifi-
c and military data handling appli-
cation. Specialized systems and com-
ponents include input/output systems,
magnetic tape storage systems, disk
mass storage files, on-line disk file
memory systems, high speed printers
and multiple tape listers, paper tape
readers and punches, punch card read-
ers and punches, automatic record
processors, word processing and doc-
ument sorters systems, hybrid micro-
circuit modules, numerical readouts,
alpha-numeric displays, visual dis-
plays, counting tubes, decoding tubes
and devices, memory stacks, and mag-
netic drums, disks, tapes, cores and
thin films / Eq / S 30,000 / E 1086

Burroughs Corp., Electronic Components
Div., P.O. Box 1226, Plainfield, N.J.
7061 / 201-757-5000 / *C 67

Ferrite memory cores, planes and
stacks; visual readout devices and
systems; electronic counters -- uni-
and bi-directional with visual read-
out and electronic outputs / S 1200
/ *C 67

Business Computer Service, Inc.,
224 St. Charles, Wa. Va. 23301
/ 304-343-9471 / *C 67

Computing service: sales analysis,
inventory maintenance, payroll re-
tail daily sales reporting; bookkeep-
ing service through accountants for
small businesses / S 2500 / E 28

Business Data Processing, 3760 State St.,
Santa Barbara, Cal. 93105 / / *C 67

General data processing services,
primarily in the assembly line appli-
cations: includes accounts receivable,
inventory, payroll, financial state-
ments, sales analysis / S 25 / E 63

Business Machines Institute, 816 W.
Olympic Blvd., Los Angeles, Cal. 90015
/ 213-748-0121 / *C 67

Training, programming, systems analy-
sis, management and information sys-
tem courses; keypunch, tab and wir-
ing hybrid computer courses; corre-
respondence courses in digital computer
for technology; computer newsletter / Sv
Co / S 10 / E 58

Business Publishers Circulation Service,
(Div. of 01/News Press, Inc.), 1 East
First St., Duluth, Minn. 55802 / 216-
727-8511 / *C 67

Specialists in computerized ABC and
HICU circulation, circulation consult-
ants, circulation acquisitions, ful-
fillment, direct mail service, audits, data processing, reader in-
quiry processing, printing / Sv / S
75 / E 66

Business Supplies Corp. of America,
Sky-
top Rd., Skytop, Pa. 18357 / 717-595-
7511 / *C 67

Special and standard tabulating cards,
continuous forms, ribbons, magnetic
tape, paper tape, wires, control pan-
els, and/or panel covers / S 650 / E
59

Butler- Roberts Associates, Inc., (Sub. of
01/ Electronics of America, Inc.), 500
E 26 St., Revere, Fla. 33316
/ 305-523-7220 / *C 65

All computer and EDP peripheral
equipment, including high speed line print-
ers, input-output devices both on-line
and off-line, etc. / S 12,000 (parent &
subs.) / 11 (Butler-Roberts Inc.) / E
1001 (parent); 60 (Butler-Roberts
Inc.)

C

Cadre Industries Corp., 20 Valley St.,
Endwell, N.Y. 13763 / 607-P18-3373
/ *C 65

Cable harnesses, cable assemblies,
wiring harnesses, custom manufactur-
ing: amplifiers, plug-in modules and
panels, test equipment, communications
equipment and systems / S 814 / E 51

CAE Industries, Ltd., Box 6166, Montreal
3, Quebec, Canada / 514-875-5522 / *C 66

Soll state equipment, memory sys-
tems, memory computer,$, and
translators, selectors, etc. Supervi-
sory control and telemetry systems;
flight simulators: computers / S 3000
/ E 47

California Computer Products Inc.,
(Comp.), 305 North Muller St., Anaheim,
Cal. 92801 / 714-774-9411 / *C 67

Digital plotting systems, ink-on-
paper plotters; electronic plotters;
off-line, on-line and remote systems
/ Eq Ti / S 500 / E 59

CALMA Co., 346 Mathew St., Santa Clara,
Cal. 95050 / 408-244-0960 / *C 67

Graphic-to-digital converters; data
reduction equipment: magnetic tape
recorders / E 55

Coltec, Inc., 3023 Sylvania Ave., Toledo,
Ohio 43613 / 419-475-3501 / *C 67

Programming, consultation and pro-
cessing of technical and commercial
digital computer applications. / Sv
Ti / S 6 / E 59

Cambridge Computer Associates, Inc.,
550 Massachusetts Ave., Cambridge,
Mass. / 617-668-1111 / *C 67

System analysis and design: program
design and implementation; statisti-
cal design of experiments and
program documentation / Sv / S 12 / E
65

Cambridge Thermionic Corp., 445 Concord
Ave., Cambridge, Mass. 02130 / 617-878-2000 / *C 66

Digital system design, digital logi
Roster of Organizations

modules, printed circuit boards, board racks and digital hardware assemblies / E 47
Camwell, Inc., 11821 Pico Blvd., Los Angeles, Cal. 90064 / 213-683-9646 / E 66
Special type heads for IBM selective memory systems / E 47
Camwell Inc., 615 Kaeaukou, Honolulu, Hawaii 96814 / 808-961-110 / E 67
Special type heads for IBM selective memory systems / E 62
Canadian Aviation Electronics, Ltd., P.O. Box 6166, Montreal 3, Quebec, Canada / 514-631-6781 / E 67
Circle 206 Co., 4150 Airport Pkwy., San Diego, Calif. 92112 / 714-827-3700 / E 67
Circle 206 Co., P.O. Box 591, Milwaukee, Wis. 53201 / 414-W92-9200 / E 65
PICO integrated circuits - typical applications / E 67
PICO circuits / E 67
PICO multi-channel recording oscillographs of direct writing electrograph and analog data / E 67
Centralab, the Electronics Div. of Globe Union Inc., P.O. Box 591, Milwaukee, Wis. 53201 / 414-W92-9200 / E 65
PICO integrated circuits - typical applications / E 67
PICO circuits / E 67

card reader, photo electric scan for accessing computer directly, coupled with input

keyboard, high speed strip printer / E 67
Er cv Sw / S 355 service / 67
Centralab, the Electronics Div. of Globe Union Inc., P.O. Box 591, Milwaukee, Wis. 53201 / 414-92-9200 / E 65
PICO integrated circuits - typical applications / E 67
PICO circuits / E 67

Programmable clock/calendars for digital computers: digital clocks, calendars, timers, counters; time code reader, payrolls, tape search systems / Eq / S 20 / E 57
Cisco Data Processing Co., (Div. of MAP Development Corp.), 5600 Paramount Blvd.; Long Beach, Calif. 90805 / 213-634-6065 / E 67
Cisco Data Processing Co., (Div. of MAP Development Corp.), 5600 Paramount Blvd.; Long Beach, Calif. 90805 / 213-634-6065 / E 67
programmable clock/calendars for digital computers: digital clocks, calendars, timers, counters; time code reader, payrolls, tape search systems / Eq / S 20 / E 57
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Programmable clock/calendars for digital computers: digital clocks, calendars, timers, counters; time code reader, payrolls, tape search systems / Eq / S 20 / E 57

The CMS Group, Inc., PennSheraton, Pittsburgh, Pa. 15230 / 412-201-2772 / E 67
Consulting and programming services: information and systems engineering: operations research. Courses in systems / E 67
Consulting and programming services: information and systems engineering: operations research. Courses in systems / E 67
Cincinnati Time Recorder Co., 1733 Central Ave., Cincinnati, Ohio 45214 / 513-241-5500 / E 65
Five alarms, master time and program systems, time recorders, indicating wall clocks, signaling devices, automatic parking control equipment, service supplies and data collection systems / S 300 / E 1026

C, P. Clarke Co., 3101 Pratt Ave., Chicago, Ill. 60654 / 312-262-7700 / E 67
Relays, related control components; mercury-wetted contact relays, sealed reed relays ("Clared") ® crystal can and telephone type relays; stepping switches / S 2000 / E 57
Clary Datacom Systems (Div. of Clary Corp.), 404 Juniper Sierra, P.O. Box 1, San Gabriel, Cal. 91776 / 213-283-9495 / E 67
Digital small scale computer: arithmetic units, paper tape punch, readers / Eq / Co LE / S 80 / E 39
Codame Division, Pacific Ordnance & Electronics Co., 6650 Lincoln Ave., Anaheim, Cal. 92801 / 714-776-5432 / 653-4100 / G 67
Printers / Eq / S 200 / E 52
Conpintronics Corp., 549 Pleasantville Rd., Briarcliff Manor, N.Y. 10510 / 914-809-7900 / E 66
Full line of composing room computers; remote optical scanners; digital to audio devices - "Speechmaker" units / S 35 / E 67
Cohn Electronics, Inc., Box 624, San Diego, Cal. 92112 / 714-277-6700 / E 67
DC data amplifiers, digital data logging systems, digital multimeters, closed-circuit television systems / S 225 / E 44
Collins Radio Co., Dallas, Texas. 75207 / 214-435-5611 / E 66
Complete line of equipment and systems for communication, computation and control / S 18000 / E 33
Colorado Instruments, Inc., 1 Park St., Brookfield, Colo. 80020 / 303-466-7553 / E 67
Central Data Recording Systems, C-Dek (Computer Data Entry Keyboard) / S 75 / E 67
Columbia Commercial College, 1234 Hamp ton St., Columbia, S.C. 29021 / 803-
Roster of Organizations

COMPUTERS & AUTOMATION for June, 1967

253-64179 / 67 / 47

Courses in programming, computing / Co / S 20 / E 35


Data processing film and fabric ribbons; continuous spirit and offset duplicating masters; magnetic inked ribbons / Co / S 500 / E 65

Columbia Technical Corp., 50 St. at 25 Ave., Woodside, N.Y. 11377 / 212-932-0900 / 67 / 66

Delay networks for use in computers; hybrid cernet networks for use in computers; HUMISEAL line of insulating coatings for protection of electronic assemblies against environmental stresses / S 124 / E 50


Consulting and service bureau 1401 tape system, 360/30 tape system (on order), continuous forms / Sv Co / S 50 / E 67

COMOR, Inc. (Div. of Astrodata, Inc.), 1535 S. Claudia St., Anaheim, Cal. 92802 / 714-772-4510 / 67

Analog/hybrid computer systems and components / Eq Co Le / S 393 / E 59

Commerce Clearing House, Inc., 4025 W. Pershing Ave., Chicago, III. 60646 / 312-907-9010 / 67

Loose leaf automation reporter / S 1800 / E 13

Component Corp., 106 Main St., Deville, N.J. 07034 / 201-627-0290 / 67

DCU-100 solid state decade counter / S 10 / E 43


Service bureau: IBM 360/30 computer; keypunching, tab equipment. Main service: mailing list labels, maintenance and creation / Sv Ti / S 35 / E 60


Computer-based touch tone translators to keypunch and audio response devices including job displays for retail credit and banking industries / Eq Sv Ti Co Le / S 60 (under contract) / E 67


Programming services: business, scientific, software / Sv / S 12 / E 50

Computer Applications Center, Inc., 516 Hutton Place, Columbus, O. 43215 / 614-224-0139 / 67

Consulting, processing services. Specialized services include engineering computations, data processing for engineering profession, construction industry. Systems study or problem analysis; computer programming; computer service; problem translation. Equipment includes: IBM 1130 computer; IBM 1627 plotter; IBM teleprocessing equipment; miscellaneous peripheral equipment / Eq Sv / S 8 / E 66


Computing, consulting and programming services; systems engineering. Equipment includes 360/30; 1401; CDC 1601; 1410; 360/75 / Eq Sv Ti Co / S 2000 / E 61


Computing services; consulting services; programming services / S 50 / E 61

Computer Center (Div. of Industrial State Bank & Trust Co.), 1226 S. Burdick, Kalamazoo, Mich. 49001 / 616-349-9404 / 67

Business, financial data processing services / Sv Le / S 42 / E 63

The Computer Center of Southern New England (Div. National Bank), Rm. 520 Industrial Bank Bldg., 111 Westminster St., Providence, R.I. 02903 / 401-661-6100 / 67

Payroll; insurance agency, demand deposit; register, Christmas Club accounting; accounts receivable, billing; time sharing systems; savings application; golf handicap computing; account reconciliation services / Sv Ti Le / S 15 / E 64


Analysis, system design, management information system implementation, programming and systems design / Sv Co / S 40 / E 63


Programming design, consulting for systems; software development; real-time, scientific, engineering and commercial applications / Sv Co / S 3 / E 64


Computers and special-purpose digital systems for space, engineering, training, scientific and business applications. Digital modules, test instruments, magnetic core memories. Space vehicle instrumentation, simulation and data handlers; information storage and retrieval; missile tracking and positioning; signal processing and time compression; language translators; industrial process and machine tool control; business data processing; pulse pattern and range time code generation; computer training devices / S 3500 / E 53

Computer Devices Corp., 63 Austin Blvd., Commack, L.I., N.Y. 11725 / 516-543-4220 / 67

Delay lines, computer memories / S 50 / E 60

The Computer Exchange, Inc., 30 East 42nd St., New York, N.Y. 10017 / 212-661-5870 / 67

Used computer systems of all major manufacturers (2nd and 3rd generation); used equipment; computer time brokerage, sales; EDP consulting; computer leasing / Eq Sv Le / S 6 / E 66

Computer Fullfillment Corp., 225 East St., Winchester, Mass. 01890 / 617-729-4650 / 67

Specialized services and data processing. Computer systems analysis, subscription fulfillment, circulation file maintenance and analysis; reader inquiry processing; consulting / Eq Sv / S 6 / E 63


Data processing services; accounts receivable, list maintenance, mail order fulfillment, consulting, systems & programming 1401 and 360 / Sv / S 15

Computer International Sales Co., 2708 Bagley (P.O. Box 66047), Houston, Tex. 77005 / 713-343-3111 / 67

Sell used computer equipment; commission for owners / Sv / S 6 / E 64


Marginal punched, continuous address label paper, heat transfer paper, pressure sensitive labels for data printing / E 67

Computer Logic Corp., 1520-32nd St., Santa Monica, Cal. 90404 / 213-451-9754 / 67

Discrete logic cards IC; totalizers; computer timers; instruments for logic training and evaluation; data acquisition systems / S 12 / E 60


Programming, systems and consulting services for real-time and batch-type commercial applications; computation center housing a 7080 (160K, 15 tapes), 1401 (8K, 3 tapes), card reader/punch, data transmission capabilities (7711) / Sv / S 50 / E 62


Consulting services in systems analysis and programming; application development for System 360, Models 30, 40, 50, and 65; processing services including: ALGOL, and PL/I utilizing full OSS, DOS, DTS; consultation available for 1400 and 7000 series equipment; computer facilities provided by our service bureau / Sv / S 50 / E 62


Computing, consulting, programming and time-shared computing services; computer programming / Sv Ti Co / S 6 / E 63

Computer Progress, Inc., 120 East 56th St., New York, N.Y. 10022 / 212-761-3430 / 67

Analysis and programming services / Sv / S 20 / E 65

Computer Sciences Corp., 650 N. Sepulveda Blvd., El Segundo, Cal. 90245 / 213-678-0592 / 67

Software: systems analysis, design, development; systems and applications programming; operational systems; commercial applications; applied sciences; management information techniques; service bureaus; facilities management, operation, maintenance; problem-solving / Sv Ti / S 2400 / E 59

Computer Services, Inc., 59 West Shore Rd., Warwick, R.I. 02889 / 401-739-6544 / 6595 / 67

Service bureau: professional consultants, programming, data analysts, systems analysts, systems programmers, data processing, related services, system program conversions for updated installations / Sv / S 6 / E 63

Computer Sciences Co., Lakewood Center Bldg., P.O. Box 3396, Tacoma, Wash. 98499 / 206-584-7214 / 67

Contract: key-punch payroll, accounts receivable, insurance agency, fuel oil dealer and golf handicap
Roster of Organizations

Computer Usage

Computer Usage Co., 363 Wedgewood Dr., Blackwood, N.J. 08012 / 609-227-6814 / E 67

Time sharing commercial utility, remote terminals, batch processing / Sv Ti Co / S 10 / E 66


Sell used computing and data processing equipment, install raised floors, environmental systems; complete line of accessories, supplies / Eq Le / S 4 / E 65

Computer Supplies, Inc., 9540 West Bryn Mawr Ave., Rosemont, Ill. 60018 / 312-670-6700 / E 67

Manufactures tabulating cards; distributes magnetic tape, etc. / S 10 / E 66

Computer Systems Co., 1470 St. Charles Ave., Cleveland, Ohio. 44107 / 216-220-4100 / E 67

Technical data processing consultants and software contractors providing: feasibility studies, equipment selection assistance, application development, systems design and programming services for digital computers / E 64

Computer Systems Division, Graphic Controls Corp., 189 Van Rensselaer St., Buffalo, N.Y. 14210 / 716-853-7500 / E 67

GE 265 time-sharing computer service provides on-line time use of Model 33 or 35 teletype stations or other connected off-site commercial terminal equipment; IBM 1440 remote access real time system operating in conversational inquiry mode through IBM 1050 class terminals; continuous data processing forms; computer systems, forms design, general system design / Sv Ti Co / S 750 / E 37

Computer Systems Institute, Inc., 300 Sixth Ave., Suite 275, Pittsburgh, Pa. 15222 / 412-621-0110 / E 66

Training of computer programmers on RCA 301, IBM 1401-1404 systems / S 12 / E 62

Computer Tabulating Corp., 136 Main St., Hempstead, N.Y. 11550 / 516-499-7401 / E 67

Total services from key punching, tabulating and computing (1401, 360) / Sv Ti / S 50 / E 53

Computer Technology Ltd., Samley House, Maylands Ave., Hemel Hempstead, Herts, England / Hemel Hempstead 4727 / E 67

Low-cost, high-performance modules; processors, stores, interfaces, displays, backing stores; Modular One real time computing system / Eq / S 50 / E 66

Computer Test Corp., 3 Computer Dr., Cherry Hill, N.J. 08034 / - / E 66

Core testers, pulse generators, memory test systems / S 250 / E 62

Computer Usage Co., Inc., 344 Main St., Mount Kisco, N.Y. 10549 / - / E 67

Systems analysis, programming services, computer sales, educational services / Sv Co / S 1000 / E 55

Computer Usage Development Corp., 22 West 56th St., Baltimore, Md. 21204 / 301-625-1300 / E 67

Consultants in all areas of data processing systems and applications including development, studies, systems analysis, programming, installation management; computing services, time sales / Sv Ti Co / S 25 / E 63

Computer Usage Development Corp. (Div. of Computer Usage Co.), 9539 Sepulveda Blvd., Los Angeles, Calif. 91606 / 213-670-7240 / E 67

Programming and analysis; consulting services; time sharing, time brokering / Sv Ti Co / S 800 / E 55

Computer Usage Development Corp. (Div. of Computer Usage Co., Inc.), 7315 Wisconsin Ave., Bethesda, D.C. 20014 / 301-656-0200 / E 67

Two systems 360/30's on premises; data processing, scientific programming and analysis services / Eq Sv Ti Co / S 200 / E 55

Computer Usage Development Corp. (Div. of Computer Usage Co.), Barclay Bidg., City Line & Bala Cynwyd, Pa. 19004 / 215-639-1105 / E 67

Consulting, analysis, programming services to owners or renters of computers; areas include data processing, software systems and development, management science / Sv Co / S 65 / E 55


Computer software development; scientific and technical applications programming; mathematical and statistical analysis; business data processing; scientific computing; electronic data reduction; equipment maintenance; data analysis and quality control / Sv Co / S 1152 / E 48

Control Systems, Inc., 361 E. Paces Ferry Rd., N.E., Atlanta, Ga. 30305 / 404-672-5800 / E 67

Problem-oriented on-line, time-sharing input device, national-wide, time-shared, on-line computer utility; consulting in on-line, time-shared systems / Sv Ti / S 20 / E 65

Computron Inc., 122 Calvary St., Waltham, Mass. 02154 / 617-899-0680 / E 67

Magnetic tape / S 250 / E 60


Computer systems, software design and development; computer evaluation using simulation techniques; programming services / Sv Co / S 92 / E 62

COM-SHARE Inc., 4001 W. Devon Ave., Chicago, Ill. 60646 / 312-282-9444 / E 67

Computing, consulting and programming services. Time-shared computing services using SDS 940 computers in Ann Arbor, Mich., Chicago, Ill., Minneapolis, Minn., and Houston, Tex. Instruction in computing, programming systems and Sv Ti Co / S 50 / E 66

Contech, 4018 Hamilton St., Hyattsville, Md. 20781 / 301-779-0111 / E 67

Applied mathematics, computer programming, scientific programming / Sv Co / S 350 / E 62


Time-shared computer-assisted programming for civil and structural engineers; software development for business, industry / Sv Ti / S 6 / E 66

Connecticut Technology Co., 3000 Main St., Hartford, Conn. 06120 / 203-522-6167 / E 67

Keyboards; keyboard-perforators; input/output typewriters; typewriter tape preparation systems; digital printers, strip and line; custom peripheral design; graphic art special tape units; magnetic imaging units / Eq Sv Co / S 20 / E 60

Conrac Corp., 1600 S. Mountain Ave., Duarte, Calif. 91010; and 330 Madison Ave., New York, N.Y. 10017 / 212-681-2311 (Cal.); 212-687-3330 (N.Y.) / E 67

Data acquisition devices, encoders, numerical controllers; measurement and control devices; instrumentation; timing devices; ultrasonic devices; nuclear devices / S 2000 / E 45

Consolidated Avionics Div. of Condec Corp., 100 Shames Blvd., N.Y. 11590 / 516-334-8400 / E 67

Transistorized power supplies, stock and custom-design for use in computers and computer systems / S 220 / E 57

Consolidated Electrodynamics Corp. (Div. of Bell & Howell Co.), 360 Sierra Madre Villa, Pasadena, Calif. 91109 / 213-796-9301 / E 67

Analog computers, amplifiers, data recording equipment, magnetic heads, recording papers, magnetic tape / S 2500 / E 37

Construction Products, Inc., 350 Chestnut St., Newton, Mass. 02121 / 617-801-1700 / E 67

Site contracting for computer facilities, including raised floors, air conditioning, partitions, ceilings / S 6 / E 65


Leasing of IBM System 360 computers, punch card equipment. Management services: programming, feasibility studies, implementation, proposal and analysis / Eq Sv Le / S 30 / E 65

Continental Connector Corp., 34-65 50th St., Woodside, N.Y. 11377 / 212-797-4122 / E 66

Precision electronic connectors for computers and data processing equipment; printed circuit, rack and panel, power, special designs, microcircuit module sockets / S 525 / E 52

Continental Systems Inc., 205 W. Fourth St., Cincinnati, Ohio. 45202 / 513-381-7675 / E 67

Specialists in automobile dealer accounting; journal, 6/12, B/S, corporate financials, management business trend analysis; misc. sales analysis. Also offer systems, programming, consulting services, payroll, other business applications. 200-computer, key-punch services / Sv / S 6 / E 66

Control Data Corp., 1000 34th Ave. S., Minneapolis, Minn. 55440 / 612-888-5555 / E 67

Digital computer systems, components, peripheral equipment and supervisory control systems; communications equipment; electro-mechanical devices / Eq Sv Ti Co Le / S 13,000 / E 67

Control Data Corp., Control Systems Div., 4455 Miramar Rd., La Jolla, Calif. 92037 / E 66

Electrical data processing and systems design; consulting services of all kinds / S 315 / E 56

Control Data Corp., Data Display Div., 2401 N. Fairview Ave. P.O. Box 551135 / 612-631-0550 / Minn. 66

Cathode ray tube displays, microfilm computer recorders, remote terminals / Eq Co / S 500 / E 66

Control Data Corp., Government Systems Div., 3101 E. 60th St., Minneapolis, Minn.
Roster of Organizations

Systems consulting and programming / Sv Co / S 16 / E 60

DataCommunications, Inc., Church Rd., P.O. Box 29, Moorestown, N.J. 08057 / 609-235-6650, 51, 52 / °C 66
Digital communication and terminal equipment; Data processing instrumentation / Sv Ti / °C 48

Dashew Business Machines, Inc., 2219 Bel Air Rd., S., Los Angeles, Cal. 90059 / 213-385-9255 / °C 65
Computer systems consulting and programming / Sv Co / °C 60

Data Control Corporation., 212-675-3514 / °C 67
Engineer, design, build computer rooms; consultants for planning, expansion / Sv / S / E 65

Crend & Co., Ltd., (Div. of IT&T Corp.), 151 Broadway, New York, N.Y. 10010 / 212-674-9150 / °C 67
Make teleprinters, ancillary equipment, data processing equipment / Eq Sv Le / S 2000 / E 09

Crystalonics, Inc., 147 Sherman St., Needham Heights, Mass. 02194 / 617-444-9750 / °C 66
Digital logic modules, custom digital systems, digital instrumentation including multiplexers, A/D converters, output buffers, data loggers, similar data processing instrumentation / S 25 / E 61

Control Logic, Inc. (Subsidiary of Schaevitz Engineering), 3 Strathmore Rd., Natick, Mass. 01760 / 617-653-1170 / °C 67
Digital circuit cards/modules; special purpose digital systems / Eq S 35 / E 61

Controlomag Laboratories, 2459 Sassaquans St., Roslyn, N.Y. 11576 / 212-683-6280 / °C 66
Custom digital counters and controls / S 10 / E 59

Control Pressing Services, 5809 Annapolis Rd., Hyattsville, Md. 20784 / 301-779-3770 / °C 67
Specialize in direct mailing field; 100 360/30, 140 125; three upper, lower case printers / Eq Sv S / S 55 / E 64

Control Science Corp., S150 Duke St., Alexandria, Va. 22304 / 703-354-9000 / °C 65
Decoders, encoders; active solid-state filters; displays, electronic and electro-mechanical; teletermining systems / S 35 / E 61

Control Technology, Inc., (Div. of Milgo Electronic Corp.), 3450 E. Spring St., Long Beach, Cal. 90806 / 213-426-8320 / °C 67
Hybrid computing facility. Specialists in digital simulation; real time control; data acquisition programs; compilers: assemblers and program conversion / Sv Co Ti / S 20 / E 60

Cook Electric Co., Data Storage Div., 6401 W. Division, N.W. 60055 / 312-967-6600 / °C 66
Systems engineering assistance; computer peripheral equipment including photorecording paper tape readers, incremental and continuous digital magnetic tape transports with read and write capability; magnetic drum recorders; memory development and manufacturing capability / S 1500 / E 1097

Co-ordinated Data Accounting, 319 Alden Place, Orange, N.J. 07050 / 201-672-6367 / °C 67
Payroll, accounts receivable, accounts payable services / Sv S / S 66

Full line of capacitors for computer application; delay lines / S 3000 / E 20

C. L. Counell Associates, Inc., 721 Ellsworth Dr., Rm. 204, Silver Spring, Md. 20910 / 301-587-1755 / °C 67
Data processing accessory equipment / Sv / S / E 66

C. P. & S., Inc., 1414 Spring St., N. M., Atlanta, Ga. 30309 / 404-873-4578 / °C 67
Management consultants and service bureau; Honeywell 120, 16K, 4 tape system: sorters, collators, reproducers, punch keys and key verification / Sv / E 60

Created Spence, Inc., 175 Fifth Ave., New York, N.Y. 10010 / 212-675-3514 / °C 67
Engineer, design, build computer rooms; consultants for planning, expansion / Sv / S / E 65

Creed & Co., Ltd., (Div. of IT&T Corp.), Hollinburg, Brighton, Sussex, England / Brighton, 507117 / °C 67
Make teleprinters, ancillary equipment, data processing equipment / Eq Sv Le / S 2000 / E 09

Data Communications, Inc., Church Rd., P.O. Box 29, Moorestown, N.J. 08057 / 609-235-6650, 51, 52 / °C 66
Digital communication and terminal equipment; Data processing instrumentation / Sv Ti / °C 48

Data Control Services, 948 High Ave., SW, Canton, O. 44706 / 216-456-7333 / °C 67
Programming and systems analysis services for commercial business; complete computer systems design and services. IBM data processing equipment and IBM 1620 computer / Sv Ti / S 10 (full time) / E 63

Data-Copy Co., (Div. of R. B. Davison Co.), 760 Bryant St., San Francisco, Calif. 94107 / 415-392-6613 / °C 66
Computer-graphic services including direct image/photo offset reproduction; collating/binding; computer-to-microfilm copy; text storage, editing and formatting; document preparation; file conversion; record maintenance / Sv Le / S 17 / E 58

DataCenter, Inc., boxes 2215, Box 20495, Houston, Tex. 77002 / 713-412-2360 / °C 67
Weekly and monthly rental of small general purpose computers Model PDP-8/S (manufactured by Digital Equipment Corp.); consulting and programming assistance to rental customers / Eq Sv Le / S 17 / E 58

Data Documents/Inc., (Div. of Data Document Corp.), 2251 S. Western Ave., Chicago, Ill. 60612 / 312-529-2289 / °C 67
Manufacturers of tabulating cards (standard, special, continuous); sell magnetic tape, continuous paper forms and pressure sensitive labels / S 21 / E 61

Data Dynamics, Inc., 305 Webster St., Monterey, Cal. 94040 / 408-375-4133 / °C 67
Embosed and punched plastic card processing, service with punched tab cards as input / Sv / S 200 / E 52

Data Acquisition Corp., (Div. of Picker X-Ray Co.), 701 Huntington Ave., North Haven, Conn., and 2900 Whitney Ave., Hamden, Conn. 06518 / 203-240-5529 / °C 67
Desk-top digital computers / Eq Co / S 15-20 / E 64

Data Associates, 1160 Terra Bella Ave., Mountain View, Cal. 94040 / 415-961-6760 / °C 67
Services and equipment for cleaning, testing and certifying magnetic computer tape / Eq / S / E 64

Data Automation Co., Inc., 7450 Las Colinas Blvd., Dallas, Tex. 75247 / 214-ME7-2403 / °C 67
Leasing IBM data processing and punch card machines / Eq Le / S 25 / E 65

Systems analysis, programming, IBM key punch, Mohawk data recorders, UNIVAC 90 columns punch, UNIVAC 1005 / Sv Ti / °C 25 / E 64

Data Processing Services, Inc., 14472, 716-624-2000 / °C 71
Computer components: scanners, switch matrix, automatic controls keyboards, systems engineering / S 125 / E 1838

Leasing computers, punch card machines; buying and selling used data processing machines; maintenance service / Eq Sv Le / S 165 / E 61

Cybertronics, Inc., 132 Calvary St., Walling, Mass. 02134 / 617-699-0012 / °C 67
Magnetic tape rehabilitation services, cleaners, cleaners, testers, certifiers; systems: computer performance monitor systems / Eq Sv S / S 75 / E 60

Cycle Equipment Co., P.O. Box 307, Los Gatos, Cal. 95030 / 408-370-4220 / °C 67
Punched tape handling equipment: winders, feeders, unwinders (powered, unpowereed), reels, tape transports / S 10 / E 48

D
Roster of Organizations

Dennison Manufacturing Co., Machines Systems Div., 300 Howard St., Framingham, Mass. 01702 / 617-873-5511 / *C 60
Cummins-Johnson Dat-A-Read / S 3600 / E 1644 / *C 60

Design Automation, Inc., 809 Massachusetts Ave., Lexington, Mass. 02173 / 617-369-9998 / *C 60

Computer analysis of electronic circuits and systems: design review service; electronic circuit and systems design / S 60 / *C 60


G.E. time-sharing services: batch processing / S Tt Co / S 12 (local) / E 66 (ISD Dept.) / *C 60

Diaight Corp., (Div. of Cons. Electronics, Inc.), 60 Stewart Ave., Brooklyn, N.Y. 11237 / 212-497-7600 / *C 60

Indicator lights, illuminated push button switches, single plane numeric readouts, "Datalates" (ultra-miniature indicator lights for computer and automation fields), transilluminated lamps, time-delays relays, "Data Strips" and "Data Matrix" for computers and automation applications / S 250 / *C 60

Diamonite Products Mfg. Co., Mconkey St. Ext., Shreve, O. 44676 / 216-547-4211 / *C 60

Computer components of alumina ceramics, high strength, low loss, high density, electrical insulating, vacuum tight, readily metallized. Sizes available, subminiature through normal size requirements / S 175 / E 40

DITAN Controls, Inc. 944 Dorchester Ave., Boston, Mass. 02125 / 617-280-7700 / *C 60

Digital systems and equipment for commercial, industrial and military applications / Eq S 250 / E 50

Diebold Inc., 1174 Webster Ave., S.E., Canton, O. 44702 / 216-453-4592 / *C 60

Products for storage and fire protection of in-pet data for computers / S 5000 / E 1859

Digitek Corp., 4315 Baltimore Ave., Bladensburg, Md. 20710 / 301-266-9378 / *C 60

Digital magnetic tape recorders; paper tape magnetic tape converters; punched card magnetic tape transcription system / Eq S 25 / E 62

Digital Development Corp., (Div. of Xebec Corp.), 5575 Kearny Villa Rd., San Diego, Cal. 92123 / 714-270-9920 / *C 60

Rotating magnetic memory devices and systems / Eq S 100 / E 59

Digital Devices, Inc., 200 Michael Drive, Syosset, N.Y. 11791 / 516-921-2400 / *C 60

Magnestricutive delay lines, associated electronics, complete memories, communications buffers, analog and voice delay units / S 100 / E 62

Digital Electronics Inc., Ames Court, Prospect, N.Y. 11800 / 516-433-7000 / *C 60

General purpose scientific and educational systems; custom designed special data systems / Eq Co S 50 / E 62

Digital Equipment Corp., 146 Main St., Maynard, Mass. 01754 / 617-897-8821 / *C 60

General purpose digital computers; A-D and D-A converters; logic modules; CRT displays; test systems; printed circuit boards; magnetic tape systems / Eq Co S 1500 / E 57

Digikem Corp., 5950 S. Century Blvd., Los Angeles, Cal. 90045 / 213-670-9040 / *C 60

Digital communications and data acquisition equipment: paper tape readers and handiers / Eq S 450 / E 57

Dison Corp., 4250 N.W. 10th Ave., Fort Lauderdale, Fl. 33309 / 505-565-5511 / *C 60

Digital plotters, coordinate readers, film readers: binary to decimal converters: digital data compression and recording systems: numeric readouts / S 50 / E 62

Diverse Integration of Data Services, (Div. of Electronic Administrative Services, Inc.), 1745 Saratoga Ave., San Jose, Cal. 95129 / 408-257-4800 / *C 60

Analysis and programming of commercial, scientific systems and applications: data processing and algebraic compilers and assemblers: interpretive languages; operating systems: linear, matrix generators: information retrieval systems: machine feasibility and computer installation effectiveness studies / S v ti Co / S 20 / E 66

Documentation Inc., 4833 Rugby Ave., Bethesda, Md. 20014 / 301-656-9500 / *C 60

Information systems design: consulting, basic research, computer programming and engineering, operation of information centers, indexing, abstracting, microfilm processing, optical scanning, photo-composition, mechanized publishing. Microfiche readers / Sv Ti / 650 / *C 60

Document Control Associates, 1807 Elmwood Ave., Buffalo, N.Y. 14207 / 716-875-6464 / *C 60

Consulting services: management information systems, computer feasibility studies: production scheduling and inventory control; on-the-job training of supervisors and operators / Sv Co / S 5 / E 62

Dolein Metal Products, Inc., 315 Lexington Ave., Brooklyn, N.Y. 11216 / 212-638-9472 / *C 60

Manufacturers of stock size data tape store units: special sizes mobile storage systems: tabulating card files / S 80 / E 48

Mormar Co., 785 Mission St., San Francisco, Cal. 94103 / 415-362-5713 / *C 60

New and used data processing accessories: buy, sell and lease accessories as well as equipment: specializing in sale and installation of Priden equipment / Eq Sv Le / S 17 / E 10

DPS, Inc., 1800 Longview Rd., Waukegan, 111, 60005 / 312-662-3333 / *C 60

Complete data processing services,
Drake Mfg. Co., 4626 N. Olcott Ave.,
Durant Mfg. Co., 4626 N. Olcott Ave.,
EDACO. Inc., 348 Baronne St., New
Punched tape handling equipment and filling supplies / S 9 / E 55
Drexel Dynamics Corp., Maple Ave.,
Winston-Salem, N.C. 27102 / 910-722-0211 / 67
IBM key punch / S 7 / E 24
Dresser Products Inc., P.O. Box 2035, Provided digital end equipment / S 67
Punched tape handling equipment and filling supplies / S 9 / E 55
Durant Mfg. Co., 4626 N. Olcott Ave.,
EDACO. Inc., 348 Baronne St., New
Industrial films for electrical/electronic applications, computer tapes, programming belts / S 7 / E 7
Digital read-out instrument counters and indicators / S 300 / E 1879
4K-22K computer, with instrumentation peripherals for data acquisition / Eq Co Le / S 600 / E 57
Eastman Kodak Co., 343 State St., Rochester, N.Y. 14650 / 716-325-3000 / 65
Photographic equipment, stapler synthehtic and organic chemicals and dyes/stuffs: facadeimic equipment (photocopy); recording paper / S 50,000 / E 1898
EASCO Services Inc., (Div. of Electric Bond and Share Co.), 2 Rector St., New York, N.Y. 10006 / 212-014-4400 / 67 Computing, consulting and programming services: microelectronics and systems engineering: economic and operations research: instruction in computing and programming. Equipment includes Control Data 6-G200 computer / Sr / S 1500 / E 06
Electro-Mechanical Research Inc., (Div. of Schlumberger Ltd.), P.O. Box 44, Princeton, N.J. 08540 Company divisions include: Aerospace Sci., Div., 5012 College Ave., College Park, Md. 20740; Computer Div., 6001 Bloomington Freeway, Minneapolis, Minn. 55420; Magnetics Div., P.O. Box 130, Van Nuys, Cal. 91408; Photoelectric Div., P.O. Box 44, Princeton, N.J. 08540; Telemetry Div., P.O. Box 304, Sarasota, Fla. 33578 / 61-940-9100 / 67 Small, medium and large digital computers for scientific and engineering applications: both analog and digital data acquisition communications and processing systems / Eq S 1600 / E 42
Electro-Miniatures Corp., 600 Huyler St., So. Hackensack, N.J. 07606 / 201-488-7776 / 66
Commutator switches. Metal segments and rings embedded in plastic compounds / S 152 / E 65
Electronic Associates Inc., West Long Branch, N.J. 07764 / 201-222-1100 / 65
Analog, digital and hybrid computers, digital printing equipment, computing services / S 2500 / E 45
Electronic Business Machines Co., 625 Hard Ave., Staten Island, N.Y. 10310 / 212-273-3636 / 65
Buy, sell, purchase and leaseback used IBM DP equipment from key punctions to computers / Eq Le / S 7 / E 51
Electronic Business Machines Co., 57 West 57th St., New York, N.Y. 10019 / 212-759-1212 / 67
Services solving structural problems on computers for consulting engineers and industrial or state organizations; has large library of structural computer programs which are enumerated in a free folder described in detail in a free handbook / S 9 / E 66
Electronic Computer Programming Institute of Central Pa., Inc., (Div. of ECPI, Inc.), 49 N. Progress Ave., Harrisburg, Pa. 17109 / 717-545-4231 / 67
Courses in data processing and computer programming / Co / S 18 / E 65
Electronic Computer Programming Institute of Chicago, (Franchised branch of ECPI, Inc.), 220 S. State St., Chicago, Ill. 60604 / 312-922-7774 / 67
EAM wiring, operation and education: 1401 and 360 education and programming: management science service bureau / Sr Co / S 8 / E 65
Electronic Computer Programming Institute of Cincinnati, Inc. (Div. of ECPI, Inc.), 31 East 4th Cincinnati, O. 45202 / 513-421-6222 / 67
1401 and 360 computer programming training / Co / S 6 / E 65
Electronic Computer Programming Institute of Columbus, Inc., (Franchised branch of ECPI, Inc.), 4544 Indianola Ave., Columbus, O. 43214 / 614-265-1841 / 67
Courses and instruction in IBM data processing and computer programming, including IBM tabulating equipment operation, control panel wiring, and programming logic, languages, and computer operation for IBM 1400 and 360 series / Co / S 20 / E 66
Key punch, data processing and computer programming courses / Co / S 20 / E 65
Electronic Computer Programming Institute of Milwaukee, Wis. (Franchised branch of ECPI, Inc.), 174 W. Wisconsin Ave., Milwaukee, Wis. 53203 / 414-276-7460 / 67
IBM unit record: 1401 programming: system 360 instruction / Co / S 15 / E 65
Electronic Computer Programming Institute of Northeastern Ohio, Inc. (Franchised branch of ECPI, Inc.), 850 Euclid Ave.,
Cleveland, O. 44114 / 216-771-5855 / *67
Courses and instruction in IBM data processing and computer programming, including IBM tabulating equipment operations, control panel wiring, and programming in English, languages, and computer operation on IBM 1400 and 360 series / Co / S 30 / E 64

Electro-Scientific Institute of Omahain (Div. of ECPI Inc.), 305 S. 17th St., Omaha, Nebr. 68102 / 402-345-1300 / *C 67
Residential and home study courses in data processing and computer programming using IBM equipment. Consulting service and contract programming / Sr / S 25 / E 67

Electronic Computer Programming Institute, 235 Manarone Ave., White Plains, N.Y. 10602 / 914-352-8200 / *C 67
Vocational training in data processing and computer programming / Sv Co / S 15 / E 65

E.D.P. services and programming / Sv Ti / S 26 / E 60

BC, AC voltage calibrators; analog/digital converters (voltageed digitizers); data acquisition systems / Eq / S 20 / E 50

Electronic Engineering Co. of Calif., 1601 E. Chestnut Ave., Santa Ana, Calif. 92702 / 714-547-5501 / *C 67
Timing, data processing, electromechanical products; format control, buffer and data recording systems / S 300 / E 47

Consultants in military and civilian functionally encompassing systems / S / E 64

Electronic Memories, Inc., 12621 Chadron Ave., Hawthorne, Cal. 90250 / 213-772-5201 / *C 67
Memory cores, stacks and systems for industrial, commercial and military aerospace uses / Eq / S 1500 / E 62

Electronic Modules Corp., 1949 Dr., Timonsium, Md. 21095 / 301-252-2900 / *C 67
Special purpose digital control systems, P.C.M. decomposition, scanner systems, sequencer systems, digital logic modules, integrated circuit logic cards, temperature controllers, A.C. switches / S 170 / E 61

Computer service bureau functions / S Ti Co / S 60 / E 61

Electronic Tabulating Corp., 14025 Schaeffer Hwy., Detroit, Mich. 48227 / 313-272-1863 / *C 67
Computer and data processing services / Sv / S 56 / E 67

Electron Ohio Inc., 1278 W. 9th St., Cleveland, O. 44113 / 216-MAI-5577 / *C 67
Data collection systems; card and badge readers; place counters; production recorder; magnetic drums / Eq / S 20 / E 56

Electropec, Inc. (Subs. of Computer Control Co., Inc.), Industrial Park, Peterborough, N.H. 03458 / 603-924-3021 / *C 65
Contract manufacturer of electronic and electromechanical equipment (computer, aeronautical, medical). Production or prototype construction wiring or circuit assembly to commercial or Mil specifications / S 225 / E 60

Elec-Pac, Inc., 1550 Euclid St., Santa Monica, Cal. 90404 / 213-451-1635 / *C 67
Electronic noise generators (function generators) / S / E 55

El Paso Data Services, Inc., 616 E. Yandell Dr., El Paso, Tex. 79902 / 915-533-1013 / *C 67
Keypunch overload and training; data processing courses; systems consulting / Sr / S 25 / E 65

El-Rad Manufacturing Co. (Div. of Sherwood Electronic Labs), 4300 N. California Ave., Chicago, Ill. 60618 / 312-470-7350 / *C 67
Delay lines and pulse transformers; other special coils / S 250 / E 44

Entech Research Products Corp., 12 Patten Ave., Rochelle, N.Y. 10801 / 914-725-7505 / *C 66
Manufacturers of computer interfaces for instrumentation; peripheral devices for small digital computers; special data processing systems; and distributors of small digital computers / Eq / S 15 / E 65

Encoder Div., Littion Precision Products, Inc., 7042 Woodley Ave., Van Nuys, Cal. 91406 / 213-701-2111 / *C 66
Digital shaft encoders of the magnetic, optical and contact types. Output cards include self-decoded, binary, BCD, gray and V-Scan binary / S 175 / E 63

Engineered Electronics Co., 1441 E. Chestnut Ave., Santa Ana, Calif. 92702 / 714-547-5651 / *C 67
Digital logic cards, modules, integrated circuit logic cards, custom systems, custom packaging and welding, rotary thumwheel switches / Eq Sv / S 200 / E 54

Data processing systems and support services, time-share, time-hire / Eq Sv Co / S 5000 / E 63

Ennis Business Forms, Inc., (Subdivision of Ennis Business Forms, Inc.), F.O. Box 217 (Sherwood Field), Paso Robles, Calif. 93447 / 805-270-1144 / *C 67
Tabulating cards, continuous carbon interleaved forms / S 1200 / E 09

Epson Co., 411 Providence Hwy., Westwood, Mass. 02090 / 617-329-1400 / *C 65
Computer components and equipment; special purpose computers, monitoring systems, computer-concepts and format recorders, 1 and 3 megacycle digital circuit cards, wide-board amplifier series, portable data gathering systems, speech A/D converters, voltmeters, reference sources. Pulse code modulation air and ground telemetry systems / S 275 / E 65

Erdos & Morgan Inc., 111 Fourth Ave., New York, N.Y. 10003 / 212-614-6970 / *C 67
Market research studies, including pre-computer cleaning, systems, key-punching and EAM tabulations / Sv / S 40 / E 47

ESEE Inc., 1 Holland Ave., White Plains, N.Y. 10605 / 914-NW-1200 / *C 65
Airborne data processing equipment and instrumentation. Instrumentation and recording equipment for operation with high-speed A/D converters, and computer interconnection components. Ground data handling systems / S 3000 / E 57

Evered & Vignoles Ltd., Acton Lane, Chiswick, London W. 4, England / Chiswick 3670 / *C 65
Special purpose analog computers data loggers, industrial telemetry, process control, servo-system components / S 2300 / E 1959

Exact Electronics, Inc., 101 S.E. 2nd St., Hillsboro, Ore. 97123 / 503-648-6661 / *C 66
Electronic function generators / S 40 / E 57

Executeon, Inc., 47-37 Austell Place, Long Island City, N.Y. 11101 / 212-552-4000 / *C 66
Electronic voice communication, sound, signalling and package page systems / S 450 / E 57

E-Z Sort Systems, Ltd., 45 Second St., San Francisco, Cal. 94105 / 415-GAI-8005 / *C 65
Edge-punched cards for filling and sorting data. Special cards for correlation of facts. Control systems for a number of electronic computers. Teaching machines, program scheduling / S 186 / E 35

F

Fabri-Tek, Inc., 5901 S. County Rd. 18, Minneapolis, Minn. 55436 / 612-933-8011 / *C 65
Cores, planes, and stacks for ferrite memories; colloid current core memory systems (30 and 21/20); thinfilm memory systems; digital educational computers; paper tape punches and readers; bio-medical and nuclear physics research instruments / Co / S 2000 / E 57

Facit-Ohdner Inc., a subsidiary of Avdiabergs Industrier of Sweden, 222 East 44 St., New York, N.Y. 10017 / 212-867-1716 / *C 65
Sale of the Facit high-speed tape reader, tape punch and tape duplicator / S 10,000 / E 22

Fairchild Controls, Inc. (Div. of Fairchild Camera and Instrument Corp.), 225 Park Ave., Hicksville, L.I., N.Y. 11802 / 516-WE-5600 / *C 65
Especially for computing and data processing industries — a complete new line of single turn, multi-turn potentiometers and trimmers (FAIRDYN)
Roster of Organizations

Fairchild Semiconductor, (Div. of Fairchild Camera and Instrument Corp.), 313 Ferrich Dr., Mountain View, Cal. 94042 / 415-962-5011 / E 67
Ferrite memory cores, microrcircuit memory devices, silicon Planar Intergrated circuits, transistors, diodes, photo arrays, microwave signal sources / Eq / S 13,000 / E 57
Ferranti Electric, Inc., East Bethpage Rd., Federal Business
Fedder Data Centers of California, Inc., Fedder Data Centers, Inc., Farrington Electronics Inc., (Div. of Fairchild Camera & Instrument Corp.), 313
magnetic flip disc displays, special
memories, silicon microcircuits, microcircuit
memory systems, silicon memory sources / Eq Sv / E 45
industrial and military data acquisition equipment: digital computer process control. Multiple pressure measuring systems. Vehicular traffic data records and systems. Metrological data recorders and systems. Electronic integrator / S 15,000 / E 37
Fisher-Stevens Inc., 120 Brighton Rd., Clifton, N.J. 07012 / 201-471-4000 / E 67
Computer consulting, systems design, programming and operational services for business and government applications, marketing informational systems, operations research projects; educational services offered by a computer science institute offers IBM 360 programming courses; also, direct mail services are provided / Sv Ti Co / E 59
Flight Research Div., (Giannini Scientific Corp.), P.O. Box 1-F, Richmond, Va. 23201 / 703-737-4163 / E 67
Cameras - high velocity single frame recorders used in microfilm industry or computer display read-out devices; encoders - Rem-o-tizer, used for converting angular or linear input data into digital electrical output / S 750 / E 48
Free access raised floor system for computer rooms and other applications: precision made die cast aluminum panel in 16 1/4" or 24" modules, completely interchangeable and supported by a die cast aluminum pedestal assembly; under floor cavity can be used for cables, wires, etc., or as a plenum for air conditioning / E 57
Dr. Ivan Flores, 931 President St., Brooklyn, N.Y. 11215 / 212-789-1312 / E 67
Consulting: systems layout; hardware and software design; feasibility investigation; proposal management; education course outline; preparation and presentation; research and development of digital systems / Sv / S 500 / E 56
Memory systems, electronic: automatic counting & sorting systems: photoelectric readers: oscilloscopes & cameras for recording data / S 250 / E 56
General Dynamics/Electronics, 3320 Pacific Hwy., P.O. Box 127, San Diego, Cal. 92112 / 714-298-4611 / E 65
Computer readout devices, high speed electronic printers, electronic communications printers, microfilm recorders, plug-in and potted circuits, digital devices for display of computer information, input and visual output devices (the CHARACTERON)
Roster of Organizations

Microcomputers / S 1100 / E 46
General Precision, Inc., Kearfott Products Div., 1150 McBride Ave., Little Falls, N.J. 07424 / 201-256-4000 / *C 66
Analog, digital, and hybrid computers. Programmed measurement and checkout equipment. Digital data communication, high-speed logic, and range instruments. Data acquisition and recording systems. Analog to digital converters. Servomechanisms and systems. Digital electro-mechanical solid state readout devices (alpha-numeric). Resolvers, transducers, synchros, servo motors, motor tach generators, servo amplifiers, d.c. power supplies, choppers, mag-amps, signal comparators and sensors, and summing-isolation amplifiers / S 6000 / E 17
General Precision, Inc., Librascope Group, 800 Western Ave., Glendale, Calif. 91201 / 213-244-6541 / E 67
Digital computers, disc memories, woven plated wire memories, encoders, integrators, flow computers, automatic diagnostics, technical management services, high precision optical systems / Eq Co Le / S 2000+ / E 37
General Precision, Inc., Link Group, Covelosle Rd., Binghamton, N.Y. 13902 / 716-772-3100 / E 66
Aircraft and missile simulators, video and photographic storage/retrieval and processing systems, space information systems, range timing and instrumentation systems, graphic data conversion systems, special purpose analog/digital computing systems, electronic test equipment, computer simulation, and scientific programming services / S 4000 / E 35
Computer programming, system analysis, production service on 1401, 1410, 2200, 360/30 / S 700 / E 63
Genisco Technology Corp., Systems Div., 1895 Center Stock Rd., Compton, Calif. 9218 / 213-872-3100 / E 66
Data processing accessory equipment / Eq Le / S 140 / E 66
Custom designed general support equipment, automatic test equipment, special purpose computer components and computer systems, digital systems using small medium general purpose computers / S 600 / E 55
 Tape to card converters, card to tape converters, data communication equipment / S 300 / E 55
Custom designed general support equipment, automatic test equipment, special purpose computer components and computer systems, digital systems using small medium general purpose computers / S 600 / E 55
Magnetic tape testers, cleaners, winders and erasers / Eq Sv / S 197 / E 55
Information retrieval and annotation systems, character vector generators, analog to digital capacitative reset integrators, hard copy printers.
Referral and placement of personnel in fields of electronic data processing, management information systems, operations research, and the management sciences at all levels, coast to coast.

Hallmarks International, 90-41 64th Rd., P.O. Box 252, Forest Hills, N.Y. 11375 / 212-275-3725 / #67

Contact wire, manual port­able key-­punch machines, paper tape readers,bursters,inked ribbons,magnetic tape ledgers, punch cards, alarm­ning business and tab card holders, manual and electric tape winders.

Of all firm's equipment is imported from Europe sold in U.S.A.; firm exports worldwide U.S. made data processing supplies. / S 12 / E 27

Hamiton, Grayden & Flemmer, Inc., Hamilton Rd., Hopkins, Minn. 55343 / 612-941-1120 / #67

delay lines,magnetic discs and drums, keyboards, indicators lights, servo­mechanisms / S 6 / E 05

Hammond Manufacturing Co., Ltd., 394 Ed­inburgh Rd., Guelph, Ontario, Canada / 519-622-2960 / #66

Transformer and sheet metal components of all types for electronic and elec­tronic computer sub and main systems / S 350 / E 27


Consulting and programming for scientific and business applications. Also, service bureau operation on IBM system 360 (65K and 16K) computers: business and accounting reports and a specialized capacity for retail store operations / S 917 / E 17

Philip Hano Co., Inc., 65 Sargent St., Holyoke, Mass. 01040 / 413-533-7141 / #67

Continuous forms marginally punched including standard, stock, tab and tab imprints / S 97 / E 1988

Hanover & Selwyn Co., Cambridge Savings Bank Bldg., 1374 Massachusetts Ave., Cambridge, Mass. 02138 / 617-UN4-7347 / #67

Applications development for time sharing, telemetry and test data process­ing / S 2 / E 65

Hardy Scales Co., (Div. of Utah Systems Div.), 125 33rd St., Ogden, Utah 84401 / 801-399-5200 / #67

Electrical weighing systems which interphase with computers: floor, bench, in-motion, and rail scales; automatic batch mix system, in-motion carton dimensioning and cube calcula­tions / S 55 / E 06

Jack W. Harrison & Assoc., 57 E. Oakland Ave., Salt Lake City, Utah 84115 / 801-405-8644 / #67

Systems consultants, contract program­ming and interfacing service, data process­ing forms-systems, bureau services / Sv / S 12 / E 64


Titles on computers, programming and related subjects / S 21 / E 63

The A. W. Hayden Co., 232 N. Elm St., Waterbury, Conn. 06720 / 203-756-4481 / #67

Timing and control devices, stepper switches, mechanical counters / S 600 / E 46

Heath Co., Benton Harbor, Mich. 49022 / 616-926-3661 / #65

Educational analog computer / S 575 / E 46

Heliodyne Corp., 7810 Burnet Ave., Van Nuys, Cal. 91405 / 213-797-7300 / #66

Scientific and business data process­ing: feasibility studies; manage­ment sciences / S 11,000 / E 55

Hermes & Co., 2431 K St., N.W., Washing­ton, D.C. 20007 / 202-945-3100 / #67

Design and operation of information retrieval panel, library automa­tion projects, SDI systems, bibli­ographic services and surveys / S / E 05


Digital computer with interfaces for working with electromagnetic measuring instruments; digital tape recorders. Also text instruments: oscillo­scopes, pulse generators, counters, signal and function generators, dig­i­tal, analog and vector voltmeters, vector impedance meters, wave and spectrum analyzers, microwave instru­ments, time and voltage standards, power supplies, amplifiers, analog tape; X-Y and continuous-charts record­ers; digital data acquisition systems / E 11,000 / E 39


Digital computer for signal processing and high-speed telecommunications / S / E 06

The Hickok Electrical Instrument Co., 10514 Duport Ave., Cleveland, O. 44108 / 216-541-8060 / #67

Punched card readers, electronic test equipment / S 700 / E 14

Hoffman Electronics Corp., Semiconductor Div., Hoffman Elec­tronic Airpark Dr., Hop­kins, Minn. 55343 / 612-941-2125 / #67

Hoffman Co., Inc., 1240 Monte, Cal. 91734 / 213-666-0123 / #67

Photoelectric tape and card readers; semi-conductor devices including diodes, regulators, temperature com­pensated reference devices / S 429 / E 41

Hollander Assoc., P.O. Box 2276, Fullerton, Cal. 92633 / 714-525-8777 / #67

Applied research, design and consult­ation; system optimization studies for computer and applica­tions including communications switching, command and control, simu­lation, and management systems. Work is based on the information techni­cian for optimum decision making / Sv / S 16 / E 61

Holley Computer Products Co., (Subsid. of Control Data Corp.), 1400 N. Roches­ter Rd., Rochester, N.Y. 14603 / 313-651-0811 / #66

High and medium speed digital drum printers / S 200 / E 61


Computers, core memories, memory test equipment, logic modules / Eq / S 2000 / E 53

Honeywell Inc., Denver Div., 4800 E. Dry Creek Rd., Denver, Colo. 80217-305 / #67

Incremental digital magnetic tape recorder / E 75

Honeywell Inc., Electronic Data Process­ing Div., 60 Walnut St., Wellesley Hills, Mass. 02181 / 617-235-4750 / #67

General purpose digital computers for business, industry and science; com­plete line of peripheral equipment including: punched-card equipment, audio re­sponse systems, all-purpose remote terminals / Eq / S 11,000 / E 55

Honeywell Inc., Industrial Div., 1100 Virginia Dr., Fort Washington, Pa. 19034 / 215-643-1300 / #66

General purpose digital computers for on-line real time applications, special purpose analog computers, and programming and maintenance of these systems / S about 3500 / #67

Houston Fearless Corp., 11801 W. Olympic Blvd., Los Angeles, Cal. 90064 / 213-725-4531 / #67

Film card reader and film card cam­era processor / Eq / S 500 / E 43


Digital plotting systems / S 75 / E 58

Howard's Automatic Devices, 2270 Atlantic Blvd., Jacksonville, Fla. 32207 / 904-390-9515 / #67

Paper tape and supplies: Dura Mach 10, 1041, and other punched tape equipment. 5000-X & Othner adding machine and posting machines with punched tape output. Tabulating and computer accessories and equipment: floating computer floors; Dolin mobile storage of all types: modular and shelf filing equipment and supplies / S / E 45

HBB-Singer, Inc., Box 60, Science Park, State College, Pa. 16801 / 815-238-4513 / #67

Services and special equipment in the areas of operations research, system analysis, and system measure­ment and evaluation / S 12 / E 46

Hughes Aircraft Co., 1100 Alameda Ave., Teale St., Culver City, Cal. 90230 / 213-951-0711 / #67

Aerospace and space-based computers: automatic checkout equipment; aero­space signal processing display equip­ment (sensors, display and control systems, human factors engineering): data processing and presentation equipment; general purpose attack computer; aircraft on-board data management equipment: high data-rate tape recording: magnetic drum memories / S 32,000 / E 35


Consulting service / Sv Co / S 4 / E 58

IBM Corp., Data Processing Div., 112 E. Post Rd., White Plains, N.Y. 10601 / 914-WHR-1900 / #65

Complete line of data processing systems and equipment serving the IBM System/360, the IBM RAMAC 305 (model 2), 1401-G, 1401, 1440, 1460, 1410, 1620, 1620 model (2), 7010, 7040, 7044, 7070, 7072, 7080, 7090, 7094, 709411, data processing systems; 1420 bank transit system; 1240 bank data processing system; 1642 teller service and marking system, 1231 optical mark scoring reader: 1282 optical page reader: 1418 optical character reader; random and drum storage units: 7770 audio response unit; 1070 process communication system, 2321 data cell drive; 1015 inquiry display console: 2671 paper tape reader; 1710 control system: magnetic
character inscribing and sensing equipment; automatic reservations systems; Tele-processing devices and systems including data collection and transmission equipment: Hypertape; mark sensing equipment; and a full line of punched card equipment, including the low-cost Series 50 line. Also printers, Micro-processing, punched cards, magnetic tape, magnetically encoded paper checks and other supplies used with data processing equipment / $ 116,000 / E 12

IBM Corp., Industrial Data Processing Div., 326 E. Montgomery Ave., Rockville, Md. 20852 / 301-G44-6700; 301-H74-4110 / 65 Electronic information handling and control equipment for U.S. government space, defense, and civil programs. Systems management, systems development, research, engineering, production, installation, and field support / S / E 55


IBM Corporation / S 5000 / E 7

IB Personnel Service Agency, Inc., 261 Broadway, New York, N.Y. 10007 / 212-697-3475 / 67 Employment agency specializing in data processing personnel, including programmers, computer systems, analysts, and operations managers / S / E 54


Image Instruments, Inc., 2300 Washington St., Newton Lower Falls, Mass. 02162 / 617-969-8440 / 66 Storage tape systems for machine-to-machine interface, off-line processing, temporary storage or multiple display purposes in conjunction with computer / S / E 56


Indel Inc., 6749 East 12 St., Tulsa, Okla. 74112 / 918-TE5-9568 / 67 Ampex computer tape, tape rehabilitation, cleaning and recertifying. Data processing equipment and supplies / S 30-40 / E 56

Indiana General Corp., Electronics Div., Crow Hill Rd., Newbury, N.Y. 08052 / 201-626-2500 / 67 Ferrites: Linear and square loop, memory cores, memory planes, memory stacks, pulse transformers and recording heads / S 580 / E 02

Inductor Engineering, Inc., 117 Schley Ave., Lewes, Del. 19958 / 302-645-6251 / 67

Toraloid transformers: electronic, telemetry filters; magnetic amplifiers / S 30 / E 56


Industrial Electronic Engineers, Inc., 7720 Lemona Ave., Van Nuys, Cal. 91405 / 213-767-0233 / 67 Rear-projection readout and display devices and systems; binary to decimal driver/decoders; readout and display accessories; illuminated switch status indicators; bin-view self-decoding readout / S 200 / E 46

Industrial Formulations Corp., 30 Dupont St., Plattsburg, N.Y. 11803 / 516-661-1700 / 67 Anti-static cleaning preparation for use on all plastics, ceramics and metals / S 550 / E 66

Industrial Nuclieosciences Corp., 650 Ackerman Rd., Columbus, 0. 43202 / 614-267-6351 / 65

Analytical industrial process measurement and automatic control systems, data reduction and readout systems for paper, plastics, metal and other products / 50

Industrial Products Group (Div. of Texas Instruments, Inc.), 3609 Buffalo Speed­way, Houston, Texas, 77006 / 713-JM-1411 / 67 Special purpose computers for digital seismic data processing, data communications systems, A-D, D-A converters and multiplexers; test instruments for circuit testing and design work; semiconductor test systems / E / $ 1000+ / E 55


Information Control Systems Inc., 327 Fourth Ave., Ann Arbor, Mich. 48108 / 733-761-1657

Computer programming and consulting services: specializing in process control, real time data acquisition systems, statistical control systems / Sv / S 50 / E 65

Information Development Corp., 1621 East 17th St., Santa Ana, Cal. 92701 / 714-547-8961

Consulting and software in real-time systems, compilers, time sharing systems, management information systems and applications programming / Ti Sv / S 70 / E 65

Information Displays, Inc., 102 East Sandford Blvd., Mt. Vernon, N.Y. 10550 / 914-499-5515

Computer controlled cathode ray tube displays / Eq Le / S 50 / E 60

Information Dynamics Corp., 80 Main St., Readfield, Mass. 01367 / 617-944-2224 / 67 Data processing services for science, industry, and the professions: IBM System 360/91 processing equipment on site (also a facility in Washington, D.C.) / Co Sv / S 30 / E 60


Solo owners of data base covering all U.S. chemically related patents issued since 1950 to date. Programs available for IBM, Burroughs and CDC equipment / S / E 55


Programmers / Systems engineers/recorders; contract film reading, programming / Eq Sv / S 50 / E 62

Information Management Associates, Inc., 4221 Lindell, St., St. Louis, Mo. 63108 / 314-JE5-2544 / 67

Consulting, systems design, programming, service bureau services / Sv / S 10 / E 66

Information Management, Inc., (Div. of Wafroc Corp.), 165 Bedford St., Burlington, Mass. 01803 / 617-272-1500 / 67

Review, appraisal, systems analysis, design and implementation of information handling systems for business, indus­try and government. Professional and technical services in the evaluation, extension and development of existing manual or automated operational and management systems / Sv Co / S 200+ / E 65

Computer consulting, programming and processing specializing in scientific and engineering applications / Sv / S 2 / E 64


Used electronic data processing systems; appraisals of systems value; leasing and lease consulting / Sv Le / S / E 63


Operations research, systems analysis, scientific computer programming, communications engineering / Ti / S 20 / E 65


Research and development, consultation in information, mathematical and communications sciences: computer programming, numerical analysis, operations research and analysis: pattern recognition analysis, systems and devices; display analysis automatic / S 500 / E 65

Information Science Institute, 323 Third Ave., Pittsburgh, Pa. 15222 / 412-281-8083 / 67

Courses in computing, programming, and systems / Co / S / E 65

Information Sciences Associates — name changed to Arthur S. Kranzley & Co. Inc., which see

Information Sciences Division, Brown Engineering Co., Inc., 300 Sparkman Dr. N.W., Huntsville, Ala. 35805 / 205-532-1379 / 67

Machine time sales, business and scientific systems development. Equipment includes 360/30, 360/50, Philco optical scan, 3610 print station / Sv / S 200 / E 60

Information Supplies Corp., 2411 Howard St., Evanston, Ill. 60202 / 312-RB3-2000 / 67

Manufacturers tabulating cards: other services offered include magnetic tape, continuous forms, tabulating ribbons, magnetic tape cleaners and certifiers, and tape rehabilitation / Sv / S 125 / E 57

Information Systems Co., (Div. Lear Siegler Co.), 1111 Wilshire, Los Angeles, Cal. 90017 / 213-HR2-4633 / 67

Contract programming, business data processing, critical path scheduling, computer assisted engineering, consulting engineering / Sv / S 130 / E 65


Consulting services / Sv / S 15 / E 67

Infotec, Inc., 80 Urban Ave., Westbury, N.Y. 11590 / 516-334-1624 / 67

Engineering: data communication via data phone, remote terminal devices, custom engineering, complete program­ming service: specialize in graphics and integrated hardware systems / Eq Sv / S 25 / E 67

Infotec Inc., 860 Fifth Ave., New York, N.Y. 10021 / 212-LE5-7724 / 67
Roster of Organizations

Special purpose computers, data communications and control systems; planning, design and development of total information systems; new product development; vocational services / Sv / S / E 64

Infret Corp., 80 Wall St., New York, N.Y. 10005 / 212-943-5220 / *C 67

Integrated Systems, research and engineering technology, contracting and consulting in information management systems research, analysis, evaluation, design and implementation / Sv / S / E 10

Inland Computer Service, 3664 Market St., Riverside, Cal. 92501 / 714-684-0714 / *C 66


Consulting services, especially, long range systems planning, and market and product development for advanced systems; management education; executive search / Sv Co / S 15 / E 66

Input, Inc., 500 Old Elm Rd., Highland Park, Ill. 60035 / 312-433-4450 / *C 67

Data processing services; Large IBM keypunch facility, EAM equipment, Honeywell 5 tape 120 computer, Rent IBM keypunches to other customers / Eq Sv Co / S 15 / E 66

Institute for Computing Sciences, Preston Tower, P.O. Box 30245, Dallas, Tex. 75230 / 214-401-1012 / *C 66

Education programs for management: career training / S 15 / E 65


Offer complete data files of magnetic tapes of scientific information from all disciplines considered largest commercially available. Also, ASCA, a selective dissemination service, covering approximately 6000 current scientific articles each week / S 150 / E 60


Programming courses: equipment includes IBM 360/20, 8K; 1403 printer 2560 MOP; reader; 83 sorter; 85 and 67 collator; 514 reproducer / Co / S 25 / E 63


Train computer operators, programmers and systems analysts on IBM 1401, 360, and autocoder: feasibility studies, programming systems design / Sv Co / S 7 / E 64


Data preparation, key punching and verifying, EAM maintenance of automated information systems, data processing management consultation, systems analysis, programming / Sv / S 150 / E 67

Interdata, 17 Lewis St., Eatontown, N.J. 07724 / 201-542-3094 / *C 67

16 bit general purpose digital computer, peripheral equipment including card readers, line printers, teletype, magnetic tape units, A/D and D/A converters, multiplexer and logic modules / Eq / S 30 / E 66


Home study courses in programming for computers, and applications of business problems to computers / S 150 / E 67


T.C.T. 1900 series of digital computers. Computer peripheral and auxiliary equipment for O.E.M. / Sv Co / S 30 / E 64

International Data Corp., 355 Walnut St., Newtownville, Mass. 02150 / 617-322-8840 / *C 67

Marketing research and analysis studies in the computer and data processing field. Computer and tab equipment customer rosters maintained for U.S. and foreign markets / Sv / S 25 / E 64

International Data Processing Corp., 15 E. 26th St., New York, N.Y. 10010 / 212-685-6115 / *C 67

Consulting and programming services / Sv / S 15 / E 63

International Data Processing Institute, (Div. of International Data Processing Institute), 1024 S. Wabash Ave., Chicago, Ill. 60605 / 312-HAT-3342 / *C 67

Training of IBM key punch and basic machine operators, and IBM computer programmers / Co / S 30 / E 60

International Digitizing Corp., P.O. Box 7527, Todd's Inlet, Okla. 74103 / 918-422-0757 / *C 67

Digitizing services for electrical logs, or almost any other type of graphical data. Computer programming and consulting for oil industry / Sv / S 3 / E 66

International Diode Corp., 90 Forrest St., Jersey City, N.J. 07304 / 201-452-7151 / *C 67

Fast switching germanium diodes, silicon diodes / S 10-19 / E 59

International Electro-Magnetics, Inc., Eric Dr. & Cornell Ave., Patine, Ill. 60067 / 312-353-4622 / *C 67

Research, and development of record, playback and erase magnetic heads / S 37 / E 59


Analog to digital converters / S 350 / E 56

International Rectifier, 223 Kansas St., El Segundo, Cal. 90246 / 213-678-6281 / *C 66

Zener voltage regulators, controlled rectifiers, transient protectors, photofabric readouts / S 1100 / E 47


Resistors (composition, film, power and precision wire wound and special application): potentialmeters, displacement transducers: low pressure cells: rectifiers: pressure transducers, diodes, frequency and time standards / S 2500 / E 27


Instruction in key punch, computer and machine operation and wiring, programming, complete data processing / Co / S 15 / E 67

International Tabulating Institute, (Div. of Kett Engr.), 101 S. Vermont, Los Angeles, Cal. 90004 / 213-385-0301 / *C 67

Training in programming, computer operations, tab G wiring, and keying / Co / S 20 / E 57

Interstate Data Services, Inc., (Div. of American Nurse Nursing, Inc.), 118 E. Washington St., Monticello, Ill. 61856 / 217-762-2437 / *C 67

Data processing services, programming, systems analysis, consulting / Sv / S 14 / E 59

Invac Corp., 26 Fox Rd., Waltham, Mass. 02154 / 617-699-2500 / *C 67

Peripheral data processing equipment: tape punchers and readers; input keyboards, I/O typewriters, output printers; tape-to-tape conversion systems / Eq / E 59

Ittek Corp., 10 Maguire Rd., Lexington, Mass. 02173 / 617-862-6200 / *C 65

Research, development and manufacture of digital computers, graphic to digital converters, information retrieval devices, mass memory systems, high speed printers, film readers, scanners, translating equipment, and visual output devices / S 2100 / E 37

ITT Data Services, (Div. of International Telephone and Telegraph Corp.), Route 17 G Garden State Pkwy., Paramus, N.J. 07620 / 201-282-8700 / *C 67

Complete computation, programming and systems services / Sv Ti / S 600 / E 65

ITT Federal Laboratories, (Div. of International Telephone and Telegraph Corp.), 500 Washington Ave., Butler, N.J. 07401 / 201-204-0123 / *C 65

Medium and large scale real time data processors for on-line applications: ITT 025 data processor, ITT 525 Versatile Automatic Data Exchange / S ITT, 173,000; ITTLT, 5,000 / E 20

ITT General Controls, 801 Allen Ave., Greendale, Cal. 91201 / 213-842-6213 / *C 65

Automatic controls for product or process. Counters and counting devices, actuators, magnetic valves, Hydromotor electrohydraulic valves and actuators, industrial controls and instrument modules, Klikswitch snap-acting switches, time switches (sequency), transformer-relays, contacts, limit controls (temperature) / S 3000 / E 30

J

J. L. Jacobs & Co., 53 W. Jackson Blvd., Glendale, Ill. 60604 / 312-427-8162 / *C 67

Consulting services / Sv / S 45 / E 15

Janus Control Corp., 296 Newton St., Waltham, Mass. 02154 / - / *C 66

Electronic data-handling equipment, counters and counter-related products: numerical displays / S 30 / E 63

Johnson Computing & Tabulating Corp., 5000 Marvine St., St. Paul, Minn. 55114 / 215-WA2-5012 / *C 67

Complete service center / Sv / S 75 / E 58

Josker Corp., 26 N. Summit Ave., Galtersburg, Md. 20760 / 301-948-9440 / *C 67

Information retrieval systems, data retrieval and correlation systems based on Teramac, Teramac: reliability equipment; information systems design / Sv Eq / S 75 / E 60

K

Kaman Nuclear, (Div. of Kaman Aircraft).

COMPUTERS and AUTOMATION for June, 1967 25
Kansas City College of Automation, 3230 Main St., Kansas City, Mo. 64111 / 816-332-4000

John F. Keane Assoc., Inc., 77 Main St., Hingham, Mass. 02043 / 617-749-5917 / *C 67

Computer service bureau specializing in commercial applications offering systems and programming services, keypunching and computer time either as a complete package or individually

*C 67


Computer time sharing services; keypunch equipment, computer service bureau specializing in commercial applications offering systems and programming services, keypunching and computer time either as a complete package or individually

*C 67

Keydata Corp., (Div. of Charles W. Adams Electric Engineering), 2616 Main St., Columbus, Ohio 43225 / 614-455-4877

Digital computer equipment; turnkey computer systems; programming services, keypunching and computer time either as a complete package or individually

*C 67

Lester B. Knight & Associates, Inc., 549 W. Randolph St., Chicago, Ill. 60606 / 312-263-3800 / *C 67

Management information systems, planning, systems design and implementation; EDP audit of operations; CPN network scheduling; TELE-communications service for banking, industry, institutions, commerce, government / Sv / T / E 45

Wm. M. Kordsenron and Assoc., 100 W. Monroe St., Chicago, Ill. 60603 / 312-RA6-7380 / *C 67

Design and implementation of integrated distribution operation systems: specification of data processing and communications equipment, environment and training and development of personnel; analysis of financial aspects / Sv Co Le / S 50 / *C 67


Consulting services and systems design / Sv Co / S 6 / *C 67


Special-purpose computers and interface equipment for on-line gauging and process control / S 56 / E 53


Special purpose computers; consulting services; converters -- A/D, D/A, graphic to digital, and tape to tape. Data logging and data acquisition equipment. Digital integrators, programming services, scanners, simulators, systems engineering / Eq Sv / S 265 / E 50

Kennedy Co., 275 N. Halstead Ave., Hingham, Mass. 02043 / 213-681-9343 / *C 67

Inertial recorders, including Models DS 370, 1400, 1500 and 2200 / S 7 / E 7

Keuffel & Esser Co., 300 Adams St., Hoboken, N.J. 07030, 201-609-1100 / *C 67

Digital computer / Eq / S 2100 / E 1867


On-line invoice preparation with real time control of inventory, accounts receivable, and by-product sales analysis / Ti / S 76 / E 64


Data processing services covering full range of general business accounting and financial reports, statistics, inventory control, computer assisted numerical control tapes / Sv Co / S 38 / E 65


Service in computer programming, software systems design and development, systems analysis, operations research, systems engineering, applied math, scientific and data processing applications, management consulting / Sv / S 75 / E 65

Kimball Systems, Inc., (Div. of Linton Industries), 215 Daniel St., Farmingdale, N.Y. 11735 / *C 67

High-speed punched tag reader, PM 75” machine, hard part / S 450 / E 1876

John F. Keane Assoc., Inc., 77 Main St., Hingham, Mass. 02043 / 617-749-5917 / *C 67

Consulting, systems, and programming services / Sv / S 20 / E 65

Kee’s Coastal Business College, Suite 350 Montecillo Arcade, Norfolk, Va. 23510 / 703-627-0303 / *C 67

Key punch, data processing and computer programming training / Co / S 8 / E 67


Special-purpose computers and interface equipment for on-line gauging and process control / S 56 / E 53


Special purpose computers; consulting services; converters -- A/D, D/A, graphi -
Roster of Organizations

electronic printing desk top office machines / Eq Sv Tl Co Le / S 22

Litton Industries, Clifton Precision Products, Marlboro at Broadway, Clifton Heights, Pa. 19010 / 215-622-1000 / * C 67

Converters—alog to digital, digital to analog; mechanical counters; sine­
cosine resolvers; servomechanisms; synchronizers / Eq / S 45

Litton Industries, Data Systems Div., 8000 Woodley Ave., Van Nuys, Cal. 91406 / 213-701-0211 / * C 66

Air data systems, general purpose micro­
electron computer: data links: IFF decoders; microelectronic power


Displays; data recording equipment; scanners / Eq / S 1200 / E 53

Litton Industries, Encoder Div., 20745 Nordhoff St., Chatsworth, Cal. 91311 / 213-341-6101 / * C 67

Analog to digital shaft transducers / Eq Sv / S 200 / E ?

Litton Industries, Potentiometer Div., 226 E. Third St., Mt. Vernon, N.Y. 10550 / 914-664-8201 / * C 67

Precision potentiometers: wirewound, conductive film, carbon film, single

Litton Industries, Triad Distributor Div., 305 N. Jefferson St., Huntington, Ind. 46750 / 219-336-6500 / * C 66

Transformers, filter reactors, integrated circuit cards, card extractors,

Litton Industries, USECO Div., 13356 Salisbury St., Van Nuys, Cal. 91402 / 213-786-9301 / * C 66

Terminals, handles, knobs, pushbutton switches, special machine and molded

Litton Industries, Victor Electrode Electronics Div., Main St., & Hillside Ave., Oakville, Conn. 06779 / 202-274-6091 / * C 66

Connectors and accessories: round, rectangular, subminiature, printed circuit, coax, crimp contact; special application types / S 500 / E 41


Data systems engineering and computer programming services in the analysis,

design and development of command and control systems; data handling net­

Litton Systems, Inc., Data Electronics Div. (Div. of Lockheed Aircraft Corp.), 6201 E. Randolph St., Los Angeles, Cal. 90022 / 213-722-6810 / * C 67

Memory, computer, planes, stacks and systems (military and commercial); printed circuit boards and assemblies, etched and/or plated, PC switch parts, chem­milled circuits, multi­layer boards, flexible/fibar multi­

M

Machine Accounting Supply Co. of Tenn., 821 17th Ave., S., Nashville, Tenn. 37203 / 615-256-1909 / * C 67

Data processing supplies and acces­


Manufacturer analog computer: S 15 / E 50

MAC Panel Co., (Div. of Adams­Millis Corp.), 2060 Brentwood St., F.O. Box 5027, High Point, N.C. 27263 / 919-802-8130 / * C 67

Magnetic computer tape, magnetic in­

Master Data, (Div. of McDonnell Co.), Suite 400/500, Jefferson Bldg., Houston, Tex. 77002 / 713-224-5921 / * C 67

Management consultants to scientific and commercial businesses offering consulting, engineering and program­

Management Systems Corporation, 500 Main St., East Providence, R.I. 02914 / 401-999-8660 / * C 66

Magnetic tape; magnetic tape unit, paper tape reader, paper tape punch, card reader, line printer. Also, systems instruction / Sv Co / E 00

Management Information Services Inc., 42 E. Gay St., Columbus, O. 43215 / 614-221-7571 / * C 65

Consulting and data processing; systems and applications; installation management, programming packages for financial institutions, commercial on-line and off-line pro­


Magnetic data processing; sales, purchasing, purchasing, clients / Sv / E 67


Magnetic tape; magnetic tape unit, paper tape reader, paper tape punch, card reader, line printer. Also, systems instruction / Sv Co / E 00

Magnetic Tape Machine Co., 10049 Crenshaw Blvd., Torrance, Calif. 90004 / 213-321-8407 / * C 66

General and specialized data processing service / Sv / S 15 / E 63


Management Systems Corporation, 209 Griffin St., Dallas, Tex. 75202 / 214-812-8251 / * C 66

Data processing consultants in systems and applications; installation management; contract programming; computing services and time sales; complete bureau services / S 24 / E 64

Management Systems International AB, 37, Banergatan, Stockholm, Sweden / 06/ 607040 / * C 66

Courses in data processing: periodical "Automatisk Data­Behandling"; books / S 4 / E 65


Magnetic tape; magnetic tape unit, paper tape reader, paper tape punch, card reader, line printer. Also, systems instruction / Sv Co / E 00

The Marconi Co. Ltd., Automation Div., Chelmsford, Essex, England /
Roster of Organizations

Chelmsford 53221 / *C 67
Manufacture general purpose on-line data processing equipment

Marks-Bauer, Inc., 5560 Main St., Williamsville, N.Y. 14221 / 716-634-9090 / *C 67
Services: applications design, programming, consulting, training / Sv Co / E 66

Marksmen, Inc., 21 West 10th St., Kansas City, Mo., 64105 / 816-482-4150 / *C 67
Data acquisition, transmission and conversion; models 353 typewriter recorder console; 354 typewriter recorder transmitter; 355 typewriter recorder playback; 356 typewriter recorder, transmitter, playback, receiver; 994 tape to tape converter / Sv S 20 / E 64

L. A. Marler & Ed., 6207 Myron Ave., St. Louis, Mo. 63121 / 314-EV1-8449 / *C 67
Source data key punches, source data capturing devices (punch tape & punched card from typewriter keyboards) / Eq / S T / E 35

Tape to card converter, card to tape converter, card to teletype, teletype to card, act as government distributor for Systems Div., General Instrument Corp.; tape to magnetic tape converters and card via telephone to magnetic tape communications as government distributor for Digi-Data Corp.; also SeeScan Optical Co-inocence information systems / Eq / S 1 / E 66

Martin W. Nyrod Assoc., 747 New Center Bldg., Detroit, Mich. 48202 / 313-784-0046 / *C 67
Systems consulting firm providing comprehensive services for the applications of computer technology in industry, commerce and government with special capabilities in areas of systems analysis, programming, information processing, process control and software development / Sv S T / E 66

Massey Dickinson Co., Inc., 9 Elm St., SaxsviIle, Mass. 01056 / 617-877-2211 / *C 67
Programming and data acquisition equipment, behavioral physiological, psychological, and visual research / S 25 / E 77

Nast Development Co., 2212 E. Twelfth St., Daytona Beach, Fla. 32029 / 312-325-9729 / *C 67
Identification cameras, miniature angle counters, random access filmstrip and slide projectors (information retrieval devices) / S 75 / E 45

NATA College of Automation, 415 E. Broad St., Columbus, O. 43215 / 614-224-0263 / *C 67
Courses in computing, programming, and systems / Co / S 35 / E 60

Mathatronics, (Div. of Barry Wright Corp.), 241 N. Wabash, Chicago, Ill. 60601 / 312-947-1850 / *C 67
Desk computer/calculators with manual, 10 key or full typewriter keyboard, punched paper tape 1/0 and serial strip and page printers with applications and complete software for statistical, mathematical, scientific and engineering areas / Eq Le / S 100 / E 61

Mathematical Applications Group, Inc., 100 S. Broadway, White Plains, N.Y. 10605 / 914-428-3520 / *C 67
Systems analysis and computer programming / Sv S 20 / E 66

Mathatronics Engineering Associates, Inc., 7007 Preston Rd, Dallas, Tex. 75205 / 214-LA1-0370 / *C 67
Consultation, development of total EDP audit methods; documentation techniques and standardization and analysis of systems, with total implementation; educational services / Sv Co / S 25 / E 85

Mathematical Beratungs-und Programmierungs­dienst, Rhein-Ruhr, Kleppinstrasse 26, 4600 Dortmund, W. Germany / 0231-528697 / *C 67
Consulting, engineering, programming, computing (ADP), operations research; (general and special consulting ADP; various system engineering; common and application software programming both commercial and scientific ADP; scientific and commercial computing on own computer, Electrologica XI and external computing capacity.) Editors of technical magazine "elektronische dataverarbeitung" Programming course / Sv Co / S 100 / E 57

The Matrix Corp., Computer Services Div., 635 Hawaii St., El Segundo, Cal. 90245 / 213-672-4393 / *C 67
Computing, consulting and programming services: information and systems engineering; programming and systems courses, etc. Includes two IBM 7094, IBM 1401, a 360/65, three 360/40, two 360/20, a GE 635 and 115 and nine Univac 1004's / Eq Sv Co / S 100 / E 57

Computer time: IBM 7094, IBM 360/40, IBM 360/65, IBM 360/67, IBM 360/85, IBM 360/87, IBM 360/95, IBM 360/97, IBM 360/99. Computer programming and consulting services / Sv Ti S 200 / E 52

Software systems design in project scheduling methods. IBM 1620 card I/O service bureau / Sv S 60 / E 59

Marketing representatives for the Mauchly-Dataport™ portable terminal; time sharing, consulting and programming services / Eq Sv Ti Co Le / S 10 / E 65

Applied research; information systems design and implementation; data re­duction and analysis; operations research; EDP systems - analysis, design, programming / Sv Co / S 16 / E 65

Data scheduling and control systems: analysis, design, and installation / Eq Sv Co Le / S 30 / E 64

Digital Seismic software systems and computer parts; information retrieval systems, operating and inventory control systems / S 15 / E 66

MBA Systems, Inc., Statler Office Bldg., 20 Providence St., Waltham, Mass. 02254 / 617-426-3650 / *C 67
Programming, systems analysis and design, feasibility studies, pre- and post instalment systems, documentation studies, personnel selection / S 6 / E 64

List maintenance services and zip coding by computer, market research statistics, magnetic tape, publishing consultants on uses of the computer / Sv S 25 / E 66

Computer services: IBM 360/30, 360/60 and 360/30 and NCR 315 BMC. Systems, programming, operations research and key punch services / Sv S 30 / E 65

IBM 1401, 16K, 4-7300's; IBM 1410, 40K, 4-7300's; IBM 7010, 100K, 9-729's - IV: all IBM peripheral equipment / Sv Ti S 60 / E 49

Medcomp Research Corp., 3333 Vine St., Cincinnati, O. 45229 / 513-281-5617 / *C 67
Programming, systems & programming services with special applications to scientific or statistical problems. Instruction to qualified persons with extreme physical handicaps / Sv Co / S 25 / E 65


Medical Computer Services, 68 Harvard St., Brookline, Mass. 02146 / 617-566-1139 / *C 67
Specialized data processing service for hospital subscribers for patient billing, statistics, payroll preparation and various analytical reports with data collection service by telecommunication / Sv S 12 / E 61

Memorex Electronics Corp., 1750 New Highway, Farmingdale, N.Y. 11735 / 516-694-5370 / *C 67
Control, servo, operational and buffer amplifiers / S 90 / E 60


Memorex Corp., 1180 Shulman Ave., Santa Clara, Cal. 95050 / 408-248-3344 / *C 67
Precise magnetic tape / S 950 / E 61

Mepitel, Inc., 10560 S. Main St., Memphis, Tenn. 38101 / 903-527-4913 / *C 67
1401 magnetic tape, 1440 disc: dealer pressure sensitive labels, perforated continuous forms: mailing lists, direct mail service: all computer applications.
**Roster of Organizations**

key punching / Eq Sv Co Le / S 15 / 15 E 58

Merle Thomas Corp., 10400 Connecticut Ave., Bethesda, Md. 20072 / 301-953-4140 / *C 67

Specialize in financial and material management information systems and special analytical consulting services; two modern hi speed computers and related peripheral equipment serve in data processing needs. Business and technical programming staff: engineers capable of computer systems and hardware design / Sv / S 90 / E 60

Methods Research Corp., 105 Willow Ave., Staten Island, N.Y. 10305 / 212-442-4900 / *C 66

Visual control systems / S 25 / E 1852

M-H Standard Corp., 400 Beaton St., Hamilton, O. 45011 / 513-694-7171 / *C 65 Palletlift and Versrack, components for computer controlled live storage racks / S 50 / E 7

Miami Institute of Technology, 561 NE 79 St., Suite 230, Miami, Fla. 33130 / 305-442-3061 / 305-442-3062

Training in data processing: computer technology; programming; punched card equipment; data processing service bureau; consulting service / Sv / S 5 / E 65


All used computers. IBM punched card equipment / Lc / S 8 / E 62


Precision wire-wound potentiometers, 13 mm and non-linear, sine cosine / S / E 9 / E 51

Microdot Corp., 3127 Kelvin St., Alexandria, Va. 22314 / 703-549-3033 / *C 66

Magnetic tape / S 30 / E 65

Microsonics, Inc., 60 Winter St., Waymounth, Mass. 02188 / 617-337-4200 / *C 65

Delay lines memory systems up to 20 mc; quartz crystal computer clocks / S 50 / E 67

Monarch Controls, Inc., 170 S. Van Brunt St., Englewood, N.J. 07631 / 201-567-7454 / *C 65

Information discs, analog to digital converters, encoders, energy coupled encoder, visual read-out equipment, light sources / S 27 / E 62

Micro Switch, (Div. of Honeywell), 11 W. Spring St., Freeport, Ill. 61032 / 815-232-1122 / *C 67

Manufacturer of: precision snap-action switches; mercury switches; reed switches; multi-lighted Coordinated Manual Controls equipped with dry-circuit or electronic duty contact block; micromicro "one-shot" circuits (electronic package); keyboards / S / E 3 / E 35

Mid-America Computer & Data Processing Centers, Inc., 200 S. Badger Rd., 14th & Faream, Omaha, Neb. 68102 / 402-341-2424 / *C 67

Midland National Bank, 201 West Wisconsin Ave., Milwaukee, Wis. 53203 / 414-273-1200 / *C 67

Computing services, programming, systems engineering. Equipment includes: Bank grade tape, optical scanner, all other related computer equipment / Sv Le / S 27 / E 62


Data processing consultants in the apparel industry — systems design, specifications, programming, computer service center / Sv Ti Co / S 8 / E 66

Midwest Business Statistics Inc., 6415 North Ave., Oak Park, 111. 60302 / 312-876-0700 / E 47

Commercial and scientific computing service for professional only; utilize various hardware, strictly on a time sharing basis / Sv / S 40 / E 60

Midwestern Instruments, Subsidiary of Tele Corp., 1815 Cherokee, Tulsa, Okla. 74101 / 918-627-1111 / *C 66

Tape transport systems / S 300 / E 51

Mikron, Inc. — Bankers Data Services, Inc., 505 Hadley, Houston, Tex. 77002 / 713-JAD-2436 / *C 67

General data processing service, tape paper, magnetic tape, punch card applications; financial calculations, MICR processing / Sv / S 8 / E 65

Milner Bros. Prods., 8000 Blackborne Ave., Los Angeles, Cal. 90048 / 213-936-4514 / *C 67

Software, management consultants / Sv Co Le Ti / S 30 / E 50 / E 68

Missouri Business Machines, Inc., 2109 Locust St., St. Louis, Mo. No. 31301 / 314-241-7875 / *C 66

Binary-to-decimal converter/display, digital interface, digital address selector / S 400 / E 46


Computing services using IBM 360 and miscellaneous EDP equipment / S 30 / E 67

Mokah Data Sciences Corp., 245 Columbus St., Denver, Colo. 80206 / 303-333-1546 / *C 67

Data recording, data communications and verifying equipment / Eq / S 3 / E 64

Mokah Data Sciences Corp., 95 E. Main St., Meriden, Conn. 06450 / 203-238-1976 / *C 67

Manufacture and market data recorders (key magnetic tape magnetic card equipment / key punch key verifier, 3 magnetic tape magnetic card equipment / Eq / S 4 / E 64

Mokah Data Sciences Corp., P.O. Box 630, Herkimer, N.Y. 13350 / 315-865-6600 / *C 67

Data-recorders for computer input preparation directly on 1/2" standard computer magnetic tape with on-line devices such as punched card reader, modem for long distance transmission of data; adding/listing machine, paper tape strip reader, input/output type writer / S / E 64


Data processing accessory equipment; computer accessories; punch card accessories; forms binding equipment / Eq / S 85 / E 45

Monroe Computer Systems Div., 550 Central Ave., Orange, N.J. 07050 / 201-673-6600 / Ext. 469 / E 67

Monroe Data Processing Inc., 550 Central Ave., Orange, N.J. 07050 / 201-673-6600 / *C 66

Nationwide data processing services offered through accountants to small and medium sized businesses; process all paperwork necessary for general business accounting and financial statements; deliver sales analysis for management guidance; also DATA-TAX, a computerized personal income tax preparation service / S 100 / E 60


Monrobot XI desk-sized electronic computer for scientific and business use, Monro-Car Pro for additional high-capacity storage. Electro-mechanical and electronic office machines / S / E 12


Servo action actuators and systems for computer equipment and tape transports / S 100 / E 65

Moore Associates Inc., BIS American St., San Carlos, Calif. 94070 / 415-591-5363 / *C 67

Telenetering and data transmission systems / Eq / S 50 / *C 67

Moore Business Forms, Inc., Niagara Falls, N.Y. 14302 / 716-273-4500 / *C 65

Denton, Tex. 76201; Emeryville, Calif. 94608 / *C 77

Continuous business forms; scanning forms; tab cards products; forms handling equipment / S 13,000 / E 1085

The Mosley Co., 909 Islington St., Portsmouth, N.H. 03081 / 603-426-5450 / *C 67

Tabulating cards and magnetic tape for data processing equipment / S 75 / E 1890


X-Y recorders (with time base); strip chart recorders, logarithmic amplifiers, curve followers, computer accessories / S 300 / E 51

The Nosler Safe Co., 320 Park Ave., New York, N.Y. 10022; 212-982-4450 / E 55

Protection for data processing tapes, disk packs, etc., from fire, smoke, moisture; mechanized card files / S 2500 / E 1840


Visual display equipment (graphic, CRT, radar); high speed printers: special purpose computers for guidance, radar data processing; data transfer systems (microwave) / S / E 2

Motorola Semiconductor Products, Inc., 5005 E. McDowell Rd., Phoenix, Ariz. 85054 / *C 66

Computer components / S 6600 / E 55


General data processing and computing services; facilities include Burroughs B-200, 4 magnetic tapes, paper tape, punched card IBM unit card equipment / Eq Sv / S 20 / E 64


Training for IBM 360 and IBM 1401 programmers; also for computer, tab and key punch operators / Co / S 35 / E 64

M.T.I. Business Schools, (Branch of M.T.I., Inc.), 1703 Broadway, Suite 300, Oakland, Calif.
Roster of Organizations

Cal. 94612 / 415-834-1253 / 867
Training for keypunch, sorter and computer operators, etc. also com­puter programming / Co / S 11 / E 64
Full line of data processing training with emphasis on business application. All key punch and computer readout equipment: IBM 360/20 computer system and related peripheral equipment. Train key punch operators, computer operators, and computer pro­grammers / Sv Co / S 12 / E 65
M.T.I. Business Schools, 80 E. San Carlos St., San Jose, Cal. 95112 / 408-286-8282 / 867
Training in IBM 029, 024, 026, 059 key punch equipment; IBM 082 sortor / Co / S 8 / E 65
M.T.I. Business Schools, 7790 N. 7th Ave., Miami, Fla. 33150 / 867
Computer training and instruction / Co / S 12 / E 55
Main Forms, Inc., 1335 Green Court, Santa Monica, Cal. 90404 / 413-653-6878 / 867
Equipment includes digital process control computers de­voted to data processing, consulting, programming and computing / Co / S 12 / E 55
The National Cash Register Co., (Branch), 921 N. St., Fresno, Calif. 93732 / 209-264-5010 / 867
NCR 315, 315 RMC, 500, 395, 395-400 / Eq Sv Co / S 100 / E 1084
NCR 315-100 and 315 RMC EDP systems and peripherals, NCR 420-2 optical journal reader, and NCR 411 check digit verifier / Eq Sv Ti / S 2200 / E 50
Consulting, programming and computing services / S 40 / E 62
National Computer Systems, Inc., 1015 S. Sixth St., Minneapolis, Minn. 55415 / 612-355-3267 / 867
Optical mark reader; psychological educational test scoring and data processing computer systems with online scanner input / Eq Sv / S 50 / E 63
National Data Processing Corp., 2950 Ho­no­hua Ave., Youngstown, O. 44509 / 216-799-7137 / 867
Data processing consultants in systems and applications; contract pro­gramming: computing services and time sales; complete bureau services / Sv / S 10 / E 65
National Key punch Services, Inc., 430 Oak Grove, Minneapolis, Minn. 55403 / 602-352-6596 / 867
Keypunching and keyverifying of all data (alpha and/or numeric) / S 65 / E 65
National Manpower Register, 635 Madison Ave., New York, N.Y. 10022 / 212-641-9495 / 867
Computerized employment services for technical professionals / Sv / S 24 / E 65
National Physical Laboratory, Mathematics Div., Teddington, Middx., England / TEDDINGTON LOCK 3222 / 867
Computing service using ACE and KDP9 / Sv / S 60 / E 45
Next Data Processing Services, 212 North St. Paul, Dallas, Tex. 75201 / 214-748-4977 / 867
Complete computer and tabulating data processing services; data processing system consultants and contract pro­grammers; cost study or contract computer or tabulator time; hourly or contract keypunching / Sv Ti / S 15 / E 63
Nexus Research Laboratory, Inc., 480 Nep­oon St., Canton, Mass. 02021 / 617-520-9000 / 867
Solid-state encapsulated d-c oper­ational amplifiers, logarithmic mod­ules and related components for ana­log applications; low-profile cases (.375” high) for card rack mounting; analog computer building blocks / Applications department to assist customers with special designs / S 160 / E 65
Norden Div., United Aircraft Corp., Helen St., Norwalk, Conn. 06852 / 203-083-4471 / 867
Sensave, differential amplifier, servo amplifiers, gated, custom analog and digi­tal circuits, video processors, solid-state monolithic integral circuits, TO-5 or flat package / S 2100 / E 28
North Atlantic Industries, Inc., 200 Terminal Dr., Plainview, N.Y. 11803 / 516-681-8600 / 867
Resolver/synchro computer interface equipment / S 125 / E 56
Northrop Corp., Nortronics Div., 2301 N. 120th St., Hawthorne, Calif. 90250 / 213-757-5181 / 867
Airborne digital computers, input/ output devices, computer programs, software, programming, systems integra­tion and test / S 4200 (Div.) / E 7 (Nortronics Div.)
Northrop Corp., Nortronics Div., Precision Products Dept., 100 Morse St., Norwood, Mass. 02062 / 617-762-5300 / 867
Precision gyroscopes, gyro systems, inertial components, inertial sensor test facilities, standards labora­tories, accelerometers / S 1200 / E 58
Northwest Management Services, Inc., 1107 Pike St., Seattle, Wash. 98101-213-­MA4-4333 / 867
All types of data processing service center operations including data com­munications & real-time, time-sharing, on-line processing / Sv Ti / S 18 / E 58
Norton Associates, Inc., 10 Di Tomas Ct., Copiague, N.Y. 11726 / 617-596-1600 / 867
Standard and special magnetic record/playback erase heads in single and mul­titrack arrangements for magnetic tape, film, drum, and magnetic ink character recognition / S under 50 / E 55
NUMEX Corp., 223 Crescent St., Waltham, Mass. 02154 / 617-899-4040 / 867
Decoding readers and displays: num­ber counters / Eq / S 15 / E 66

N
Computing and consulting services. Equipment includes H-200, 16-K, 5 tape drives, punch card reader, sorter, collator, key punches / Eq Sv / S 20 / E 61
Namar, Inc., 108 West Liberty Dr., Wheaton 11, Ill. 60187 / 212-693-6781 / 867
Data processing consulting, program­ming and training; micro film service and consulting / Sv / S 5 / E 64
Nash and Harriss Ltd., 1355 Wellington St., Ottawa 3, Ontario, Canada / 613-722-6544 / 867
Digital process control computers de­signed around standard modular com­ponents which may be adapted to a wide variety of control applications. Special designs and consulting services requested / Sv / S 12 / E 57
NateI Engineering Co., Inc., 7129 Gerald Ave., Van Nuys, Cal. 91406 / 213-762-82-41 / 867
Synchronous converters to operate with air data computers and ground computer systems / S 45 / E 59
National Bike Co., Neter St., Hol­yoke, Mass. 01040 / 413-591-9911 / 867
Data binders for punched forms; perfor­ator tape / S 1500 / E 1843
NCR 315, 310, 304 digital computer system (configures in film strip memory computer) computer peripherals (card read and punch, magnetic tape servos

COMPUTERS and AUTOMATION for June, 1967

30
Roster of Organizations

19123 / 215-603-5433 / *C 66
Digital communication systems, communication terminal equipment, photo-electric tape readers, recorders and displays / S 38,000 (Borg-Warner Corp.) / E 60

OPTOMECHANICS Inc., 40 Skyline Drive, Piscataway, N.J. 08854 / 516-433-0100 / *C 66

Photoelectric tape readers, read/write, incremental or absolute; and/or optical scanners, with or without peripheral equipment / S 25 / E 44

L. A. Pearl Co., 801 Second Ave., New York, N.Y. 10017 / 212-691-2025 / *C 66

IBM computers and peripherals bought for cash / S 1 / E 45

Pers Inc., Box 7304, Pittsburgh, Pa. 15213 / 412-269-7900 / E 63

Statistical consulting and processing; test scoring, processing; test development / Sv Co / S 3 / E 63


The Illustromatt "1100", a computer-directed graphics instrument whose function is to produce visually and mechanically accurate perspective drawings from any viewing distance and angle; it makes mechanically accurate axonometric drawings or projections from orthographic prints / S 19 / E 53 (Inc.)


Consulting and data processing services. Equipment includes CDC 3200-32K with Convolver, 2-Disc-Paks, 1-21T Transport, 1-9T Transport, 4-7T Transport / Sv / S 1000

Philbrick Researches, Inc., 143 W. St., Dedham, Mass. 02020 / 617-329-1600 / *C 66

Analog computers, operational amplifiers, non-linear transconductors, power supplies / S 220 / E 46


Philo 2000, Philco 1000, Philco 3100 process controller, Philco 1700 message and data switching system. Philco general purpose print/reader, ZIP-code readers, mass storage systems, peripheral equipment, displays, Philco 7100 plant monitor system, computer service bureau / S 5000 / E


Integrated circuits: microwave components; diodes (switching, mixer, pin, backward, tunnel); infrared components; field effect transistors and components / S 1500 / E 66


General purpose computers; computing switching systems; industrial controls; optical scanners; service bureau facilities / Eq Sv Ti Co / S 4000 / E 1969

Philo Electronics Instrument Corp., 750 S. Fulton Ave., Mt. Vernon, N.Y. 10550 / 914-M44-2525 / *C 66

X-ray diffractometers, spectrophotometers, cameras, detectors, industrial radiographic equipment, X-ray, electron microscopes, gauges, process control instrumentation, electron probe microanalyzer, automatic X-ray spectrometer which may be linked with computers, or used independently in any pressure encircled units of measurement / S 350 / E 42

Photocircuits Corp., 31 Sea Cliff Ave., Glen Cove, N.Y. 11542 / 516-088-0000 / *C 66

Tape readers and spoolers, militarized tape reader / S 450 / E 51

Photo Data Systems, 10400 Oak St., Newton Upper Falls, Mass. 02164 / 617-332-2311 / *C 67

A-D and D-A converters; associated subsystems and modular power supplies / S 25 / E 44

IBM 1130 with punched perforated tape and/or card input and output; primarily programmed for type setting, hot metal, or photo composition. Wergen tabulator limit shift for IBM and other tape perforators: Photo-list sequential card system. Available for type setting or service bureau operations / Sv Ti / S 63 / E 67

Photomechanics, Inc., 15 Stepan Place, Huntington Sta., N.Y. 11746 / 516-H34-411 / *C 66

Photograph-electric computer input-output equipment, hard copy generating systems on and off-line utilizing rapidly processed silver halide films and paper and electrostatic papers / S 55 / E 52

Photon, Inc., 355 Middlesex Ave., Wilmington, Mass. 01887 / 617-933-7000 / *C 66

Computer-driven prototype setting machines, photographic computer printers, tape merger machines / S 300 / E 40


Magnetic drum heads / S 160 / E 46

The Pioneer Electric Research Corp., (Div. of Penn Controls), 743 Circle Ave., Forest Park, Ill. 60130 / 312-771-8242 / *C 67

Photoelectric cells and tachometers, data interface system converters, transmission aids and EDP support equipment / Eq / S 5 / E


Consulting and data processing services / Sv Ti / S 10 / E 64

Pivian Engineering Co., 3535 West Peterson Ave., Chicago, Ill. 60645 / 312-539-4838 / *C 67

Analogue digital and hybrids: computing systems; accessories include paper tape, readers and perforators, magnetic tape, read/write, incremental and high speed: printers: converters; test equipment, digital voltmeters, counters, graphic recorders, time interval meters; pulse generators, components, amplifiers, logic modules, power supplies, voltage regulators, telemetry scanners / Eq / S 33 / E

Planning Research Corp., 1100 Glendon Ave., Los Angeles, Cal. 90024 / 213-479-7725 / *C 67

Analysis, design, and implementation of computer software systems: information flow, systems analysis, technical audit: compilers, master control systems, information processing, utility programs; scientific programming, cartographic data processing, biomedical data processing, simulation and gaming, command and control, intelligence, logical, and government information systems, information storage and retrieval; real-time systems, automation of brokerage back-office accounting; educational data processing; computer engineering / Sv / S 800 / E 54


Manufacturers of electronic peripheral equipment for the data processing industry, and many other types of peripheral equipment for the machine and tool industry. Service to Potter machines and systems readily available throughout U.S. and Canadian and most parts of Europe / Eq Co Le / S 750 / E 42

Precision Instrument Co., 3170 Porter Dr.,
Roster of Organizations

Digital incremental magnetic tape recorders / S 300 / E 58
Preferred Tabulating Service Inc., 114 East 20th St., New York, N.Y. 10016 / 212-265-5566 / * C 67
Ke punch service bureau; 026 key punches and key verifiers - IBM / Sv / S 17 / E 64
Prestoial Mfg. Corp., 37-12 108th St., Corona, N.Y. 11368 / 212-276-5566 / * C 66
Splicer for punched paper tape, 58 channel / E 47
Planning product studies: market surveys; diversification studies; long range planning / Sv / S 8 / E 62
Profimatics, Inc., 7060 Owosso Ave., Gunoga Park, Cal. 91303 / 213-683-6530 / * C 67
Consulting services relative to industrial process control / Sv / S 8 / E 50
Programmatics Inc., 12011 San Vicente Blvd., Los Angeles, Cal. 90049 / 213-474-1936 / * C 67
Systems analysis and design, feasibility studies, management control systems, systems programming, business and scientific applications / Sv / S 20 / E 63
EDW education and service: leasing / Sv Ti Co Le / S 75 / E 59
Programming & Systems Institute, (Div. of Programming & Systems, Inc.), 33 West 42 St., New York, N.Y. 10036 / 212-LM-0530 / * C 67
Computing, consulting and leasing services. Instruction in computing and programming / Sv Co Le / S 50 / E 59
Programming Methods Inc., 51 Madison Ave., New York, N.Y. 10006 / * C 67
Computerization consulting services / Sv Co Ti / S 75 / E 65
Multiprogramming as applied to online video consoles and message switching, specializing in software acceptance testing and integrated checkout planning: consulting in systems analysis and design of executive systems, software acceptance tests, business applications-DODD emphasis, data reduction for all Mariner 5050 / Sv / S 6 / E 66
Programming Services, Inc., 18455 Burbank Blvd., Tzarana, Cal. 91356 / 213-801-1672 / * C 67
Computer programming for: process control, information storage and retrieval, standard software (assemblers, compilers, etc.), commercial applications, engineering and scientific applications / Sv / S 45 / E 65
Protolab Extractors, 295 Pojaris Ave., Mountain View, Cal. 94040 / 415-961-8033 / * C 67
Printed circuit card extractors for computers and data handling systems (these units are specified in with unit as an OEM component and delivered to customer as part of system / Eq / S 20 / E 9
Quality Programming Inc., 114 S. Canal
St., Chicago, Ill. 60606 / 312-782-0305 / * C 67
Systems and programming services / Sv Co / S 20 / E 66
Computer interface systems, computer data logging systems, communication amplifiers, AM and FM tone equipment used in field testing systems, analog and digital telemetering systems, computer alarm systems and scanners / Eq / S 200 / E 60
R
Raleigh School of Data Processing, Inc., 334 South Salisbury St., Raleigh, N.C. 27601 / 919-034-1911: 034-2764 / * C 67
Courses in IBM machines operation and wiring, accounting, computer programming, systems and procedures, key punch, business English / Eq / S 8 / E 63
Computer service specialists in the leasing of equipment, sales and the operation of a service bureau in the Portland, Ore. area. Also, offers specialized educational equipment for training purposes in EDP. Company has developed specialized proprietary software programs such as "payroll", "banking packages" and a "hospital accounting" system / Eq Sv Ti Co Le / S 100 / E 65
Random Data Systems Inc., 344 W. State St., Trenton, N.J. 08618 / 609-696-2047 / * C 67
Random access information retrieval system for random storage and instant retrieval of card records of many types; system is an in-file sorter, selects meaningful groups instantly by descriptive codes / Eq / S 25 / E 65
Hub S. Balliff, Data Processing Consultants, P.O. Box 22407, Houston, Tex. 77027 / 713-NA2-1192 / * C 67
Systems and applications: contract programming, system recommendation and selection; installation management / Sv Co / S 6 / E 66
Raytheon Co., Communication & Data Processing, (Div. of Raytheon Co., Norwood, Mass. 02062 / 617-762-6700 / * C 67
Computer communication terminals utilizing wide band microwave (channel to channel link) / S 1000 / E 23
Raytheon Co., Semiconductor Operation, 350 Ellis St., Mountain View, Cal. 94040 / 415-961-2921 / * C 67
Amplifiers: differential, linear, operational, IC amplifiers, digital, linear, registers, arrays. Silicon diodes, transistors, field effect transistors, diode arrays, logic circuits / S 1000 / E 61
Raytheon Computer, (Div. of Raytheon Co.), 2700 Ss. Fairview St., Santa Ana, Cal. 92704 / 714-546-7160 / * C 67
RCA Electronic Components and Devices Div., 415 South 5th St., Harrison, N.J. 07029 / 201-685-3900 / * C 67
Electro-mechanical switchdoctor devices, integrated circuits, test and measuring equipment, dry batteries, micro­circuits / * C 67
RCA Electronic Data Processing, Cherry Hill, Camden, N.J. 08108 / 609-M03-8000 / * C 65
Full range of digital computers, components, supplies and services / E 55
Recognition Equipment Inc., 1500 W. Mockingbird Lane, Dallas, Tex. 75235 / 214-637-2210 / * C 67
Produces Electronic Retina® Computing Reader, an optical character recognition system that processes data for input to large-scale electronic data processing systems; also provides systems analysis, forms design, programming, other supporting services / Eq / S 550 / E 61
Record Control Systems, P.O. Box 2281, No. Side Post Office, Youngstown, 0. 4450 / 216-746-3567 / * C 67
Record keeping and filing systems; equipment and supplies; magnetic schedule systems (visual control boards); paper tape devices and accessories; computer program panels, tape cleaners, accessories: forms, paperwork flow, analysis and design / Sv / S 6 / E 65
Record Media Products, 109 W. 9th St., Los Angeles, Cal. 90015 / 213-625-2243 / * C 67
Data processing consultants in printer ribbon applications; sellers of ribbons and magnetic computer tape / Sv / S 6 / E 61
Record Processing Corp., 111 Fourth Ave., New York, N.Y. 10003 / 212-982-0711 / * C 67
Univac card computers used in commercial accounting applications: payrolls, billing, inventory, accounts receivable, etc. / Sv / S 30 / E 63
Distributes Mac Panel computer tape, control panels, accessories: W. H. Harvey, printerfeeding equipment, micro steel files, sorting racks, accessories, filing supplies, binders; Remington Rand fire-proof files for cards, tape and paks / * C 67
Redcor Computer, 7760 Deering Ave., Canoga Park, Cal. 91304 / 213-340-5892 / * C 67
Data acquisition system: A-D and D-A converters; digital logic modules / S 220 / E 56
Reeves Instrument Co., 100 East Gate Blvd., Garden City, N.Y. 11532 / 516-P16-8100 / * C 67
Analog computer, capable of expansion to powerful hybrid facility; computation center for scientific analysis, kill planning / S 110 / E 43
Reeves Soundcraft, (Div. of Reeves Industries, Inc.), 15 Great Pasture Rd., Danbury, Conn. 06810 / 203-743-7601 / * C 67
Manufactures magnetic recording tape / S 300 / E 50
Reland, Page & Associates, Inc., 1521 E. Broadway St., Columbus, Ohio 43205 / 614-258-3903 / * C 67
Data processing systems design, consulting, contract programming / Sv / S 12 / E 66
Management. computer consulting;
Roster of Organizations

S


SAID, Inc., 645 Oakley Ave., Lynchburg, Va. 24501 / 703-520-9190 / *C 67

Systems Design, programming consultant, feasibility studies, programming, computer processing, EAM processing, development of automated accounting systems / Sv / S 100 / *C 62

photocell punched tape readers and spoolers, speeds to 1000 char/sec; BLOC-STORE for storage of tape information in two line increments to 60 lines; punched tape transports. All models uni- and bidirectional. Automatic control systems / Le / S 125 / *C 60

Research Calculations, Inc., 200 Boylston St., Newton, Mass. 02167 / 617-969-5700 / *C 67

Automatic data processing services: computer processing (Hewlett 2000), plotting, analog to digital conversion, format conversion / Sv Ti / S 110 / *C 65

Remex Electronics, (Div. of Ex-Cell-O Corp.), 5250 W. El Segundo Blvd., Hawthorne, Calif. 90250 / 313-772-3321 / *C 67

Photocel punched tape readers and spoolers, speeds to 1000 char/sec; BLOC-STORE for storage of tape information in two line increments to 60 lines; punched tape transports. All models uni- and bidirectional. Automatic control systems / Le / S 125 / *C 60

Sabre Associates, Inc., 95 Canal St., Nashua, N.H. 03060 / 603-883-3351 / *C 65

Computer driven information displays, character generators, digital logic circuitry for special computers / S 3000 / *C 61

Scantlin Electronics, Inc., 60 Broad St., New York, N.Y. 10004 / 212-014-0450 / *C 67

Real-time financial (stock market) data through private communications network / Sv Ti / S 110 / *C 65

Scientific Control Corp., 14000 Distribution Way, Dallas, Tex. 75234 / 214-241-2111 / *C 67

General purpose digital computers (small, medium size); data acquisition equipment, related peripheral equipment / Eq / S 85 / *C 64


Products: general-purpose digital computers; special-purpose and hybrid computers; coprocessors for scientific, industrial, business applications; computer peripheral equipment; analog, digital systems components, modules. Services: systems engineering; computer maintenance (to users); training courses in computer maintenance, programming / Eq Co / S 2900 / *C 61

Robertshaw Controls Co., Aeronautical & Instrument Div., Santa Ana Freeway # Euclid St., Anahiem, Calif. 92803 / 714-535-8151 / *C 66

Magnetic core memories; special digital systems / S 40 / *C 65

Rixon Electronics, Inc., 2120 Industrial Pkwy., Montgomery Industrial Pk., Silver Spring, Md. 20904 / 301-622-2211 / *C 67

Data transmission modems for data communication from 150 to 4900 bits per second; computer input unit; and equipment for data security / Eq / S 250 / *C 67


Accessories for EDP equipment / S 100 / *C 65

Rotron Mfg. Co., Inc., Hasbrouck Lane, Woodstock, N.Y. 12498 / 914-679-2401 / *C 66

Cooling devices and high pressure/vacuum air sources specifically designed for the computer industry... Muffin Fan, Sprite, Skipper, Centrimax, Spiral, Duplex Spiral, Feather Fan, etc. / S 550 / *C 67

Roytron, (Div. of Litten Industries), 165 Dexter Ave., W. Hartford, Conn. 06110 / 203-278-2000 / *C 67

Full line of paper tape punches, readers (20cps, 50cps, 75cps) with/without electronics; verify, duplicate, regeneration systems / Eq / S 60 / *C 64


Design, sale of all types of forms for computer, data processing equipment / S / *C 64


Card readers, punches, interpreters: tape punches, readers, printers; computer data processing equipment including keyboards, printers; data communications terminals / Eq Co / S 300 / *C 65

Southern Data Service, 280 T.V. Rd., P.O. Box 100, Dothan, Ala. 36301 / 205-794-3166 / *C 67

Service bureau / Sv / S 6 / *C 62

Southwest Computing Service, Inc., 2300...
The Standard Register Statistical Service

Standard Programs

Statistical Tabulating

Spear, Inc., 335 Bear Hill Rd., Waltham, Mass. 02154 / 617-699-4800 / 606 / 10 / F 65

Data processing services / Sv / S 20 / E 53

Spear Farragut Co., Div. of Sperry Rand Corp., Bristol, Tenn. 37622 / 615-960-1151 / 606 / 65

Amplifiers; packaged computer circuits, plug-in circuits; printed circuits; computer type colls; analog computers; computer components; fire control equipment; systems engineering / S 1000 / E 51


Small microcircuited real-time general purpose computers, associated analog to digital and digital to analog conversion and microcircuited CRT display consoles / S 8000 / E 7


Standard IC-6000 with exclusive interpretation technique called MINIFLOW, programs run directly from tapes and by the machine it emulates using IHBSYS, FORTRAN, COBOL or machine language with no modifications / Eq / S 65


Standardized programs for manufacturing and distribution, inventory control, and order picking / S 4200 / E 12

Standards, Inc., 6434 N. Central Ave., Chicago, Ill. 60646 / 312-774-0878 / 606 / 67

Master deck data (manufacturing information) on processing methods, standards / Sv / S 12 / E 50

Statistical Consulting Center, Inc., 2501 No. Stiles, Oklahoma City, Okla. 73105 / 405-255-0940 / 606 / 67

On-line in real-time services: financial including savings and loan, credit union and mortgage account servicing; distribution including billing, inventory control, accounts receivable and statistical / Sv Ti / S 30 / E 65


IBM unit record sales, rental; complete service center using IBM unit record, 10005 Univac / Eq Sv Ti Le / S 50 / E 65

Statistical Tabulating Corp., 104 S. Mich-
ign, Chicago, Ill. 60603 / 312-DX2-2404 / 606 / 67

Nine data-processing and computer service centers containing IBM 1400 series card and tape systems, Systems/ 360, and SDS 9000 tape systems - plus peripheral equipment. Administrative management, scientific management, engineering and general data processing, systems analysis, consultation and temporary personnel. / Sv / S 7 / E 7

Theodore Stearn, Sperry Corp., E. 400 Lake St., Addison, Ill. 60101 / 312-279-2440 / 606 / 67

Engineering sales representatives for manufacturer's computers, computer controlled information display, EDP peripheral equipment; controls, transducers; counters / Eq / S 9 / E 9

Stephens-Nelson Data Processing Center, N. 711 Lincoln, Spokane, Wash. 99201 / 509-327-1558 / * C 67

General business data processing services and consulting; special package program for small hospital management / Sv / S 15 / E 62

Strata Industries, 790 Greenfield Dr., Elcajaran, Calif. 90210 / 714-442-3451 / 606 / 67

Printer/plotter, symbol generators, line generators, microfilm recording equipment, computer output equipments / S 100 / E 50

Stromberg-Carlson Corp., Data Products Div. (Div. of General Dynamics Corp.), P.O. Box 2449, 1895 Hancock St., San Diego, Calif. 92112 / 619-249-0331 / 606 / 67

High-speed microfilm non-impact printers: S-C 120 (20,000 char/sec.), S-C 240 (40,000 char/sec.), S-C 440 (90,000 char/sec.). High-speed microfilm plotter-printers: S-C 4600 (60,000 characters per min.), S-C 4600 (90,000 char/sec.). High-speed microfilm handling equipment / Eq / S 500 / E 55

Sturgis Newport Business Forms, Inc. (Div. of Littodon Industries), P.O. Box 31, Sturgis, Mich. 49091 / 616-651-2301 / 606 / 67

Business forms; data processing forms, magnetic ink imprinting / S 950 / E 12

Suburban Data Processing Center, Inc. (Div. of Computations, Inc.), 387 Passaic Ave., Fairfield, N.J. 07006 / 201-228-4700 / 606 / 67

Services on 1401 tape system / Sv / S 40 / E 67


Service bureau / Sv / S 100, IBM 360-30, sorters, collators, reproducers, etc; Services: keypunching, consulting (software, system analysis), generating programs, etc. / Eq Sv Co Le Ti / S 70 / E 63


Special purpose data processing sys-
tem / S 10,000 / E 65

System Computers Ltd., Fosway, Newcastle-on-Tyne, 6, Northumberland, Great Brit-
ain (Div. of International Research & Development Co.), Newcastle-on-Tyne 650411 / 606 / 67

6 amplifier analog teaching machines, logic teaching machines; 30, 60 amplifier (basic) fully transistorized general purpose analog computers; larger capacity machines custom built; option of logic control / Eq Ti Co Le / S 120 / E 67

System Development Corp., 2500 Colorado Ave., Santa Monica, Cal. 90406 / 213-333-9411 / 606 / 67

Computing services; courses in programming, systems / Sv Co / S 3300 / E 50

Systems Sciences, Inc., 4905 Del Ray Ave., Bethesda, Md. 20014 / 301-657-4440 / 606 / 67

Operations research: mathematical models, simulations; systems analysis; programming services; management consulting services / Ti Sv / S 18 / E 64

Systemat, 1107D Spring St., Silver Spring, Md. 20010 / 301-357-3650 / 606 / 67

Placement of professional programming personnel / Sv / S 10 / E 61


Consulting and computing services. System 360, model 20, sorter, key-punches, verifiers, 1401 E 360/20 programming & system design / Sv Ti / S 22 / E 65

Systematics of Missouri, Inc., 3222 Olive St., St. Louis, Mo. 63103 / 314-531-5378 / 606 / 67

Portable card counter, Model CC-350; small, portable, tab card counting device. Hopper capacity 500 cards; counter capacity 9999, speed 300 CPM / S 12 / E 60

Systems Data Processing Co., 920 23rd St., Sacramento, Cal. 95816 / 916-444-0152 / 606 / 67

Full range of computer, programming, system design for business; key-punching services. Kimber tag applications / Sv / S 7 / E 61


Data processing service: IBM 1401 and System 360 with related IBM EAM equipment / Sv / S 10 / E 62

Systems Engineering Laboratories, Inc., P.O. Box 9148, Ft. Lauderdale, Fla. 33310 / 305-507-2900 / 606 / 67

Digital computers, special purpose computers, digital data acquisition / Eq / S 380 / E 61

Systems-Management Services Co., 201 Wall St., Hougan, Tex. 77002 / 713-224-7110 / 606 / 67

Consulting and computing services. Equipment includes NCR computer / Sv / S / E 61

Systems Programming, Inc., 175 Main St., White Plains, N.Y. 10601 / 914-428-0494 / 606 / 67

Programming, systems developmental services; experienced in communications network analyses, message & traffic analyses, all phases of insurance applications programming, and language translators / Sv / S 7 / E 64

Systems Programming Services Inc., 3550 N.W. 58 St., Miami, Fla. 33143 / 305-635-9455 / 606 / 67

Roster of Organizations
Technical Information on June, 1967

Services: payrolls, accounts receivable, etc. / Sv / S 22 / E 53
Systems Science Corp., 1104 Spring St., Silver Spring, Md., 20910 / 301-669-7353 / E 67
Systematic Surveying Co., 400 E. Third St., Bloomington, Ind. 47403 / 301-779-5500
(Md.); 012-332-1720 (Ind.) / 66
Specialists in real time, on-line audit/charge policies; perform feasibility studies; develop-
ment of hardware specifications; systems and applications; software design and programming / S 15 / E 61
Syatron-Donner Corp., 800 Galindo St.,
Concord, Cal. 94520 / 415-682-6161 / E 67
Portable, desk top analog computers for education and research with +
100 volt, all solid state design, modular computing plug-ins, built-in
digital logic and REP-DP / Eq Co Le / S 800 / E 57

TAB Products Co., 550 Montgomery St.,
P.O. Box 2623, San Francisco, Cal. 94104 / 415-981-6160 / E 67
DP auxiliary equipment, computer room

equipment; datafinder, an electronic device for

card punch machine in-put: forms handling machines, l
teral shelf filing equipment, spacefinder filing systems, and unit
spacefinder filing systems / S 100 / E 50
TAB Products of Ill. (Div. of TAB Prod-
ucts Co.), 5151 N. Harlem, Chicago, Ill. 60650 / 312-631-2615 / E 67
DP auxiliary equipment, card files, etc., forms handling machines / Eq / S 400 / E 61
Tally Corp., 1310 Mercer St., Seattle,
Wash. 98101 / 206-624-0760 / E 67
Paper tape readers (mechanical and
photoelectric) and perforators; mag-
netic tape di r d e r s  a n d t a p e s; d a t a-
t e m a l s; d a t a t r a n s m i s s i o n / E q / S 500 / E 40

Tape Center Ltd., 1053 South Blvd., Oak
Park, Ill. 60302 / 312-336-0433 / E 67
Friden flexwriters, tape/edge card


Roster of Organizations

/ S 9 / E 55
/ E 67
Consultation, information and library services. Literature research.
Specialists in the field of information retrieval systems and library services / Sv / S 7 / E 64
Toxon Laboratories, Inc., 3500 Parkdale Ave., Baltimore, Md. 21211 / - / - C 67
A/D converter to digital converter, digital telemetry equipment / Eq / S 21 / E 59
Trak Electronics Co., Inc., 59 Danbury Rd., Wilton, Conn. 06897 / 203-762-5521 / C 66
Worse-to-teleprinter code converters;
DIGIT-STORE, asynchronous magnetic tape read/write unit / S 95 / E 47
Transistor Electronics Corp., Box 6191, Trak Electronics Co., Inc., 59 Danbury Rd., Wilton, Conn. 06897 / 203-762-5521 / C 66
Magnetic ink imprinting / Eq / 202-338-1161 / C 20
Computer data processors, special purpose
General purpose computers, digital
Continuous forms (spot carbonized), magnetic ink imprinting
elcos, CRT display systems. All are
operational for locomotives and vehicles / S 1500 / E 1081
Custom molded plastic electronic modules
and shells / S 25 / E 61
U.S. Magnetic Tape Co. (Div. of Wabash Magnetics, Inc.), 221 E. Main St., Huntley, Ill. 60142 / 312-669-5181 / C 67
Magnetic digital computer tape / S 100 / E 63
United States Motors Corp., 339 W. 20th Ave., Oshkosh, Wis. 54901 / 414-221-4560 / C 67
Engine generator sets, uninterrupted power sets, blowers, versus trailers / S 50 / E 1090
U.S. Navy Marine Engineering Laboratory (Dept. of the Navy), Computer Div., Annapolis, Md. 21402 / 301-268-7711, Ext. 6514 / C 67
Mathematical analysis and research; design, development and validation of mathematical models simulating complex naval shipboard machinery systems and auxiliary systems; design and development of information systems; computer programming and DP services. Services available to government activities / Sv / S 5 / E 63
U.S. Tabulating Binder Corp., 7207 Melvina Ave., Niles, Ill. 60648 / 312-647-9010 / C 67
Binders, aylan post for marginal-punched records, indexes for bound marginal-punched records, binding machines for records on marginal-punched sheets / S 7 / E 63
UNIVAC Data Processing Centers (Div. of Sperry Rand Corp.), Main office at P.O. Box 0100, Philadelphia, Pa. 19101 / 215-644-9000
Commercial and scientific DP services utilizing UNIVAC 1108, 1107, 418, 1004 and 1005 in Atlanta, Buffalo, Chicago, Cleveland, Denver, Detroit, Houston, Kansas City, Los Angeles, Mineola, Minneapolis, N.Y. City, Philadelphia, Phoenix, Pittsburgh, Portland, San Diego, Spring and Wellesley / Sv Ti / S 180,000
(all centers) / E 52
Complete MCR bank processor systems including high-speed document sorters, audit list processor, processor with accumulating and dictionary look-up capabilities. MCR document encoding devices to print the amount, account number, and transit number fields. Optical character recognition systems for automation of accounts receivable and inventory control, include Card Punch and Charge Sales Recorders / S 150 / E 57
Universal Computeries Corp., Clairmont Ave., Thousand Oaks, N.Y. 10594 / 914-809-7500 / C 67
A/D Data acquisition systems, A/D instrumentation, A/D converters, special purpose digital control systems for automation / Eq / S 35 / E 59
Systems, programming, DP, temporary personnel and key punching, consulting / Sv / S 15 / E 66
University Computing Co., 1300 Frito-Lay Tower, Dallas, Tex. 75235 / 214-FL-0246 / C 67
Commercial and scientific data processing at our centers or via remote terminals linked to centers; programming; systems computer time / Sv Ti Co / S 230 / E 60
Uptone, Inc., 13910 W. Fifth Ave., Golden, Colo. 80401 / 303-279-3551 / C 67
Punched card readers, card punch / S 130 / E 58
Information systems design: personnel; administrative support; communications; general, financial, insurance and operational accounting; maintenance management; material scheduling; production control; distribution; inventory management. System programming, data; translation, simulation/emulation, operating systems (input-output control, real-time and executive routines, monitors, and file processors), language compilers, sort/merge programs, report generators, computer program conversion. Scientific and engineering analysis. Operations research / Sv Ti Co / S 250 / E 51
USECO Div., Litton Industries, 13536 Satiny St., San Diego, Calif. 92109 / 213-786-9281 / C 67
Molded and precision machine electronic hardware. / S ? / E 43
Utility Billing, Inc., P.O. Box 22247, Memphis, Tenn. 38112 / 901-293-5164 / C 67
Utility billing, consulting and programming services / S / E 66
Vector Electronic Co., Inc., 1100 Flower St., Glendale, Calif. 91201 / 213-245-6971 / C 65
Pre-programming, patchboards, patch cords, plug-in cards, breadboard kits / S 85 / E 47
Rev-Roofer, 70 Sargeant St., Hartford, Conn. 06120 / 203-527-7201 / C 67
Mechanical and electrical instruments to count, record and control through numerics / S 1700 / E 1866
Rev-Roofer, Electronic Controls Div., 29 Andover St., Danvers, Mass. 01923 / 617-747-6110 / C 67
Electronic controls, counters, converters, recorders, flexible assignment plan systems, multiple key-lock security systems, and industrial numerical systems / S 110 / E 60
Vermont Research Corp., Precision Park, N. Springfield, Vt. 05150 / 802-886-2255 / C 67
Magnetic memory drums and associated electronic circuitry / Eq / S 75 / E 60
Victor Computers Corp., Business Machines Group, 3900 N. Rockwell, Chicago, Ill. 60618 / 312-5955
Digital printers, adding machines, calculators, calculating services handwritten, instant reproduction
computations systems and visual displays for communications systems / Eq / s 4000 / E 10
Audio amplifiers, transformers, communication control systems, programmable patch panels, patch cords, resistance soldering machines, systems engineering, research and development, design and manufacturing technical documentation, drafting and graphic arts, power supplies, circuit programs / 5100 / E 51
Offers plugboards, patchcords, DP accessories, electronic components, magnetic tape cleaner / S 70 / E 59
Master power controls, electrical outlet boxes, instrument carts and labvalve controls / S 70 / E 59
MICRO-PUNCH 461, a portable, printing key punch / S / E 7
Walkert Co., 10321 S. La Cienega Blvd., Los Angeles, Calif. 90045 / 213-776-0025 / 67
Digital and logical modules and P.C. boards, I.C. modules and BBS production services / s 50 / E 48
Wang Laboratories, 756 North St., Tewksbury, Mass. 01876 / 617-851-7311 / 67
GP computer for scientific and business computations, desk top computer, electronic calculator with satellite keyboards and simultaneous electronics / Eq Ti Co Le / S 360 / E 67
Computer software, training, and consulting; software for robotic devices / S 5 / E 48
WACO plate all steel free-access floor system (raised floors for computer rooms) / S 400 / E 47
F. S. Webster Co., Interchemical Corp., Copying Products Div., 1 Amherst St., Cambridge, Mass. 02142 / 617-KIT-2300 / 65
Computer software, training, and consulting; software for robotic devices / S 5 / E 48
Consulting service: systems and operations research; data systems design and development; data retrieval systems and packages / S 50 / E 56
Westinghouse Electric Corp., Electronic & Specialty Products Group, Gateway Bldg. #3, Pittsburgh, Pa. 15230 / 412-391-2800 / 66
Amplifiers, plug boards, computer packaged circuits, computing services, consulting services, analog to digital converters, digital to analog converters, electronic counters, indicator lights, electronic counting indicators, indicators, back-up, digital and analog multipliers, shift registers, research, scanners, tele-metering systems, transformers, virtual output devices / S 55,000 / E 62
Weston-Boonsoht and Fuchs, Hathor Ind., Hathor, Pa. 19040 / 215-052-1240 / 65
Sine, transient and random computer analyzers, servo computers, control systems, statistical computers / S 100 / E 59
Wentworth Instruments, Inc., Weston Hathor Ind., County Line Road, Hathor, Pa. 19040 / 215-674-0599 / 67
Digital and hybrid computers for process control / S 150 / E 70
Wentworth Instruments, Inc., 614 Frelinghuysen Ave., Newark, N.J. 07114 / 201-243-4700 / 65
Instruments and components; indicating, display and controlling instruments; power supplies, input-output devices, multipliers, calculators, relays, and resistors / S 2000 / E 1888
Wheeling Rex. Inc., 5000 N. Division St., Peckskill, N.Y. 10566 / 914-737-6800 / 67
Cards, inventory systems, office machines, continuous forms, paper and magnetic tape filing systems / S - 500 / E 31
Whittaker Corp., Technical Products Div., 9601 Canoga Ave., Chatsworth, Calif. 91311 / 213-341-0800 / 66
Electromechanical counter / S 950 / E 56
Wild & Assoc., Inc., 200 Michael Dr., Sposset, N.Y. 11719 / 516-921-7100 / 67
Small digital computers, digital peripheral equipment, memory devices and systems / Eq / S 100 / E 56
Publishers of books dealing with computers and computer technology / S 20 / E 51
Williams and Marcus Co., Busting Lane, Primos, Pa. 19018 / 215-CR6-6415 / 67
Col. DP cards, panels, paper tape, flat forms, continuous forms, wires / S 210 / E 08
Binders, files, labels, tapes, forms, ribbons, card tapes, storage files, chiselled punched CF mailing labels, paper tape, filling systems / S 20 / E 51
Timing devices / S 15 / E 45
Wilson Jones Co. (Div. of Swingleine Inc.), 6150 Touhy Ave., Chicago, Ill. 60646 / 312-794-7700 / 67
Electronic and electrical connectors; high density, miniature, sub-miniature, round, rectangular, rack and panel, printed circuit types / S / E 50
Wiltek, Inc. (formerly Trak Electronics Co., Inc.), 59 Danbury Rd., Wilton, Conn. 06897 / 203-672-5521 / 67
Digital-stored magnetic tape read/write units, buffer stores, design systems using the above equipments to specifications / S 85 / E 46
Winchester Electric Co., 3505 Litton Industries, Main St. & Hillside Ave., Oakville, Conn. 06779 / 203-274-0891 / 67
Electronic and electrical connectors; high density, miniature, sub-miniature, round, rectangular, rack and panel, printed circuit types / S / E 50
Withtek Products Co., 14750 Keswick St., Van Nuys, Cal. 91405 / 213-STO-8265 / 65
Broadboard kits for electronic designers working on research and development in semiconductor circuitry, computers, and data processing systems / S 3 / E 46
Wolf Research and Development Corp., P.O. Box 30, Baker Ave., West Concord, Mass. 01781 / 617-349-2111; 646-8192 / 67
Computer consulting, systems analysis and design, computer programming, computer operations in the fields of aerospace, information retrieval, geoedics, electronics and management systems / S / E 350 / E 50
Wolf Research and Development Corp. (Branch office), 5001 Annapolis Rd., Bladensburg, Md. 20710 / 301-797-2800 / 67
Research and development in the application of digital computer equipment and techniques to the solution of scientific, business and management problems, specifically in areas (Please turn to page 40)
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*SIMON & SCHUSTER, N.Y. — 1967 — 352 pp

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Understanding mathematics
The anchoring of new knowledge upon old knowledge
Acquiring power to use mathematical tools
The idea of mathematics
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A Guide To Mathematics For The Intelligent Nonmathematician

TABLE OF CONTENTS:

Preface

Part One:
A WAY IN
1. The Iceberg Mathematics
2. The Hidden Seeds
3. Understanding Mathematics
4. The Ideas of Mathematics

Part Two:
ROUGHLY AND APPROXIMATELY
5. The Numbers that are Used Often
7. The Long Reach of Estimating
8. Estimating and Being Right

Part Three:
A DOZEN POWERFUL IDEAS MADE EASY TO UNDERSTAND
9. Mathematics: Variables
10. Formulas
11. Functions and Graphs
12. Derivatives
13. Integrals
14. Equations
15. Angles
16. Logic: Properties and Relations
17. Statistics: Probability and Frequency Distributions

Part Four:
MATHEMATICS AND THE ENVIRONMENT
18. Going from Ordinary Language into Mathematics
19. The Kinds of Problems, and Mathematics
20. Computers and Mathematics
21. The “New Math,” and Mathematical Education
22. Predicting the Future, and Running Risks
23. The Future and Mathematics

Appendices
1. A Short Introduction to Algebra
2. Studying by Yourself
3. A Short Bibliography

OTHER BOOKS BY EDMUND C. BERKELEY:

“Giant Brains or Machines that Think,” John Wiley and Sons, New York, 1949, 227 pp


Any of the above may be ordered on approval from “Computers and Automation.” Ask for announcement of publications.
Roster of Organizations

(Continued from page 37)

of data reduction and storage and retrieval, operations research, biomedical DP, theoretical physics, computer-controlled communications, applied mathematics, statistical analysis, missile trajectory analysis, satellite tracking and control / Sv Ti Co / S 350 / E 56


Products for the handling, storage and filing of punched cards, magnetic tape, paper tape and disk packs / S 300 / E 34

Wyle Laboratories, 128 Maryland St., El Segundo, Ca. 90245 / 213-670-4251 / € 67

Computers, digital, desk-top and rack-mounted; punch card readers; keyboard-display units, other peripherals. Circuits, two lines of module cards, one utilizing germanium discrete components, the other integrated circuits / Eq Sv Co / S 500 / E 49

Wyoming Electroedata Corp., 309 E. Main, Riverton, Wyo. 82501 / - / € 67

Data consoles for source data acquisition, transmission over Tel lines, and high speed computer input of same / Eq Co Le / S -10 / E 65

Xerox Corp., P.O. Box 1540, Rochester, N.Y. 14603 / 716-586-4500 / € 65

Document copying and reproduction equipment / S 10,000 / E 06

Y

Ed Younger & Assoc., Inc., 8 S. Michigan Ave., Chicago, Ill. 60603 / 312-236-7455 / € 67

Nationwide recruitment of manpower in EDP, systems, operations research, mathematics, applied statistics, accounting and finance / Sv / S 8 / E 61

Youngstown Technological Inst., 2151 Market St., Youngstown, Ohio, 44507 / 216-780-6597 / € 67

Instruction in IBM keypunch, verifier, sorters, collators, interpreters, reproducing punch, accounting machines, 1401 computer, 604 computer, 360 systems / Co / S 12 / E 63

Z

Zuse KG, Grosse Industriestrasse 19-21, 643 Bad Hersfeld, Germany / 06621-841 / € 67

Zuse Z 25, Zuse Z 23 electronic computer systems, Zuse Z 64 Graphomax punched tape plotter, Zuse Z 80 electronic counter, Zuse Z 84 film to paper tape converter, Zuse Z 16 data preparation equipment, Zuse Z 18 punched tape controlled tag punch, tag reading automatic cash desk with adding tape punch / Eq Sv Co / S 1000 / E 36


Friden, Marchant, IBM, Monroe / S 6 / E 66

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BUYERS' GUIDE TO PRODUCTS AND SERVICES
IN COMPUTING AND DATA PROCESSING

(Cumulative Information As Of May 15, 1967)

This guide contains the names of organizations who offer products and services in the computer field. For addresses and additional information about these organizations, please refer to their entries in the "Roster of Organizations" beginning on page 8.

LIST OF HEADINGS

Following is a list of headings under which products and services have been classified. There is some overlapping among these headings; thus it may be necessary or desirable to look for a specific item under more than one heading.

| Adding Machines                      | A1  |
| Amplifiers                           | A2  |
| Boards, Plugs (See P7: Plugboards)   | B1  |
| Cameras                              | C1  |
| Data Processing                     | C2  |
| Data Cards (See P14: Punch Cards)    | C3  |
| Magnetic                             | C4  |
| Circuits                             | C5  |
| Computer Package                     | C6  |
| Communications Systems (Computer types) | C7  |
| Computers (See also specific types)  | C8  |
| Analog                               | C9  |
| Digital                              | C10 |
| Special Purpose                      | C11 |
| Test Equipment                       | C12 |
| Computer Components (See also specific types) | C13 |
| Computing Services                  | C14 |
| Consulting Services                 | C15 |
| Controls                             | C16 |
| Automatic                            | C17 |
| Sorting and Counting                 | C18 |
| Converters, Information              | C19 |
| Analog to Digital                    | C20 |
| Card to Magnetic Tape                | C21 |
| Card to Paper Tape                   | C22 |
| Code                                 | C23 |
| Digital to Analog                    | C24 |
| Digital to Graphic                  | C25 |
| Graphic to Digital                   | C26 |
| Magnetic Tape to Card                | C27 |
| Magnetic Tape to Paper Tape          | C28 |
| Magnetic Tape to Magnetic Tape       | C29 |
| Paper Tape to Card                   | C30 |
| Paper Tape to Magnetic Tape          | C31 |
| Cores                                | C32 |
| Ferrite                              | C33 |
| Magnetic                             | C34 |
| Counters                             | C35 |
| Electronic                           | C36 |
| Mechanical                           | C37 |
| Courses by Mail (Computer Field)     | C38 |
| Training or Instruction              | C39 |
| Computing                            | C40 |
| Programming                          | C41 |
| Systems                              | C42 |
| Data Processing Accessory Equipment  | D1  |
| Data Processing Machinery (See also specific types) | D2  |
| Data Recording Equipment             | D3  |
| Data Reduction Equipment             | D4  |
| Delay Lines (Computer Types)         | D5  |
| Desk Calculators                     | D6  |
| Differential Analyzers               | D7  |
| Discs, Magnetic                      | D8  |
| Displays                             | D9  |
| Drums, Magnetic                      | D10 |
| Economic Research                    | E1  |
| Employment Agencies                  | E2  |
| Facsimile Equipment                  | F1  |
| Financial Services (See also Leasing Services) | F2  |
| Floors (Computer Room)               | F3  |
| Forms, Continuous                    | F4  |
| Handling Equipment                   | F5  |
| Generators, Function                 | G1  |
| Electronic                            | G2  |
| Mechanical                            | G3  |
| Heads, Magnetic                      | H1  |
| Heading                              | H2  |
| Recording                            | H3  |
| Information Engineering              | I1  |
| Information Retrieval Devices        | I2  |
| Integrators                          | I3  |
| Electronic                            | I4  |
| Mechanical                            | I5  |
| Inventory Systems                    | I6  |
| Keyboards                            | K1  |
| Leasing Services                     | L1  |
| Lights, Indicator                    | L2  |
| Memory Systems                       | M2  |
| Multipliers                          | M3  |
| Electronic                            | M4  |
| Servo                                | M5  |
| Office Machines                      | M6  |
| Operations Research                  | M7  |
| Panels                               | P1  |
| Jack                                 | P2  |
| Relay Rack                           | P3  |
| Paper Tape                           | P4  |
| Plotting (See also Boards, Plotting) | P5  |
| Plugboards                           | P6  |
| Printers                             | P7  |
| High Speed                           | P8  |
| Keyboards                            | P9  |
| Plots                                | P10 |
| Line-A-Time                          | P11 |
| Programming Service                  | P12 |
| Publications                         | P13 |
| Punch Cards                          | P14 |
| Punch Equipment                      | P15 |
| Machines                              | P16 |
| Readers                               | R1  |
| Character                            | R2  |
| Film                                  | R3  |
| Magnetic Card                        | R4  |
| Magnetic Ink                         | R5  |
| Magnetic Tape                        | R6  |
| Optical Character                     | R7  |
| Paper Tape                           | R8  |
| Photoelectric                        | R9  |
| Punch Card                           | R10 |
| Recording Papers                     | R11 |
| Registers, Shift                     | R12 |
| Relays (Computer Types)              | R13 |
| Research                             | R14 |
| Resolvers                            | R15 |
| Coordinate Transform                 | R16 |
| Product                              | R17 |
| Sine-Cosine                          | R18 |
| Robots                               | R19 |
| Ribbons, Data Processing             | R20 |
| Scanners                             | S1  |
| Servomechanisms                      | S2  |
| Simulators                           | S3  |
| Storage Systems                      | S4  |
| Magnetic                             | S5  |
| Switches                             | S6  |
| Stepping                             | S7  |
| Synchros                             | S8  |
| Systems Engineering                  | S9  |
| Tape Handlers                        | T1  |
| Tape, Magnetic                       | T2  |
| Filing Systems                       | T3  |
| Readers                              | T4  |
| Recertification                      | T4a |
| Recorders                            | T5  |
| Reels                                | T6  |
| Tape, Paper                          | T7  |
| Filing Systems                       | T8  |
| Punches                              | T9  |
| Readers                              | T10 |
| Telemetering Systems                 | T11 |
| Thin-Films, Magnetic                 | T12 |
| Time-Shared Computing Services       | T13 |
| Timing Devices                       | T14 |
| Transformers                         | T15 |
| Pulse                                | T16 |
| Translating Equipment                | T17 |
| Typewriters, Electric, Controlled    | T18 |
| Used Data Processing Equipment and Supplies | U1 |
| Visual Output Devices                | U15 |
### A1. ADDING MACHINES
- Addo-X
- ADDO-X Sales Corp.
- All Data Processing Machines, Inc.
- Comput-A-Credit, Inc.
- Data Processing Exchange, Inc.
- Friden, Inc.
- Howard's Automatic Devices
- Litton Electronic Business Systems
- Michigan Business Machines
- The National Cash Register Co.
- Scientific Control Corp.
- Superior Data Processing Service
- Victor Comptometer Corp.
- Business Machines Group
- Wang Laboratories Inc.
- Western Addo-X, Inc.

### A2. AMPLIFIERS
- Adage, Inc.
- Aerojet-General Corp., Von Karman Center
- All Data Processing Machines, Inc.
- Applied Dynamics, Inc.
- Argonaut Associates, Inc.
- Avtron Manufacturing, Inc.
- Beckman Instruments, Inc.
- Coho Electronics, Inc.
- CONCOR, Inc.
- Consolidated Electrodynamics Corp.
- Data Machines, Inc.
- Digital Devices, Inc.
- Dynec
- Fairchild Semiconductor
- General Radio
- Global Science Corp.
- GPS Instrument Co., Inc.
- Hewlett-Packard
- Inductor Engineering, Inc.
- Melcor Electronics Corp.
- Moog Inc. Industrial Div.
- Pastoriza Electronics Inc.
- Pivan Engineering Co.
- Potter Instrument Co., Inc.
- Quidar Electronics Inc.
- Raytheon Co., Semiconductor Operation
- Scientific Data Systems, Inc.
- Simulators, Inc.
- System Computers Ltd.
- Syskon-Denny Corp.
- Virginia Electronics Co., Inc.
- West Eleven Inc.

### B1. BOARDS, PLOTTING
- Advanced Circuitry Div., Litton Industries
- All Data Processing Machines, Inc.
- Benson-Lehner Corp.
- DISCON Corp.
- Felsenthal Instruments Co.
- Mactex
- Mantiel Corp.
- Stromberg-Carlson Corp.
- Wild & Assoc., Inc.

### B2. BOARDS, PLUG
(See P7: Plugboards)

### C1. CAMERAS
- Beckman & Whitely, Inc.
- Control Data Corp.
- Data Reproduction Systems
- Flight Research Div.
- Hewlett-Packard
- Mast Development Co.
- Technical Operations, Inc.

### C2. CAMERAS, DATA RECORDING
- Beckman & Whitely, Inc.
- Control Data Corp.
- Fairchild Space & Defense Systems
- Flight Research Div.
- Houston Fearless Co.
- The National Cash Register Co.
- Stromberg-Carlson Corp.
- Superior Data Processing Service
- Victor Comptometer Corp.
- Business Machines Group
- Wang Laboratories Inc.
- Western Addo-X, Inc.

### C3. CARDS
(See P14: Punch Cards)

### C4. CARDS, MAGNETIC
- DI/AN Controls, Inc.
- Hallmarks International
- Litton Electronic Business Systems
- Management Systems International
- Moore Business Forms, Inc.
- The National Cash Register Co.
- Record Control Systems
- Sooner Business Systems

### C5. CIRCUITS
- Aerojet-General Corp., Von Karman Center
- Advanced Circuitry Div., Litton Industries
- The Artronic Instrument Co.
- Comput-A-Credit, Inc.
- Decision Control, Inc./Data Machines, Inc.
- Electronic Modules Corp.
- Indel Inc.
- Logic Corp.
- Moog Inc. Industrial Div.
- Superior Data Processing Service
- Tec Serv, Inc.
- Wild & Assoc., Inc.
- Wyle Laboratories

### C6. CIRCUITS, COMPUTER PACKAGED
- Advanced Circuitry Div., Litton Industries
- Aerojet-General Corp., Von Karman Center
- The Artronic Instrument Co.
- Avtron Manufacturing, Inc.
- Combined Data Group Inc.
- Comput-A-Credit, Inc.
- Control Logic, Inc.
- Data Machines, Inc.
- DI/AN Controls, Inc.
- Digital Devices, Inc.
- Digital Equipment Corp.
- Electronic Modules Corp.
- Fairchild Semiconductor
- GPS Instrument Co., Inc.
- Keltec Industries, Inc.
- Alexandria Div.
- Logic Corp.
- Pivan Engineering Co.
- Raytheon Computer
- Scientific Control Corp.
- Scientific Data Systems, Inc.
- Tech Serv, Inc.
- Universal Comptronics Corp.
- Walkir Co.
- Wild & Assoc., Inc.
- Wyle Laboratories

### C7. COMMUNICATIONS SYSTEMS
(Computer Types)
- Aries Corp.
- Beckman Instruments, Inc.
- Celetronics Inc.
- Combined Data Group Inc.
- Comput-A-Credit, Inc.
- The Computer Exchange, Inc.
- Computer Technology Ltd.
- Computer Test Corp.
- Control Data Corp.
- Control Processing Services
- Data Network Corp.
- Data Systems Analysts, Inc.
- Digi-Data Corp.
- Digital Equipment Corp.
- Digitalronics Corp.
- General Electric Co., Information Systems Marketing Operation (ISMO)
- Honeywell Electronic Data Processing Div.
- Informs, Inc.
- Infotec, Inc.
- Infotran, Inc.
- Invacorp
- Lenkurt Electric Co., Inc.
- Litton Electronic Business Systems
- Logic Corp.
- Mactex
- Mohawk Data Sciences Corp.
- The National Cash Register Co.
- Philco-Ford Corp.
- Quidar Electronics Inc.
- Raytheon Co., Communication & Data Processing Operation
- Rixon Electronics, Inc.
- Scientific Data Systems, Inc.
- Superior Data Processing Service
- Tec Serv, Inc.
- Wyle Laboratories

### C8. COMPUTERS
(See also specific types)
- Adage, Inc.
- All Data Processing Machines, Inc.
- The Automation Co.
- Avtron Manufacturing, Inc.
- Beckman Instruments, Inc.
CI0. COMPUTERS, DIGITAL

Adage, Inc.
All Data Processing Machines, Inc.
Automated Data Associates
The Automation Co.
Automation Electric
Avtron Manufacturing, Inc.
Bailey Meter Co.
Beckman Instruments, Inc.
Frank L. Berman
The Bunker-Ramo Corp.
Clary Datacomp Systems
Combined Data Group Inc.
Comput-a-Credit, Inc.
Computer Consultants, Inc.
The Computer Exchange, Inc.
Computer Sharing Inc.
Computer Supplies Co.
Computer Technology Ltd.
Control Data Corp.
Cyber-Tronics, Inc.
DA-PEX
Data Acquisition Corp.
Datacraft Inc.
Data Machines, Inc.
Data Operations Inc.
Data Processing Exchange, Inc.
DataStation/Los Angeles
Datatastion of New York, Inc.
Decision Control Inc/Data Machines, Inc.
DI/AN Controls, Inc.
Digital Electronics Inc.
Digital Equipment Corp.
Dymec
DYP Leasing Corp.
Educational Products, Fabri-Tek Inc.
Electro-Mechanical Research, Inc.
Electronic Business Machines Co.
Emtech Research Products Corp.
Fabri-Tek, Inc.
Fairchild Space & Defense Systems
General Electric Co., Information Systems Marketing Operation (ISMO)
General Precision, Inc.
Librascope Group
Hewlett-Packard
Honeywell Electronic Data Processing Div.
Honeywell Inc., Computer Control Div.
Information Processing Systems, Inc.
Interdata
Kaman Nuclear
Keuffel & Esser Co.
Litton Electronic Business Systems
Logic Corp.
Mactex
MAI Equipment Corp.
Mathtronic
Mauchly Honig Time Sharing Associates, Inc.
Memphis Methods & Tabulating Service
Michigan Business Machines
Namac, Inc.
The National Cash Register Co.
National Computer Systems, Inc.
Pacific Data Systems Inc.
Philco-Ford Corp.
Pivan Engineering Co.
Randolph Computer Corp.
Raytheon Computer
Said, Inc.
Scientific Control Corp.

Scientific Data Systems, Inc.
Serendipity Associates
Spear, Inc.
Standard Computer Corp.
R. Edward Stemm, Inc.
Superior Data Processing Service
Synchronous Electronics, Inc.
Systems Engineering Laboratories, Inc.
Technical Measurement Corp.
Time Brokers, Inc.
UNIVAC Div., Sperry Rand Corp.
Wang Laboratories
Wild C & Associates Inc.
Wiley Laboratories
Zase KG

CI1. COMPUTERS, SPECIAL PURPOSE

All Data Processing Machines, Inc.
Amorceda, Inc.
Applied Dynamics, Inc.
Argonaut Associates, Inc.
The Automation Co.
Avtron Manufacturing, Inc.
Baldwin Rongberg Co.
Beckman Instruments, Inc.
The Bunker-Ramo Corp.
Canadian Research Institute Caletronics Inc.
Combined Data Group Inc.
COMCOR, Inc.
Comput-a-Credit, Inc.
Control Data Corp.
Control Logic, Inc.
Cyber-Tronics, Inc.
Datametrics Corp.
Data Machines, Inc.
DataStation/Los Angeles
Data Systems Corp.
DI/AN Controls, Inc.
Digital Electronics Inc.
Digital Equipment Corp.
DISCON Corp.
Dymec
Educational Products, Fabri-Tek Inc.
Electro-Mechanical Research, Inc.
Electronic Modules Corp.
Kurt Ensellin
Felsingthal Instruments Co.
General Precision, Inc.
Librascope Group
Logicspace Corp.
G. I. Div., General Precision, Inc.
Honeywell Inc., Computer Control Div.
Industrial Products Group
Infotec, Inc.
Infotron Inc.
Interdata
Jonker Corp.
George Kelk Limited
Litton Electronic Business Systems
Logic Corp.
Mathtronic
Moore Associates Inc.
Motorola Inc., Government Electronics Div.
Nash and Harrison Ltd.
The National Cash Register Co.
Pacific Data Systems Inc.
Philco-Ford Corp.
Photo Data, Inc.
Baytron Computer
Scientific Control Corp.

Superior Data Processing Service
System Computers Ltd.
Systems Engineering Laboratories, Inc.
Technical Measurement Corp.
UNIVAC Div., Sperry Rand Corp.
Universal Copmutors Corporation
Wyle Laboratories
Zase KG

CI2. COMPUTERS, TEST EQUIPMENT

All Data Processing Machines, Inc.
Applied Dynamics, Inc.
Beckman Instruments, Inc.
Comput-A-Credit, Inc.
Computer Test Corp.
Control Data Corp.
DARTEX Div. of Tally Corp.
Data Machines, Inc.
Datametrics Corp.
Data Systems Corp.
Digital Electronics Inc.
Digital Equipment Corp.
Digitaltronics Corp.
Dymec
Enetech Research Products Corp.
Kurt Ensellin
General Kinetics Inc.
Geo Space Corp., Computer Div.
Hewlett-Packard
The Hickok Electrical Instrument Co.
Honeywell Inc., Computer Control Div.
Industrial Products Group
Interdata
Kyrkos Corp.
Logic Corp.
Philco-Ford Corp.
Pivan Engineering Co.
Poter Instrument Co., Inc.
Randolph Computer Corp.
Baytron Computer
Scientific Control Corp.
Scientific Data Systems, Inc.
Superior Data Processing Service
System Computers Ltd.
Systems Engineering Laboratories, Inc.

CI3. COMPUTER COMPONENTS

(Asee also specific types)

Aerojet-General Corp., Von Karman Ctr.
Applied Dynamics, Inc.
The Artronic Instrument Co.
Automated Management Systems, Inc.
Beckman Instruments, Inc.
Bolt Beranek & Newman Inc.
Camwell Inc.
COMCOR, Inc.
Comput-a-Credit, Inc.
The Computer Exchange, Inc.
Consolidated Avionics
Control Data Corp.
Control Logic, Inc.
Data-Link Corp.
Data Machines, Inc.
Decision Control, Inc./Data Machines, Inc.
Digital Devices, Inc.
Digital Equipment Corp.
Electro-Mechanical Research, Inc.
Fairchild Semiconductor
Fairchild Space & Defense Systems

C14. and C15. COMPUTING SERVICES and CONSULTING SERVICES

(See SPECIAL HOSTER of Computing, Data Processing, or Consulting Services on Page 68)

C16. CONTROLS

Joseph K. Blum Co.
Bunker-Ramo Corp., Numerical Control Systems Division
Combined Data Group Inc.
Computer Supplies Co.
Emtech Research Products Corp.
Hanover & Selwyn Co.
Interdata
George Kelk Limited
Litton Electronic Business Systems
Moog Inc. Industrial Div.
Moore Associates Inc.
Philco-Ford Corp.
R. Edward Stemm, Inc.
Veeder-Root
Veeder-Root, Electronic Controls Div.

C17. CONTROLS, AUTOMATIC

Aerojet-General Corp., Industrial Systems Div.
All Data Processing Machines, Inc.
Avtron Manufacturing, Inc.
Beckman Instruments, Inc.
Bunker-Ramo Corp., Numerical Control Systems Division
Combined Data Group Inc.
Control Data Corp.
Data Processing Exchange, Inc.
Electronic Modules Corp.
Emtech Research Products Corp.
Interdata

43
PRODUCTS AND SERVICES

George Kelk Limited
Litton Electronic Business Systems
Moog Inc., Industrial Div.
Moore Associates Inc.
Motorola Inc., Government Electronics Div.
The National Cash Register Co.
Philco-Ford Corp.
Pivan Engineering Co.
Remex Electronics
Sealectro Corp.
R. Edward Stemm, Inc.
The Instrument Corp.
Universal Comptronics Corp.
Veeder-Root
Veeder-Root, Electronic Controls Div.

C18. CONTROLLS, SORTING and COUNTING
Aerojet-General Corp., Industrial Systems Div.
All Data Processing Machines, Inc.
Avtron Manufacturing, Inc.
Beckman Instruments, Inc.
Chromlog Corp.
Computer Supplies Co.
Data Processing Exchange, Inc.
Interdata
George Kelk Limited
Litton Electronic Business Systems
Nash and Harrison Ltd.
The National Cash Register Co.
Philco-Ford Corp.
Sooner Business Systems
R. Edward Stemm, Inc.
Superior Data Processing Service
Theta Instrument Corp.
Veeder-Root
Veeder-Root, Electronic Controls Div.

C19. CONVERTERS, INFORMATION
All Data Processing Machines, Inc.
Beckman Instruments, Inc.
Comput-A-Credit, Inc.
Control Data Corp.
Digital Equipment Corp.
Entech Research Products Corp.
Engineered Electronics Co.
Flight Research Div.
Friden, Inc.
GDP Div., General Precision, Inc.
Honeywell Inc., Computer Control Div.
Litton Electronic Business Systems
Namar, Inc.
The National Cash Register Co.
Philco-Ford Corp.
Superior Data Processing Service
Towson Laboratories, Inc.
Wesco Information Utility, Inc.
Wyoming Electrodata Corp.

C20. CONVERTERS, ANALOG TO DIGITAL
Adage, Inc.
Beckman Instruments, Inc.
Cohn Electronics, Inc.
COMCOR, Inc.
Comput-A-Credit, Inc.
Control Data Corp.
Control Logic, Inc.
Data-Matics Corp.
Data Systems Corp.
Digital Electronics Inc.
Digital Equipment Corp.
Diversified Integration of Data Services
Dymec
Electro-Mechanical Research, Inc.
Electronic Development Corp.
Electronic Engineering Co. of Calif.
Electronic Modules Corp.
Entech Research Products Corp.
Engineered Electronics Co.
Fairchild Space & Defense Systems
Flight Research Div.
Geo Space Corp.
Geo Space Corp., Computer Div.
GDP Div., General Precision, Inc.
Hewlett-Packard
Honeywell Inc., Computer Control Div.
Industrial Products Group Information Corporation
Instrument Products, Minneapolis Mining & Mg.
International Digitizing Corp.
Johnson Computing & Tabulating Corp.
George Kelk Limited
L machine Encoder Div.
Logic Corp.
Magnetic-Linear Systems, Inc.
Pastoriza Electronics Inc.
Philco-Ford Corp.
Pivan Engineering Co.
Raytheon Co., Communication & Data Processing Operation
Raytheon Computer Science
Scientific Data Systems, Inc.
R. Edward Stemm, Inc.
Systems Engineering Laboratories, Inc.
Systrom-Donnor Corp.
Technical Measurement Corp.
Towson Laboratories, Inc.
Universal Comptronics Corp.
Weston Laboratories Inc.
Wild & Assoc., Inc.
Wyle Laboratories
Zuse KG

C21. CONVERTERS, CARD TO MAGNETIC TAPE
Beckman Instruments, Inc.
The Computer Exchange, Inc.
Control Data Corp.
Control Logic, Inc.
DARTEX Div. of Tally Corp.
Data Operations Inc.
Data Processing Exchange, Inc.
DataStation/Los Angeles
Detroit IPC
Digi-Data Corp.
Diversified Integration of Data Services
EDCO Data Processing Corp.
Entech Research Products Corp.
Information Systems Marketing Operation (ISMO)
Interdata
Logic Corp.
Marshall, Roger D.

C22. CONVERTERS, CARD TO PAPER TAPE
The Acratoc Corp.
The Automation Co.
Control Data Corp.
Control Logic, Inc.
Creed & Co. Ltd.
DARTEX Div. of Tally Corp.
Data-Link Corp.
Data Processing Exchange, Inc.
Diversified Integration of Data Services
EDCO Data Processing Corp.
Entech Research Products Corp.
Friden, Inc.
General Electric Co., Information Systems Marketing Operation
Howard’s Automatic Devices
Interdata
Keyed Systems & Service, Inc.
Litton Electronic Business Systems
Logic Corp.
Marshall, Roger D.
Michigan Business Machines
The National Cash Register Co.
Ohrtronics, Inc.
Philco-Ford Corp.
The Pioneer Electric & Research Corp.
Pivaries Engineering Co.
Raytron
SAID, Inc.
R. Edward Stemm, Inc.
Superior Data Processing Service
Tally Corp.
Tape Center Ltd.
Tape Tabulating Inc.
Robert V. Thoren Co.
Universal Comptronics Corp.

C23. CONVERTERS, CARD TO ANALOG
Beckman Instruments, Inc.
Comput-A-Credit, Inc.
Control Data Corp.
Control Logic, Inc.
DARTEX Div. of Tally Corp.
Data-Link Corp.
Data Systems Corp.
Entech Research Products Corp.
Interdata
Logic Corp.
Non-Linear Systems, Inc.
Pastoriza Electronics Inc.
Philco-Ford Corp.
Pivan Engineering Co.
Qadar Electronics Inc.
Raytheon Computer
Scientific Control Corp.
Scientific Data Systems, Inc.
Simulators, Inc.
Systems Engineering Laboratories, Inc.
Universal Comptronics Corp.
Veeder-Root, Electronic Controls Div.
Wild & Assoc., Inc.
Wyle Laboratories
Zuse KG

C25. CONVERTERS, DIGITAL TO ANALOG
Adage, Inc.
Avtron Manufacturing, Inc.
Beckman Instruments, Inc.
COMCOR, Inc.
Comput-A-Credit, Inc.
Control Data Corp.
Control Logic, Inc.
Data-Link Corp.
Data-Matics Corp.
Decision Control Inc./Data Machines, Inc.
Digital Electronics Inc.
Digital Equipment Corp.
Diversified Integration of Data Services
Dymec
Electro-Mechanical Research, Inc.
Electronic Development Corp.
Electronic Engineering Co. of Calif.
Entech Research Products Corp.
Engineered Electronics Co.
Fairchild Space & Defense Systems
General Radio Co.
Geo Space Corp.
Geo Space Corp., Computer Div.
Hewlett-Packard
Honeywell Inc., Computer Control Div.
Industrial Products Group
Information Displays, Inc.
Information International Systems
Interdata
Logic Corp.
Non-Linear Systems, Inc.
Pastoriza Electronics Inc.
Philco-Ford Corp.
Pivan Engineering Co.
Qadar Electronics Inc.
Raytheon Computer
Scientific Control Corp.
Scientific Data Systems, Inc.
Simulators, Inc.
Systems Engineering Laboratories, Inc.
Universal Comptronics Corp.
Veeder-Root, Electronic Controls Div.
Wild & Assoc., Inc.
Wyle Laboratories
Zuse KG

C24. CONVERTERS, DIGITAL TO DIGITAL
Bolt Beranek and Newman Inc.
Control Data Corp.
Data-Link Corp.
Digital Equipment Corp.
DISCON Corp.
Entech Research Products Corp.
Engineered Electronics Co.
Geo Space Corp., Computer Div.
Hewlett-Packard
Information Displays, Inc.
Information International Systems
Interdata
Litton Electronic Business Systems
Mactec
Philco-Ford Corp.
C26. CONVERTERS, GRAPHIC TO DIGITAL

Auto-trol Corp.
Beckman Instruments, Inc.
Bolt, Beranek and Newman Inc.
CALMA Co.
Data-link Corp.
DISCON Corp.
Entech Research Products Corp.
Information Displays, Inc.
Information International Inc.
Interdata
International Digitizing Corp.
National Computer Systems, Inc.
Philo-Ford Corp.
Pivan Engineering Co.
Wang Laboratories
Wild & Assoc., Inc.

C27. CONVERTERS, MAGNETIC TAPE TO CARD

Beckman Instruments, Inc.
The Computer Exchange, Inc.
Control Logic, Inc.,
DARTEX Div. of Tally Corp.
Data-Link Corp.
Data Processing Exchange, Inc.
DataStation/Los Angeles
Detroit IPC
Diversified Integration of
Data Services
EDCO Data Processing Corp.
General Electric Corp., Information Systems Marketing Operation (ISMO)
Interdata
Johnson Computing & Tabulating Corp.
Logic Corp.
Mactex
Marksmen, Inc.
The Matrix Corp., Computer Services Div.
Memphis Methods & Tabulating Service
The National Cash Register Co.
Philo-Ford Corp.
Pivan Engineering Co.
Said, Inc.
Superior Data Processing Service
Tally Corp.
Universal Comtronics Corp.
Wild & Assoc., Inc.
Wyoming Electrodata Corp.

C28. CONVERTERS, MAGNETIC TAPE TO PAPER TAPE

Control Data Corp.
Control Logic, Inc.
DARTEX Div. of Tally Corp.
Data-Link Corp.
Data Operations Inc.
Digtronics Corp.
Diversified Integration of
Data Services
EDCO Data Processing Corp.
Engineered Electronics Co.
General Electric Co., Information Systems Marketing Operation (ISMO)
Interdata
Johnson Computing & Tabulating Corp.
Logic Corp.
Mactex
Marksmen, Inc.
Marshall, Roger D.
Michigan Business Machines
Mohawk Data Sciences Corp.
Pastoriza Electronics Inc.
Philo-Ford Corp.
Pivan Engineering Co.
Potter Instrument Co., Inc.
Said, Inc.
Superior Data Processing Service
Tally Corp.
Universal Comtronics Corp.
Wild & Assoc., Inc.
Wyoming Electrodata Corp.
Wang Laboratories Inc.
Wild & Assoc., Inc.
Wyle Laboratories
Zuse KG

C37. COUNTERS, MECHANICAL

Chrono-log Corp.
Computer Supplies Co.
Data Processing Exchange, Inc.
Electron Ohio Inc.
F. & F. Enterprises, Inc.
Frider, Inc.
The A. W. Haydon Co.
Litton Electronic Business Systems
Mast Development Co.
M. L. Councell Associates, Inc.
The National Cash Register Co.
NUMEX Corp.
Systematics of Missouri, Inc.
Veedere-Root

C38. COURSES BY MAIL

(Computer Field)

Alvisen-Draughon College
American Institute of Technology
Business Machines Institute
Combined Data Group Inc.
Comput-A-Credit, Inc.
Computer Systems Division
Computer Usage Development Corp.
Electronic Computer Programming Institute of Chicago
Electronic Computer Programming Institute of Columbus, Inc.
Electronic Computer Programming Institute of Detroit
Electronic Computer Programming Institute of Milwaukee, Wis.
Electronic Computer Programming Institute of North-eastern Ohio, Inc.
Electronic Computer Programming Institute of Westwood, N.Y.
Kansas City College of Automation
Mathematical Engineering Associates, Inc.
M.T.I. Business Schools
Oklahoma School of Banking and Business
Philco-Ford Corp.
Toledo Technical College

C39 - 42. COURSES, TRAINING AND INSTRUCTION

(See ROSTER OF COURSES, TRAINING, OR INSTRUCTION in COMPUTER PROGRAMMING, OR SYSTEMS)

D1. DATA PROCESSING ACCESSORY EQUIPMENT

Addo-X
Addo-X Sales Corp.
Addressograph Multigraph Corp.
Aerometrics
All Data Processing Machines, Inc.
Anepex Corp., Computer Products Div.
Applied Industrial Dynamics, Inc.
The Automation Co
Bay State E.D.P. Accessories
Beekman Instruments, Inc.
Beemak Plastics
Bev-Lemann Corp.
Besco Equipment & Systems Co., Inc.
Brant Computer Products
Camwill Inc.
Cedeltronics Inc.
Center Inc.
Colorado Instruments, Inc.
Comput-A-Credit, Inc.
Computer Exchange, Inc.
Computer Supplies Co.
Computrol Systems, Inc.
Connecticut Technical Corp.
COM-SHARE Inc.
Control Data Corp.
M. L. Councell Associates, Inc.
Creed & Co., Ltd.
Cyber-Tronics, Inc.
Cybertronics, Inc.
Cycle Equipment Co.
DATA-PAK
Data-link Corp.
Data Machines, Inc.
Data Management Associates, Inc.
Data Processing Exchange, Inc.
Data Processors Supply Co.
Data Products Corp.
Data Products Sales Corp.
Data Supplies, Inc.
Datronic Rental Corp.
DI/AN Controls, Inc.
Diebold Inc.
Digital Devices, Inc.
DISCON Corp.
Dysco Corp.
No Dorman Co.
Dresser Products, Inc.
Dymec
EDACO, Inc.
Electro-Mechanical Research, Inc.
Electron Ohio Inc.
Electronic Development Corp.
Electronic Engineering Co. of California
Entech Research Products Corp.
Engineered Electronics Co.
Fairfield Space & Defense Systems
Friden, Inc.
General Electric Co., Information Systems Marketing Operations (INSO)
Geo Space Corp., Computer Div.
Hallmark's International
Hewlett-Packard
Hewlett-Packard Co., Mountain View Div.
The Hickok Electrical Instrument Co.
Howard's Automatic Devices Inc.
Iva-Corp.
Ivan Corp.
Joneson Waves, Inc.
Kansas City College of Automation
Liebert Corp.
Litton Electronic Business Systems
Logic Corp.
Machine Accounting Supply Co. of Tenn.
Mactex
Gene Malor & Assoc., Inc.
L. A. Marler & Co.
Mauchly Hotg Time Sharing
Associates, Inc.
Michigan Business Machines
Monarch Metal Products, Inc.
Monarch Steel Black Book Co.
The National Cash Register Co.
National Computer Systems, Inc.
Edward Orman Systems
Ohio Envelope Co.
Obr-tronics, Inc.
Philco-Ford Corp.
The Pioneer Electric & Research Corp.
Pivan Engineering Co.
Potter Instrument Co., Inc.
Preferred Tabulating Service Inc.
Protobol Extractors
Record Control Systems
Records Systems, Inc.
Robins Data Devices, Inc.
Scientific Control Corp.
Scientific Data Systems, Inc.
Sooner Business Systems
Standard Register Co.
R. Edward Stemm, Inc.
Stromberg-Carlson Corp.
Sturgis Newport Business Forms
Superior Data Processing Service
System Engineering Laboratories, Inc.
TAB Products Corp.
TAB Products of Ill.
Tally Corp.
Tekform, Inc.
The 65 Instrument Corp.
Tola Specialties
Toshiba Laboratories, Inc.
Transistor Electronics Corp.
United States Tabulating
Binder Corp.
U.S. Deluxe, Inc.
UNIVAC Div., Sperry Rand Corp.
Virginia Panel Corp.
Western Addo-X, Inc.
George T. Zarzunick, Inc.

D2. DATA PROCESSING MACHINERY

(see also Specific Types)

Addo-X Sales Corp.
Cheshire Inc.
Comput-A-Credit, Inc.
The Computer Exchange, Inc.
Computer Supplies Co.
Computrol Systems, Inc.
Connecticut Technical Corp.
Continental Computer Associates, Inc.
Cybertronics, Inc.
DARTEX Div. of Tally Corp.
Data Automation Co., Inc.
Data Center Inc.
Data Machines, Inc.
Datacraft Inc.
Datamedia Corp.
Data Processing Exchange, Inc.
Data Systems Div.
DI/AN Controls, Inc.
Digi-Data Corp.
Digitronics Corp.
DISCON Corp.
Dymec
Electron Ohio Inc.
Electronic Development Corp.
Electronic Engineering Co. of Calif.
Entech Research Products Corp.
Engineered Electronics Co.
Fairfield Space & Defense Systems
Friden, Inc.
General Electric Co., Printer-Reader Bus. Sector
Geo Space Corp., Computer Div.
Hallmark's International
Hewlett-Packard
Hewlett-Packard Co., Mountain View Div.
Hewlett-Packard Co., Maryland
Honeywell Electronic Data Processing Div.
Information International Inc.
Interdata Corp.
Kansas City College of Automation
KAI Equipment Corp.
Gene Malor & Assoc., Inc.
Mohawk Data Sciences Corp.
Moore Associates Inc.
The National Cash Register Co.
Pacific Data Systems, Inc.
Potter Instrument Co., Inc.
Raytheon Computer
SADL, Inc.
Scientific Data Systems, Inc.
Stromberg-Carlson Corp.
Superior Data Processing Service, Inc.
TAB Products Corp.
Wild & Assoc., Inc.
George T. Zarzunick, Inc.

D3. DATA RECORDING EQUIPMENT

Adage, Inc.
Addo-X
Addo-X Sales Corp.
Addressograph Multigraph Corp.
All Data Processing Machines, Inc.
Anepex Corp., Computer Products Div.
Argonaut Associates, Inc.
The Automation Co.
Beekman Instruments, Inc.
Benson-Lehner Corp.
Bryant Business Products, Inc.
Colorado Instruments, Inc.
Computer Systems Division
Connecticut Technical Corp.
Consolidated Dynalyzer Corp.
Control Data Corp.
Cybertronics, Inc.
Dashew Business Machines, Inc.
Data Center Inc.
Datacraft Inc.
Data Machines, Inc.
Datamedia Corp.
Data Processing Exchange, Inc.
Data Systems Div.
DI/AN Controls, Inc.
Digi-Data Corp.
Digitronics Corp.
DISCON Corp.
Dymec
Electron Ohio Inc.
Electronic Development Corp.
Electronic Engineering Co. of Calif.
Entech Research Products Corp.
Engineered Electronics Co.
Fairfield Space & Defense Systems
Friden, Inc.
Geo Space Corp., Computer Div.
Hallmark's International
Hewlett-Packard
Hewlett-Packard Co., Mountain View Div.
Honeywell Electronic Data Processing Div.
Information International Inc.
Interdata Corp.
Kansas City College of Automation
KAI Equipment Corp.
Gene Malor & Assoc., Inc.
Mohawk Data Sciences Corp.
Moore Associates Inc.
The National Cash Register Co.
Pacific Data Systems, Inc.
Potter Instrument Co., Inc.
Raytheon Computer
SADL, Inc.
Scientific Data Systems, Inc.
Stromberg-Carlson Corp.
Superior Data Processing Service, Inc.
TAB Products Corp.
Wild & Assoc., Inc.
George T. Zarzunick, Inc.

COMPUTERS and AUTOMATION for June, 1967
All Data Processing Machines, Inc.
The Automation Co.
Comput-A-Credit, Inc.
Control Data Corp.
Data Acquisition Corp.
Data Processing Exchange, Inc.
Entech Research Products Corp.
Felsenthal Instruments Co.
Friden, Inc.
Litton Electronic Business Systems
Mathatronics
Superior Data Processing Service
Victor Comptometer Corp., Business Machines Group
Wang Laboratories, Inc.
Western Addo-X, Inc.
Nyle Laboratories

D7. DIFFERENTIAL ANALYZERS
Aeromechanics
Control Data Corp.
Digital Equipment Corp.
Geo Space Corp., Computer Div.
GPI Instrument Co., Inc.
Interdata

D8. DISCS, MAGNETIC
Bryant Computer Products
The Computer Exchange, Inc.
Computer Technology Ltd.
Control Data Corp.
Data Machines, Inc.
Datamatics Corp.
Data Products Corp.
Data Products Sales Corp.
Data Supplies, Inc.
Digital Development Corp.
Digital Equipment Corp.
DIPS, Inc.
General Electric Co., Information Systems Marketing Operation (ISMO)
General Precision, Inc., Librascope Group
Hamilton, Grayden & Flemmer, Inc.
Honeywell Electronic Data Processing Div.
Honeywell, Inc., Computer Control Div.
International Electro-Magnetics, Inc.
MAC Panel Co.
Memorex Corp.
The National Cash Register Co.
Scientific Data Systems, Inc.
Time Brokers, Inc.
Wild & Assoc., Inc.
Zuse KG

D9. DISPLAYS
Avtron Manufacturing, Inc.
Beckman & Whitley
Beckman Instruments, Inc.
Bolt Beranek and Newman Inc.
The Bunker-Ramo Corp.
Comput-A-Credit, Inc.
Computer Technology Ltd.
Control Data Corp.
Data Machines, Inc.
Datapoint Corp.
Electronic Data Processing Div.
DISCON Corp.
E D P Corp.
Entech Research Products Corp.
General Electric Co., Information Systems Marketing Operation (ISMO)

D10. DRUMS, MAGNETIC
Bryant Computer Products
Computer Technology Ltd.
Control Data Corp.
Data Machines, Inc.
Datamatics Corp.
Data Processing Exchange, Inc.
Digital Development Corp.
Digital Equipment Corp.
Electro-Magnetics, Inc.
Electronic Data Processing Div.
Electro-Magnetics, Inc.
Electro-Magnetic Products
Emtech Research Inc.
Felsenthal Instruments Co.
Friden, Inc.
Honeywell Electronic Data Processing Div.
Honeywell, Inc., Computer Control Div.
Information Research Associates, Inc.
International Electric-Magnetics, Inc.
Litton Electronic Business Systems
Systems Engineering Laboratories, Inc.

D11. ELECTRONIC RESEARCH
Aerojet-General Corp., Industrial Systems Div.
Aerojet-General Corp., Sacramento Plant
Aerojet-General Corp., Von Karman Ctr.
Alpha Omega Computer Systems
Automated Information, Inc.
Ernest E. Blanche & Associates, Inc.
Bowles & Tillinghast, Inc.
Brandon Applied Systems, Inc.
C-E-I-R, Inc.
Computer Sciences Corp.
Data Perspectives, Inc.
Data Processing Consultants, Inc.
Delta Data Systems, Inc.
Diversified Integration of Data Services
Documentation Inc.
EBASCO Services Inc.
Electronic Computer Programming Institute of West Rockl., N.Y.

Kurt Enslein
Halbrecht Assoc., Inc.
Hanover Leuels Co.
Hollander Assoc.
Infret Corp.
Innovation Consultants, Inc.
International Data Corp.
Kaman Nuclear
Wm. M. Kordisemon & Assoc.
Kyro Corp.
Mathemtical Engineering Associates, Inc.
Oregon Data & Co., Inc.
Peters Inc.
Planning Research Corp.
Randolph Computer Corp.
Hub S. Rien, Data Processing Consultants
SAID, Inc.
The Service Bureau Corp.
System Development Corp.
System Sciences, Inc.
Technical Operations, Inc.
Telecheck Hawaii, Inc.
UNIVAC DP Centers
University Computing Co.
URS Corp.
Martin W. Wyrod Assoc.

E2. EMPLOYMENT AGENCIES
Brentwood Personnel Associates
Halbrecht Assoc., Inc.
ID Personnel Service Agency
F. L. Mannix & Co., Inc.
National Manpower Register System
Universal Systems & Programming Service
Ed Younger & Assoc., Inc.

E3. FAXSIMILE EQUIPMENT
Beckman & Whitely
Beckman Instruments, Inc.
Data Perspectives, Inc.
Documentation Inc.
Infotran, Inc.
Michigan Business Machines

E4. FINANCIAL SERVICES
Alpha Omega Computer Systems
Austin Data Processing Service Inc.
Automated Services, Inc.
Automatic Accounting Systems, Inc.
Comput-A-Credit, Inc.
Computer Center
The Computer Center of Southern New England
The Computer Exchange, Inc.
Computer Service Consultants, Inc.
Computer Supplies Co.
Continental Computer Associates, Inc.
Cyber-Tronics, Inc.
Datronic Rental Corp.
Mo Dorman Co.
EDP Leasing Corp.
Fedder Data Centers, Inc.
Information Processing Systems, Inc.
Innovation Consultants, Inc.
Wm. M. Kordisemon & Assoc.
Products and Services

Mauchly Techniques, Inc.
Milner Bros. Prods.
Randolph Computer Corp.
Tape Tabulating Inc.
Telecheck Hawaii, Inc.
University Computing Co.

F3. FLOORS (Computer Room)
Acoustics Inc.
Data Processing Machines, Inc.
Applied Industrial Dynamics, Inc.
Besco Equipment & Systems Co., Inc.
Joseph K. Blum Co.
Construction Products, Inc.
W. L. Counsell Associates, Inc.
Created Space, Inc.
Data Processing Supplies Data Processors Supply Co.
Data Supplies, Inc.
Floating Floors Inc.
Howard's Automatic Devices
TAB Products of Ill.
Washington Aluminum Co., Inc.

F4. FORMS, CONTINUOUS
Allen Hollander Co., Inc.
Autographic Business Forms, Inc.
Baltimore Business Forms, Inc.
Bay State E.D.P. Accessories
Besco Equipment & Systems Co., Inc.
N. H. Brady Co.
Business Supplies Corp. of America
columbus Ribbon & Carbon Mfg. Co., Inc.
Combined Data Group Inc.
Computer Label Co.
Computer Supplies Co.
Computer Systems Division
Data Documents/Inc.
Data Forms Co., Inc.
Data Management Associates, Inc.
Data Supplies, Inc.
Efficiency Bindery Inc.
Ennis Business Forms, Inc.
Federal Business Products FONRCO
Forms Inc.
Graphic Controls Corp.
Philo Dans Co., Inc.
Jack M. Harrison & Assoc.
I. D. R. Co.
Machine Accounting Supply Co. of Tenn.
Moore Business Forms, Inc.
Multiforms, Inc.
Murray & Holster, Inc.
The National Cash Register Co.
Ohio Envelope Co.
Old Town Corp.
Paper Products Div., 3M Co.
Record Control Systems
Russell Business Forms Inc.
The Standard Register Co.
Superior Data Processing Service
Wheelock, Inc.
Williams & Marcus Co.

EDACO, Inc.
Federal Business Products
Hollmarts International
Moore Business Forms, Inc.
The National Cash Register Co.
Record Control Systems
Sooner Business Systems
The Standard Register Co.
Superior Data Processing Service
TAB Products Corp.
TAB Products of Ill.
U.S. Tabulating Binder Corp.

G1. GENERATORS, FUNCTION
Beckman Instruments, Inc.
CONCOR, Inc.
Dymec
Elgeneo, Inc.
Exert Electronic
General Computers Inc.
General Radio Co.
Howlett-Packard
The Hickok Electrical Instrument Co.
Honeywell Inc., Computer Control Div.
Information Displays, Inc.
Logic Corp.
System Computer Ltd.
Systron-Donner Corp.
U.S. Motors Corp.
West Eleven Inc.
Weston Instruments, Inc.

G2. GENERATORS, ELECTRONIC
Applied Dynamics, Inc.
Beckman Instruments, Inc.
COMCOR, Inc.
Computer Test Corp.
Dymec
Electronic Modules Corp.
Elgeneo, Inc.
Exact Electronics
General Computers Inc.
General Bhdio Co.
Howlett-Packard
The Hickok Electrical Instrument Co.
Honeywell Inc., Computer Control Div.
Industrial Products Group
Information Displays, Inc.
Logic Corp.
Scientific Data Systems, Inc.
Simulators, Inc.
System Computers Ltd.
Systron-Donner Corp.
Veecher-Roger, Electronic Controls Div.
West Eleven Inc.
Weston Instruments, Inc.

H1. HEADS, MAGNETIC
Bryant Computer Products
Computer Supplies Co.
Consolidated Electrodynamics Corp.
Control Data Corp.
Ferroxcube Corp.
Geo Space Corp.
Indel Inc.
Indiana General Corp., Electronics Div.
International Electron-Magletic, Inc.

H2. HEADS, READING
Benson-Lehrer Corp.
Bryant Computer Products
Computer Supplies Co.
Ferroxcube Corp.
Geo Space Corp.
Indiana General Corp., Electronics Div.
International Electron-Magnetc, Inc.
Litton Electronic Business Systems
Magnetic Devices, Inc.
The National Cash Register Co.
Norton Associates, Inc.
Pivam Engineering Co.
Potter Instrument Co., Inc.
Robins Data Devices, Inc.
Vermon Research Corp.
Wild & Assoc., Inc.

H3. HEADS, RECORDING
Bryant Computer Products
Computer Supplies Co.
Consolidated Electrodynamics Corp.
Ferroxcube Corp.
Geo Space Corp.
Indiana General Corp., Electronics Div.
Information Research Associates, Inc.
International Electron-Magnetc, Inc.
Litton Electronic Business Systems
Magnetic Devices, Inc.
The National Cash Register Co.
Norton Associates, Inc.
Pivam Engineering Co.
Potter Instrument Co., Inc.
Robins Data Devices, Inc.
Vermon Research Corp.
Wild & Assoc., Inc.

I1. INFORMATION ENGINEERING
Aerojet-General Corp., Sacramento Plant
Aerojet-General Corp., Von Karmen Ctr.
AGS Computers, Inc.
Anagram Corp.
Applied Data Research, Inc.
Aries Corp.
Automated Business Records, Inc.
Automated Information, Inc.
Bir-Matic Data Control Center's Inc.
Bryant Computer Products
The CMS Group, Inc.
Comput-A-Credit, Inc.
Computer Command & Control Co.
The Computer Exchange, Inc.
Computer Sciences Corp.
Computer Services Co.
Control Data Corp.

II2. INFORMATION RETRIEVAL
All Data Processing Machines, Inc.
The Bunker-Ramo Corp.
Computer-A-Credit, Inc.
Computer Sharing Inc.
Computer Usage Development Corp.
Control Data Corp.
Data Management Associates, Inc.
Diebold Inc.
Digital Equipment Corp.
Diversified Integration of Data Services
Fairchild Space & Defense Systems

CONTROL TECHNOLOGY, INC.
Data Dynamics, Inc.
Data Operations, Inc.
Document Control Associates ENASCO Services Inc.
Enco Corp.
Emtech Research Products Corp.
Engineered Electronics Co.
Kart Euslein
General Precision, Inc.
Librascope Group
Hern & Co.
Hollander Assoc.
Information Inc.
Information Development Co.
Information Dynamics Corp.
Information Management.
Information Research Associates, Inc.
Information Systems Co. (Div. of Lead Siegler Co.)
Information Sciences (Division, Brown Engineering Co., Inc.)
Infinim, Inc.
Infrat Corp.
Integrated Business Methods, Inc.
Knowledge Computer Assoc., Inc.
Kraussmacher Assoc.
Logic Engineering Associates
The Matrix Corp., Computer Services Div.
Mauchly Systems, Inc.
Mauchly Techniques, Inc.
Merrle Thomas Corp.
The National Cash Register Co.
The National Data Processing Corp.
Orchard-Ways & Co., Inc.
Pers Inc.
Philo-Ford Corp.
Planning Research Corp.
Programming Methods, Inc.
Programming Services, Inc.
Hub S. Batlliff, Data Processing Consultants
Reliable Systems Inc.
S.A.D., Inc.
Scantlin Electronics, Inc.
The Service Bureau Corp.
Sooner Business Systems Standards, Inc.
System Sciences, Inc.
Telecheck Hawaii, Inc.
Trident Laboratories, Inc.
URS Corp.
Western Operations, Inc.
Wolf Research and Development Corp.
Martin W. Wyrod Assoc.

COMPUTERS and AUTOMATION for June, 1967
Products and Services

Data
Dymec
Celestronics
Computer
Combined
Moog Inc. Industrial Div.
Invac Corp.
Jonker Corp.
Wm. M. Kordsiem & Assoc.
Logic Corp.
Marshall, Roger D.
Mast Development Co.
Moog Inc. Industrial Div.
The National Cash Register Co.
Ohr-tronics, Inc.
Orchard-Hays & Co., Inc.
Potter Instrument Co., Inc.
Randomatic Data Systems Inc.
Record Control Systems
R. Edward Stemm, Inc.
Straza Industries
Stromberg-Carlson Corp.
Stromberg-Carlson Corp., Data Products Div.
TAB Products of Ill.
UNIVAC Div., Sperry Rand Corp.
URS Corp.
Wild & Assoc., Inc.
Zuse KG

13. INTEGRATORS
Beckman Instruments, Inc.
CONCOR, Inc.
Geo Space Corp.
GPS Instrument Co., Inc.
System Computers Ltd.
Systron-Dorrner Corp.

14. INTEGRATORS, ELECTRONIC
Argonaut Associates, Inc.
Avtron Manufacturing, Inc.
Beckman Instruments, Inc.
CONCOR, Inc.
Data Processing Exchange, Inc.
Gynec
General Precision, Inc., Libra-
scope Group
Geo Space Corp.
GPS Instrument Co., Inc.
Pivine Engineering Co.
Scientific Data Systems, Inc.
Simulators, Inc.

15. INTEGRATORS, MECHANICAL
Argonaut Associates, Inc.
Data Processing Exchange, Inc.
Moog Inc. Industrial Div.

16. INVENTORY SYSTEMS
AAA Data Processing Center, Inc.
Aerogate-General Corp., Industrial Systems Div.
AGS Computers, Inc.
Alpha Omega Computer Aries Corp.
Austin Data Processing Service Inc.
Auto Data Corp.
Automated Data Associates
Carter & Associates
Celestronics Inc.
Cincom Data Processing Co.
Combined Data Group Inc.
Computer Applications Inc.
Computer Sciences Corp.
Computer Service Co.
Computer Service Consultants, Inc.
Computer Sharing Inc.
Computer Usage Development Corp.
Dallas Tabulating Service, Inc.
Data Control Services
Data Operations Inc.
Diebold Inc.
Distributors Data Processing
Diversified Integration of Data Services
Document Control Associates
Electronic Ohio Inc.
Fisher-Stevens Inc.
Jack W. Harrison & Assoc.
Information Dynamics Corp.
Information Management, Inc.
Information Sciences (Division, Brown Engineering Co., Inc.)
Infotran, Inc.
Inland Computer Service
Institute of Computer Technology, Inc.
Interdata
Kodak Systems & Service, Inc.
Wm. M. Kordsiem & Assoc.
E. H. Kramer & Co.
Logic Corp.
Machinery Techniques, Inc.
Medcomp Research Corp.
Merle Thomas Corp.
Michigan Business Machines
The National Cash Register Co.
National Data Processing Corp.
Neat Data Processing Services
Edward Ochman Systems
Ohr-tronics, Inc.
Orchard-Hays & Co., Inc.
Pers Inc.
Planning Research Corp.
Record Control Systems
Reliable Systems Inc.
Sooner Business Systems Standards, Inc.
Superior Data Processing Service
System Sciences, Inc.
Systems Data Processing Co.
Television Hawaii, Inc.
UNIVAC DP Centers
URS Corp.
Wheelix, Inc.
Wolf Research and Development Corp.
Zuse KG

11. KEYBOARDS
Bolt Beranek and Newman Inc.
Celetronics Inc.
Century Datacomp Systems
Colorado Instruments, Inc.
Comput-A-Credit, Inc.
The Computer Exchange, Inc.
Computer Sharing Inc.
Computer Technology Ltd.
Connecticut Technical Corp.
Data Machines, Inc.
DI/AN Controls, Inc.
Friden, Inc.
Hamilton, Grayden & Flemmer, Inc.
Honeywell Inc., Computer Control Div.
Invac Corp.
Logic Corp.
Gene Major & Assoc. Inc.
L.A. Marler & Co.

12. LIGHTS, INDICATOR
Data Systems Corp.
Dialight Corp.
Drake Mfg. Co.
Hamilton, Grayden & Flemmer, Inc.
Honeywell Inc., Computer Control Div.
The National Cash Register Co.
Transistor Electronics
USECO Div., Litton Industries

M1. MAGNETIC TIN IMPRINTING
Addressograph Multigraph Corp.
Baltimore Business Forms, Inc.
Business Supplies Corp. of America
Data Management Associates, Inc.
Data Products Sales Corp.
Data Supplies, Inc.
Ennis Business Forms, Inc.
FORBEO Forms Inc.
Moore Business Forms, Inc.
Multiforms, Inc.
The National Cash Register Co.
Sturgis Newport Business Forms
Willis and Pedersen, DP Supply Div.

M2. MEMORY SYSTEMS
Aerogate-General Corp., Industrial Systems Div.
Amplex Corp., Computer Products Div.
Barroughs Corp., Electronic Components Div.
Bryant Computer Products
Computer Devices Corp.
The Computer Exchange, Inc.
Computer Technology Ltd.
Control Data Corp.
DARTEX Div. of Tally Corp.
Data Machines, Inc.
Datametrics Corp.
Data Products Corp.
Data Products Sales Corp.
Decision Control, Inc./Data Machines, Inc.
DI/AN Controls, Inc.
Digital Development Corp.
Digital Devices, Inc.
Digital Equipment Corp.
Electronic Memories, Inc.
Electron Ohio Inc.
Engineered Electronics Co.
Fabri-Tek Inc.
Fairchild Semiconductor
Ferroxcube Corp.
General Precision, Inc.
Librascope Group
Honeywell Inc., Computer Control Div.
Moore Associates Inc.
The National Cash Register Co.
Philco-Ford Corp.
Pivan Engineering Co.
Potter Instrument Co., Inc.
Raytheon Computer
RCA Components and Devices Div.
Scientific Data Systems, Inc.
Sealectro Corp.
R. Edward Stemm, Inc.
Vermon Research Corp.
Wang Laboratories
Wild & Assoc., Inc.

M3. MULTIPLIERS
Applied Dynamics, Inc.
Beckman Instruments, Inc.
CONCOR, Inc.
Geo Space Corp.
GPS Instrument Co., Inc.
The National Cash Register Co.
R. Edward Stemm, Inc.
Systron-Dorrner Corp.

M4. MULTIPLIERS, ELECTRONIC
Applied Dynamics, Inc.
Beckman Instruments, Inc.
CONCOR, Inc.
GPS Instrument Co., Inc.
The National Cash Register Co.
Systron-Dorrner Corp.

M5. MULTIPLIERS, SERVO
Argonaut Associates, Inc.
Avtron Manufacturing, Inc.
Beckman Instruments, Inc.
CONCOR, Inc.
Engineered Electronics Co.
Geo Space Corp.
GPS Instrument Co., Inc.
The National Cash Register Co.
Scientific Data Systems, Inc.
System Computers Ltd.
Systron-Dorrner Corp.
Wild & Assoc., Inc.

O1. OFFICE MACHINES
ADD-X Sales Corp.
Addressograph Multigraph Corp.
All Data Processing Machines, Inc.
The Automation Co.
Creed & Co. Ltd.
Data Processing Exchange, Inc.
Mo Dorman Co.
Electronic Business Machines Co.
Emtech Research Products Corp.
Friden, Inc.
Information Research Associates, Inc.
Infotran, Inc.
Wm. M. Kordsiem & Assoc.
Litton Electronic Business Systems

COMPUTERS and AUTOMATION for June, 1967

49
### Products and Services

<table>
<thead>
<tr>
<th>Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic Corp.</td>
</tr>
<tr>
<td>L. A. Marler &amp; Co.</td>
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<tr>
<td>Michigan Business Machines</td>
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<tr>
<td>The National Cash Register Co.</td>
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<tr>
<td>Victor Computometer Corp., Business Machines Group</td>
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<td>Wang Laboratories</td>
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<td>Western Addo-X, Inc.</td>
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<td>Willis and Pedersen, DP Supply Div.</td>
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<tr>
<td><strong>02. OPERATIONS RESEARCH</strong></td>
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<tr>
<td>ABA Data Processing Center, Inc.</td>
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<td>Aerojet-General Corp., Industrial Systems Div.</td>
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<td>Aerojet-General Corp., Sacramento Plant</td>
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<td>Aries Corp.</td>
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<td>Barron Data Systems, Inc.</td>
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<td>Frank R. Herman &amp; Associates, Inc.</td>
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<td>Biz-Matic Data Center Control Inc.</td>
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<td>Ernest E. Blanche &amp; Associates, Inc.</td>
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<td>Boles &amp; Tillinghast, Inc.</td>
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<td>The CINS Group, Inc.</td>
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<td>Combined Data Group Inc.</td>
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<td>Computer Applications Inc.</td>
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<td>Computer Sciences Corp.</td>
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<td>Computer Service Consultants, Inc.</td>
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<td>Computer Usage Development Corp.</td>
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<td>Computrol Systems, Inc.</td>
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<td>Concap Computing Systems Control Technology, Inc.</td>
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<td>C.P. &amp; S., Inc.</td>
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<td>R. N. Dailey, Inc.</td>
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<td>Data Dynamics, Inc.</td>
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<td>Data Perspectives, Inc.</td>
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<td>Data Processing Consultants, Inc.</td>
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<td>Data Processing, Inc.</td>
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<td>Delta Data Systems, Inc.</td>
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<td>Diversified Integration of Data Services</td>
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<td>Document Control Associates ERASCO Services Inc.</td>
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<td>Ecco Consulting Inc.</td>
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<td>Fedder Data Centers, Inc.</td>
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<td>Fisher-Stevens Inc.</td>
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<td>Dr. Ivan Flores Associates</td>
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<td>Halbrecht Assoc., Inc.</td>
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<td>Philip Hughes &amp; Co., Inc.</td>
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<td>Information Control Systems Inc.</td>
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<td>Information Dynamics Corp.</td>
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<td>Information Management, Inc.</td>
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<td>Information Research Associates, Inc.</td>
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<td>Information Sciences (Division Brown Engineering Co., Data Automation)</td>
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<td>Infotrac Corp.</td>
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<td>Keystone Computer Assoc., Inc.</td>
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<td>M. W. Kordskim &amp; Assoc.</td>
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<td>Mactex Management Dynamics Ltd.</td>
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<td>Management Research International, Inc.</td>
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<td>Mathematical Engineering Associates, Inc.</td>
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<td>Mathematischer Beratungs-und Programmierdienst Maschinen Systeme Inc.</td>
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<td>McDonnell Automation Center Merle Thomas Corp.</td>
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<td>Orchard-Hays &amp; Co., Inc.</td>
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<td>Phillips-Forney Corp.</td>
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<td>Planning Research Corp. Hub S. Ratliff, Data Processing Consultants</td>
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<td>Reliable Systems Inc.</td>
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<td>Sci-Tek Computer Center Inc.</td>
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<td>P1. PANELS</td>
</tr>
<tr>
<td>All Data Processing Machines, Inc.</td>
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<tr>
<td>Applied Industrial Dynamics, Inc.</td>
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<tr>
<td>Bay State E. D. P. Accessories Bescos Equipment &amp; Systems Co. Inc.</td>
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<tr>
<td>P2. PANELS, JACK</td>
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<td>P3. PANELS, RELAY RACK</td>
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<tr>
<td>P4. PAPER TAPE</td>
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<tr>
<td>P5. PATCH CORPS</td>
</tr>
<tr>
<td>P6. PRINTERS</td>
</tr>
<tr>
<td>(see also Boards, Plotting)</td>
</tr>
<tr>
<td>P7. PLUGBOARDS</td>
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<tr>
<td>The Acratod Co.</td>
</tr>
<tr>
<td>All Data Processing Machines, Inc.</td>
</tr>
<tr>
<td>P8. PRINTERS, HIGH SPEED</td>
</tr>
</tbody>
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Products and Services

Anlex Corp.
Beckman Instruments, Inc.
Bensol-Lehner Corp.
Celestronics Inc.
The Computer Exchange, Inc.
Control Data Corp.
Control Processing Services
DANTEX Div. of Tally Corp.
Data Center Inc.
Data Machines, Inc.
Data Products Corp.
Data Products Sales Corp.
Data Systems, Inc.
Datronic Rental Corp.
educational Products, Fabric-
tek Inc.

General Electric Co., Printer-
Reader Bus. Sect.
Infotran, Inc.
Mohawk Data Sciences Corp.
The National Cash Register Co.
R. Edward Stemm, Inc.
Systems Engineering Laborato-
ries, Inc.
Victor Comptometer Corp., Bus-
iness Machines Group
Wild & Assoc., Inc.

Computer Sciences Corp.
Computer Services Co.
Computer Service Consultants,
Inc.
Computer Sharing Inc.
Computer Systems Co.
Computer Systems Division
Computer Usage Co., Inc.
Computer Usage Development
Corp.
Computing & Software, Inc.
Comress, Inc.
COM-SHARE Inc.
Contech
Control Computing Systems
Continental Computer Assocu-
ates, Inc.
Continental Systems Inc.
Control Data Corp.
Control Data Corp., Houston
Data Center
Control Processing Services
Control Technology, Inc.
C.P. & S., Inc.
Cyber-Tronics, Inc.
R. N. Dailey, Inc.
Data Tabulating Service,
Inc.
Data Center Inc.
Data Control Services
Data Et Inc.
Data Dynamics, Inc.
Data, Inc.
Data Institute, Inc.
Datamation Services Inc.
Data Operations Inc.
Data Processing, Inc.
Data Processing Service
Data Services Corp.
DataStation/Los Angeles
Data Systems Analysts, Inc.
Data Technics Corp.
Data Tronics Corp.
Datronics, Inc.
Dela Data Corp.
Delcos, Inc.
Delta Data Systems
Design Automation, Inc.
Detroit IPC
Digitel Corp.
Diversified Data Processing
Diversified Integration of Data
Services
Documentation Inc.
Document Control Associates
DPS, Inc.
EBASCO Services Inc.
Ecco Consulting Inc.
EDB Data Processing Corp.
Educators Consultant Ser-
vices, Inc.
Electronic Business Machines
Inc.
Electronic Calculus, Inc.
Electronic Computer Programming
Institute of West-
Rockl., N.Y.
Electron Data Processing,
Inc.
Electronic Processors Inc.
Electronic Tabulating Corp.
El Paso Data Services, Inc.
Kurt Enslein
E.P.G. Computer Services,
Inc.
Fedder Data Centers, Inc.
Fisher-Stevens Inc.
Dr. Ivan Flores
Fulfillment Consultants Corp.
General Electric Co., Informa-
tion Systems Marketing
Operation (ISMO)
General Procedures Corp.
General Precision, Inc.
Librascope Group
Geo Space Corp., Computer
Div.

P10. PRINTERS, KEYBOARDS

All Data Processing Machines, Inc.
Celestronics Inc.
The Computer Exchange, Inc.
COM-SHARE Inc.
Connecticut Technical Corp.
Creed & Co. Ltd.
Data Machines, Inc.
Honeywell III Electric Data
Processing Div.
Honeywell Inc., Computer Control-
Div.
Invac Corp.
Litton Electronic Business
Systems
Marksman, Inc.
Mauchly Honig Time Sharing
Associates, Inc.
The National Cash Register Co.
Pivan Engineering Co.
Potter Instrument Co., Inc.
Scientific Data Systems, Inc.
Stromberg-Carlson Corp.
Stronberg-Carlson Corp., Data
Products Div.
Systems Engineering Laborato-
ries, Inc.
Victor Comptometer Corp., Bus-
iness Machines Group
Wild & Assoc., Inc.

P11. PRINTERS, LINE-A-TIME

Champion Service Corp.
Computer-A-Credit, Inc.
Connecticut Technical Corp.
Data Machines, Inc.
Data Products Corp.
Data Products Sales Corp.
Data Systems, Inc.
Datronic Rental Corp.
educational Products, Fabric-
tek Inc.

Computer Sciences Corp.
Computer Services Co.
Computer Service Consultants,
Inc.
Computer Sharing Inc.
Computer Systems Co.
Computer Systems Division
Computer Usage Co., Inc.
Computer Usage Development
Corp.
Computing & Software, Inc.
Comress, Inc.
COM-SHARE Inc.
Contech
Control Computing Systems
Continental Computer Associ-
ates, Inc.
Continental Systems Inc.
Control Data Corp.
Control Data Corp., Houston
Data Center
Control Processing Services
Control Technology, Inc.
C.P. & S., Inc.
Cyber-Tronics, Inc.
R. N. Dailey, Inc.
Data Tabulating Service,
Inc.
Data Center Inc.
Data Control Services
Data Et Inc.
Data Dynamics, Inc.
Data, Inc.
Data Institute, Inc.
Datamation Services Inc.
Data Operations Inc.
Data Processing, Inc.
Data Processing Service
Data Services Corp.
DataStation/Los Angeles
Data Systems Analysts, Inc.
Data Technics Corp.
Data Tronics Corp.
Datronics, Inc.
Dela Data Corp.
Delcos, Inc.
Delta Data Systems
Design Automation, Inc.
Detroit IPC
Digitel Corp.
Diversified Data Processing
Diversified Integration of Data
Services
Documentation Inc.
Document Control Associates
DPS, Inc.
EBASCO Services Inc.
Ecco Consulting Inc.
EDB Data Processing Corp.
Educators Consultant Ser-
vices, Inc.
Electronic Business Machines
Inc.
Electronic Calculus, Inc.
Electronic Computer Programming
Institute of West-
Rockl., N.Y.
Electron Data Processing,
Inc.
Electronic Processors Inc.
Electronic Tabulating Corp.
El Paso Data Services, Inc.
Kurt Enslein
E.P.G. Computer Services,
Inc.
Fedder Data Centers, Inc.
Fisher-Stevens Inc.
Dr. Ivan Flores
Fulfillment Consultants Corp.
General Electric Co., Informa-
tion Systems Marketing
Operation (ISMO)
General Procedures Corp.
General Precision, Inc.
Librascope Group
Geo Space Corp., Computer
Div.

P12. PROGRAMMING SERVICES

Adams Associates
Aerojet-General Corp., Sacra-
mento Plant
Aerojet-General Corp., Von
Kosman Ctr.
AGS Computers, Inc.
J. R. Ahart, Inc.
Airline Data Service Inc.
Allied Data Processing, Inc.
Alpha Omega Computer Systems
American Data Processing Corp.
Anglo Corp.
Analytic Computing Services,
Inc.
Applied Data Research, Inc.
Applied Data Systems, Inc.
Applied Industrial Dynamics, Inc.
The Arec Corp.
Aries Corp.
Arista Data Processing Center
Auditex, Inc.
Astin Data Processing Servi-
ces, Inc.
Automated Business Records,
Inc.
Automated Concepts Inc.
Automated Data Associates
Automated Information, Inc.
Automated Instant Data, Inc.
Automated Services, Inc.
Automatic Accounting Systems,
Inc.
Auto-Tronix Universal
Barron Data Systems, Inc.
Frank R. Berman
Bias-Matic Data Control Cent-
er's Inc.
Ernest E. Blanche & Associa-
tes, Inc.
Bowers & Tillinghast, Inc.
Branch Applied Systems, Inc.
B-R Data Systems, Inc.
The Banker-Rome Corp.
Business Computer Service, Inc.
Business Machines Institute
Business Publishers Circula-
tion Service
Caltex, Inc.
Cambridge Computer Associates,
Inc.
Carter & Associates
C-E-I-R, Inc.
Celestronics Associates, Inc.
The CIMS Group, Inc.
Combined Data Group Inc.
Computab, Inc.
Comput-A-Credit, Inc.
Computations, Inc.
Computer Applications Center,
Inc.
Computer Applications Inc.
Computer Center
Computer Consultants, Inc.
The Computer Exchange, Inc.
Computer Fulfillment Corp.
Computer Methods Corp.
Computer Programmers & Ana-
lysts, Inc.
Computer Programming Concepts,
Inc.
Computer Progress, Inc.

COMPUTERS and AUTOMATION for June, 1967
51

GPS Instrument Co., Inc.
Philip Hanks & Co., Inc.
Hannover & Selwyn Co.
Jack N. Harrison & Assoc.
Hollander Assoc.
Honeywell Inc., Computer Con-
trol Div.
I. D. R. Co., Inc.
Information Control Systems
Inc.
Information Development Co.
Information Dynamics Corp.
Information Management Assoc-
iates Inc.
Information Management, Inc.
Information Processing Inc.
Information Research Associa-
tes, Inc.
Information Sciences Division
Brown Engineering Co., Inc.)
Installation Systems Co. (Div.
LEAR Siegler Co.)
Infotec, Inc.
Inerot Corp.
Institute of Computer Technol-
y, Inc.
Integrated Business Methods,
Inc.
International Data Processing
Corp.
International Digitizing Corp.
Interstate Data Services, Inc.
ITI Data Services
Johnson Computing & Tabulating
Corp.
John F. Keane Assoc., Inc.
Keltee Industries, Inc., Alex-
sandria Div.
Keyed Systems & Service, Inc.
Keystone Computer Assoc., Inc.
Kin. M. Kordismon & Assoc.
Arthur S. Kraskeley & Inc.
Litton Electronic Business
Systems
Logic Corp.
Mactex
Management Advisory Services
Management Computer Controls,
Inc.
Management Dynamics Ltd.
Management Information Serv-
wices Inc.
Management Research Interna-
tional, Inc.
Marks-Bair, Inc.
Mathematical Applications
Group, Inc.
Mathematical Engineering
Associates, Inc.
Mathematischer Beratungs-und
Programmierungsdienst
Matrix Corp., Commercial Ser-
vices Div.
Mauchly Honig Time Sharing
Associates, Inc.
Mauchly Systems, Inc.
Mauchly Techniques, Inc.
MBI Systems, Inc.
McDonnell Automation Center
Med Management Services
Medcomp Research Corp.
Merle Thomas Corp.
Miami Institute of Technology
Mid-America Computer & Data
Processing Center
Midland National Bank
M. I. D. S., Inc.
Miller Bros. Prods.
Namar, Inc.
The National Cash Register Co.
National Data Processing Corp.
Near Data Processing Services
Oxford-Hays & Co., Inc.
John K. Paden Co.
Pers Inc.
Products and Services

Philo-Ford Corp.
Phillip C. Pipher Associates, Inc.
Planning Research Corp.
Proformatics, Inc.
Programmatics Inc.
Programming Methods, Inc.
Programming Research, Inc.
Programming Services, Inc.
Programming & Systems, Inc.
Quality Programming Inc.
Randolph Computer Corp.
Hub S Ratliff, Data Processing Consultants
Reidl, Page & Associates, Inc.
Research Calculations, Inc.
SAID, Inc.
The Service Bureau Corp.
Millard D. Shriver Co. Inc.
Sigma Processing Inc.
Southwest Computing Service, Inc.
Special Studies, Inc.
Standard Programs Corp.
Statistical Tabulating Corp.
Superior Data Processing Services
System Development Corp.
System Sciences, Inc.
Systematic Services, Inc.
Systems Programming, Inc.
Systems Programming Services Inc.
Tape Center Ltd.
Technical Computing Center
Technical Information Processing
Technical Operations, Inc.
Telecheck Hawaii, Inc.
Telecomputations, Inc.
Robert V. Thoren Co.
Time Share Corp.
Toledo Technical College
Tri-Data, Inc.
Trident Laboratories, Inc.
UNIVAC DP Centers
Universal Systems & Programming Service
University Computing Co.
URS Corp.
Utility Billing, Inc.
Warren Assoc.
WESCO Information Utility, Inc.
Westat Research, Inc.
Western Operations, Inc.
Wolf Research and Development Corp.
Wyle Laboratories
Martin W. Wyrod Assoc.

Dr. Ivan Flores
Herner & Co.
Information Research Associates, Inc.
International Data Corp.
Litton Electronic Business Systems
Logic Corp.
Management Systems International
Mathematische Beratungs-und Programmierungsdiens
The National Cash Register Co.
Orchard-Rays & Co., Inc.
Philo-Ford Corp.
SAID, Inc.
Tolos Associates
University Computing Co.
John Wiley & Sons, Inc.

P14. PUNCH CARDS

Airline Data Service Inc.
The Arch Corp.
Business Supplies Corp., of America
Celestionics Inc.
Cimaco Data Processing Co.
Computer Supplies, Inc.
Datamedia Corp.
Engineered Electronics Co.
Ennis Business Forms, Inc.
Friez, Inc.
Litton Electronic Business Systems
Moore Business Forms, Inc.
The Morley Co.
The National Cash Register Co.
Sooner Business Systems
Wheeldon, Inc.
Williams & Marcus Co.

P15. PUNCH CARD ACCESSORIES

The Acratco Co.
All Data Processing Machines, Inc.
Applied Industrial Dynamics, Inc.
Beeman Plastics
Besco Equipment & Systems Co., Inc.
Business Supplies Corp., of America
Computer Supplies Co.
Computer Supplies, Inc.
Data Center Inc.
Data Documents/Inc.
Data Management Associates, Inc.
Data Processing Exchange, Inc.
Data Supplies, Inc.
Datronic Rental Corp.
DEX Services
M. Domene Co.
EDACO, Inc.
Electronic Business Machines Co.
Friez, Inc.
Hallmark International
The Hickok Electrical Instrument Co.
Howard's Automatic Devices
Jonker Corp.
Kansas City College of Automation
Kwik File Inc.
Litton Electronic Business Systems
Machine Accounting Supply Co., of Tenn.
Gene Major & Assoc., Inc.
L. A. Marler & Co.
Monarch Metal Products, Inc.
The National Cash Register Co.
Edward Ochman Systems
Potter Instrument Co., Inc.
Records Systems, Inc.
Sooner Business Systems
TAM Products Corp.
TAM Products of Ill.
U.S. Tabulating Binder Corp.
Williams & Marcus Co.
Willis and Pedersen, DP Supply Div.
George T. Zurewich Inc.

P16. PUNCH CARD MACHINES

Addo-X
All Data Processing Machines, Inc.
The Automation Co.
The Computer Exchange, Inc.
Computer Supplies Co.
Connecticut Technical Corps
Continental Computer Associates, Inc.
Control Data Corp.
Control Processing Services
Coward & Co., Ltd.
Cyber-Tronics, Inc.
Dallas Tabulating Service, Inc.
DA-PEX
Dashew Business Machines, Inc.
Data Automation Co., Inc.
Data Center Inc.
Data Processing Exchange, Inc.
Data Supplies, Inc.
Datronic Rental Corp.
DEX Services
M. Domene Co.
EDP Leasing Corp.
Electronic Business Machines Co.
El Paso Data Services, Inc.
Friden, Inc.
General Electric Co., Information Systems Marketing Operation (ISMO)
Hallmark International
The Hickok Electrical Instrument Co.
Honeywell Electronic Data Processing Div.
Kansas City College of Automation
Keyed Systems & Service, Inc.
L. A. Marler & Co.
Mactex
MAI Equipment Corp.
Gene Major & Assoc., Inc.
L. A. Marler & Co.
Miami Institute of Technology
The National Cash Register Co.
National Keypunch Services, Inc.
Potter Instrument Co., Inc.
Preferred Tabulating Service
Scientific Data Systems, Inc.
Soroban Engineering, Inc.
Superior Data Processing Service
Time Brokers, Inc.
Uptime Corp.
Williams & Marcus Co.
George T. Zurewich Inc.

R1. READERS

All Data Processing Machines, Inc.
Celestionics Inc.
Control Data Corp.
Data Reproduction Systems
Dymec
Hewlett-Packard
The Hickok Electrical Instrument Co.
Invar Corp.
The National Cash Register Co.
National Computer Systems, Inc.
Philo-Ford Corp.
Tally Corp.
Wyoming Electrodata Corp.

R2. READERS, CHARACTER

Celestionics Inc.
Control Data Corp.
Farrington Electronics, Inc.
GFL Div., General Precision, Inc.
Litton Electronic Business Systems
The National Cash Register Co.
Philo-Ford Corp.
Royer

R3. READERS, FILM

Control Data Corp.
DISCON Corp.
Houston Fearless Corp.
Information International Inc.
The National Cash Register Co.
Stromberg-Carlson Corp., Data Products Div.
Zuse KG

R4. READERS, MAGNETIC CARD

Data Processing Exchange, Inc.
Litton Electronic Business Systems
The National Cash Register Co.
Philo-Ford Corp.

R5. READERS, MAGNETIC INK

Data Processing Exchange, Inc.
DPS, Inc.
General Electric Co., Information Systems Marketing Operation (ISMO)
The National Cash Register Co.

R6. READERS, MAGNETIC TAPE

ADD-X Sales Corp.
Chrome-log Corp.
The Computer Exchange, Inc.
Computer Technology Ltd.
Control Data Corp.
M. L. Councell Associates, Inc.
Cyber-tronics, Inc.
Data Center Inc.
Data Products Sales Corp.
DAREX Div. of Tally Corp.
Data Processing Exchange, Inc.
Data Products Sales Corp.
Digital Data Corp.
Dymec
General Electric Co., Information Systems Marketing Operation (ISMO)
Geo Space Corp.
Hewlett-Packard
Hewlett-Packard Corp., Mountain View Div.
Honeywell Electronic Data Processing Div.
Litton Electronic Business Systems
Mactex
Marksman, Inc.
L. A. Marler & Co.
Mohawk Data Sciences Corp.
Products and Services

The National Cash Register Co.
Philo-Ford Corp.
Pivhan Engineering Co.
Potter Instrument Co., Inc.
Precision Instrument Co.
Reeves Soundcraft
Scientific Data Systems, Inc.
R. Edward Stemm, Inc.
Systems Engineering Laboratories, Inc.
Tally Corp.
UNIVAC Div., Sperry Rand Corp.
Wild & Assoc., Inc.
Wiltek, Inc.
Wyoming Electrodata Corp.
George T. Zarewich Inc.

R7. READERS, OPTICAL CHARACTER

Addressograph Multigraph Corp.
Celestronics Inc.
Data Operations Inc.
Electronic Business Machines Co.
Farrington Electronics, Inc.
General Electric Co., Information Systems Marketing Operation (ISMO)
Information International Inc.
Information Research Associates, Inc.
The National Cash Register Co.
National Computer Systems, Inc.
Philo-Ford Corp.
Recognition Equipment Inc.

R8. READERS, PAPER TAPE

Addo-X
ADD-X Sales Corp.
The Alling & Cory Co.
The Automation Co.
Clary Datasync Systems
Computer Technology Ltd.
Connecticut Technical Corp.
Control Data Corp.
M. L. Councell Associates, Inc.
Creed & Co. Ltd.
DARTEX Div. of Tally Corp.
Data Machines, Inc.
Data Operation Inc.
Data Products Sales Corp.
Digital Equipment Corp.
Digital Controls Corp.
Mo Dorman Co.
DPS, Inc.
Dymec
Electronic Engineering Co. of Calif.
Engineered Electronics Co.
Fabri-Tek Inc., Educational Products
Fairchild Space & Defense Systems
Farrington Electronics, Inc.
Priden, Inc.
General Electric Co., Information Systems Marketing Operation (ISMO)
Honeywell Electronic Data Processing Div.
Honeywell Inc., Computer Control Div.
Invac Corp.
L. A. Marler & Co.
The National Cash Register Co.
National Computer Systems, Inc.
Philo-Ford Corp.
Pivhan Engineering Co.
Remex Electronics
Soroban Engineering, Inc.
Tally Corp.
UNIVAC Div., Sperry Rand Corp.
Veedern-Roost, Electronic Controls Div.
Wild & Assoc., Inc.

R10. READERS, PUNCH CARD

The Automation Co.
The Computer Exchange, Inc.
Control Data Corp.
Cred & Co. Ltd.
Cyber-Technics, Inc.
DA-PEX
DARTEX Div. of Tally Corp.
Data Center Inc.
Data Machines, Inc.
Data Operations Inc.
Data Processing Exchange, Inc.
DPS, Inc.
Digi-Data Corp.
Electro Data Systems
Electronic Business Machines Co.
Freem, Inc.
General Electric Co., Information Systems Marketing Operation (ISMO)
The Hickok Electrical Instrument Co.
Honeywell Electronic Data Processing Div.

Mohawk Data Sciences Corp.
The National Cash Register Co.
Edward Ochman Systems
Ohr-tronics, Inc.
Philo-Ford Corp.
Pivhan Engineering Co.
Potter Instrument Co., Inc.
Remex Electronics
Roytron
Scientific Data Systems, Inc.
Soroban Engineering, Inc.
R. Edward Stemm, Inc.
Systems Engineering Laboratories, Inc.
Tally Corp.
Tape Center Ltd.
Tech Serv, Inc.
Teletype Corp.
Vanguard Laboratories Inc.
Western Addo-X, Inc.
Wild & Assoc., Inc.
George T. Zarewich Inc.

Honeywell Inc., Computer Control Div.
Liton Electronic Business Systems
Nactex
MAI Equipment Corp.
L. A. Marler & Co.
Mohawk Data Sciences Corp.
The National Cash Register Co.
Ohr-tronics, Inc.
Philo-Ford Corp.
Preferred Tabulating Service, Inc.
Roytron
Scientific Data Systems, Inc.
Soroban Engineering, Inc.
TAB Products of Ill.
Tape Center Ltd.
Uptone Corp.
WESCO Information Utility, Inc.

R11. RECORDING PAPERS

The Alling & Cory Co.
Beckman Instruments, Inc.
Computer Systems Division
Consolidated Electrodynamics Corp.
Howlett-Packard
Indel Inc.
Industrial Products Group
Kennedy Co.
Multicom, Inc.
The National Cash Register Co.

R12. REGISTERS, SHIFT

Celestronics Inc.
Computer Logic Inc.
Control Logic, Inc.
Data Machines, Inc.
DI/AN Controls, Inc.
Electronic Modules Corp.
Logic Corp.
Pivhan Engineering Co.
Veedern-Roost
Walkto Inc.
Wild & Assoc., Inc.
Wiltek, Inc.
Wyle Laboratories

R13. RELAYS (COMPUTER TYPES)

Beckman Instruments, Inc.
C. P. Clare & Co.
Data Machines, Inc.
Dialight Corp.
Honeywell Inc., Computer Control Div.
Leach Corp.
The National Cash Register Co.

R14. RESEARCH

Aerojet-General Corp., Industrial Systems Div.
Aerojet-General Corp., Sacramento Plant
Aerojet-General Corp., Von Karman Ctr.
Alpha Omega Computer Systems
Anadigm Corp.
Applied Data Research, Inc.
Automated Business Records, Inc.
Automated Information, Inc.
Baron Data Systems, Inc.
Frank R. Berman
Bowles & Tillinghast, Inc.

Combined Data Group Inc.
Computer-Acre Credit, Inc.
Computer Applications Inc.
Computer Command & Control Co.
Computer Sciences Corp.
Computer Service Consultants, Inc.
Computer Usage Development Corp.
Computer Systems, Inc.
Concap Computing Systems
Control Data Corp.
Control Technology, Inc.
Data Dynamics, Inc.
Data Perspectives, Inc.
Data Techics Corp.
Diversified Integration of Data Services
EBASCO Services Inc.
Educators Consultant Services, Inc.
Kurt Ensliein
Erdos & Morgan Inc.
Dr. Ivan Flores
GPS Instrument Co., Inc.
Herrera & Co.
Hollander Assoc.
Information Management, Inc.
Information Research Associates, Inc.
Infret Corp.
Institute of Computer Technology, Inc.
M. N. Kordis & Assoc.
Liton Electronic Business Systems
Management Research International, Inc.
Mathematischer Beratungs-und Programmierdienst
Nashua Systems, Inc.
Nerle Thomas Corp.
The National Cash Register Co.
Philo-Ford Corp.
Planning Research Corp.
Hub S. Ratliff, Data Processing Consultants
Sci-Tek Computer Center, Inc.
The Service Bureau Corp.
Special Studies, Inc.
System Sciences, Inc.
Technical Operations, Inc.
Tolos Associates
URS Corp.
Westat Research, Inc.
Western Operations, Inc.
Wolfe Research and Development Corp.
Wyle Laboratories

R15. RESOLVERS

Aerometries
Applied Dynamics, Inc.
CONCOR, Inc.
Geo Space Corp.
GPS Instrument Co., Inc.
Jonker Computer
The National Cash Register Co.

R16. RESOLVERS, COORDINATE TRANSFORM

Beckman Instruments, Inc.
CONCOR, Inc.
Geo Space Corp.
GPS Instrument Co., Inc.
Honeywell Inc., Computer Control Div.
Interdata
Motorola Inc., Government Electronics Div.
Products and Services

R17. RESOLVERS, PRODUCT
GPS Instrument Co., Inc.

R18. RESOLVERS, SINE-COSINE
Applied Dynamics, Inc.
Beckman Instruments, Inc.
CONCOR, Inc.
Geo Space Corp.
GPS Instrument Co., Inc.
Honeywell Inc., Computer Control Div.
Natl Engineering Co., Inc.
Simulation, Inc.
System Computers Ltd.

R19. ROBOTS
Data Processing Exchange, Inc.
Information Research Associates, Inc.
Logic Corp.
Moog Inc., Industrial Div.
Philco-Ford Corp.
Warren Assoc.

R20. RIBBONS, DATA PROCESSING
The Acrots Co.
Addressograph Multigraph Corp.
Advanced Components Co.
American Office King, Inc.
Applied Industrial Dynamics, Inc.
Business Supplies Corp. of America
Computer Supplies Co.
E.L. Councell Associates, Inc.
Data Documents Inc.
Data Forms Co., Inc.
Datamedia Corp.
Data Processing Supplies, Inc.
Data Products Sales Corp.
Data Supplies, Inc.
Datalogic Corp.
EDACO, Inc.
EDP Supply Co.
Ennis Business Forms, Inc.
Friden, Inc.
General Electric Co., Information Systems Marketing Operation (ISMO)
Hallmarkets International
Jack K. Harrison & Assoc.
Howard's Automatic Devices
Information Supplies Corp.
Litton Electronic Business Systems
Machine Accounting Supply Co. of Tenn.
Gene Major & Assoc. Inc.
L. A. Marler & Co.
Michigan Business Machines
The National Cash Register Co.
Edward Ochman Systems
Old Town Corp.
Record Media Products
Williams & Marcus Co.
Willis and Pedersen, DP Supply Div.
George T. Zurewicz Inc.

S1. SCANNERS
Addressograph Multigraph Corp.
All Data Processing Machines, Inc.
Beckman & Whitley, Inc.
Beckman Instruments, Inc.
Celetronics Inc.
Control Data Corp.

S2. SERVOMECHANISMS
Aerojet-General Corp., Sacramento Plant
Beckman Instruments, Inc.
Bunker-Ramo Corp., Numerical Control Systems Division
CONCOR, Inc.
Continental Computer Associates, Inc.
Control Data Corp.
GPI Instrument Co., Inc.
Hamilton, Grayden & Flemmer, Inc.
Kaman Nuclear
Moog Inc., Industrial Div.
System Computers Ltd.
Theta Instrument Corp.
Zuse KG

S3. SIMULATORS
AAR Corp.
Aerojet-General Corp., Von Karman Ctr.
Applied Dynamics, Inc.
The Bunker-Ramo Corp.
Computer Sciences Corp.
Computer Usage Development Corp.
Compass, Inc.
Data Perspectives, Inc.
Digital Electronics Inc.
Diversified Integration of Data Systems
Kurt Enslin
Geo Space Corp.
GPS Instrument Co., Inc.
Interdata
Moog Inc., Industrial Div.
Scientific Data Systems Inc.
Simulators Inc.
Special Studies, Inc.
Tally Corp.
UNITED DP Centers
WMS Corp.
Warren Assoc.

S4. STORAGE SYSTEMS
All Data Processing Machines
Dynac
Educators Consultant Services, Inc.
Fairchild Space & Defense Systems
Farrington Electronics Inc.
Heiwlett-Packard
Information International Inc.
Information Research Associates, Inc.
Instrument Products, Minnesota Mining & Mfg. Co.
George Kelk Limited
Litton Industries Electron Tube Div.
Logic Corp.
Nash and Harrid Ltd.
The National Cash Register Co.
National Computer Systems, Inc.
Non-Linear Systems, Inc.
Philo-Ford Corp.
Pivan Engineering Co.
Quidar Electronics Inc.
Strada Industries
Technical Operations, Inc.
Towson Laboratories, Inc.
Wyle Laboratories

S5. STORAGE SYSTEMS, MAGNETIC
Ampex Corp., Computer Products Div.
Bryant Computer Products
The Computer Exchange, Inc.
DARTEX Div. of Tally Corp.
Data Machines, Inc.
Data Processing Exchange, Inc.
Data Processing Supplies, Inc.
Data Products Corp.
Data Products Sales Corp.
Data Supplies, Inc.
Decision Control, Inc./Data Machines, Inc.
DI/AN Controls, Inc.
Digital Development Corp.
Digital Devices, Inc.
EDACO, Inc.
Electron Ohio Inc.
Engineered Electronics Co.
Fabri-tek, Inc.
General Precision, Inc., Librascope Group
Honeywell Electronic Data Processing Div.
Litton Electronic Business Systems
The National Cash Register Co.
Philo-Ford Corp.
Pottor Instrument Co., Inc.
Scientific Data Systems, Inc.
R. Edward Steem, Inc.
Vermont Research Corp.

S6. SWITCHES
Data Supplies, Inc.
Dialight Corp.
F. & F. Enterprises, Inc.
The Hivepoint Electrical Instrument Co.
Micro Switch
The National Cash Register Co.
SM Instrument Products
USECO Div., Litton Industries
Veeder-Root

S7. SWITCHES, STEPPING
C. P. Clare & Co.
The A. W. Hayden Co.
The National Cash Register Co.

S8. SYNCHROS
Natl Engineering Co., Inc.

S9. SYSTEMS ENGINEERING
AAI Corp.
Aerojet-General Corp., Industrial Systems Div.
Aerojet-General Corp., Sacramento Plant
Aerojet-General Corp., Von Karman Ctr.
AGS Computers, Inc.
J. R. Ahart, Inc.
All Data Processing Machines, Inc.
Alphatech Computer Systems
American Data Processing Corp.
Applied Industrial Dynamics, Inc.
The Arco Corp.
Aries Corp.
Arista Data Processing Center
Automated Business Records, Inc.
Automated Information, Inc.
Avtron Manufacturing, Inc.
Baron Data Systems, Inc.
Beckman Instruments, Inc.
Bistatic Data Control Center's Inc.
Bowles & Tillinghast, Inc.
Brandan Applied Systems, Inc.
Bryant Computer Products
Bunker-Ramo Corp., Numerical Control Systems Division
The ChMS Group, Inc.
Compress, Inc.
Computer Applications Inc.
Computer Networks Corp.
Computer Sciences Corp.
Computer Services Corp.
Computer Systems Co.
Computer Usage Development Corp.
Computer Data Systems
Connecticut Technical Corp.
Continental Computer Associates, Inc.
C. P. C. S., Inc.
R. N. Dalley, Inc.
Data Institute, Inc.
Data Machines, Inc.
Data Management Associates, Inc.
Data Systems Analysts, Inc.
Data Systems Corp.
Data Technologies Corp.
Design Automation, Inc.
Digital Equipment Corp.
DISCON Corp.
Diversified Integration of Data Services
Documentation Inc.
Document Control Associates
Duluth Avionics
EBASCO Services Inc.
Eco Consulting Inc.
Electric-Mechanical Research, Inc.
Electronic Business Machines Co.
Entech Research Products Corp.
Erondo & Morgan
Fedder Data Centers, Inc.
Dr. Ivan Flores
Geo Space Corp.
Products and Services

Invac Corp.
Liton Electronic Business Systems
National Blank Book Co.
The National Cash Register Co.
Edward Ochman Systems
Pivan Engineering Co.
Potter Instrument Co., Inc.
Record Control Systems
Boyron Systems Engineering Laboratories, Inc.
Tally Corp.
Western Computer Tape Co.
Williams & Marcus Co.
Willis and Pedersen, DF Supply Div.

T8. TAPE, PAPER, FILING SYSTEMS

The Acratod Co.
The Automation Co.
Bay State E. D. P. Accessories
Computer Supplies Co.
Data Management Associates, Inc.
Data Processing Supplies, Inc.
Data Supplies, Inc.
Mo Dorman Co.
EDP Supply Co.
Efficiency Indery Inc.
Friden, Inc.
Howard's Automatic Devices
Invac Corp.
The National Cash Register Co.
Edward Ochman Systems
Ohio Envelope Co.
Record Control Systems
Scientific Data Systems, Inc.
Sooner Business Systems
TMB Products Corp.
TMB Products of Ill.
Wheeldex, Inc.
Willis and Pedersen, DF Supply Div.

T9. TAPE, PAPER, PUNCHES

Addo-X
Addo-X Sales Corp.
The Automation Co.
Colorado Instruments, Inc.
Computer Supplies Co.
Computer Technology Ltd.
Connecticut Technical Corp.
M. L. Councell Associates, Inc.
Creed & Co. Ltd.
DARTEX Div. of Tally Corp.
Data Supplies, Inc.
Mo Dorman Co.
Dymec
Fabri-Tek Inc., Educational Products
Friden, Inc.
General Electric Co., Information Systems Marketing Operation (ISMO)
Honeywell Electronic Data Processing Div.
Honeywell Inc., Computer Control Div.
Howard's Automatic Devices
Invac Corp.
Keyed Systems & Service, Inc.
Liton Electronic Business Systems
L. A. Marler & Co.
Mathatronics
The National Cash Register Co.
Edward Ochman Systems
Ohr-tronics, Inc.
Pacific Data Processing Co.
Philco-Ford Corp.
Pivan Engineering Co.
Potter Instrument Co., Inc.

Record Control Systems
Boyron Systems Engineering Laboratories, Inc.
Soroban Engineering, Inc.
H. Edward Stearn, Inc.
Systems Engineering Laboratories, Inc.
Tally Corp.
Tape Tabulating Inc.
Tech Serv., Inc.
Teletype Corp.
Western Addo-X, Inc.
Wild & Assoc., Inc.
Williams & Marcus Co.
Willis and Pedersen, DF Supply Div.
George T. Zarewicz, Inc.

T10. TAPE, PAPER, READERS

(See 88: Readers, Paper Tape)

T11. TELEMETRY SYSTEMS

Addressograph Multigraph Corp.
Bailey Meter Co.
Computer Applications Inc.
Control Data Corp.
Electro-Mechanical Research, Inc.
Hughes Aircraft Co.
Infotrac, Inc.
Interdata
George Kelk Limited
Moore Associates Inc.
Motorola Inc., Government Electronics Div.
Pivan Engineering Co.
Quidar Electronics Inc.
Raytheon Computer
Scientific Control Corp.
Scientific Data Systems, Inc.
Stellametrics, Inc.
System Computers Ltd.
Towson Laboratories, Inc.

T12. THIN-FILMS, MAGNETIC

Aerojet-General Corp., Von Karman Ctr.
Celanese Plastics Co.
E. I. du Pont de Nemours & Co., Inc.
Fabri-Tek Inc.
General Precision, Inc., Librascope Group
Hughes Aircraft Corp.
The National Cash Register Co.
Wild & Assoc., Inc.

T13. TIME-SHARED COMPUTER SERVICES

(See SPECIAL ROSTER OF COMMERCIAL, TIME-SHARED COMPUTING SERVICES ON PAGE 66)

T14. TIMING DEVICES

Addo-X Sales Corp.
All Data Processing Machines, Inc.
Atron Manufacturing, Inc.
Beckman Instruments, Inc.
Chrono-log Corp.
M. L. Councell Associates, Inc.
Dialight Corp.
DI/AN Controls, Inc.
Digital Devices, Inc.
E D P Corp.
Electronic Engineering Co. of Calif.
Engineered Electronics Co.
The A. W. Haydon Co.
Honeywell Electronic Data Processing Div.
Hughes Aircraft Co.
Interdata
Logic Corp.
Pivan Engineering Co.
Walker Inc. G. C. Wilson & Co.

T15. TRANSFORMERS

Aladdin Electronics
Austen Data Processing Service Inc.
Geo Space Corp.
Hughes Aircraft Co.
Inductor Engineering, Inc.
Virginia Electronics Inc., Zuse KG

T16. TRANSFORMERS, PULSE

Aladdin Electronics
The Artron Instrument Co.
Electro-Mechanical Research, Inc.
El-Bad Manufacturing Co.
Inductor Engineering, Inc.

T17. TRANSLATING EQUIPMENT

All Data Processing Machines, Inc.
Atron Manufacturing, Inc.
Connecticut Technical Corp.
Data Products Sales Corp.
Data Systems Corp.
Logic Corp.

T18. TYPEWRITERS, ELECTRIC, CONTROLLED

All Data Processing Machines, Inc.
The Automation Co.
Comput-A-Credit, Inc.
Computer Technology Ltd.
COM-SHARE Inc.
Connecticut Technical Corp.
DARTEX Div. of Tally Corp.
Data Processing Exchange, Inc.
DI/AN Controls, Inc.
Honeywell Inc., Computer Control Div.
Howard's Automatic Devices
Invac Corp.
Kansas City College of Automation
Marksmen, Inc.
L. A. Marler & Co.
Michigan Business Machines
The National Cash Register Co.
Philco-Ford Corp.
Scientific Data Systems, Inc.
Soroban Engineering, Inc.
Wild & Assoc., Inc.
George T. Zarewicz, Inc.

T19. USED DATA PROCESSING EQUIPMENT AND SUPPLIES

Abbott & Lind Inc.
The Automation Co.
The Computer Exchange, Inc.
Computer Supplies Co.
Cyber-Tronics, Inc.
DA-PEX
Data Processing Exchange, Inc.

DataStation/Los Angeles
DataStation of New York, Inc.
Datromental Corp.
No Dorman Co.
EDACO, Inc.
Global Tabulating Equipment Corp.
L. Goldstein & Son, Inc.
Information Processing Systems, Inc.
Michigan Business Machines

VI. VISUAL OUTPUT DEVICES

Aerojet-General Corp., Von Karman Ctr.
All Data Processing Machines, Inc.
Amplex Corp., Computer Products Div.
Argonaut Associates, Inc.
AVtron Manufacturing, Inc.
Beckman & Whitley
The Banker-Bemo Corp.
Cohu Electronics, Inc.
Comput-A-Credit, Inc.
Computer Technology Ltd.
Control Data Corp.
Dialight Corp.
DISCON Corp.
Dymec
E D P Corp.
General Electric Co., Information Systems Marketing Operation (ISMO)
Geo Space Corp., Computer Div.
GFD Div., General Precision, Inc.
Honeywell Electronic Data Processing Div.
Hughes Aircraft Co.
Information Displays, Inc.
Information International Inc.
Information Research Associates, Inc.
Infotran, Inc.
Logic Corp.
Motorola Inc., Government Electronics Div.
The National Cash Register Co.
Philco-Ford Corp.
RCA Electronic Components and Devices
Scientific Data Systems, Inc.
Stratol Industries
Stroumberg-Carlson Corp., Data Products Div.
Systems Engineering Laboratories, Inc.
Technical Operations, Inc.
Theta Instrument Corp.
Transistor Electronics Corp.
Veeder-Root
Veeder-Root, Electronic Controls Div.
West Eleven Inc.

56

COMPUTERS and AUTOMATION for June, 1967
Introducing

the DATA 620-I
new systems computer

The DATA/620-I integrated circuit computer is the newest member of the DATA/620 family of system computers. DATA/620-I fills the gap between general purpose and special purpose computers. It belongs in a system, and solves problems previously considered too difficult or expensive for computer solution.

Designed for faster problem solution the DATA/620-I has a bigger instruction set, integrated circuit reliability, is smaller, has one-half the components, and costs less than any computer in its class.

DATA/620-I comes complete with software, field-proven and refined on the DATA/620.

Extremely compact, the DATA/620-I requires only 10" of 19" rack space. It's available with memory modules from 1024 to 32,768 words of 16 or 18 bits, and with a selection of control, arithmetic and I/O facilities, including D.M.I.'s unique Micro-Exec.

Price: $13,900 with 4096 words of 16 bit memory, including ASR 33 teletype.

We are very proud of our new DATA/620-I, and would like to tell you more in a fact filled brochure. Please write for one.

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Tel. (714) 646-9371 TWX (910) 506-1358
Division of DECISION Control, Inc.
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<thead>
<tr>
<th>State</th>
<th>Companies and Addresses</th>
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<tbody>
<tr>
<td>ALABAMA</td>
<td>General Electric Co., Information Systems Marketing Organization (ISMO) 13430 N. Black Canyon Hwy., Phoenix, Ariz. 85029</td>
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<td>Southwest Computing Service, 2255 W. Desert Cove Rd., Phoenix, Ariz. 85029</td>
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<td>Data Tronics Corp., 2000 N. Central Ave., Phoenix, Ariz. 85004</td>
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<td>ARIZONA</td>
<td>General Electric Co., Information Sciences Div., Chatsworth, Cal. 91311</td>
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<td>Data Tronics Corp., 13430 N. Black Canyon Hwy., Phoenix, Ariz. 85029</td>
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<td>Southwest Computing Service, 2255 W. Desert Cove Rd., Phoenix, Ariz. 85029</td>
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<td>ARKANSAS</td>
<td>Data Tronics Corp., 310 Towson Ave., Ft. Smith, Ark. 72901</td>
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<td>CALIFORNIA</td>
<td>Aerojet-General Corp., 1100 W. Hollyvva St., Azusa, Cal. 91702</td>
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<td>Comet Computing Systems, 1268 Maryland Blvd., El Segundo, Cal. 90245</td>
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<td>Tolos Associates, 2440 Bancroft Way, Berkeley, Calif. 94704</td>
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<td>Advance Data Systems, 9261 W. Third St., Beverly Hills, Cal. 90213</td>
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<td>Pacific Data Processing Co., 9601 Wilshire Blvd., Beverly Hills, Cal. 90210</td>
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<td>The Bunker-Ramo Corp., 8433 Fahlbrook Ave., Canoga Park, Cal. 91304</td>
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<td>Profimatics, Inc., 7060 Owensmouth Ave., Canoga Park, Cal. 91303</td>
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<td>Litton Encoder Div., 20105 Wilshire Blvd., Chatsworth, Cal. 91311</td>
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<td>Serendipity Associates, 33060 Cosycroft Ave., Los Angeles, Cal. 90045</td>
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<td>Millard D. Shriver Co., Inc., 9231 E. Whitmore St., El Monte, Cal. 91717</td>
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<td>Computer Sciences Corp., 650 N. Sepulveda Blvd., El Segundo, Cal. 90245</td>
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<td>The Matrix Corp., Computer Service Div., 635 Hawaii St., El Segundo, Cal. 90245</td>
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<td>Wyle Laboratories, 1269 Maryland Blvd., El Segundo, Cal. 90245</td>
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<td>National Cash Register, 921 N St., Fresno, Cal. 93721</td>
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<td>Hollanders Associates, P.O. Box 2276, Fullerton, Cal. 92533</td>
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<td>General Precision, Inc., Librascope Group, 808 Western Ave., Glendale, Cal. 91201</td>
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<td>Celestronics Inc., 4311 East Seventh St., Long Beach, Cal. 90004</td>
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<td>Cimaco Data Processing Co., 5600 Paramount Blvd., Long Beach, Cal. 90005</td>
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<td>Coastel Technology, Inc., 3450 E. Spring St., Long Beach, Cal. 90006</td>
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<td>TimeShare Inc., 745 Distel Dr., Los Altos, Cal. 94022</td>
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<td>Alpha Omega Computer Systems, 6505 Wilshire Blvd., Los Angeles, Cal. 90045</td>
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<td>Business Machines Institute, 916 W. Olympic Blvd., Los Angeles, Cal. 90015</td>
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<td>Computer Usage Development Corp., 8939 Sepulveda Blvd., Los Angeles, Cal. 91606</td>
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<td>Data Corp., 8616 La Tijera, Los Angeles, Cal. 90045</td>
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<td>Data Perspectives, Inc., 1724 Silver Lake Blvd., Los Angeles, Cal. 90026</td>
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<td>Data Processing Exchange, Inc., 1100 Glendon Ave., Los Angeles, Cal. 90024</td>
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<td>DataStation/Los Angeles, 1401 W. Olympic Blvd., Los Angeles, Cal. 90015</td>
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<td>Pacific Data Centers of California, Inc., 330 N. Laurel Ave., Los Angeles, Cal. 90048</td>
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<td>Information Systems Co., (Div. Lear Siegler Co.), 1111 Wilshire, Los Angeles, Cal. 90014</td>
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<td>Milner Bros. Prods., 8500 Blackburn Ave., Los Angeles, Cal. 90040</td>
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<td>Planning Research Corp., 1100 Glendon Ave., Los Angeles, Cal. 90024</td>
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<td>Programamatics Inc., 12011 San Vicente Blvd., Los Angeles, Cal. 90049</td>
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<td>Record Media Products, 109 W. 9th St., Los Angeles, Cal. 90015</td>
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<td>Superior Data Processing Service, 5429 E. Beverly Blvd., Los Angeles, Cal. 90022</td>
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<td>Computing and Software, Inc., 6155 Van Nuys Blvd., Los Angeles, Cal. 90045</td>
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<td>Panorama City, Cal. 91402</td>
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<td>Delta Data Corp., 1710 San Pablo Ave., Pinole, Cal. 94546</td>
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<td>Inland Computer Service, 3664 Market St., Riverside, Cal. 92501</td>
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<td>Aerojet-General Corp., Sacramento Plant, Hwy. 50 &amp; Nimbus Rd., Sacramento, Cal. 95813</td>
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<td>Diversified Integration of Data Services, 1745 Saratoga Ave., San Jose, Cal. 95129</td>
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<td>URS Corp., 1700 South El Camino Real, San Mateo, Cal. 94042</td>
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<td>Bolt Beranek and Newman Inc., 2126 So. Lyon St., Santa Ana, Cal. 92703</td>
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<td>Engineered Electronics Co., 1441 E. Chestnut Ave., Santa Ana, Cal. 92702</td>
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<td>Information Development Co., 1621 East 17th St., Santa Ana, Cal. 92701</td>
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<td>Business Data Processing, 3760 State St., Santa Barbara, Cal. 93105</td>
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<td>Dashow Business Machines, Inc., 2219 Main St., Santa Monica, Cal. 90406</td>
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<td>System Development Corp., 2500 Colorado Ave., Santa Monica, Cal. 90406</td>
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<td>Informatics Inc., 5430 Van Nuys Blvd., Sherman Oaks, Cal. 91401</td>
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<td>Programming Services, Inc., 18455 Burbank Blvd., Tarzana, Cal. 91356</td>
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<td>Management Monitor Inc., 10049 Crenshaw Blvd., Sorance, Cal. 90045</td>
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<td>Heliodyne Corp., 7810 Sunset Ave., Van Nuys, Cal. 91405</td>
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<td>Programming Research, Inc., 6642 Van Nuys Blvd., Van Nuys, Cal. 91405</td>
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<td>COLORADO</td>
<td>Kaman Nuclear, Garden of Gods Rd., Colorado Springs, Colo. 80907</td>
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<td>Auto-Tronics, Universal, 444 Sherman</td>
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<td>Denver, Colo. 80203</td>
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<td>Delco, Inc., 360 Western Federal Savings Bldg., Denver, Colo. 80202</td>
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<td>Westat Research Inc., 6464 W. 14th St., Denver, Colo. 80215</td>
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<td>Auto Datta Corp., 300 East Hampden, Suite 220, Englewood, Colo. 80110</td>
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IBM announces:
big computer features for the “little” 1130.

Now you can get a faster, more powerful, more responsive IBM 1130 Computing System. We’ve just introduced five new CPU models. We’ve extended the range of input/output speeds and on-line storage capacities. And we’ve improved data communications capabilities for the 1130.

In short, we’ve enhanced the present 1130 line so it can grow as your needs grow. Now you can get an 1130 that will tackle the big jobs—an 1130 with bigger capacities and faster throughput.

**Five new CPU’s.** Now you have a wider choice of core sizes and speeds. We’ve added five new CPU’s for a total of nine. You can get an 1130 with 4K, 8K, 16K or 32K words of core, depending on your requirements. And you have a choice of two memory speeds.

**Up to five disk drives.** Now you can hook on up to five disk drives for an on-line capacity of 2,560,000 words. All five disks can be operated simultaneously. Since the drives use interchangeable disk cartridges, you can amass unlimited off-line storage.

**Faster printers and readers.** Take your pick of three printers with speeds ranging up to 600 lines a minute. Choose one of four card readers with speeds ranging from 300 to 1000 cards a minute. You can even add an optical mark page reader. With an expanded line of I/O gear, you can put the 1130 to work on a wider range of applications.

**Improved data communications.** With the improved Synchronous Communications Adapter, the 1130 can become an economical terminal for your
SYSTEM/360 while retaining its stand-alone computing power. The adapter can transmit at 2400 bits per second in either of two modes—Synchronous Transmit Receive (STR) or Binary Synchronous (BSC) depending on your interfaces and programs. With the addition of BSC, you get more efficient, more flexible data transmission because it is code-insensitive.

**New Disk Monitor System.** IBM supports the 1130 with a Disk Monitor System which includes a FORTRAN compiler, a Supervisor Program, a Disk Utility Program, an Assembly Program and a Subroutine Library.

Then, there’s quite an array of application programs already available for the 1130. In the engineering fields, for example, there are programs for civil engineering, programs for petroleum engineering and exploration, programs for gear and spring design. There are scientific subroutines, linear programming and project control programs. There are commercial subroutines for applications like payroll and cost accounting.

**Room for growth.** With the expanded capabilities of the IBM 1130, you have a system that will grow with you. As your company or department grows, as your data processing applications become more numerous, your 1130 will keep right in step. Extended capabilities, powerful programming support, versatility, growth potential. These are the things you get, along with IBM service, from the 1130, our “little” computer.
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New York, N.Y. 10018
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New York, N.Y. 10017
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New York, N.Y. 10018
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New York, N.Y. 10038
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New York, N.Y. 10021
Infret Corp.
80 Wall St.
New York, N.Y. 10005
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New York, N.Y. 10010
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New York, N.Y. 10017
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545 Eighth Ave.
New York, N.Y. 10018
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645 Madison Ave.
New York, N.Y. 10022
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114 East 28th St.
New York, N.Y. 10016
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New York, N.Y. 10003
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New York, N.Y. 10006
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New York, N.Y. 10017
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114 4th Ave.
New York, N.Y. 10003
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New York, N.Y. 10017
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New York, N.Y. 10004
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1350 Avenue of the Americas
New York, N.Y. 10019
Special Studies, Inc.
122 East 42nd St.
New York, N.Y. 10017
Standard Programs Corp.
324 Madison Ave.
New York, N.Y. 10017
Theodore Stein
400 Madison Ave.
New York, N.Y. 10017
Tabulating Inc.
19 Union Sq. N.
New York, N.Y. 10003
Time Brokers, Inc.
485 Fifth Ave.
New York, N.Y. 10017
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2951 Stanley Place
Oceanside, N.Y. 11572
Computer Fulfillment Corp.
345 Bayles Ave.
Port Washington, N.Y. 11050
Kurt Esslein
42 East Ave.
Rochester, N.Y. 14604
Infotec, Inc.
80 Urban Ave.
Westbury, N.Y. 11590
Electronic Computer Programming Inst. of West Rock.
235 Hamanock Ave.
White Plains, N.Y. 10605
Mathematical Applications Group, Inc.
100 South Broadway
White Plains, N.Y. 10605
Systems Programming, Inc.
175 Main St.
White Plains, N.Y. 10601
Marks-Beaer, Inc.
5586 Main St.
Williamsville, N.Y. 14221
Celestron Associates, Inc.
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Valhalla, N.Y. 10595
Cowan-Maler & Associates
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Winston-Salem, N.C. 27102
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Atkinson Sq. Suite 800
Cincinnati, O. 45202
Continental Systems, Inc.
205 W. Fourth St.
Cincinnati, O. 45202
Medcom Research Corp.
3333 Vine St.
Cincinnati, O. 45220
1070 East 152nd St.
Cleveland, Ohio 44110
Champion Service Corp.
19001 Villivue Rd.
Cleveland, O. 44419
Computer Systems Co.
1470 St. Charles Ave.
Cleveland, O. 44107
Battelle Memorial Institute
Columbus Laboratories
505 King Ave.
Columbus, O. 43201
Management Information Services, Inc.
42 E. Gay St.
Columbus, O. 43215
WATA College of Automation
415 E Broad St.
Columbus, O. 43215
Belgian, Page & Associates, Inc.
1521 East Broad St.
Columbus, O. 43205
J. R. Ahart, Inc.
627 Salem Ave.
Dayton, O. 45406
Data Services Corp.
2325 Springboro Rd.
Dayton, O. 45401
Meda Management Services
Talbot Tower
Dayton, O. 45402
The National Cash Register Co.
Main & "K" Sts.
Dayton, O. 45409
Barron Data Systems, Inc.
3556 Monroe St.
Toledo, O. 43606
Cadec, Inc.
3023 Sylvania Ave.
Toledo, O. 43613
Carter & Associates
271 Oakgrove
Toledo, O. 43613
Toledo Technical College
119 W. Central Ave.
Toledo, O. 43610
National Data Processing Corp.
2950 Mohoning Ave.
Youngstown, O. 44509
Record Control Systems
P. O. Box 2281
No. Side P. O. Office
Youngstown, O. 44504
OKLAHOMA
Sooner Business Systems
1100 Northeast 36th St.
Oklahoma City, Okla. 73111
Statistical Computing Ctr., Inc.
2501 North Stiles
Oklahoma City, Okla. 73105
Indel Inc.
6749 East 12 St.
Tulsa, Okla. 74112
International Digitizing Corp.
P. O. Box 7337
Tulsa, Okla. 74105
Southwestern Computing Service, Inc.
1631 South Boston Ave.
Tulsa, Okla. 74119
OREGON
American Data Services, Inc.
3110 S.W. Bancroft St.
Portland, Ore. 97201
Automated Information, Inc.
309 S.W. Fourth Ave.
Portland, Ore. 97204
PENNSYLVANIA
Computer Usage Development Corp.
Barclay Bldg.
City Line and Belmont Aves.
Bala Cynwyd, Pa. 19004
Innovation Consultants, Inc.
4 E. State St.
Doylestown, Pa. 18901
Continental Computer Associates, Inc.
Beaver Hill
Jenkintown, Pa. 19046
Mauchly Associates, Inc.
Montgomeryville, Pa. 18936
Mauchly Systems, Inc.
Box 279
Montgomeryville, Pa. 18936
M.A.P. Inc.
835 E. Germantown Pike
Norristown, Pa. 19401
Auerbach Corp.
124 North Broad St.
Philadelphia, Pa. 19107
Computer Command and Control Co.
204 D Arch Sts.
Philadelphia, Pa. 19104
Datatronics, Inc.
2531 Dickinson St.
Philadelphia, Pa. 19146
I. D. R. Co., Inc.
325 Chestnut St.
Philadelphia, Pa. 19106
Institute for Scientific Information
325 Chestnut St.
Philadelphia, Pa. 19106
Johnson Computing & Tabulating Corp.
5900 Darwin St.
Philadelphia, Pa. 19140
Kardon Computing Ctr.
219 North Broad St.
Philadelphia, Pa. 19107
Univac Div., Sperry Rand Corp.
P. O. Box 8100
Philadelphia, Pa. 19104
UNIVAC DP Centers
P.O. Box 8100
Philadelphia, Pa. 19101
The CIMS Group, Inc.
Penn Sharraton
Pittsburgh, Pa. 15230
Computab, Inc.
4002 Murray Ave.
Pittsburgh, Pa. 15217
Data Processing Service
908 Penn. Ave.
Pittsburgh, Pa. 15222
Eco Consulting Inc.
615 Washington Rd.
Pittsburgh, Pa. 15228
Information Systems for Management, Inc.
323 Third Ave.
Pittsburgh, Pa. 15222
Mechanized Business Inc. (MBI)
Koppers Bldg.
Pittsburgh, Pa. 15219
Pers Inc.
Box 7304
Pittsburgh, Pa. 15213
Keystone Computer Assoc., Inc.
409 North Eastern Rd.
Willow Grove, Pa. 19090
Philo-Ford Corp.
3900 Welsh Rd.
Willow Grove, Pa. 19066

(Please turn to page 65)
ROSTER OF ORGANIZATIONS SUPPLYING ENTIRE EQUIPMENTS FOR COMPUTING AND DATA PROCESSING SYSTEMS

For specific information about the organizations listed in this roster, please see their entries in the "Roster of Organizations" beginning on page 6.

ALABAMA

Data Processors Supply Co. Box 3263
Huntsville, Ala. 35810

ARIZONA

General Electric Process Computer Business Section
2255 W. Desert Cove Rd.
Phoenix, Ariz. 85029

CALIFORNIA

Autonetics
3370 Miraloma Ave.
Anaheim, Cal. 92803

Pacific Ordinance & Electronics Co. (Codamite Div.)
1747 W. Lincoln Ave.
Anaheim, Cal. 92803

Concor, Inc.
1335 S. Claudina St.
Anaheim, Cal. 92803

Ampex Corp., Computer Products Div.
P.O. Box 329
Culver City, Cal. 90231

Data Products Corp.
8385 Warner Dr.
Culver City, Cal. 90230

Non-Linear Systems, Inc. P.O. Box N
Del Mar, Cal. 92014

The Matrix Corp., Computer Services Div.
635 Hawaii St.
El Segundo, Cal. 90245

Wyle Laboratories
120 Maryland St.
El Segundo, Cal. 90245

National Cash Register
921 N St.
Fresno, Cal. 93721

General Precision, Inc., Librascope Group

808 Western Ave.
Glendale, Cal. 91201

Electronic Memories, Inc.
12621 Chadron Ave.
Hawthorne, Cal. 90250

Celetronics Inc.
4311 East Seventh St.
Long Beach, Cal. 90804

Tynshire Inc.
745 Distel Dr.
Los Altos, Cal. 94022

Control Data Corp.
8616 La Tijera
Los Angeles, Cal. 90045

Data Processing Exchange, Inc.
1100 Glendon Ave., Suite 1547
Los Angeles, Cal. 90024

Houston Fearless Corp.
11801 W. Olympic Blvd.
Los Angeles, Cal. 90064

Superior Data Processing Service
5429 E. Beverly Blvd.
Los Angeles, Cal. 90022

West Eleven Inc. (Distributor for Hitachi)
11836 Vicente Blvd.
Los Angeles, Cal. 90049

Data Associates
1160 Terra Bella Ave.
Mountain View, Cal. 94040

Fairchild Semiconductor
1313 Fairchild Dr.
Mountain View, Cal. 94042

Hewlett-Packard Co., Mountain View Div.
600 Middlefield Rd.
Mountain View, Cal. 94040

Decision Control, Inc./Data Machines, Inc.
1590 Monrovia Ave.
Newport Beach, Cal. 92660

Datametics Corp.
8217 Lankershim Blvd.
North Hollywood, Cal. 91605

Hewlett-Packard
1501 Page Mill Rd.
Palo Alto, Cal. 94304

Beckman Instruments, Inc.
2200 Wright Ave.
Rochester, Cal. 94041

Linton Industries Electron Tube Div.
960 Industrial Rd.
San Carlos, Cal. 94070

Moore Associates Inc.
815 American St.
San Carlos, Cal. 94070

Stronberg-Carlson Corp., Data Products Div., P.O. Box 2449

1895 Hancock St.
San Diego, Cal. 92112

No Dorman Co.
785 Mission St.
San Francisco, Cal. 94103

Clary Datacom Systems
404 Juniper Sierra (P.O. Box 1)
San Gabriel, Cal. 91776

Friden, Inc., A Division of The Singer Co.
2350 Washington Ave.
San Leandro, Cal. 94577

Belt Beranek and Newman Inc., Data Equipment Div.
2126 So. Lyon St.
Santa Ana, Cal. 92705

Engineered Electronics Co.
1441 E. Chestnut Ave.
Santa Ana, Cal. 92702

Pacific Data Systems, Inc.
644 Young St.
Santa Ana, Cal. 92705

Raytheon Computer
2700 South Fairview St.
Santa Ana, Cal. 92704

Standard Computer Corp.
563 East Young St.
Santa Ana, Cal. 92705

Calma Co.
345 Mathew St.
Santa Clara, Cal. 95050

Scientific Data Systems, Inc.
1649 Seventeenth St.
Santa Monica, Cal. 90404

DISTRICT OF COLUMBIA

Computer Usage Development Corp.
7315 Wisconsin Ave., N.W.
Washington, D.C. 20014

FLORIDA

Systems Engineering Laboratories, Inc.
P.O. Box 9148
Mt. Lauderdale, Fla. 33310

Soroban Engineering, Inc.
P.O. Box 1690
Melbourne, Fla. 32901

H D P Corp.
1900 North Mills Ave.
Orlando, Fla. 32803

HAWAII

Telecheck Hawai, Inc.
1481 South King St.
Honoalii, Hawaii 96814

ILLINOIS

R. Edward Stearn, Inc.
17 W 495 Lake St.
Addison, Ill. 60101

Datronic Rental Corp.
5210 Wesley Terrace
Chicago, Ill. 60656

Global Tabulating Equipment Corp.
1229 W. Washington Blvd.
Chicago, Ill. 60607

Pivan Engineering Co.
3335 West Peterson Ave.
Chicago, Ill. 60645

Tab Products of Ill.
5151 N. Harlem
Chicago, Ill. 60650

Victor Comptometer Corp., Business Machines Group
3900 N. Rockwell
Chicago, Ill. 60618

The Pioneer Electric & Rsh. Corp.
745 Circle Ave.
Forest Park, Ill. 60130

Drake Manufacturing Co.
4626 N. Olcott Ave.
Harwood Heights, Ill. 60656

Simulators, Inc.
3611 Commercial Ave.
Northbrook, Ill. 60062

COLORADO

Auto-trol Corp.
6621 West 50th Ave.
Arvada, Colo. 80002

Motor Data Science Corp.
245 Columbine St.
Denver, Colo. 80206

CONNECTICUT

Connecticut Technical Corp.
3000 Main St.
Hartford, Conn. 06120

Technical Measurement Corp.
441 Washington Ave.
North Haven, Conn.

Raytron
165 Dexter Ave.
West Hartford, Conn. 06110

COMPUTERS and AUTOMATION for June, 1967

62
Entire Equipments

Addo-X Sales Corp.
6549 West North Ave.
Oak Park, Ill. 60302
All Data Processing Machines, Inc.
105 Hinricher St.
Willow Springs, Ill. 60490

LOUISIANA
Statistical Service Corp.
714 Grand Ave.
Shreveport, La. 71110

MARYLAND
Tomsun Laboratories, Inc.
3500 Parklilbe Ave.
Baltimore, Md. 21211
Jonker Corp.
26 North Summit Ave.
Gaithersburg, Md. 20760
Central Processing Services
5809 Annapolis Rd.
Hyattsville, Md. 20784
Androcka, Inc.
10550 Wheeler St.
Kensington, Md. 20795
Bison Electronics, Inc.
2120 Industrial Pkwy.
Montgomery Industrial Park
Silver Spring, Md. 20904

MASSACHUSETTS
Adage, Inc.
107 Commonwealth Ave.
Boston, Mass. 02215
Anelex Corp.
150 Causeway St.
Boston, Mass. 02114
DI/AN Controls, Inc.
944 Dorchester Ave.
Boston, Mass. 02125
L. Goldstein & Son, Inc.
177 Milk St.
Boston, Mass. 02109
Honeywell Inc., Computer Control Div.
Old Connecticut Path
Franklin, Mass. 01740
Digital Equipment Corp.
146 Main St.
Maynard, Mass. 01754
Control Logic, Inc.
50 Stoughton Rd.
Natick, Mass. 01760
GPS Instrument Co., Inc.
188 Needham St.
Newton, Mass. 02167
Research Calculations, Inc.
200 Boylston St.
Newton, Mass. 02167
Wang Laboratories Inc.
836 North St.
Tewksbury, Mass. 01876
Cybernetics Inc.
132 Calvary St.
Waltham, Mass. 02154
Invac Corp.
26 Fox Rd.
Waltham, Mass. 02154
Numec Corp.
223 Crescent St.
Waltham, Mass. 02154
Spear, Inc.
335 Bear Hill Rd.
Waltham, Mass. 02154
Namac, Inc.
534 Boston Post Rd.
Wayland, Mass. 01770
Honeywell Electronic Data Processing Div.
60 Walnut St.
Wellesley Hills, Mass. 02181
MAT Equipment Corp.
100 Providence Hwy.
Westwood, Mass. 02090

MICHIGAN
Technical Advisors, Inc.
104 West Huron St.
Ann Arbor, Mich. 48108
Burroughs Co.
6071 Second Ave.
Detroit, Mich. 48232
Bryant Computer Products (Div.
of Electro-City Corp.)
850 Ladd Rd.
Walled Lake, Mich. 48086

MINNESOTA
Control Data Corp.
B1003 34th Ave. South
Minneapolis, Minn. 55440
National Computer Systems, Inc
1915 South 6th St.
Minneapolis, Minn. 55415
Control Data Corp.
2401 N. Fairview Ave.
St. Paul, Minn. 55113

MISSOURI
Kansas City College of Automation
3220 Main St.
Kansas City, Mo. 64111

NEW JERSEY
Keuffel & Esser Co.
300 Adams St.
Hoboken, N.J. 07030
Ok-tronics, Inc.
305 West Grand Ave.
Montvale, N.J. 07645
Electro-Mechanical Research
P.O. Box 44
Princeton, N.J. 08540
Quindor Electronics Inc.
60 Fadem Rd.
Springfield, N.J. 07081
Random Data Systems, Inc.
344 West State St.
Trenton, N.J. 08618
Pacific Data Systems Inc.
1557 Oakland Ave.
Union, N.J. 07083

NEW YORK
Digirtronics Corp.
1 Albertson Ave.
Albertson, N.Y. 11507
Manhatty Honig Tone Sharing
Associates, Inc.
116 North Central Ave.
Hartsdale, N.Y. 10530
Information Displays, Inc.
102 East Sandford Blvd.
Mt. Vernon, N.Y. 10550
Monarch Metal Products, Inc.
MacArthur Ave.
New Windsor, N.Y. 12550
Addo-X, Inc.
845 Third Ave.
New York, N.Y. 10022
Analytic Computing Services, Inc.
1140 Broadway
New York, N.Y. 10001

NEW YORK
The Automation Co.
342 Madison Ave.
New York, N.Y. 10017
Comput-A-Credit, Inc.
Pan Am Bldg.
200 Park Ave.
New York, N.Y. 10017
Computer Applications Inc.
555 Madison Ave.
New York, N.Y. 10022
The Computer Exchange, Inc.
30 East 42nd St.
New York, N.Y. 10017
Cyber-Tronics, Inc.
915 Broadway
New York, N.Y. 10010
Datastation of New York, Inc.
666 Third Ave.
New York, N.Y. 10117
Thames Elektron Co.
100 William St.
New York, N.Y. 10038
Randolph Computer Corp.
200 Park Ave.
New York, N.Y. 10017
Digital Electronics Inc.
Amen Court
Plainview, N.Y. 11803
Potter Instrument Co., Inc.
151 Sunnyside Blvd.
Plainview, L.I., N.Y. 11803
Electronic Business Machines Co.
625 Bard Ave.
Staten Island, N.Y. 10310
Wild & Associates, Inc.
200 Michael Dr.
Syracuse, N.Y. 13217
InfoTel, Inc.
80 Urban Ave.
Westbury, N.Y. 11590
Gene Motor & Assoc. Inc.
139 Nepperhan Ave.
Yonkers, N.Y. 10701

NORTH CAROLINA
Raleigh School of Data Processing, Inc.
334 South Salisbury St.
Raleigh, N.C. 27601

OHIO
Addressograph-Multigraph Corp.
1200 Babbitt Rd.
Cleveland, O. 44117
Liebert Corp.
500 Dana Ave.
Columbus, O. 43223
The National Cash Register Co.
South Main & K Sts.
Dayton, O. 45409
Bailey Meter Co.
Wickliffe, O. 44092

OKLAHOMA
Sooner Business Systems
1100 Northeast 36th St.
Oklahoma City, Okla. 73111

OREGON
Argonaut Associates, Inc.
Box K
Beaverton, Ore. 97005

Pennsylvania
Chrono-log Corp.
2503 West Chester Pike
Broomall, Pa. 19008
Continental Computer Associates, Inc.
Beaver Hill
Jenkintown, Pa. 19046
NSCADP, Inc.
835 E. Germantown Pike
Norristown, Pa. 19401
General Electric Co., Printer-
Reader Business Section
511 North Broad St.
Philadelphia, Pa. 19123
Univac Div., Sperry Rand Corp.
P.O. Box 8100
Philadelphia, Pa. 19104
Data Systems Corp.
16 Elizabeth St.
West Conshohocken, Pa.
19428
Philo-Ford Corp., (Div. of
Ford Motor Co.)
3900 Welsh Rd.
Willow Grove, Pa. 19098

TENNESSEE
Memphis Methods & Tabulating
Service
50 N. Main St.
Memphis, Tenn. 38103

TEXAS
Recognition Equipment Inc.
1560 West Mockingbird Lane
Dallas, Texas 75235
Scientific Control Corp.
14000 Distribution Way
Dallas, Tex. 75234
Geo Space Corp.
5803 Glennmont
Houston, Tex. 77056
Mactex (Div. of McDonnell Co.)
Suite 400/500 Jefferson Blvd.
Houston, Tex. 77002

Vermont
Vermont Research Corp.
P.O. Drawer
Springfield, Vt. 05150

Virginia
Keitel Industries, Inc.
5901 Edsall Rd.
Alexandria, Va. 22314
General Kinetics Inc.
211 Shirley Rd.
Arlington, Va. 22206

Washington
Computer Supplies Co.
2301 Fifth Ave.
Seattle, Wash. 98121
Daily Corp.
1310 Mercer St.
Seattle, Wash. 98109

Wyoming
Wyoming Electrodata Corp.
309 E. Main
Riverton, Wyo.
ROSTER OF ORGANIZATIONS PROVIDING LEASING
OR FINANCIAL SERVICES IN THE COMPUTER FIELD

For specific information about the organizations listed in this roster, please see their entries in the "Roster of Organizations" beginning on page 8.

ARIZONA
General Electric Co., Information Systems Marketing Operation (ISMO), 13430 N. Black Canyon Hwy., Phoenix, Ariz. 85029

ARKANSAS
Data Tronic Corp., 310 Towson Ave., Ft. Smith, Ark. 72901

CALIFORNIA
Concor, Inc., 1335 S. Claudina St., Anaheim, Cal. 92803
Systrom-Dunnor Corp., 800 Galindo St., Concord, Cal. 94520
Data Products Sales Corp., 8535 Warner Dr., Culver City, Cal. 90231
Datacraft Inc., 15225 S. Main St., Gardena, Cal. 90247
General Precision, Inc., LibraScope Group, 808 Western Ave., Glendale, Cal. 91201
Remex Electronics, 5250 West El Segundo Blvd., Hawthorne, Cal. 90250
Alpha Omega Computer Systems, 6505 Wilshire Blvd., Los Angeles, Cal. 90048
Control Data Corp., 8616 La Tijera, Los Angeles, Cal. 90045
Data Processing Exchange, Inc., 1100 Glendon Ave., Suite 1647, Los Angeles, Cal. 90024
Wilmar Bros. Prods., 8000 Blackburn Ave., Los Angeles, Cal. 90048
Superior Data Processing Service, 5429 E. Beverly Blvd., Los Angeles, Cal. 90022
Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Cal. 94804
Mo Dorman Co., 785 Mission St., San Francisco, Cal. 94103
Clary Datacomp Systems, 404 Junipero Sierra (P.O. Box 1), San Gabriel, Cal. 91776

WASHINGTON, D. C.

FLORIDA
Systems Engineering Laboratories, Inc., P. O. Box 9148, Ft. Lauderdale, Fla. 33310

HAWAII
Telecheck Hawaii, Inc., 1491 South King St., Honolulu, Hawaii 96814

ILLINOIS
Datronic Rental Corp., 5210 Wesley Terrace, Chicago, Ill. 60656
Global Tabulating Equipment Corp., 1229 N. Washington Blvd., Chicago, Ill. 60607
William N. Kordiemon Associates, 100 West Monroe St., Chicago, Ill. 60603
Addo-X Sales Corp., 6549 West North Ave., Oak Park, Ill. 60302
All Data Processing Machines, Inc., 105 Hinricher St., Willow Springs, Ill. 60480

KENTUCKY
DA-PFX (Data Processing Equipment Exchange Co.), 334 Francis Bldg., Louisville, Ky. 40202

LOUISIANA
EDACO, Inc., 348 Baronne St., New Orleans, La. 70112
Statistical Service Corp., 714 Grand Ave., Shreveport, La. 71110

MARYLAND
Computer Usage Development Corp., 22 West Rd., Towson, Baltimore, Md. 21204
Fedder Data Centers, Inc., 307 S. Sharp St., Baltimore, Md. 21201

MASSACHUSETTS
Wang Laboratories Inc., 120 North St., Tewksbury, Mass. 01876
MAT Equipment Corp., 100 Providence Hwy., Westwood, Mass. 02090

MICHIGAN
Michigan Business Machines, 1375 E. Square Lake Rd., Troy, Mich. 48004

MINNESOTA
Control Data Corp., 8100 34th Ave. South, Minneapolis, Minn. 55440

NEW YORK
Information Displays, Inc., 102 East Sandford Blvd., Mt. Vernon, N.Y. 10550
The Computer Exchange, Inc., 30 East 42nd St., New York, N.Y. 10017
Cyber-Tronics, Inc., 915 Broadway, New York, N.Y. 10010
Datastat of New York Inc., 729 3rd Ave., New York, N.Y. 10017

NEW JERSEY
Ohr-tronics, Inc., 305 West Grand Ave., Montvale, N.J. 07645

OHIO
Data Services Corp., 2835 Springboro Rd., Dayton, O. 45409
The National Cash Register Co., South Main & K Sts., Dayton, O. 45409

OKLAHOMA
Sooner Business Systems, 1600 Northeast 36th St., Oklahoma City, Okla. 73111

PENNSYLVANIA
Continental Computer Associates, Inc., Beaver Hill
Roster of Computing, Data Processing and Consulting Services

(Cont'd. from page 61)

RHODE ISLAND

Litton Electronic Business Systems - Monroe International Inc. 955 Waterman Ave. E. Providence, R.I. 02914
The Computer Center of Southern N.E. Rm. 520, Industrial Bank Bldg. 111 Westminter St. Providence, R.I. 02903

TENNESSEE

Memphis Methods & Tabulating Service 56 N. Main St. Memphis, Tenn. 38103

TEXAS

Data Automation Co., Inc. 4050 Cash Rd. Dallas, Tex. 75247
University Computing Co. 1300 Frito-Lay Tower Dallas, Tex. 75235

VIRGINIA

Anagram Corp. 6560 Backlick Rd. Springfield, Va. 22150

WASHINGTON

Computer Supplies Co. 2301 Fifth Ave. Seattle, Wash. 98121

WISCONSIN

Midland National Bank 201 West Wisconsin Ave. Milwaukee, Wis. 53203

WYOMING

Wyoming Electrodata Corp. 309 E. Main Riverton, Wyo.

ENGLAND

System Computers Ltd. Fossmay, Newcastle-on-Tyne. 6 Northumberland, England

ROSTER OF COMPUTING, DATA PROCESSING AND CONSULTING SERVICES

(Cont'd. from page 63)

WASHINGTON

Computer Supplies, Inc. 2301 Fifth Ave. Seattle, Wash. 98121
Northwest Management Services, Inc. 1107 Pike St. Seattle, Wash. 98101
The Arcie Corp. N 4407 Division Spokane, Wash. 99207
Stephens-Nelsen Data Processing Ctr. N. 711 Lincoln Spokane, Wash. 99201
Agency Service Bureau, Inc. 10103 Bristol Ave., S.W. Tacoma, Wash. 98499

Roster of Equiptments (Cont'd. from page 63)

ENGLAND


GERMANY

Zuse KG Grosse Industriestrasse 19-21 643 Bad Hersfeld, Germany
Mathematischer Beratungs-und Programmierungsdienst Rechezentrums Rhin-Ruhr Kleppingstrasse 26 4600 Dortmund, W. Germany

Hamburg 14

Zentrale der Datenverarbeitung GmbH Schuckertstr. 15-17 2000 Hamburg 14

WEST VIRGINIA

Busines Computer Service, Inc. 124 Court St. Charleston, W. Va. 25301

WISCONSIN

Kyes Corp. 5420 Lake Mendota Dr. Madison, Wis. 53705
Midland National Bank 201 West Wisconsin Ave. Milwaukee, Wis. 53203

CANADA

Nash and Harrison Ltd. 1355 Wellington St. Ottawa 3, Ontario, Canada

ENGLAND

English Electric Computers Ltd. Kidsgrove, Stoke-on-Trent Staffordshire, England

GERMANY

Zuse KG Grosse Industriestrasse 19-21 643 Bad Hersfeld, Germany
ROSTER OF COMMERCIAL TIME-SHARED COMPUTING SERVICES

For specific information about the organizations listed in this roster, please see their entries in the "Roster of Organizations beginning on page 8.

ALABAMA
Southern Computer Service 200 T.V. Rd., P.O. Box 100 Dothan, Ala. 36301

ARIZONA
General Electric Co., Information Systems Marketing Operation (ISMO) 13430 N. Black Canyon Hwy., Phoenix, Ariz. 85029

CALIFORNIA
California Computer Products Inc. (CalComp) 305 North Muller St., Anaheim, Calif. 92803 Aerojet-General Corp., Ven Karman Ctr. 1100 W. Hollyvyle St., Azusa, Calif. 91702
Concap Computing Systems Claremont Hotel, Suite 226 Berkeley, Cal. 94710
The Bunker-Ramo Corp. 8433 Fallbrook Ave., Canoga Park, Cal. 91304
Computer Sciences Corp. 650 N. Sepulveda Blvd., El Segundo, Cal. 90245
Control Technology, Inc. 3450 E. Spring St., Long Beach, Cal. 90806
Tynshare Inc. 745 Distel Dr., Los Altos, Cal. 94022
Computer Usage Development Corp. 8939 Sepulveda Blvd., Los Angeles, Cal. 90066
Control Data Corp. 860 La Tijera
Los Angeles, Cal. 90045
Superior Data Processing Service 5429 E. Beverly Blvd., Los Angeles, Cal. 90022
Milner Bros. Prods. 8000 Blackburn Ave., Los Angeles, Cal. 90048
Decision Controls, Inc./Data Machines, Inc. 1590 Monrovia Ave., Newport Beach, Cal. 92660
Medical Billing Service, Inc. 3023 Summit St., Oakland, Cal. 94609

Inland Computer Service 3664 Market St., Riverside, Cal. 92501
Aerojet-General Corp., Sacramento Plant Hwy 50 & Nimbus Rd. P.O. Box 15047, Sacramento, Cal. 95813
Diversified Integration of Data Services 1745 Saratoga Ave., San Jose, Cal. 95129
UBS Corp. 1700 South El Camino Real San Mateo, Cal. 94402
Bolt Beranek and Newman Inc., Data Equipment Div. 2126 S. Lyon St., Santa Ana, Cal. 92705
Information Development Co. 1621 East 17th St., Santa Ana, Cal. 92701

COLORADO
Kaman Nuclear Garden of Gods Rd., Colo. Springs, Colo. 80907
Delcos, Inc. 360 Western Federal Savings Bldg., Denver, Colo. 80202

CONNECTICUT
The Bunker-Ramo Corp., Business & Industry Div. 445 Fairfield Ave., Stamford, Conn. 06904

DISTRICT OF COLUMBIA
C-E-I-R, Inc. 5272 Reid Rd., Washington, D.C. 20016
Computer Usage Development Corp. 7315 Wisconsin Ave., N.W., Washington, D.C. 20014
Philip C. Pipher Associates, Inc. 1000 16th St., N.W., Washington, D.C. 20036
Photo Data, Inc. 601 G St., N.W., Washington, D.C. 20001

FLORIDA
Data Dynamics, Inc. P.O. Box 6641 MacDill AFB, Fla. 33608

GEORGIA
Bowles & Tillinghast, Inc. 3400 Peachtree N.E., Atlanta, Ga. 30326
Computrol Systems, Inc. 361 E. Paces Ferry Rd.N.E., Atlanta, Ga. 30305

HAWAII
Automation Training Ctr. (Div. of Honolulu Business College) 1111 Bishop St., Honolulu, Hawai 96813
Telecheck Hawaii, Inc. 1481 South King St., Honolulu, Hawai 96814

ILLINOIS
Com-Share Inc. 4001 West Devon Ave., Chicago, Ill. 60646

INDIANA
Automated Services, Inc. 7009 N. River Rd., Ft. Wayne, Ind. 46805
C A S H, Inc. 300 E. Fall Creek Blvd., N. Dr., Suite 401 Indianapolis, Ind. 46205

IOWA
Data Technics Corp. 508 10th St., Des Moines, Ia. 50309

LOUISIANA
Statistical Service Corp. 714 Grand Ave., Shreveport, La. 71110

MARYLAND
Computer Usage Development Corp. 22 West Rd., Towson, Baltimore, Md. 21204
Documentation Inc. 4833 Rugby Ave., Bethesda, Md. 20014
System Sciences, Inc. 4905 Del Ray Ave., Bethesda, Md. 20014
Wolf Research and Development Corp. 5001 Annapolis Rd., Bladensburg, Md. 20710
Ernest E. Blanch & Associates, Inc. 10335 Kensington Pkwy., Kensington, Md. 20795
WESTCO Information Utility, Inc. White Flint Science Park Kensington, Md. 20795

MASSACHUSETTS
Keydata Corp. 375 Technology Sq., Cambridge, Mass. 02139
Warren Associates 433 Putnam Ave., Cambridge, Mass. 02139
Digital Equipment Corp. 146 Main St., Maynard, Mass. 01754
Research Calculations, Inc. 200 Boylston St., Newton, Mass. 02167
Wang Laboratories Inc. 036 North St., Teckeshury, Mass. 01676

MICHIGAN
Com-Share, Inc. 2200 Fuller Rd., Suite 201B Ann Arbor, Mich. 48105
Technical Advisors, Inc. 104 West Huron St., Ann Arbor, Mich. 48108
Detroit TPC 22150 Greenfield Rd., Oak Park, Mich. 48237

MINNESOTA
Control Data Corp.
Time-Shared Computing Services

8100 34th Ave. South
Minneapolis, Minn. 55440

NEBRASKA
Mid-America Computer & Data Processing Ctr.
306 W.O.W. Bldg., 14th & Farnam
Omaha, Nebr. 68102

NEW HAMPSHIRE
Time Share Corp.
Lyne Rd.
Box 301
Hanover, N.H. 03755

NEW JERSEY
Computer Sharing Inc.
363 Wedgewood Dr.
Blackwood, N.J. 08012
Aries Corp.
1144 Clifton Ave.
Clifton, N.J. 07013
ITT Data Services (Div. of International Telephone and Telegraph Corp.)
Rte. 17 & Garden State Pkwy.
Paramus, N.J. 07652
Applied Data Research, Inc.
Route 206 Center
Princeton, N.J. 08540

NEW YORK
Computer Systems Div.
189 Van Rensselaer St.
Buffalo, N.Y. 14210
Graphic Controls Corp.
189 Van Rensselaer St.
Buffalo, N.Y. 14210
Mauchly Honig Time Sharing Associates, Inc.
116 North Central Ave.
Hartsdale, N.Y. 10530
Computer Tabulating Corp.
126 Main
Hempstead, N.Y. 11550
Dr. Frank R. Berman
Engle Hill Court
Huntington, N.Y. 11743
Datamation Services Inc.
381 Sunrise Hwy.
 Lynbrook, N.Y. 11563
Aero Performance, Inc.
67 Hillside Ave.
Manhasset, N.Y. 11030
Allied Data Processing, Inc.
41 East 42nd St.
New York, N.Y. 10017
Automated Concepts Inc.
60 East 42nd St.
New York, N.Y. 10017
Compugold Credit, Inc.
Pan Am Bldg.
200 Park Ave.
New York, N.Y. 10017
Computer Applications Inc.
555 Madison Ave.
New York, N.Y. 10022
Data Network Corp.
460 Twelfth Ave.
New York, N.Y. 10018
EDCO Data Processing Corp.
226 West 37th St.
New York, N.Y. 10118
General Procedures Corp.
150 East 52nd St.
New York, N.Y. 10022
Infrasys Corp.

80 Wall St.
New York, N.Y. 10005
Matrix Corp., Computer Services Div.
350 Madison Ave.
New York, N.Y. 10017
M.I.D.S., Inc.
545 Eighth Ave.
New York, N.Y. 10018
Programming Methods Inc.
51 Madison Ave.
New York, N.Y. 10006
Programm & Services, Inc.
33 West 42 St.
New York, N.Y. 10036
Rambush Computer Corp.
200 Park Ave.
New York, N.Y. 10017
Scantlin Electronics, Inc.
60 Broad St.
New York, N.Y. 10044
Time Brokers, Inc.
405 Fifth Ave.
New York, N.Y. 10017
Kurt Ensilin
42 East Ave.
Rochester, N.Y. 14604
Gene Musco & Assoc. Inc.
138 Nepperhan Ave.
Yonkers, N.Y. 10701

NORTH CAROLINA
Arista Data Processing Ctr.
436 Goldfloss St.
Winston-Salem, N.C. 27107

OHIO
Computer Programming Concepts, Inc.
Atkinson Sq. - Suite 802
Cincinnati, O. 45246
Champion Service Corp.
19001 Villawood Rd.
Cleveland, O. 44119
Management Information Services, Inc.
42 E. Gay St.
Columbus, O. 43215
Data Services Corp.
2035 Springboro Rd.
Dayton, O. 45401
The National Cash Register Co.
South Main & K Sts.
Dayton, O. 45409
Celtex, Inc.
3023 Sylvania Ave.
Toledo, O. 43613

OKLAHOMA
Statistical Computing Ctr., Inc.
2501 North Stiles
Oklahoma City, Okla. 73105
Southwestern Computing Service, Inc.
1831 South Boston Ave.
Tulsa, Okla. 74119

PENNSYLVANIA
UNITAC Data Processing Ctr.
Main Office at P.O. Box
8100
Philadelphia, Pa. 19101
Computab Inc.
4202 Murray Ave.
Pittsburgh, Pa. 15217
Data Processing Service

900 Penn Ave.
Pittsburgh, Pa. 15222
Mechanized Business Inc. (MBI)
Koppers Bldg.
Pittsburgh, Pa. 15219
Philco-Ford Corp.
3900 Welsh Rd.
Willow Grove, Pa. 19090

RHODE ISLAND
The Computer Center of Southern New England
Rm. 520, Industrial Bank Bldg.
111 Westminster St.
Providence, R.I. 02903

TEXAS
Net Data Processing Services
212 North St. Paul
Dallas, Tex. 75201
University Computing Co.
1300 Frito-Lay Tower
Dallas, Tex. 75235
Control Data Corp., Houston
Data Ctr.
7135 Office City Dr.
Houston, Tex. 77017

WASHINGTON
Northwest Management Services, Inc.
1107 Pike St.
Seattle, Wash. 98101
The Arc Corp.
N 4007 Division
Sporke, Wash. 99207

ENGLAND
System Computers Ltd.
Fossway, Newcastle-on-Tyne.
6
Northumberland, England

TIME SHARE CORPORATION
Lyme Road
Hanover, New Hampshire 03755

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... solving system analysis and programming problems with emphasis on multi-programming and time sharing applications.

COMPUTERS and AUTOMATION for June, 1967 67
For specific information about the organizations listed in this roster, please see their entries in the "Roster of Organizations" beginning on page 8.

ARIZONA
American Institute of Technology
3620 North Central Ave.
Phoenix, Ariz. 85012
General Electric Co., Information Systems Marketing Operation (ISMO)
1340 N. Black Canyon Hwy.
Phoenix, Ariz. 85029
General Electric Co. Process Computer Business Section
2255 W. Desert Cove Rd.
Phoenix, Ariz. 85029

CALIFORNIA
Automation Institute of America
1700 West Lincoln Ave.
Anaheim, Cal. 92801
Autometrics
3370 Miraleom Ave.
Anaheim, Cal. 92803
Comer, Inc.
1335 S. Claudina St.
Anaheim, Cal. 92803
Pacific Data Processing Co.
7605 Wilshire Blvd.
Beverly Hills, Cal. 90210
Profimatics, Inc.
7060 Owensmouth Ave.
Canoga Park, Cal. 91303
Serenity Associates
9760 Cozycroft Ave.
Chatsworth, Cal. 91311
Systron-Donner Corp.
886 Galileo St.
Concord, Cal. 94520
Millard D. Shriver Co. Inc.
9251 E. Whitmore St.
El Monte, Cal. 91731
The Matrix Corp., Computer Services Div.
635 Hawaii St.
El Segundo, Cal. 90245
Wyle Laboratories
120 Maryland St.
El Segundo, Cal. 90245
National Cash Register
921 N. St.
Fresno, Cal. 93721
General Precision, Inc., Libra-
scope Group
806 Western Ave.
Glendale, Cal. 91201
M.T.I. Business Schools
5512 Hollywood Blvd.
Hollywood, Cal. 90028
Automation Institute of America
100 N. Orange Ave.
Kovaco, 200 Pine Ave.
Long Beach, Cal. 90802
Control Technology, Inc.
3450 E. Spring St.
Long Beach, Cal. 90806
Tyndare Inc.
745 Distel Dr.
Los Altos, Cal. 94022
Alpha Omega Computer Systems
6500 Wilshire Blvd.
Los Angeles, Cal. 90048
Automation Institute of America
451 South Hill St.
Los Angeles, Cal. 90013
Business Machines Institute
016 W. Olympic Blvd.
Los Angeles, Cal. 90015
Computer Usage Development Corp.
8939 Sepulveda Blvd.
Los Angeles, Cal. 90066
Control Data Corp.
8616 La Tijera
Los Angeles, Cal. 90045
International Tabulating Institute
101 South Vermont
Los Angeles, Cal. 90004
E. H. Kramer & Co.
6505 Wilshire Blvd.
Los Angeles, Cal. 90048
Milner Bros. Bros.
8000 Blackburn Ave.
Los Angeles, Cal. 90048
Superior Data Processing Service
5429 E. Beverly Blvd.
Los Angeles, Cal. 90022
West Eleven Inc. (Distributor for Hitachi)
11036 Vicente Blvd.
Los Angeles, Cal. 90049
Decision Control, Inc./Data Machines, Inc.
1590 Monrovia Ave.
Newport Beach, Cal. 92660
Automation Institute of America
500 16th St.
Oakland, Cal. 94609
Dymec
395 Page Mill Rd.
Palo Alto, Cal. 94306
Automation Institute of America
110 West "C" St.
San Diego, Cal. 92101
Applied Data Systems, Inc.
203 California
San Francisco, Cal. 94111
Automation Institute of America
760 Market St.
San Francisco, Cal. 94102
Automation Institute of America (DIV. of C-E-T-R, Inc.)
1760 Market St.
San Francisco, Cal. 94102
Clary Datacomp Systems
404 Junipero Sierra (P.O. Box 1)
San Gabriel, Cal. 91776
Diversified Integration of Data Services
1745 Saratoga Ave.
San Jose, Cal. 95112
Friden, Inc., A Division of The Singer Co.
2350 Washington Ave.
San Leandro, Cal. 94577
UBS Corp.
1700 South El Camino Real
San Mateo, Cal. 94402
Scientific Data Systems, Inc.
1649 Seventeenth St.
Santa Monica, Cal. 90404
System Development Corp.
2500 Colorado Ave.
Santa Monica, Cal. 90406
Automation Institute of America
14003 Ventura Blvd.
Sherman Oaks, Cal. 91403
Informatics Inc.
5430 Van Nys Blvd.
Sherman Oaks, Cal. 91401

COLORADO
Kaman Nuclear
Garden of Gods Rd.
Colorado Springs, Colo. 80907
Automation Institute of America
1450 Logan St.
Denver, Colo. 80203
Auto-Tronix, Universal
444 Sherman
Denver, Colo. 80203

CONNECTICUT
Connecticut Technical Corp.
3000 Main St.
Hartford, Conn. 06120
Data Institute, Inc.
24th Farmington Ave.
Hartford, Conn. 06105

WASHINGTON, B. C.
Brandon Systems Institute
1130 17th St., N.W.
Washington, D.C. 20036
C-E-T-R, Inc.
5272 River Rd.
Washington, D.C. 20016
Computer Command and Control Co.
1750 Pennsylvania Ave., N.W.
Washington, D.C. 20007
Computer Usage Development Corp.
7315 Wisconsin Ave., N.W.
Washington, D.C. 20012
Compress, Inc.
2120 Bladensburg Rd., N.E.
Washington, D.C. 20018
Herner & Co.
2434 K St., N.W.
Washington, D.C. 20037
Institute of Computer Technology, Inc.
2600 Virginia Ave., N.W.
Washington, D.C. 20037
Trident Laboratories Inc.
2430 Ponce Ave., N.W.
Washington, D.C. 20036

FLORIDA
Fort Lauderdale Technical College
201 West Sunrise Blvd.
Ft. Lauderdale, Fla. 33311
Systems Engineering Laboratories, Inc.
P.O. Box 949
Ft. Lauderdale, Fla. 33310
Data Processing, Inc.
1225 American Heritage Life Bldg.
Jacksonville, Fla. 32202
Soroban Engineering, Inc.
P.O. Box 1690
Melbourne, Fla. 32901
Charron-Williams Commercial College
2 N.W. 2nd St.
Miami, Fla. 33129
M.T.I. Business Schools
7790 N.W. 7th Ave.
Miami, Fla. 33150
Miami Institute of Technology
561 N.E. 79th St., Suite 230
Miami, Fla. 33138
Florida Technical College of
Courses, Training, or Instruction

MASSACHUSETTS

Data Operations Inc.
24 Mill St.
Arlington, Mass. 02174

Adams Associates
128 The Great Rd.
Bedford, Mass. 01730

Automation Institute of America
20 Bayston St.
Boston, Mass. 02116

Automation Training Schools, Inc.
62 Chauncy St.
Boston, Mass. 02111

Computer Consultants, Inc.
1340 Commonwealth Ave.
Boston, Mass. 02134

Information Management, Inc.
165 Bedford St.
Burlington, Mass. 01803

Technical Operations, Inc.
South Ave.
Burlington, Mass. 01803

Warren Associates
453 Putnam Ave.
Cambridge, Mass. 02139

Old Connecticut Path Framingham, Mass. 01701

Design Automation, Inc.
907 Massachusetts Ave.
Lexington, Mass. 02173

Digital Equipment Corp.
146 Main St.
Wayland, Mass. 01778

GPS Instrument Co., Inc.
166 Needham St.
Newton, Mass. 02164

Keyed Systems & Service, Inc.
33 Spring St.
Pittsfield, Mass. 01201

Information Dynamics Corp.
30 Main St.
Reading, Mass.

Wang Laboratories Inc.
336 North St.
Tewksbury, Mass. 01876

MICHIGAN

Applied Dynamics, Inc.
2275 Platt Rd.
P.O. Box 1488
Ann Arbor, Mich. 48106

Com-Share, Inc.
2200 Fuller Rd., Suite 201B
Ann Arbor, Mich. 48105

Automation Institute of America
150 Michigan Ave.
Detroit, Mich. 48226

Electronic Computer Programming Institute of Detroit
16411 W. Eight Mile Rd.
Detroit, Mich. 48235

Detroit TPC
22150 Greenfield Rd.
Oak Park, Mich. 48237

MINNESOTA

Automation Institute of America
24 South Seventh St.
Minneapolis, Minn. 55402

Central Data Corp.
2000 34th Ave. South
Minneapolis, Minn. 55440

Fabri-Tek Inc., Educational Products
5901 South County Rd. 18

MINNEAPOLIS

Sigma Processing Inc.
10130 Hwy. 55

Minneapolis, Minn. 55427

Control Data Corp.
2401 N. Fairview Ave.
St. Paul, Minn. 55113

MISSOURI

Automation Institute of America
100 Davidson Bldg.
Kansas City, Mo. 64108

Sigma Business College & School of Business Machines
25 Frampton Place
Newark, N.J. 07102

Logic Corp.
15 W. Broad St.
Palmyra, N.J. 08065

Automation Institute of America
105 North 7th St.
St. Louis, Mo. 63101

McDonnell AutomationCtr.
P.O. Box 516
St. Louis, Mo. 63166

NEBRASKA

Automation Institute of America
204 W.O.W. Blvd., 14th & Farnam
Omaha, Neb. 68102

Electronic Computer Programming Institute of Omaha
305 S. 17th St.
Omaha, Neb. 68102

NEW HAMPSHIRE

Time Share Corp.
Lyne Rd.
Box 301
Hanover, N.H. 03755

NEW JERSEY

Computer Sharing Inc.
363 Wedgewood Dr.
Blackwood, N.J. 08077

Fisher-Stevens Inc.
120 Bright Rd.
Clifton, N.J. 07012

Automation Institute of America
669 Broad St.
Newark, N.J. 07102

Sigma Business College
School of Business Machines
25 Frampton Place
Newark, N.J. 07102

Logic Corp.
15 W. Broad St.
Palmyra, N.J. 08065

Automation Institute of America
105 North 7th St.
St. Louis, Mo. 63101

NEW YORK

Altro Work Shop
1021 Jennings St.
Brooklyn, N.Y. 11217

Dr. Ivan Flores
931 President St.
Brooklyn, N.Y. 11215

Computer Systems Div.
189 Van Rensselaer St.
Buffalo, N.Y. 14210

Document Control Associates
1007 Elmwood Ave.
Buffalo, N.Y. 14207

Mauchly Homic Time Sharing Associates, Inc.
116 North Central Ave.
Hartsdale, N.Y. 10530

Computer Usage Co., Inc.
344 Main St.
Mount Risco, N.Y. 10549

AGS Computers, Inc.
405 Fifth Ave.
New York, N.Y. 10017

Automated Concepts Inc.
60 East 42nd St.
New York, N.Y. 10017

Dr. Frank R. Berman
Pan Am Bldg., 200 Park Ave.
New York, N.Y. 10017

Brandon Applied Systems, Inc.
30 East 42nd St.
New York, N.Y. 10017

Combined Data Group Inc.
100 Broadway
New York, N.Y. 10030

Comput-A-Credit, Inc.
Pan Am Bldg., 200 Park Ave.
New York, N.Y. 10017

Computer Applications Inc.
555 Madison Ave.
New York, N.Y. 10022

R. N. Dailey, Inc.
101 Park Ave.
New York, N.Y. 10017

B&R Services
11 West 42nd St.
New York, N.Y. 10036

EBASC Company
2 Rector St.
New York, N.Y. 10006

E.P.C. Computer Services Inc.
369 Lexington Ave.
New York, N.Y. 10017

Hayden Book Co., Inc.
116 West 14th St.
New York, N.Y. 10011

Hume Associates, Inc.
122 East 42 St.
New York, N.Y. 10017

Infor, Inc.
860 Fifth Ave.
New York, N.Y. 10021

Infret Corp.
60 Wall St.
New York, N.Y. 10005

M.E. Inc. (The Institute for Management & Computer Education)
155 West 50th St.
New York, N.Y. 10020

M.I.T.S., Inc.
545 Eighth Ave.
New York, N.Y. 10018

Programming & Systems, Inc.
53 West 42 St.
New York, N.Y. 10036

Programming Methods, Inc.
51 Madison Ave.
New York, N.Y. 10006

Randolph Computer Corp.
200 Park Ave.
New York, N.Y. 10017

Reliable Systems Inc.
475 5th Ave.
New York, N.Y. 10017

The Service Bureau Corp.
1350 Avenue of the Americas
New York, N.Y. 10019

Dr. Ivan Flores
931 President St.
Brooklyn, N.Y. 11215

Computer Systems Div.
189 Van Rensselaer St.
Buffalo, N.Y. 14210

Document Control Associates
1007 Elmwood Ave.
Buffalo, N.Y. 14207

Mauchly Homic Time Sharing Associates, Inc.
116 North Central Ave.
Hartsdale, N.Y. 10530

Computer Usage Co., Inc.
344 Main St.
Mount Risco, N.Y. 10549

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555 Madison Ave.
New York, N.Y. 10022

R. N. Dailey, Inc.
101 Park Ave.
New York, N.Y. 10017

B&R Services
11 West 42nd St.
New York, N.Y. 10036

EBASC Company
2 Rector St.
New York, N.Y. 10006

E.P.C. Computer Services Inc.
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New York, N.Y. 10017

Hayden Book Co., Inc.
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New York, N.Y. 10011

Hume Associates, Inc.
122 East 42 St.
New York, N.Y. 10017

Infor, Inc.
860 Fifth Ave.
New York, N.Y. 10021

Infret Corp.
60 Wall St.
New York, N.Y. 10005

M.E. Inc. (The Institute for Management & Computer Education)
155 West 50th St.
New York, N.Y. 10020

M.I.T.S., Inc.
545 Eighth Ave.
New York, N.Y. 10018

Programming & Systems, Inc.
53 West 42 St.
New York, N.Y. 10036

Programming Methods, Inc.
51 Madison Ave.
New York, N.Y. 10006

Randolph Computer Corp.
200 Park Ave.
New York, N.Y. 10017

Reliable Systems Inc.
475 5th Ave.
New York, N.Y. 10017

The Service Bureau Corp.
1350 Avenue of the Americas
New York, N.Y. 10019
If you reduce graphical data from motion analysis film, oscillograms, weather maps, bubble chamber films, land use maps, garment patterns, tree rings, oceanographic charts, spectrograms, fingerprints, temperature gradient curves, engineering drawings, streak camera photographs, magnetometer profiles, EKG records, cloud formation photographs, oil well logs, thermocouple strip charts, ballistic trajectory films, aerial photographs or fish scales to digital magnetic tape for computer processing and analysis, you have much to gain from a few minutes spent with these interesting little books.
SEVENTY KEY IDEAS IN COMPUTING AND DATA PROCESSING

The following is a selection of special terms in the field of computing and data processing that are essential, or almost essential, for understanding the subject. They might reasonably be called "seventy key ideas" in this field. Of course, the understanding of more ideas besides is necessary and desirable.

I. General Concepts

computer -- 1. A machine which is able to calculate or compute, that is, which will perform sequences of reasonable operations with information, mainly arithmetical and logical operations. 2. More generally, any device which can accept information, apply definite reasonable processes to the information, and supply the results of these processes. 3. A human being who can perform these operations and processes.

analog computer -- A computer which calculates by using physical analogs of the variables. -- Note: Usually a one-to-one correspondence exists between (1) each numerical variable occurring in the problem and its solution and (2) a varying physical measurement such as electrical voltage or rotation of a shaft in the analog computer. In other words, an analog computer is a physical system in which the analysis or solution of the problem is mirrored by the varying behavior of the physical system.

digital computer -- A computer in which information is represented in discrete form and which calculates using numbers expressed in digits and yeses and noes expressed usually in 1's and 0's, to represent all the variables that occur in a problem.

data processor -- A machine for handling information in a sequence of reasonable operations.

cybernetics -- The comparative study of the control and the internal communication of information-handling machines and the central nervous system of man, in order to understand better the functioning of brains and communication.

feedback -- The returning of a fraction of the output of a machine, system, or process to the input, to which the fraction is added or subtracted. If increase of input is associated with increase of output, subtracting the returned fraction (negative feedback) results in self-correcting or control of the process, while adding it (positive feedback) results in a runaway or out-of-control process.

negative feedback -- The returning of a fraction of the output of a machine, system, or process to the input from which the fraction is subtracted; if an increase of input is associated with an increase of output, the increase of output produces a decrease of input, this results in self-correction or control of the machine, system, or process. For example, if an increase of caterpillars is associated with an increase of parasites, destroying them, then the caterpillar-parasite populations display negative feedback.

positive feedback -- The returning of a fraction of the output of a machine, system, or process to the input, to which the fraction is added; if an increase of input is associated with an increase of output, and the increase of output produces a still further increase of input, this results in a runaway or out-of-control process. For example, if an increase of rabbits results in an increase of rabbits, the population of rabbits displays a runaway or out-of-control process.

automatic data processing (ADP) -- The processing of information by: (1) obtaining input information in machine language as close to the point of origin as possible; (2) operating on the information by automatic computer and other machines, without human intervention, as far as economically justified; and (3) producing just the output information needed. For example, a department store would have attained automatic data processing if: (1) at the time of each sale the details were entered mechanically into the system by a salesperson's plate, the customer's plate, and a merchandise punched ticket; and (2) reports to management, bills to customers, reorders for low inventory, connections to teletype operators, and other desired output reports were all computed and produced by the system without human intervention.

electronic data processing (EDP) -- computing and data processing using electronic devices, and therefore very high speeds, now approaching a ten million operations a second.

integrated data processing (IDP) -- 1. Data processing organized, coordinated, and carried on completely planned and systematic way, without bottlenecks and with the least possible duplication of tasks such as entering data, and from which the whole processing procedures built around a common machine language and common representation of data, in which there is a minimum of duplicate operations, such as entering the same data more than once.

time-sharing -- Equipment. Using a device for two or more functions during the same output time interval, by allocating (in rotation, for example) small divisions of the total time interval to the performance of each function in the operating system of a powerful, fast, central computer may offer a thirtieth of a second of computing time in rotation to each of 20 human users at 20 computers, and so to all the users it appears that each has entire command of the computer, although actually it is shared in time.

real-time -- In solving a problem, a speed of computing and processing data which is fast enough to give answers that can be used to control or guide the situation or operation or physical process presenting the problem. For example, in the case of a being driving a motor car at 30 miles an hour he can regularly solve nearly all of his driving problems in real-time; and at 100 miles an hour he will regularly fail to solve some of his driving problems in real-time.

on-line -- Units of Equipment. Connected to and controlled by another unit or equipment. If one unit of equipment is controlled by another without human intervention, the first unit is said to be on-line to the second. For example, if a high-speed line printer is connected by a cable to a computer, and from time to time prints under the control of the computer, then the printer is operating on-line.

benchmark problem -- A specified standard or typical problem used to test two or more computers relative to each other, and to evaluate their relative performance.

total integrated management information system -- A system of integrated data processing that contains and furnishes (as needed) all the information about an organization that its management needs for running the organization efficiently.

II. Digital Computers

input -- Computers. 1. Information transferred from outside the computer, including secondary or external storage, into the memory of the computer. 2. The sections of the computer which accept information from outside the computer, for example, magnetic tape readers or punch-card readers.

output -- Computers. 1. Information transferred from the internal storage of a computer to secondary or external storage, or to any device outside of the computer. 2. The device or devices which bring information out of the computer.

memory -- Computers. 1. The units which store information in the form of the arrangement of hardware or equipment in one way or another. Same as "storage". 2. Any device into which information can be introduced and then extracted at a later time.

arithmetic unit -- Digital Computers. The section of the hardware of a computer where arithmetical and logical operations are performed on information.

control unit -- Digital Computers. That portion of the hardware of an automatic digital computer which directs
the sequence of operations, interprets the encoded instructions, and initiates the proper signals to the computer circuitry to execute the instructions.

Input--Output channels (IOC) -- Computers. Input and output devices considered together.

Central processing unit (CPU) -- Computers. The unit, usually assembled in one frame, containing the arithmetic unit, the logical unit, and the fast storage or rapid memory, consisting often of magnetic cores.

Address -- Digital Computers. A label, name, or number identifying a register, a location, or a device where information is stored.

Access time -- Digital Computers. 1. The time interval between the instant at which the arithmetic unit requires information from the storage or memory unit and the instant at which the information is obtained by the arithmetic unit. 2. The time interval between the instant at which the arithmetic unit starts to send information to the memory unit and the instant at which the storage of the information in the memory unit is complete.

Transducer -- A device which converts energy from one form to another. For example, a slab of quartz crystal embedded in electronic equipment may be used to convert electric energy to sound energy (and vice versa).

Machine word -- Digital Computers. A unit of information containing a fixed number of characters, which a machine regularly handles in one transfer. For example, a machine may regularily handle numbers or instructions in units of 36 binary digits. This is then the "machine word."

Code (noun) -- Computers. A set of characters or symbols which specifies that the computer take a certain action. More precisely, a set of characters which defines an operation together with one or more addresses (or no address) and which, as a unit, causes the computer to operate accordingly on the indicated quantities. Note: The term "instruction" is preferred by many to the terms "command" and "order." "Command" may be reserved for uses in the meaning "sequence," as in "the order of the character."
specifies the location of the next instruction and directs the computer to that instruction. Also called a jump instruction.

**pseudocode** -- Digital-Computer Programming. An arbitrary code, independent of the hardware of a computer, which has the same general form as actual computer code, which directs the computer to string together actual computer codes, and which is automatically translated into actual computer code to control the computer.

**automatic programming** -- Digital-Computer Programming. Any method or technique whereby the computer itself is used to transform or translate programming from a language or form that is easy for a human being to produce into a form that is efficient for the computer to carry out. Examples of automatic programming are compiling routines, interpreters, and compilers.

**compiler** -- Digital-Computer Programming. A program-making routine, which produces a specific program for a particular problem by the following process: (1) determining the instructions intended in an item of information in a pseudocode; (2) selecting or generating (i.e., calculating from parameters and skeleton instructions) the required subroutine; (3) storing the subroutine into a specific code for the specific problem, assigning specific memory registers, etc., and entering the specific coding as an element of the problem program; (4) maintaining a record of the subroutines used and their position in the problem program; and (5) continuing to the next element of information in pseudocode.

**plugboard** -- 1. A removable board holding many hundreds of electric terminals, into which short connecting wire cords may be plugged in patterns varying for different programs for the machine. To change the program, one wired-up plugboard is removed and another wired-up plugboard is inserted. A plugboard is equivalent to a program tape that provides the instructions to the computer at one time. It relies on certain signals in the punch cards passing through the machine to cause different selections of instructions in different cases. 2. A similar board which may be used to guide or edit the handling of information in a computer or its output.

**programming language** -- A language for expressing unambiguously the sequences of instructions (or programs) that a computer should perform. There are two main kinds: problem-oriented languages; and machine-oriented languages, often called machine languages.

**machine language** -- Computers. Information in the physical form in which a computer can handle. For example, punched paper tape is machine language, while printed characters on paper are not usually machine language, although for optical character reading they would be. 2. Numbers or instructions expressed in a form that a computer can process at once without conversion, translation, or programmed interpretation. Note that a punched card containing an instruction in punched holes that requires programmed interpretation is "in machine language" by the first meaning; "in machine language" by the second meaning.

**machine-oriented language** -- (Also called: machine-oriented programming language, machine language) -- Computer Programming. 1. A language for programming a computer so that a problem, which is designed for use on the computer without change or translation into another form. For example, in a computer where the registers contain 18 binary digits, the following code: 010 000 000 101 000 011 (written to store a problem) if set up on switches on the console of the machine, may cause the machine to "load the accumulator with the data in register 050." 2. A language which with very simple or direct translation will program a computer to solve problems. For example, the following code: 20 0503 (written in octal notation) may cause the machine to "load the accumulator with the contents of register 050." 3. A language making use of alphabetic symbols, which with very simple or direct translation will program the computer for any problem. For example, the code: LAC 0503 (written in symbolic and octal notation) may express to the machine to "load the accumulator with the data in register 503." 4. A language closely related to the foregoing, and which the computer should perform. The instruction set of the computer will accept, translate, and assemble into an operating program. For example, the code:

```
START
LAC M = 0503
```

written in what is called "assembly language") are acceptable statements in this kind of machine language.

**problem-oriented language** -- A language for programming computers which is designed originally specifying a sequence of instructions for solving a problem and which is acceptable to two or more kinds of general purpose computers without regard in their differences in hardware. Some well-known problem-oriented languages are FORTRAN, COBOL, and ALGOL. A program written in FORTRAN can be run in almost exactly the same form on at least 20 different kinds of computers; but this is not true of a program written in machine language.

**supervisory program** -- A computer program at the top level which schedules, loads, runs, relocates, and in general controls the operation of other programs, with due regard to priorities and the availability of the central processor and other units. Also called: the supervisor, the monitor, the monitor program, the executive, the language system program, the operating system, etc.

**software** -- The entire collection of computer programs used to make a computer do useful work, including ordinary problem-solving programs and general programs such as operating systems, compilers, assemblers, editors, debuggers, translators, etc. Software is contrasted with "hardware" -- the machinery and the electronics of the computer.

**IV. Operation**

**check digit** -- One or more digits carried along with the data (i.e., a unit item of information handled by the machine), which report information about the other digits in the word in such a way that any single error occurs (excluding two compensating errors), the check will fail and give rise to an error alarm signal. For example, the check digit may be 0 if the sum of other digits in the word is odd, and the check digit may be 1 if the sum of other digits in the word is even. It is possible to choose check digits for rows and columns in a block of characters recorded on magnetic tape, for example, in such a way that any single error of 1 for a 0 or a 0 for a 1, can be located automatically by row and column, and eliminated automatically by the computer.

**automatic checking** -- Computers. Provision, constructed in hardware, for automatically checking the information transmitted, manipulated, or stored by any device or unit of the computer. Automatic checking is "complete" when on the machine is automatically checked: otherwise it is partial. The term "extent of automatic checking" means (1) the relative proportion of machine processes which are checked, or (2) the relative proportion of machine hardware devoted to checking.

**multi-programming** -- A technique for handling in a computer many routines or programs at what seems to be the same time. This is accomplished by overlapping or interleaving their execution, and by keeping more than one program to share the time of machine components and units.

**documentation** -- A group of techniques needed for good recording, organizing, and presenting of a body of specialized knowledge so as to communicate it completely and accurately. In some cases, documentation is necessary primarily to give a complete and accurate historical record of changes in designs, or plans, or construction, etc. 2. Also, the result of documentation, consisting of a complete and accurate description of a system, structure, or installation, an extensive computer program. Good documentation of a computer program means that any trained person can understand the purpose of all parts of the program easily and can modify it intelligently and easily.

**V. Representation of Information**

**digit** -- 1. One of the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, used in the scale of ten. 2. One of these symbols and sometimes also letters expressing integral values ranging from 0 to 9, inclusive, used in a scale of numbering to the base n.
character -- Digital Computers. 1. A decimal digit 0 to 9, or a letter A to Z, or any lower case, or a single pulse in a group of pulses; a single magnetically polarized spot in a group of spots on a paper. This word is derived from the "b" in "binary" and the "it" in "digit"; the word replaces the obsolete invented word "digit". A symbol taken on additional meaning from the word "bit" meaning "small piece".

octal notation -- Notation of numbers in an octal system. For example, the number 217 in this scale means 2 times 8 squared (2 times 64, which equals 128) plus 1 times 8, plus 7, which is 2 times 8 plus 7 in octal notation. The number 217 in octal notation is equal to 010 001 111 in binary notation, each octal digit being changed directly into its binary equivalent. The octal notation is remarkably convenient for dealing with digital computers, because octal numbers are much easier for human beings to handle than binary numbers, and yet the conversion into binary notation is immediate, since each octal digit is a group of three binary digits.

coded decimal (adjetive) -- A form of notation by which each decimal digit 0 to 9 is converted into a pattern of binary ones and zeros. For example, in the "8-4-2-1" coded decimal notation, the number twelve is represented as (1001 0010) whereas in pure binary notation it is represented as 1100. Other coded decimal notations are: "5-4-2-1", "3-2-1", "excess three", "2-4-2-1", etc. Following are the codes for the decimal digits 0 to 9 in each of the mentioned systems:

<table>
<thead>
<tr>
<th>Decimal</th>
<th>Excess</th>
<th>8-4-2-1</th>
<th>5-4-2-1</th>
<th>3-2-1</th>
<th>2-4-2-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0000</td>
<td>0000</td>
<td>0000</td>
<td>0000</td>
<td>0000</td>
</tr>
<tr>
<td>1</td>
<td>0001</td>
<td>0001</td>
<td>0001</td>
<td>0001</td>
<td>0001</td>
</tr>
<tr>
<td>2</td>
<td>0010</td>
<td>0010</td>
<td>0010</td>
<td>0010</td>
<td>0010</td>
</tr>
<tr>
<td>3</td>
<td>0011</td>
<td>0011</td>
<td>0011</td>
<td>0011</td>
<td>0011</td>
</tr>
<tr>
<td>4</td>
<td>0100</td>
<td>0100</td>
<td>0100</td>
<td>0100</td>
<td>0100</td>
</tr>
<tr>
<td>5</td>
<td>0101</td>
<td>0101</td>
<td>0101</td>
<td>0101</td>
<td>0101</td>
</tr>
<tr>
<td>6</td>
<td>0110</td>
<td>0110</td>
<td>0110</td>
<td>0110</td>
<td>0110</td>
</tr>
<tr>
<td>7</td>
<td>0111</td>
<td>0111</td>
<td>0111</td>
<td>0111</td>
<td>0111</td>
</tr>
<tr>
<td>8</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>9</td>
<td>1001</td>
<td>1001</td>
<td>1001</td>
<td>1001</td>
<td>1001</td>
</tr>
</tbody>
</table>

VI. Mathematics and Logic

fixed-point calculation -- Computers. Calculation using or assuming a fixed or constant location of the decimal point or the binary point in each number.

floating-point calculation -- Computers. Calculation taking into account varying location of the decimal point (if base 10) or binary point (if base 2), and consisting of writing each number by specifying separately its sign, its coefficients, and the exponent affecting the base. For example, in floating-point calculation, the decimal number -656,020,000 might be reported as -2.5 x 10^9 since it is equal to -6,3802 x 10^9.

complement -- 1. Arithmetic. A quantity which is derived from a given quantity by changing its sign, as in P'Q (read "P dot Q") and PQ, as in P'Q. (read "P dot Q"). 2. Circuits. A connection between two circuits A and B or two circuit elements A and B which modifies signals in such a sense as to activate one circuit element A at a time.

The AND operator is often represented by a centered dot (.) or by no sign, as in P•Q (read "P dot Q"). 

Key Ideas

character -- Digital Computers. 1. A decimal digit 0 to 9, or a letter A to Z, or any lower case, or a punctuation symbol, or any other single symbol (such as appear on the keys of a typewriter) which a machine may take in, store, or put out. 2.

One of a set of basic or elementary unit symbols which, singly or in sequences of two or more, may express information which a computer may accept. 3. A representation of such a symbol in a pattern of ones and zeros representing a pattern of positive logic or a positive state in binary notation (in the sense "scale of notation" or "positional notation" for numbers) -- Arithmetic. A systematic method for stating quantities in which any number is represented by a sum of coefficients times multiples of the successive powers of a chosen base number g (sometimes more than one).

If a quantity is written in the scale of notation g, then the successive positions of the digits report the powers of g, and the scale of 10 or decimal notation means 3 hundreds, 7 tens, and 9. The number 379 in the scale of 10 (used in some computers) means three times sixty squared, plus 7 times sixteen, plus 9 (which in decimal notation would be 809). 1101 in the scale of two means two one, plus one half, plus one eighth, but 11.101g means three plus one, plus one-third, plus one twenty-seventh.

Names of scales of notations which have had some significant considerations are:

Base Name
2 binary
3 ternary
4 quaternary, tetral
5 quinary
8 octal
10 decimal
12 duodecimal
16 hexadecimal, sexadecimal
32 duodecimal
2.5 binary

The digits used for "ten" and "eleven" are ordinarily "T" and "Ele"; beyond eleven, uniformity of nomenclature has apparently not yet developed.

binary notation -- The writing of numbers in the scale of two. Positional notation for numbers using the base 2. The first dozen numbers zero to eleven are written in binary notation as 0, 1, 10, 11, 100, 101, 110, 111, 1000, 1001, 1010, 1011. The positions of the digits designate powers of two; thus 1010 means 1 times two cubed or eight, plus 1 times two to the first power or two, and 0 times two to the zero power or one; this is equal to one eight plus no four plus one two plus no one, which is ten.

binary digit -- A digit in the binary scale of notation. This digit may be only a "zero" or a "one." It is equivalent to an "on" condition or an "off" condition, a "yes," or a "no," etc.

bit -- A binary digit; a smallest unit of information; a "yes" or a "no;" a single pulse in a group of pulses; a single magnetically polarized spot in a group of spots on a paper. This word is derived from the "b" in "binary" and the "it" in "digit"; the word replaces the obsolete invented word "digit." A symbol taken on additional meaning from the word "bit" meaning "small piece."
RANGES OF COMPUTER SPEEDS OF COMMERCIAL COMPUTERS

The following is a summary of the highest speed range and the lowest speed range of general purpose computer systems (including peripheral equipment) currently being marketed commercially.

**Current Computer Speeds — Internal**

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Speed Unit</th>
<th>High Speed Range</th>
<th>Low Speed Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition</td>
<td>number per second</td>
<td>1,000,000</td>
<td>15,000</td>
</tr>
<tr>
<td>Multiplication</td>
<td></td>
<td>400,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Average instruction</td>
<td></td>
<td>1,300,000</td>
<td>16,000</td>
</tr>
<tr>
<td>execution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to fast memory</td>
<td></td>
<td>13,000,000</td>
<td>120,000</td>
</tr>
</tbody>
</table>

**Current Computer Speeds — External**

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Speed Unit</th>
<th>High Speed Range</th>
<th>Low Speed Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper tape: a. Read in</td>
<td>characters per second</td>
<td>1,000</td>
<td>10</td>
</tr>
<tr>
<td>b. Punch out</td>
<td></td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Punch cards: a. Read in</td>
<td>cards per minute</td>
<td>2,000</td>
<td>85</td>
</tr>
<tr>
<td>b. Punch out</td>
<td></td>
<td>360</td>
<td>100</td>
</tr>
<tr>
<td>Line printer:</td>
<td>lines per minute</td>
<td>1,300</td>
<td>20</td>
</tr>
<tr>
<td>Magnetic tape: Read or</td>
<td>characters per second</td>
<td>2,900,000</td>
<td>150</td>
</tr>
<tr>
<td>write:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical character reading:</td>
<td></td>
<td>2,300</td>
<td>2,300</td>
</tr>
<tr>
<td>Magnetic ink character</td>
<td></td>
<td>3,200</td>
<td>1,800</td>
</tr>
<tr>
<td>reading:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Designate No. 9 on Reader Service Card

COMPUTERS and AUTOMATION for June, 1967
The following figures show estimates of the number of general-purpose digital computer systems (both made in the United States and made elsewhere) installed at user sites as of June 1967. The figures were compiled through the market research programs of the International Data Corp.

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of Digital Computer Systems Installed</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>32,500</td>
</tr>
<tr>
<td>Canada</td>
<td>1,200</td>
</tr>
<tr>
<td>Mexico</td>
<td>230</td>
</tr>
<tr>
<td>Central America</td>
<td>180</td>
</tr>
<tr>
<td>South America</td>
<td>480</td>
</tr>
<tr>
<td>Western Europe</td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>200</td>
</tr>
<tr>
<td>Belgium</td>
<td>320</td>
</tr>
<tr>
<td>Denmark</td>
<td>220</td>
</tr>
<tr>
<td>Finland</td>
<td>110</td>
</tr>
<tr>
<td>France</td>
<td>1,950</td>
</tr>
<tr>
<td>Great Britain</td>
<td>2,200</td>
</tr>
<tr>
<td>Greece</td>
<td>100</td>
</tr>
<tr>
<td>Ireland</td>
<td>85</td>
</tr>
<tr>
<td>Italy</td>
<td>1,300</td>
</tr>
<tr>
<td>Netherlands</td>
<td>500</td>
</tr>
<tr>
<td>Norway</td>
<td>180</td>
</tr>
<tr>
<td>Portugal</td>
<td>65</td>
</tr>
<tr>
<td>Spain</td>
<td>80</td>
</tr>
<tr>
<td>Sweden</td>
<td>430</td>
</tr>
<tr>
<td>Switzerland</td>
<td>500</td>
</tr>
<tr>
<td>West Germany</td>
<td>3,300</td>
</tr>
<tr>
<td>Eastern Europe and Siberia</td>
<td></td>
</tr>
<tr>
<td>U.S.S.R.</td>
<td>1,400</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>400</td>
</tr>
<tr>
<td>Asia</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>2,700</td>
</tr>
<tr>
<td>India</td>
<td>210</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>65</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>400</td>
</tr>
<tr>
<td>Africa</td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td>240</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>200</td>
</tr>
<tr>
<td>Oceania</td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>530</td>
</tr>
<tr>
<td>New Zealand</td>
<td>80</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>25</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>52,460</strong></td>
</tr>
</tbody>
</table>

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CHARACTERISTICS OF GENERAL PURPOSE

ANALOG AND HYBRID COMPUTERS

Following is a survey of general purpose analog and hybrid computers, based on returns from a current mailing and information previously published in Computers and Automation.

The editors will be glad to receive any additional entries, corrections or comments.

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NADAC 100 / DESCR: general purpose analog computer / ACCUR: analog, 4 signif. figures / PRNG: automatic prgmg; change time, 10 to 1 min. / IN-OUT: conventional analog method / RELIB: automatic checking; operg ratio, 90% / SALE: $60,000 to $120,000 / RMKS: digital section of hybrid computer features logical elements / C.I.I. / 67


Systron-Donner Airborne Computer / DESCR: 1000 all solid state general purpose analog computer / APPLICS: scientific, real-time / ACCUR: analog 5 signif. figures / PRNG: automatic prgmg; change time, 1 min. to change patch panel / RELIB: automatic checking; operg ratio, 90% needed to change / IN-OUT: digital computer, paper tape, manual control / RELIB: automatic checking; operg ratio, 100% / IN-OUT: Inputs -- transducers for time, frequency, etc.; Outputs -- 3-5 PSI, Elect drive units, etc. / RELIB: 100% / SALE: $500 to $10,000 / RMKS: 23 solid; primarily for control applications in industrial processes / Leeds & Northrup Co., N. Wales, Pa. / 66

NADAC 20 / DESCR: general purpose, desk-top analog computer with built-in digital logic / APPLICS: scientific, real-time, education (classroom) / ACCUR: analog, 4 signif. figures / PRNG: automatic prgmg; change time, 100 hr. MTBF in airborne environment / SALE: $100,000 to $500,000 / RMKS: adds consist of high-gain summers, inverters and generally reduces set-up time / Reeves Instrument Div., Dynamics Corp. of America, Garden City, N.Y. 11530 / 67

SD 10/0 Analog Computer / DESCR: general purpose, desk-top analog computer / ACCUR: analog 5 signif. figures / CAPAC: up to 20 (track/store) / LRGST INSTL: 20 adders, 9 multipliers, 18 integrators, 6 relay & electronic comparators and switches / PRNG: analog automatic prgmg; change time, 1 min. to change patch panel / IN-OUT: patch panel programming / RELIB: / SALE: $60,000 to $135,000; RENTAL: $220 to $450 (3-yr. lease/purchase non-cancelable) / RMKS: 15 flip-flops, and gates are packaged in modular form to fit into the patchbay. 100 volt operating range, digital logic in plug-in module (optional bus-added console) / Systron-Donner Corp., 800 Galindo St., Concord, Cal. 94520 / 67

SD 60 Analog Computer / DESCR: general purpose analog with built-in digital logic / APPLICS: scientific, real-time, education / ACCUR: analog, 5 signif. figures / PRNG: 1 per integrator / LRGST INSTL: 24 amplifiers, 8 multipliers, 16 integrators, 7 DFGs, 30 trunks/flip-flops / PRNG: no automatic prgmg / IN-OUT: logic levels to digital logic, analog voltage and resistance changes to analog modules / RELIB: automatic checking / SALE: $6000 to $15,000; RENTAL: $220 to $450 (3-yr. lease/purchase non-cancelable) / RMKS: 15 flip-flops, and gates are packaged in modular form to fit into the patchbay. 100 volt operating range, digital logic in plug-in module (optional bus-added console) / Systron-Donner Corp., 800 Galindo St., Concord, Cal. 94520 / 67

Other

NADAC 100 / DESCR: general purpose analog computer / ACCUR: 4 signif. figures; hybrid, 16 bit single precision, 20 min. / IN-OUT: patch panel programming / RELIB: automatic checking; operg ratio, 90%/ SALE: $200 to $5200 / RMKS: 4 comparator, digital section of hybrid computer / C.I.I. / 67

EAI 8800 Analog/Hybrid Computing System / DESCR: 100 volt, 338 amplifier, solid state / APPLICS: scientific, real-time, and faster than real-time / ACCUR: analog, 5 signif. figures / CAPAC: 120 / LRGST INSTL: 60 adders, 24 multipliers, 70 comparators, 30 arbitrary function generators, card programmed or manual / PRNG: automatic prgmg; change time, 15 min. to 20 min. / IN-OUT: patch-panel input, integrated displays output / RELIB: automatic checking; operg ratio, 90% / SALE: $95,000 to $495,000; RENTAL: $2500 to $12,500 / RMKS: over 50 installed / Electronic Associates Inc. / 67

EAI 8900 Hybrid Computing System / DESCR: EAI 8800 Analog + EAI 8400 Digital + EAI 9300 Linkage / APPLICS: scientific, real-time, and faster than real-time / ACCUR: analog, 5 signif. figures; hybrid, 16 bit half-word, 32 bit full word / LRGST INSTL: 60 adders, 72 multipliers, 66 integrators, 30 comparators, 30 arbitrary function generators, card programmed or manual / PRNG: automatic prgmg; change time, 20 min. to IN-OUT: 5 min. / RELIB: automatic checking; operg ratio, 90% / SALE: $900,000 to $1,400,000; RENTAL: $10,000 to $30,000 / RMKS: digital section of hybrid computer has high speed processing 32 bit word length, 750 instructions: extensive hybrid software; 14 installed / Electronic Associates Inc. / 67

EAI TR-20 / DESCR: solid-state, versatile, portable, expandable / APPLICS: scientific, real-time, studen use / ACCUR: analog, 3 signif. figures, CAPAC: up to 20 (track/store) / LRGST INSTL: 20 adders, 9 multipliers, 18 integrators, 16 relay & electronic comparators and switches, fixed (log, sin/ cos, tan) HPC's / PRNG: no automatic prgmg; change time, 15 seconds to change remov­able patch panel / IN-OUT: patch panel programming or on-line operation / RELIB: automatic checking / SALE: $3450 to $11,000; RENTAL: $210 to $515 (min­imum 1 year) / RMKS: output to X-Y recorder or oscilloscope / RELIB: repetitive operation available / Electronic Associates Inc. / 67


Hybrid 7 Series developed from 247 systems and from digital -- real-time; hybrid, parameter optimisation / ACCUR: 3 signif. figures / CAPAC: 50 / LRGST INSTL: 80 adders, 50 multi­pliers, 40 integrators / PRNG: automatic prgmg: 10 min. needed to change / IN-OUT: digital computer, paper tape, manual control / RELIB: automatic checking; operg ratio, 90% / IN-OUT: 66 integrators, 30 arbitrary function generators, etc.) added / PRNG: included for system / IN-OUT: Inputs -- transducers for time, frequency, etc.; Outputs -- 3-5 PSI, Elect drive units, etc. / RELIB: 100% / SALE: $500 to $10,000 / RMKS: 23 solid; primarily for control applications in industrial processes / Leeds & Northrup Co., N. Wales, Pa. / 66
Sigma is the only family of computer hardware and software designed for multiprogramming.

Sigma systems have the fastest throughput rates in the industry.

Sigma systems cost from $26,000 to $1,000,000.  Scientific Data Systems, Santa Monica, California

Sigma 2

Sigma 5

Sigma 7

Designate No. 14 on Reader Service Card
Following is a list of currently existing higher level languages developed or reported in the United States which have been implemented on at least one computer. While every effort has been made to make this list both complete and accurate, inevitably some errors of omission or commission have occurred. The author would appreciate notice of these errors for correction in future lists, subject to the disclaimer in the following paragraph.

Certain items which might be considered as programming languages by some people have been omitted because they do not meet the criteria stated in an earlier paper (see Sammet, J. E., "Fundamental Concepts of Programming Languages", Computers and Automation, Vol. 16, No. 2, Feb. 1967). In that paper, a "higher level" programming language is defined as a set of characters and rules for combining them which has the following characteristics: (1) the language requires no knowledge of machine code by the user; (2) the language is significantly independent of a particular computer; (2) there is one-man translation of instructions from source code to object code; (4) the notation of the language is fairly natural to its problem area.

In some instances, there are many versions of a language on the list, all under differing names. No attempt has been made to name or include all these differing versions. Another class of languages omitted consists of those without assigned names i.e., those identifiable only by the system developer(s)' names.

The references cited are usually the most accessible, and are not necessarily the best. Where possible, both the best reference and the most accessible reference have been given.

Where no contact has been shown, either there is no clearly identifiable one, or the contact is the same as the names shown in the cited reference(s). In some cases, the author has exercised judgment and has supplied a probable contact. However, the individuals cited as contacts have not given permission for their listing, and the author does not assume responsibility for their reaction to inquiries.

### AED (Automated Engineering Design)

### AEDT (Automatic Engineering Design Translating)

### ALTRAN (Automatic Mathematical TRANsla-tion)

### AMBIT (Automatic Mathenatical Bit Interpretation Translating)

### BASIC (Beginner's All Purpose Symbolic Instruction Code)

### COBOL (Common Business Oriented Language)

### CPF (Conversational Programming System)
An on-line subset of PL/I on IBM 7090/94.

Copyright © 1967 by Jean E. Sammet. This material will appear as a summary and appendix in a book on programming languages which the author is writing.
COMPUTERS and AUTOMATION for June, 1967

81

PROGRAMMING LANGUAGES


FORMAC (Formula Manipulation Compiler) An extension of FORTRAN on the 7090/94 to do formal algebra manipulation, i.e., formal differentiation, expression expansion, etc. / REF.: Sammet, J. E., and Bond, E., "Introduction to FORMAC", ZEEE Transactions on Electronic Computers, Vol. EC-13, No. 4, Aug. 1964; and "FORMAC (Operating and User's Preliminary Reference Manual)", Z2 IBM 0016, ZIBM Program Information, Hawthorne, N.Y., Aug. 1965 / CONTACT: Mr. R. G. Tobey, IBM, 545 Technology Sq., Cambridge, Mass. 02139

FORTRAN (Formula Translator) The first language to be widely used for solving numerical problems. Has existed in many versions and been implemented on almost all computers. The first language to be a USASI standard. There are actually two standards: Basic FORTRAN, and FORTRAN, which correspond approximately to FORTRAN II and FORTRAN IV. / REF.: "American Standard Basic FORTRAN", Z3A 1966; and "American Standard FORTRAN", Z3A 3.9, 1966; March 1966 / CONTACT: [For the Standard] Mr. Paul Goodstadt, BCA, 235 East 42nd St., New York, N.Y., 10017


JOSS (JOHNNIAC Open Shop System) A very simple on-line system for doing numerical computations. First version was on the JOHNNIAC (since disassembled). Second version is on the


Bell Telephone Laboratories' Low-Level Languages A list processing language which allows the user to define the type and sizes of his lists. Implemented on several computers. / REF.: Knutson, K., "A Programmer's Description of low, Bell Telephone Laboratories' Low-Level List Language", Proceedings of the ACM, Vol. 9, No. 8, Aug. 1966


MAD (Michigan Algorithm Decoder) A language for doing numerical computations which has a very fast compiler. / REF.: "The Michigan Algorithm Decoder: "The MAD Manual"") Univ. of Michigan Computing Center, Ann Arbor, Mich. / CONTACT: Prof. B. A. Galler at above address

MADCAP A language developed at Los Alamos to do numeric computations and set theoretical operations. Requires a special typewriter which permits 2 dimensional input and output. / REF.: Morris, B. M., "Recent Improvements in MADCAP", Communications of the ACM, Vol. 6, No. 11, Nov. 1963


NEIAC (Naval Electronics Laboratory International ALGOL Compiler) A language for doing numerical computation and analysis. Implemented on a number of machines; the compilers are written largely in NEIAC. / REF.: Halstead, M. A., Machine-Independent Computer Programming, Spartan Books, Washington, D.C. 1962

PL/I (Programming Language I) A language suitable for doing numerical scientific and business data processing problems. Combines the most significant concepts from previous languages in the individual areas. / REF.: "IBM System/360 Operating System PL/I Language Specifications", Form C90-6571-4, Dec. 1966 / CONTACT: Mr. Elliott Nohr (Chairman, USASI Prestandardization Committee), IBM, P.O. Box 37, Armonk, N.Y. 10504

QUICKTRAP An on-line version of FORTRAN with some restrictions, but with added facilities for debugging. / REF.: "Information Marketing (QUICKTRAP User's Guide)", E-20-0240, IBM, White Plains, N.Y. 10601


Guaranteed to cure headaches

CEC's new line of magnetic recording heads can now eliminate the major pains of data recording. Such as rapid head wear, frequent cleaning and limited frequency response.

Fact is, CEC recording heads are guaranteed to have a life in excess of 1000 hours. In most cases, these heads will far surpass that figure with little or no indication of wear. And cleaning is seldom required.

Result: replacement costs have been dramatically reduced, and recorders (both analog and digital) can stay "on line" for far longer periods of time without repairs. Furthermore, recalibration of electronics is greatly reduced since head parameters are not subject to continual change due to wear.

The secret is due to CEC's unique, solid metal pole-tip design which completely eliminates the weakness of conventional lamination and rotary head design.

Other advantages:
CEC has more than 100 different recording heads to choose from, ranging from simple 2-channel audio types up to high performance 42-channel instrumentation models. And high frequency response has been extended as high as 2.0 MHz.

Furthermore, the mechanical specifications of every CEC head exceed IRIG standards.

For complete specifications and all the facts about this complete line of advanced recording heads, call your nearest CEC Field Office. Or write Consolidated Electrodynamics, Pasadena, California 91109. A subsidiary of Bell & Howell. Bulletin 1662-X6. Designate No. 15 on Reader Service Card

CEC/DATATAPE PRODUCTS
OVER 1200 APPLICATIONS
OF COMPUTERS

I. Business and Manufacturing in General

1. Office

Absence reports
Accounts receivable; posting, re-billing
Advertising effectiveness: analysis, data handling
Attendance records, analysis, and evaluation
Billing and invoicing
Budgeting
Capital investment analysis
Catalog indexing
Charitable contribution
Consumer credit verification
Contract lists
Correspondence: personalized letters to delinquent accounts
Cost accounting and analysis
Data gathering from multiple locations
Depreciation calculations
Directory advertising calculations
Dispatching
Equipment registers
Expenses: analysis, prompt reports
File maintenance
Filing operations, single and multiple
Financial statements
Fixed assets accounting
Forecasting
General ledgers: operation
Hiring: analysis
Information retrieval
Insurance records and schedules
Inventory control
Job placement: matching men with jobs
Labor cost determinations
Lease and rental accounting
Libraries: classification, records
Linear programming
Mailbox list operations
Management games
Management reports using the exception principle and others
Management simulation
Management statistics analysis
Management strategy analysis
Market research: studies
Message switching
Operations research applications
Optical character recognition
Order acknowledgment
Order analysis
Order processing
Order shipping
Overhead cost allocation
Overtime reports
Payroll changes for general increases
Payroll computation and payment
Payroll: overtime reports
Pension reporting and updating
Personnel: planning, placement
Personnel records
PERT charts: automatic drawing and updating
Performance evaluation
Plastic plates: emboss, code-punch
Price analysis
Property accounting
Production forecasting
Punched tape: automatic production and reading
Purchase order writing
Questionnaire analysis
Record retention and destruction studies
Repair and maintenance: records, scheduling, control
Rent analysis
Retirement fund: records, valuation
Royalty processing
Salary advances
Sales analysis
Sales area distribution
Sales forecasting
Sales quota calculations
Savings bond deductions
Scheduling for traveling salesmen
Seniority records
Simulation of inventory systems
Social Security records
Systems: analysis, synthesis, evaluation
Taxes, calculation
Transportation optimization
Turnover analysis
Vacation scheduling
Voucher distribution
Wage and salary analysis
Wage and salary tax computations
Warehousing and stocking: records, analysis
Work-in-process records

2. Plant and Production

Assembly line balancing
Cartons: automatic manufacture and packaging
Construction accounting
Construction job scheduling
Conveyor systems: designing
Critical path scheduling
Delivery scheduling
Dispatching control
Equipment capabilities: inventory, analysis
Factory operation simulation
Fuel consumption: records, analysis
Industrial accidents: analysis
Inspection: planning, scheduling
Job standards: determination
Labor management: remote terminal payroll system
Labor utilization: analysis
Lathe operations: automatic control
Machine loading schedules
Machine tools: numerical control
Machine tools: control for automatic reproduction of complete parts
Machine utilization analysis
Maintenance: records, analysis, scheduling
Manpower utilization: analysis, scheduling
Materials and parts: requirements, allocations, scheduling, control
Operational planning
Optimum ordering: determination
Parts catalogs: construction, changes, control
Power used: reports, analysis
Precision measuring
Procurement
Product grading
Production forecasts
Production information analysis
Production operations: determination of optimum order
Production scheduling
Quality control
Repairs: records, analysis, scheduling, control
Route accounting (Bakeries, Bottling plants, Dairies, etc.)
Routing cable and electrical wiring
Salvage records
Scrap reporting
Shipping control
Shop scheduling, optimum
Shrinkage calculations
Traffic control
Truck maintenance
Warehouse automation
Work standards: coding analysis

II. Business — Specific Fields

1. Advertising

Consumer audiences: analysis
Direct mail advertising: addressing, personalizing
Effectiveness analysis
Electric signs: computer-controlled
Expenditures: analysis, comparison, projection

2. Banking

Account reconciliation
Accrual settlement
Bond ownership and redemption
Check cashing credit: verification
Check certification
Check processing accounting
Check reconciliation
3. Educational and Institutional

<table>
<thead>
<tr>
<th>Category</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>Record-keeping, compilation, compilation</td>
</tr>
<tr>
<td>Elementary arithmetic instruction</td>
<td>Scheduling, classroom assignment</td>
</tr>
<tr>
<td>College board examinations</td>
<td>Scoring, interpreting</td>
</tr>
<tr>
<td>College selection</td>
<td>Aiding high school students to select colleges</td>
</tr>
<tr>
<td>Computer-assisted instruction</td>
<td>Curricular searches</td>
</tr>
<tr>
<td>Education</td>
<td>Forecasting administration trends and budgeting</td>
</tr>
<tr>
<td>Educational test results: compilation</td>
<td>Elementary arithmetic instruction</td>
</tr>
<tr>
<td>Honor rolls: compilation</td>
<td>Identifying &quot;underachieving&quot; students</td>
</tr>
<tr>
<td>Bright students</td>
<td>Laboratory experiments: automatic control</td>
</tr>
<tr>
<td>Language teaching</td>
<td>Matching teachers with job vacancies</td>
</tr>
<tr>
<td>Personal counselling</td>
<td>Personality test analysis for counseling</td>
</tr>
<tr>
<td>Registration of students</td>
<td>Registration cards: preparation, issuance</td>
</tr>
<tr>
<td>Revenue and expense accounting</td>
<td>Revenue and expense accounting</td>
</tr>
<tr>
<td>Scheduling of courses, classes, sections</td>
<td>Scheduling of courses, classes, sections</td>
</tr>
<tr>
<td>Student attendance: records, analysis, summaries</td>
<td>Student attendance: records, analysis, summaries</td>
</tr>
<tr>
<td>Student loan applications: screening, approval</td>
<td>Student loan applications: screening, approval</td>
</tr>
<tr>
<td>Student records: interpretation, processing</td>
<td>Student records: interpretation, processing</td>
</tr>
<tr>
<td>Supply accounting</td>
<td>Supply accounting</td>
</tr>
<tr>
<td>Teacher credential issuance</td>
<td>Teacher credential issuance</td>
</tr>
<tr>
<td>Teacher standards evaluation</td>
<td>Teacher standards evaluation</td>
</tr>
<tr>
<td>Teaching</td>
<td>Test grading</td>
</tr>
<tr>
<td>Training manuals: preparation, maintenance</td>
<td>Training manuals: preparation, maintenance</td>
</tr>
</tbody>
</table>

4. Finance

<table>
<thead>
<tr>
<th>Category</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amortization</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Annual statements</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Bond bidding</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Bond evaluation</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Clearing house reports</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Commodity trading: customer confirmation</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Dividend calculation</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Equipment trust accounting</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Funds: accounting, analysis</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Investment: analysis, evaluation</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Losses: distribution, reserves</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Margin accounts: commodities, securities</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Monthly customer statements</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Portfolio evaluation</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Securities called for redemption: reports</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Security information: on-line inquiry and response</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Security rating</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Stock analysis</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Stock market data transmission</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Stock price index computed hourly, etc.</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Stock tabulations</td>
<td>Financial calculations</td>
</tr>
<tr>
<td>Stock transfers</td>
<td>Financial calculations</td>
</tr>
</tbody>
</table>

5. Government

<table>
<thead>
<tr>
<th>Category</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident records: analysis for safety programs</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Air mail extracting</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Appropriation accounting</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Budgetary control</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Census analysis</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Draft: investigation, analysis</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Driver license applications: checking, processing</td>
<td>Driver license applications: checking, processing</td>
</tr>
<tr>
<td>Driver records: automated</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Drug control</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Economy: simulation of sections</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Election return analysis</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Election returns processing</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Excess tax bill preparation</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Fire statistics</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Fiscal accounting</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Foreign policy analysis</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Hack licenses recording</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Highway toll and service area</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>revenues processing</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Highways: maximum speed determination</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Income tax accounting</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Income tax checking: nationwide</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Land use surveys</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Mail: sorting, routing, determining volume</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Motor vehicle excise tax billing</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Motor vehicle registration</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>New drug application processing</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Parts cataloging</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Political district reapportionment</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Property right-of-way analysis</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Property value analysis</td>
<td>Accident records: analysis for safety programs</td>
</tr>
<tr>
<td>Public Health:</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Air pollution: records, analysis</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Radiation studies</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Water pollution studies</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Water purification studies</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Radio station licenses: issuance</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Rubbish disposal planning, route analysis</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Sales tax records, analysis</td>
<td>Public Health:</td>
</tr>
<tr>
<td>State warrants: writing</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Statistical analysis</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Supplies: inventory and control</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Traffic: control</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Traffic density: pictorial simulation</td>
<td>Public Health:</td>
</tr>
<tr>
<td>Traffic flow computation</td>
<td>Public Health:</td>
</tr>
</tbody>
</table>

6. Hospitals

<table>
<thead>
<tr>
<th>Category</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission: control</td>
<td>Hospital admission</td>
</tr>
<tr>
<td>Billing</td>
<td>Hospital billing</td>
</tr>
<tr>
<td>Patient billing</td>
<td>Hospital billing</td>
</tr>
<tr>
<td>Patient data: on-line gathering and processing</td>
<td>Patient data: on-line gathering and processing</td>
</tr>
<tr>
<td>Patient means: planning</td>
<td>Patient data: on-line gathering and processing</td>
</tr>
<tr>
<td>Patient prescriptions: checking</td>
<td>Patient data: on-line gathering and processing</td>
</tr>
<tr>
<td>Patient records: collation, analysis, summaries</td>
<td>Patient data: on-line gathering and processing</td>
</tr>
<tr>
<td>Patient's condition during operation:</td>
<td>Patient data: on-line gathering and processing</td>
</tr>
<tr>
<td>recording and reporting</td>
<td>Patient data: on-line gathering and processing</td>
</tr>
<tr>
<td>Physiological systems and conditions:</td>
<td>Patient data: on-line gathering and processing</td>
</tr>
<tr>
<td>quantitative study</td>
<td>Patient data: on-line gathering and processing</td>
</tr>
<tr>
<td>Supplies: records, control</td>
<td>Patient data: on-line gathering and processing</td>
</tr>
</tbody>
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7. Insurance

<table>
<thead>
<tr>
<th>Category</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Actuarial research</td>
<td>Insurance accounting</td>
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<td>Agency accounting</td>
<td>Insurance accounting</td>
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<tr>
<td>Agents: record-keeping</td>
<td>Insurance accounting</td>
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<td>Agents' commission calculations</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Annual statement preparation</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Assets: value analysis</td>
<td>Insurance accounting</td>
</tr>
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<td>Automobiles: coding</td>
<td>Insurance accounting</td>
</tr>
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<td>Claims</td>
<td>Insurance accounting</td>
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<td>Computation menu calculations</td>
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<td>Cost allocation</td>
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<td>Dividend formula analysis</td>
<td>Insurance accounting</td>
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<td>Dividend scale calculations</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Gross premium calculations</td>
<td>Insurance accounting</td>
</tr>
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<td>Group annuity calculations</td>
<td>Insurance accounting</td>
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<tr>
<td>Group insurance commissions</td>
<td>Insurance accounting</td>
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<td>Loss distribution</td>
<td>Insurance accounting</td>
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<td>Loss reserves computation</td>
<td>Insurance accounting</td>
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<tr>
<td>Management reports</td>
<td>Insurance accounting</td>
</tr>
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<td>Mean reserve calculations</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Mortality tables</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Net premium calculations</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>New issues: summaries, analysis</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Non-forfeiture value calculations</td>
<td>Insurance accounting</td>
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<tr>
<td>Policy issuance</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Policy registers</td>
<td>Insurance accounting</td>
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<tr>
<td>Policy reserve calculations</td>
<td>Insurance accounting</td>
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<td>Policy writing</td>
<td>Insurance accounting</td>
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<tr>
<td>Premium billing</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Premium and loss distribution accounting</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Rate computation</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Renewal rating calculations</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Reserve calculations</td>
<td>Insurance accounting</td>
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<tr>
<td>Stock dividends: calculations</td>
<td>Insurance accounting</td>
</tr>
<tr>
<td>Valuation calculations</td>
<td>Insurance accounting</td>
</tr>
</tbody>
</table>

Traffic interchanges: designs of angles and grades
Traffic light maintenance control
Traffic signal regulation
Traffic simulation
Traffic summaries
Traffic ticket control
Unemployment: Information and claims processing
Matching job openings with unemployed
Urban renewal planning
Vital statistics (births and deaths)
Water and sewer rates revenue
Water monitoring systems
Workload and manpower fluctuations

84
8. Labor unions
   Analysis: processing, membership reports
   Summary reports
   Transfers, re-instatements

9. Law
   Judicial decisions: simulation of
   Laws: analysis, consistency
   Lawyers: court assignment for indigents
   Legal research
   Magistrate courts: records
   Patent searching
   Pre-testing of proposed legislation
   Property right-of-way: analysis, determination
   Property value: analysis
   Reconstruction of decisions (using statistical methods) re: taxes, trust funds, public utility rates
   Statute retrieval
   Title searching
   Writing title policies

10. Libraries
    Book purchasing
    Card catalogs: maintenance and updating
    Information retrieval
    Inventory
    Magazines, journals: ordering, controlling
    Overdue notifications
    Records and control
    Registration: computerized

11. Magazine and Periodical Publishing
    Automatic typesetting
    Classified advertisement preparation
    Layout control
    Mailing list maintenance
    Mailing lists: geographic analysis
    Mailing lists: high-speed label printer
    Newspaper printing: long distance transmission of linotype setting
    Newspaper printing: high-speed linotype setting by punched paper tape and computer
    Phototypesetting, computerized
    Printing: automatic hyphenation of words
    Printing: automatic line justification
    Renewals: analysis, promotion
    Subscription fulfillment

12. Military
    Air Force engines and parts: regulation of supply
    Distress signals: dispatching aid
    Plotting location of all ships and planes in operation
    Stock priority items: speedy shipment

13. Oil Industry
    Absorber calculations
    Aerial surveys and exploration: analyses
    Bulk stations: wholesale sales, billing, accounting
    Credit card accounting
    Crude oil: analysis of properties, evaluation, processing
    Depletion accounting
    Distillation tower design
    Equilibrium flash calculation
    Flow: control
    Fuel deliveries: degree-day accounting
    Gasoline blending
    Gravity drainage analysis
    Gravimetric analysis
    Heat and Material balances
    Heat exchange calculations
    Instrument scanning
    Lease and well expenses and investments: records and analysis
    Map construction
    Mass spectrometer data: reduction, analysis
    Material and energy balances
    Off-normal variables alarm
    Off-shore deep sea drilling: ship position control
    Off-shore installations: studies of design variations
    Oil field analysis
    Correlations of data from different drill holes
    Correlation of data from seismic tests
    Estimated amount and direction of flow of fluids through porous rocks
    Oil pipe-line system: automatic control and operation
    Oil purchase accounting
    Operating records: logging
    Petroleum exploration: data reduction
    Petroleum reserves: calculations
    Physical behavior of complex mixtures: predictions
    Pipe stress analysis
    Plate-to-plate distillation calculations
    Product mix for oil refineries: determination
    Refinery and gas plant components: design, operation
    Refinery shutdown and maintenance: scheduling calculations
    Refinery simulation
    Remote control of crude oil production
    Secondary recovery: analysis
    Seismic data reduction
    Well logs: corrections
    Wells and fields: prorating analysis
    Yield accounting

14. Police
    Arrests: record
    Crime occurrence: pattern analysis
    Criminal identification
    Fingerprints: processing, searching
    Message switching
    Stolen automobile: identification
    Stolen property: information storage and retrieval (national file)
    Traffic law violations: recording, accounting, analysis
    Wanted persons: information storage and retrieval (national file)

15. Public Utilities
    Boiler control
    Circuits and lines: mileage analysis
    Compressor performance
    Dispatch control
    Electric distribution networks
    Electric telemetering
    Electrical power control
    Engineering studies
    Equipment: nutrition and life expectancy
    Fuel: records, analysis
    Gas dispatching: on-line control
    Gas distribution networks
    Gas well probability
    Load duration
    Load flows
    Market surveys
    Meter reading
    Meter test records
    Natural gas measurement
    New service areas: calculations
    Operating reports, analysis
    Pipe line design
    Power distribution calculations
    Power plants: stability of control
    Power production scheduling
    Pressure vessel flange designs: calculating, listing
    Rate determination
    Repair calls: dispatching, scheduling
    Sag-tension studies
    Steam turbines: output, control
    Surety deposit records
    Transformer thermal rating
    Transmission line design and losses
    Water filtration plant control
    Water reservoir management
    Water supply evaluation

16. Religious organizations
    Bible distribution
    Church funds: analysis, distribution
    Missionary work
    Personnel record keeping
    Payroll and budget accounting

17. Sports and Entertainment
    Airplane racing: final scoring, specialized category winners, up-to-the-minute standings
    Animated film production
    Bowling: averages, handicaps, records, scoring
    Bridge tournaments: shuffling and dealing
    Contests: judgment of entries
    Football: judging contest entries
    Horse racing: handicap lists, determining odds, calculating prizes paid on winners
    Indoor golf: measurement of shots
    Motion picture distribution
    Motion pictures: producers settlement statements
    Olympic Games: registration, scoring, winners, up-to-the-minute standings
    Television shows: success or failure predictions
    Television stations: availability status of commercial time
    Television stations: management reports
    Television stations: real-time program switching operations
    Theatre: scheduling, planning, production
    Ticket printing (on-line transactions)
    Ticket sales: inventory (on-line)

18. Steel Industry
    Billet cut-up line: control
    Blast furnace burden calculation: determining economical ore mixture

COMPUTERS and AUTOMATION for June, 1967
Applications of Computers

III. Science and Engineering

1. Aeronautics and Space Engineering

Aerodynamical formulas: evaluation
Airborne jet-engines: control, management
Aircraft safety: control of cargo weights and fuel supply
Airfoil synthesis
Airframe stress analysis
Astronaut training
Atmospheric re-entry studies
Automatic checkout for aircraft, missiles, space vehicles
Behavior in space flights: analysis
Boost cut-off determination
Catastrophe simulation
Contour maps presentation
Critical speed problems
Curve fitting
Engine design for propelling space vehicles
Factor analysis
Flight control for missiles and space vehicles
Flight simulation
Flight test data reduction
Flight training devices
Flutter analysis
Ground controlled approach: programming
Guidance and flight control studies
Guidance sensitivity problems
Guidance systems design
Gyrosopic calculations
Heat transfer analysis
Helicopter piloting studies
High-altitude balloon flights
Horizon scanning
Hypersonic air data analysis
Inertial guidance for missiles and space vehicles
Interplanetary space probes control
Jet aircraft, landing gear: design
Jet aircraft refueling
Lunar orbiter cameras: control
Lunar probes control
Moon flight simulation
Moon landing simulation
Navigation training devices
Orbit injection
Parachute recovery system
Radar and satellite antennas: positioning and pointing
Re-entry vehicle development
Rocket flight simulation
Rocket motor analysis: analysis, control during firing
Rocket nozzle development for space boosters

22. Miscellaneous

Agriculture: crop shifting indications
Auto-crash studies, simulation
Automobile dealerships: profitability analysis
Automobile repair: testing
Automobile replacement parts: inventory and distribution
Automobile warranties: information storage and retrieval
Automobiles:
   - Auto parts: design
   - Diagnostic testing
   - Exhaust emissions: data analysis
   - Building construction schedules
   - Cement making: proportioning and control of raw materials
   - Clothes: design
   - Construction: estimates of electrical work costs
   - Construction: selection of housing materials
   - Farm management simulation
   - Forestry: planting and cutting trees
   - Graphing of scientific data
   - Harbor and port facilities: planning, evaluation, filling shallows calculations
   - Hotels: guest charge accounting and billing
   - Hotels: registration, reservations
   - Indexes: preparation
   - Inventions and patents: filing, retrieval
   - Literature searching: automatic location of scientific articles
   - Mail-order operations: classifying and coding customers
   - Mail-order operations: ordering processing
   - Mail-order operations: re-starting after fire

21. Transportation

Air freight: automated cargo handling
Air freight: shipment tracing
Air traffic control
Air traffic prediction plots
Aircraft loading requirements charts
Aircraft maintenance: recording, scheduling, analyzing
Airline fare computation
Airline flight schedules: planning
Airline flight simulation
Airline passenger space control
Automatic toll registration
Bus scheduling
Cloud-height-data analyzer for airports
Collision warning systems
Crew training
Elevators: automatic control
Flight plan issuance
Flight simulation
Helicopter rotor evaluation
Motor freight records: analysis
Moving Industry: Tariff analysis
Van management
Navigation systems
Parking garages: automatic control
Pilot training
Position plotting of airplanes
Preventive maintenance scheduling
Railroad car identification and recording
Railroad cars: wheel slip control
Railroad fares: collection allocation
Railroad freight cars: accounting, allocation, distribution, control
Railroad inventory accounting
Rail traffic control, centralized
Reservation systems
Revenue tonnage statistics
Satellite orbit calculations
Seaman training
Ship arrival forecasting
Ship traffic: statistical analysis
Subways: automatic control
Terminal operation simulation
Ticket billing
Ticket validation
Trains: automatic control
Tramp ship operating: computerized bidding
Travel reservations
Trucking:
   - central rating and automatic billing of each shipment
   - reports on the composition of all loads dispatched
   - simulating operating conditions
   - split-second furnishing of status of any shipment
   - traffic control

20. Textile Industry

Dyeing process control
Fabric quality control
Marking systems, automated
Matching colors
Material availability evaluation
Monitoring clothing production
Pattern grading, automated
Production planning
Sales analysis
Style forecasting
Style line reports
Textile design

19. Telephone Industry

Assigning dial equipment
Automatic telephone exchange for private lines
Circuit deviations: determining and repairing
Coin telephone: collecting, accounting
Customer payments
Forecasting for construction planning
Local service charge billing
Long-distance charge billing
Long-distance rates: split-second quotation
Long-distance transmission of data
Message register billing
Speech waves: generation, analysis
Toll ticket billing
Updating "yellow pages" directories
Written message telephoning
Written messages: automatic switching

18. Utilities

Steel sample analysis
Style forecasting
Tariff analysis

17. Steel Industry

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16. Steel Industry

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15. Telecommunication Industry

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14. Telephone Industry

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11. Telephone Industry

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9. Telephone Industry

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8. Telephone Industry

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7. Telephone Industry

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6. Telephone Industry

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5. Telephone Industry

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4. Telephone Industry

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3. Telephone Industry

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2. Telephone Industry

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1. Telephone Industry

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Written messages: automatic switching

Hot sheet mill: computer-controlled
Mill pacing for maximum throughput
Power control: optimization
Production logging
Smelting process: blast furnace stockhouse control
Steel mill simulation
Steel sample analysis
Utilities and power requirements: control

Market Research:
   - Competitive bidding: analysis
   - Future markets: analysis
   - Price change effects: analysis
   - Map compilation and production
   - Meat packaging: mixture, optimization
   - Ore mines: traffic control
   - Personnel selection
   - Real estate: building appraisal and valuation
   - Real estate: matching house-seekers with houses
   - Real estate: information retrieval system
   - Restaurant of ordering
   - Retail store credit authorization
   - Specialized personnel-searching
   - Vending machine programming

For June, 1967

COMPUTERS and AUTOMATION
Applications of Computers

Satellite photography rectification
Satellite research
Satellite tracking
Self-adjusting pilot
Simulation of physiological reactions of astronauts
Space platform "anchorage"
Spacecraft transmitted pictures: assembling, developing
Spaceship positions: precise determination
Static rocket engine checkout
Suspension reaction for airborne stores
Theodolite data reduction
Turbo jet engine testing
Vibrational analysis
Wind tunnel data reduction

2. Astronomy

Artificial satellite orbit calculations
Comet orbits: calculations, analysis
Interplanetary probe calculations
Lunar orbit calculations
Optical measuring engines: control
Planetary orbit calculations
Star density calculations
Stellar evolution calculations
Visual information: detecting, analyzing

3. Biology

Animals: behavior models
Brain: tracing messages from sense organs to the brain
DNA molecular code analysis
Hybrid optimization
Livestock breeding analysis
Livestock feeding control
Livestock-feed ingredient-mix: optimization
Molecules: determination of position of atoms
Species characteristics: correlation analysis
Species varieties: automatic classification

4. Chemical Engineering and Chemistry

Bound chemicals: simulation of reaction between
Chemical analysis
Chemical compounds: structure studies
Chemical kinetics: problem solving
Continuous-flow stirred-tank reactor: simulation and control
Crystal structure factors
Distillation processes: determination of starting times, etc.
Equilibrium equations: studies
Fertilizer-mix: optimization
Flash vapor calculations
Gas-liquid calculation
Hydrocarbons: structure analysis
Ion-exchange column: performance appraisal
Mass spectrometer analysis
Material flow to batch chemical plants: program simulation
Meteorite pattern charting
Molecular structure calculations
Organic compounds: classification
Organic compounds: file searching
Permeability, relative: computations
Process control
Process simulation
Reaction analysis
Spectrum analysis
X-ray crystallography analysis

5. Civil Engineering

Abutment design
Adjustment of level net
Area calculation by coordinates
Azimuth calculations
Beam design
Bridge design
Construction time computation
Curve, arc, line computations and intersections
Cut and fill calculations
Cylindrical shell analysis
Dam design
Distance, station and offset, to a point
Earthwork computations
Elevation calculations
Embarkment stability design
Flood control systems: analysis, synthesis
Freeway assignment
Freezing and thawing of soils
Grain sheet processing
Harbor analysis
Highway design
Highway profiles
Highways: determination of future needs
Levee design
Monthly equipment summary
Oceanographic currents: studies
Oceanographic salinity: studies
Oceanographic temperatures: studies
Pavement design
Photogrammetric data reduction
Pier design
Pipe load computation
Pipe design
Pressure distribution in layered media
Preserved concrete: design
Rainfall simulation
Ramp and interchange design and calculations
Reinforced concrete: design
Routing traffic during emergency conditions
Reservoir design
Retaining wall design
Roadway elevations
Route optimization
Sewage disposal studies
Shell structure design
Slab volumes and other calculations
Soil test analysis
Steel column design
Stress analysis
Survey closure: control
Three-point problem solutions
Transformation of coordinates
Traverse adjustment
Traverse closure
Triangulation
Vertical alignment
Water distribution systems: analysis, optimization
Water system: mathematical models

6. Economics

Household simulation
Industry: analysis, simulation of competition
Input-output analysis
Input-output: analysis, models
Leontief models
Mathematical models of investment planning
Non-linear economic models

7. Electrical Engineering

Antenna design
Cathode tube design
Circuit analysis and design
Circuit assembly: control
Component design
Computer logic circuits: design
Computer wiring: automatic design and control
Economic load dispatching
Electrical analysis of circuit types
Electromagnetic wave propagation in various media
Feedback system, single loop, finding the root locus
Field dynamic error computations
Filter analysis
Generator calculations
Load flow studies
Logical networks: design
Motor calculations
Power network transient studies
Radar echoes
Radiation interference
Short circuit studies
Standard beam antenna patterns
Systems evaluation
Transformer design
Transient performance
Transient wave-tube calculations
Traveling wave-tube calculations
Triode tube needs
Turbo-generators thrust bearing: study, analysis

8. Geology

Contour maps and charts: computer print-out
Earth surface study: formations; changes; projections into future

9. Hydraulic Engineering

Backwater profiles
Compressible and incompressible flow analysis
Culverts: analysis, geometry
Drainage systems design
Flooding and flooding forecasting
Flood control calculations
Flood frequency analysis
Flood routing
Flow in open channels
Ground water: flow of
Hydraulic circuits and components
Hydraulic network analysis
Hydroelectric dam design
Multi-purpose water-reservoir system management
Pipe stresses
Reservoir augmentation
Reservoir area computations
Sewer design
Shock-wave effect analysis
Surge-tube analysis
Turbine speed regulation
Unit hydrographs: determination
Water hammer analysis
Wave motion analysis
Wind-wave analysis

10. Marine Engineering

Beam shapes: structural analysis
Compartment pressures in emergency situations
Compartment ventilation calculations
Force analysis of space structures
Form calculations
Fuel rate analysis

COMPUTERS and AUTOMATION for June, 1967
Applications of Computers

11. Mathematics

Bessel functions
Boolean algebra calculations
Calculus of variations
Computer programming produced by one computer for another one (bootstrapping)
Constants, important: evaluation
Convolution
Coordinate rotation and translation
Curve fitting
Determinant evaluation
Differentiation: numerical
Difference equations solution
Differential equations solution
Differentiating symbolically
Dynamic programming equations: solutions
Eigenvalues and eigenvectors: calculations
Fourier analysis and synthesis
Function tables: computation
Integral equations
Integration: numerical
Integration of functions
Intelligence: simulation of human thinking processes
Lagrange interpolation
Least squares fit to inconsistent equations
Linear programming equations: solutions
List processing
Logarithms
Matrix inversion
Matrix multiplication
Multi-dimensional partial differential equations
Multiple integrals
Numerical base conversion
Partial differential equations: solutions
Partial differential equations: solutions
Roots
Proportional gain
Reciprocals
Recursive functions: computation
Simulations of mathematical equations and solutions
Simultaneous linear equations
Simultaneous non-linear equations
Simultaneous ordinary differential equations
Square roots
Stochastic difference equations
Table computation (evaluation of functions)

12. Mechanical Engineering

Air conditioning calculations
Arch analysis and design
Building frames for reinforced concrete construction: Hardy Cross analysis
Cam design
Casing design
Combustion computations
Composite strings design
Compressors: horsepower calculations
Conveyor geometry
Crankshaft vibration analysis
Engine and piston computations
Engineering drawings: producing, finishing
Flange cross sections, table of properties
Foundation settling: effects
Heat flow
Heat loss of rooms and buildings
Machine vibration analysis
Moments of inertia
Orifice factors: computations
Pipe-stress analysis
Piping systems, flexibility analysis
Pressure vessel computations
Propeller pitch correction
Reinforced concrete: bending, stress, etc.
Rigid body vibrations: analysis
Rigid frames: moment distribution analysis
Shell analysis: stress distribution
Temperature stresses
Throttling device computation
Torsional systems, bearing loads, and engine forces: Holzer analysis
Truss analysis: stress and deflections
Vehicle checkout calculations
Vibration analysis

13. Medicine and Physiology

Ambulatory clinic records control
Anesthesia control
Arterial physiology research
Alveolar gas parameter computations
Bacteria in photographs, slides: counting
Ballistocardiogram analysis
Biologic rhythm studies
Biologic significance of surface waves
Blood cells in photographs, slides: counting
Blood chemistry determination
Blood grouping and typing
Blood samples: analysis
Blood vessels — distensibility: determination
Blood volume: calculation of total amount in circulation and loss
Bone crystal structures: calculations
Cancer: diagnosis and treatment
Cerebral slow waves: correlation and spectral analyses
Cervical and vaginal smear screening
Chromosomal analysis
Clinical data: statistical analysis
Compartmental rate exchange parameters
Controlled artificial hand
Coronary artery disease prediction
Cytotoxicometric analysis
Dermatoglyphic diagnosis
Diagnosis of disease
Diagnostic possibilities: listing, suggestions, comments
Eating habit pattern
Ecological system simulation
Effect of drugs on animals: studies
Effect of drugs on human body: studies, analysis of effectiveness
Effects of organic chemical compounds in malaria, radiology, schistosomiasis, etc.
Effect of radio-frequency waves on biological macromolecules: studies
Electrocardiogram integration and analysis
Electroencephalogram analysis
Enzyme kinetic representations
Evoked brain-wave response analysis
Eye muscle studies
Fatigue research
Fetal heart beat recording
Gastrointestinal tract pressures: detection and recording
Gene frequency calculation
General anesthetic simulation
Growth and physique studies
Hearing loss: testing analysis
Heartbeat analysis
Human brain simulation
Human ear simulation for speech analysis
Human eye: simulation for hearing analysis
Human retinal and brain responses to light simulation
Hypertensive pressure computations
Intestinal absorption rate measurement
Intracranial lesions, site stability, nature: studies
Iodine metabolism computation
Isotope tracer studies: analysis
Location of pain-transmitting area in brain
Malignant tissues, location
Medical data: telemetering and analysis
Medical literature: indexing, analysis
Medical tests: analysis
Medication administration schedules
Metabolic control involving chemical feedback
Motor system coordination testing
Neural events: studies
Neuroelectric data processing
Neuron signal conduction theory: Nutritional intake analysis
Ocular lesions, site, stability, nature: studies
Ophthalmologic disorders simulation
Optimum therapeutic procedure determination
Patient history recording
Patient simulators for training in anesthesiology
Pediatric cardiac diagnosis
Pharmacological research: patient simulation
Photocardiogram analysis
Physiology of the eye: analysis
Post-mortem examination analysis
Probability in medical diagnosis
Psychiatric test scoring
Pulse analysis
Pupil servomechanism analysis
Applications of Computers

1. Radiation therapy
   - Red cell volume: calculation
   - Renal function simulation
2. Screening community population for the presence of heart disease
3. Shock therapy: monitoring of patient condition
4. Speech research
5. Symptom-disease complexes
6. Temperature of man: simulation
7. Toxicity data analysis
8. Tumors, location
9. Whole blood supply and distribution control
10. X-ray analysis

11. Meteorology
   - Atmospheric turbulence and diffusion: simulation
   - Cloud picture processing
   - Flood control
   - Global weather simulation
   - Hurricane forecasting
   - Ionosonde charting
   - Short-range storm observation and forecasting
   - Weather forecasting
   - Weather research: gridding of picture data
   - Weather satellites: real-time assessment

12. Meteorology
    - Submerged flow: potential patterns
    - Underwater acoustic experiments
13. Nuclear Engineering
    - Engines: tests, data control
    - Multigroup criticality calculations
    - Neutron diffraction
    - Neutron flux distribution
    - Neutron transport
    - Power plant monitoring
    - Radiactive fallout: analysis, prediction
    - Radiactive level calculations
    - Reactor control
    - Reactor design and evaluation
    - Reactor simulators

14. Metallurgy
    - Alloy calculations
    - Crystal structure computations
15. Meteorology
    - Atmosphere turbulence and diffusion: simulation
    - Cloud picture processing
    - Flood control
    - Global weather simulation
    - Hurricane forecasting
    - Ionosonde mapping
    - Meteorologie pattern charting
    - Short-range storm observation and forecasting
    - Weather forecasting
    - Weather research: gridding of picture data
    - Weather satellites: real-time assessment
16. Military Engineering
    - Ballistic trajectories
    - Bomb impact analysis
    - Bombing tables
    - City evacuation studies
    - Command and control: systems, displays
    - Fire control
    - Firing tables
    - Missiles: analysis, calculations
    - Controlling
    - Designing
    - Directing
    - Drafting structural parts
    - Intercepting
    - Launching
    - Predicting impact points
    - Recovering
    - Pursuit and combat: analysis, control
    - Radar defense systems: analysis, calculations
    - Reconnaissance data: analysis and interpretation
    - Rocket trajectories
    - Strategic weapons systems: studies, assessment
    - Strategy analysis and optimization
    - Submarine battles: simulation for crew training
    - Tactical weapons systems: studies
    - Trajectory calculations
    - Weapons control
    - Weapons systems analysis and evaluation
17. Naval Engineering (see also Marine Engineering)
    - Anti-submarine warfare simulation
    - Cavitation studies
    - Component attrition rate analysis
    - Decompression tables
    - Minesweeper vessels navigation
    - Submersible flow: potential patterns
    - Underwater acoustic experiments
18. Nuclear Engineering
    - Engines: tests, data control
    - Multigroup criticality calculations
    - Neutron diffraction
    - Neutron flux distribution
    - Neutron transport
    - Power plant monitoring
    - Radiactive fallout: analysis, prediction
    - Radiactive level calculations
    - Reactor control
    - Reactor design and evaluation
    - Reactor simulators

19. Photography
    - Aerial photographs: distortion compensation
    - Color analysis
    - Color separation negatives: scanner for automatic production
    - Lens coating calculations
    - Optical ray tracing
    - Optical system design
20. Physics
    - Atom-human communications system
    - Cosmic radiation: statistical analysis
    - Crystallography analysis
    - Elastic particle collision studies
    - Electron distributions
    - Electron trajectories
    - Gamma ray particles: multiparameter analysis
    - Intratomic bond lengths and angles
    - Shock waves analysis
    - Thermodynamic equations
21. Psychology
    - Canonical analysis
    - Cognitive processes simulation
    - Data reduction and analysis
    - Factor analytic studies
    - Human language behavior: analysis, synthesis
    - Learning and behavior studies
    - Multiple regressive models for prediction
    - Neural behavior simulation
    - Pattern analytic methods: agreement analysis, configurational analysis, multiple scalargram analysis, profile analysis
    - Perception studies
    - Psychological tests: analysis
    - Space flights: study of behavior
    - Time and motion studies: data collection and analysis
22. Sociology
    - Data reduction and analysis
    - Social behavior simulation
    - Social processes: hypothesis testing
    - Sociometric data: analysis
    - Voting behavior simulation
23. Statistics
    - Bernoulli probability
    - Beta function calculation
    - Binomial coefficient calculations
    - Chi squared function calculations
    - Complex error function and integral

Correlation
Covariance
Factor analysis
Forecasting
F-test
Gamma function
Gaussian probability
Hypergeometric probability
Least-square-polynomial fitting
Maximum likelihood functions
Moments
Moving averages
Multiple regression
Non-linear estimation
Period search
Poisson probability
Sampling
Sampling implementation
Time series analysis and adjustment
T-test I (sample mean vs. population mean)
T-test II (difference between two means)
Variance: analysis

IV. Humanities

1. Archeology
   - Archeological data: information retrieval and analysis
   - Artifacts found at sites: classifying, reconstructing
   - Museum accession records: information retrieval and analysis
   - Pottery shards found at sites: analyzing, classifying, reconstructing
   - Stones found at sites: determining whether of natural or human origin based on analysis of angles and other characteristics
2. Anthropology
   - Cords and string: analysis
   - Content analysis for cross-cultural values study
3. Art
   - Designs by computer
   - Graphic representation by computer
4. Games of skill
   - Checkers: championship play
   - Chess: rudimentary play
   - Kalah: excellent play
   - Nim: perfect play
   - Quad: excellent play
   - Tic-tac-toe: perfect play
5. Genealogy
   - Data analysis
6. Geography
   - Map production
   - Record matching
   - Spatial pattern analysis
   - Theory testing
7. History
   - Census records — ecological implications: analysis, summaries
   - Congressional voting records — social implications: analysis, summaries
   - Court records and decisions — implications: analysis, summaries

(Please turn to page 136)
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- statistical trend charts
- molecular structure diagrams
- apparel patterns, graded for sizes
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it can

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CHARACTERISTICS OF GENERAL PURPOSE DIGITAL COMPUTERS

The purpose of this report is to give the characteristics of general purpose digital computers currently available for sale or rent. The three sections give: (1) Internal Characteristics; (2) Input and Output; and (3) Cost and Use. Any additions, corrections, or comments are invited.

EXPLANATION OF READINGS

Internal Characteristics

Solid State?: If the computer is built with primarily solid state devices such as transistors, distinguished from non-solid state devices such as vacuum tubes, a "Y" appears in this column. Solid state devices are generally more reliable than non-solid state devices.

Number System:
Number Base: the number base the machine uses internally (either binary, octal, or decimal).
Bits/Digit: the number of binary bits per digit (digit is either a binary, octal, or decimal digit; see Number Base.)
Digits/Alphabetic: the number of digits used to represent an alphabetic character.
Word Length: the number of numerical digits per machine word.

Memory:
Number of Words: the number of machine words contained in the memory; may be broken into two or more memory types on two or more lines. Whenever the machine word length is "variable", the Number of Words refers not to the number of machine words but to the number of digits.
Type: memory type, such as magnetic drum (abbreviated "drum"), core storage or delay line.
Access Time: the time required to retrieve information from the memory.

Timing -- Add, Multiply, Divide: the average time required to get and complete one operation instruction.

Machine Programming:
Number of Instr.: the number of distinct instructions in the machine's repertoire.
Addresses/Instr.: the number of operand addresses per instruction.
No. Index Registers: a "0" indicates no indexing possible; a "Y" indicates that indexing is possible but information as to the number of index registers was not received.
Indirect Addressing?: "Y" indicates indirect addressing is possible.
Floating Point?: "Y" indicates that the machine can perform in a floating-point mode. (Floating-point arithmetic can be programmed on all machines.)

Input and Output

Magnetic Tape:
No. of Units: maximum number of tape transports which can be directly connected to the computer.
Tape Density: characters per inch.
Words/Tape: capacity of a reel of tape.
Punched Cards: speed of reading and punching cards.

Paper Tape:
No. of Units: maximum number of tape transports which can be directly connected to the computer.
Tape Density: characters per inch.
Words/Tape: capacity of a reel of tape.
Punched Cards: speed of reading and punching cards.

Printer Speed: speed of printing, complete lines printed per minute.

Cost and Use

Average Monthly Rental: the rental at an average installation.
Rental Range: the monthly rental range made possible by different configurations of available equipment.
One-Sum Price Range: the range of selling price.
Power: electricity requirements for an average installation.
Floor Space: floor space needed at an average installation.
Air Cond. -- Tons: air conditioning required at an average installation.

Abbreviations Used

A/D -- analog to digital
B -- binary
DA -- digital to analog
ETB -- binary to decimal
D -- decimal
DE -- decimal to binary
DIG -- fast bands on memory
FBD -- fast bands on memory
I/O -- input/output
K -- 1000
KK -- 1,000,000
M -- milliseconds, thousandth
m -- microsecond, millionth
n -- nanosecond, billionth
V -- variable
Y -- yes

Adage, Inc., 1079 Commonwealth Ave., Boston, Mass. 02215
Amilog 200
Advanced Scientific Instruments Co., a div. of Electro-Mechanical Research, Inc., 5249 Hanson Court, Minneapolis 29, Minn.
ASI 210, ASI 420, ASI 1900, ASI 6020, ASI 6040
ALMAC II-E, formerly made by above, no longer in production.
Bailey Meter Co., Wickliffe, Ohio 44092
Bailey 655
The Bunker-Ramo Corp., 4533 Fallbrook Ave., Canoga Park, Calif.
BR-133
Burroughs Corporation, 6071 Second Ave., Detroit 32, Mich.
Burroughs E-103, 205, 220, 200 Series, 300, 2500/3500, 5500, 6500
Business Information Technology, Inc., Three Erie Dr., Natick, Mass. 01760
BIT 480, BIT 480F
Clary Corporation, 408 Junipero St., San Gabriel, Calif.
DE-60, DE-600
Collins Radio Co., Dallas, Texas 75207
C-5500
Compagnie europeene D'Automatisme Electronique, 151 Rue de Billancourt, Boulogne-Billancourt Siene, France.
CAE 510
**Digital Computers**

DDP-24, DDP-224

Control Data Corp., 8100 34th Ave. S., Minneapolis 20, Minn.
CDC-160, CDC-160A, CDC-924, CDC-924A, CDC-1604, CDC-1604A,
CDC-1606, CDC-1700, CDC-3100, CDC-3150, CDC-3200, CDC-3300,
CDC-3400, CDC-3600, CDC-3600, CDC-6400, CDC-6500, CDC-6600,
CDC-6800, CDC-6900, CDC-6992, 6-15, 6-20

Digital Electronics Inc., Ames Ct., Engineers Hill, Plainview, N.Y. 11003
DIGITAL 3080

Digital Equipment Corp., Main St., Maynard, Mass.
PDP-1, PDP-4, PDP-5, PDP-6, PDP-7, PDP-8

Electro-Mechanical Research, Inc., Computer Div., 8001 Bloomington Freeway, Minneapolis, Minn. 55420
ADVANCE 6020, 6040, 6050, 6070

Electronic Associates, Inc., West Long Branch, N.J. 07764
EAI-640, EAI-6400

English Electric Computers Ltd., Portland House, Stag Place, London SW1, England
EEC 4-50, EEC 4-70

Friden, Inc., 2350 Washington St., San Leandro, Calif.
Friden 6010

Fujitsu Ltd., Furukawa Sogo Bldg., B, 2-chome, Marunouchi,
Chiyoda-ku, Tokyo, Japan
230-50, 230-60, 270-10, 270-20, 270-30

GE-115, GE-205, GE-210, GE-215, GE-225, GE-235, GE-415,
GE-425, GE-455, GE-625, GE-635, GE Datnet-30

General Precision Ltd., 800 Western Ave., Glendale 1, Calif.
General Precision LGP-21, LGP-30, L-2010, L-3000,
RPG-4000

H-W Electronics, Inc., 14 Huron Dr., Natick, Mass.
HW-15K

SEMA 2000, SEMAC

Honeywell Electronic Data Processing Div., 60 Walnut St.,
Wellesley Hills 81, Mass.
DAMOMATIC 1000*, H-120, H-200, H-400, H-800, H-1200,
H-1400, H-1800, H-2200, H-2202, H-2800

Hughes Aircraft Company, Fullerton, Calif.
H-330

International Business Machines Corp., Data Processing Div.,
112 E. Post Rd., White Plains, N.Y.
IBM 3050, IBM 360, IBM 360/20, IBM 650, 704, 705 111,
709, 1130, 1401, 1410, 1440, 1460, 1620, 1620 MODEL II,
1800, 7010, 7030, 7040, 7044, 7070, 7072, 7074, 7080,
7090, 7094 II

The Marconi Co., Ltd., Marconi House, Chelmsford, Essex,
England.
Myriad 111

Mathatronics, 241 Crescent St., Waltham, Mass. 02154
Mathatronics 4200TD

Monroe Calculating Machine Co., Inc., 555 Mitchell St.,
Orange, N.J.
Monrobot XI

The National Cash Register Co., Main & K Sts., Dayton 9, Ohio
NCR 304, 310, 315, 315-RMC-1, 315-RMC-11, 390, 500

Oki Electric Industry Co., Ltd., 10 Shiba Kotchiracho, Minn Toku,
Tokyo, Japan
OKMINITAC-7000

Pacific Data Systems, Inc., 644 Young St., Santa Ana, Calif.
92705

PDP-1020

Philco Corp., Government & Industrial Group, Computer Div.,
3900 Welsh Rd., Willow Grove, Pa.
Philco 102, 102M, 1000, 2000-210, 2000-211, 2000-212

Radio Corp. of America, Electronic Data Processing Div.,
Front & Cooper Sts., Camden 2, N.J.
RCA 301, 501, 601, 3301, RCA Spectra 70/15, 25, 35, 45,
46, 55

Raytheon Computer, 2700 So. Fairview St., Santa Ana, Calif.
92704

Raytheon 250, 520

Scientific Control Corp., 14006 Distribution Way, Dallas,
Texas 75234

SCE 650, 655, 660, 670

Scientific Data Systems, Inc., 1542 Fifteenth St.,
Santa Monica, Calif.
SDS-910, 920, 930, 940, Sigma 2, Sigma 5, Sigma 7

Spear, Inc., 335 Bear Hill Rd., Waltham, Mass. 02154
Micro-LINC-300

Systems Engineering Labs., Inc., 6901 W. Sunrise Blvd., Ft.
Lauderdale, Fla. 33313

SIC 6104, 8404

UNIVAC Division of Sperry Rand Corp., 1290 Ave. of the
Americans, New York 19, N.Y.
Univac I, II, III, 60/120, 490, 1004 II, 1004 III,
1050, 1103A, 1105, 1107, 1108, 9200, 9300, Univac File
Computer I, II, Univac Larc, Univac SS 60/90, SSX/90 II

Zuse KG, Industriestrasse 19-21, 643 Bad Hersfeld, Germany
Z-23, Z-25, Z-26, Z-31

* Honeywell DATAMATIC 1000 listed under DATAMATIC

<table>
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<tr>
<th>NAME OF COMPUTER</th>
<th>NUMBER SYSTEM</th>
<th>MEMORY</th>
<th>TIMING</th>
<th>MACHINE PROGRAMMING</th>
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**INTERNAL CHARACTERISTICS**

| NAME OF COMPUTER | NUMBER BASE | BITS/DIGIT | WORD LENGTH | NUMBER OF WORDS | TYPE | ACCESS TIME | ADD TIME | MULTIPLY TIME | DIVIDE TIME | NUMBER OF INSTR.
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**COMPUTERS and AUTOMATION** for June, 1967
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</tr>
<tr>
<td>Burroughs 205</td>
<td>N</td>
<td>D</td>
<td>4 2 10</td>
<td>60 FBD</td>
<td>.85m</td>
</tr>
<tr>
<td>Burroughs 220</td>
<td>N</td>
<td>B</td>
<td>4 2 10</td>
<td>2-10K core 10u</td>
<td>185u</td>
</tr>
<tr>
<td>Burroughs 200 Series</td>
<td>Y</td>
<td>B</td>
<td>7 7 4</td>
<td>4.1K</td>
<td>0.7K</td>
</tr>
<tr>
<td>Burroughs 300</td>
<td>Y</td>
<td>B</td>
<td>8 12 96</td>
<td>19.2K core 6u</td>
<td>.69m</td>
</tr>
<tr>
<td>Burroughs 2500/3500</td>
<td>Y</td>
<td>B</td>
<td>8 2 16</td>
<td>10-50K core 1u</td>
<td>31.5u</td>
</tr>
<tr>
<td>Burroughs 5000</td>
<td>Y</td>
<td>B</td>
<td>3 2 13</td>
<td>4-32K core 6u</td>
<td>10u</td>
</tr>
<tr>
<td>Burroughs 5500</td>
<td>Y</td>
<td>B</td>
<td>6 8 48</td>
<td>32K core 4u</td>
<td>1m</td>
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<td>Burroughs 6500</td>
<td>Y</td>
<td>B</td>
<td>6 8 48</td>
<td>106K thin film 600n</td>
<td>.4m</td>
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<tr>
<td>CAE 510</td>
<td>Y</td>
<td>B</td>
<td>1 6 18</td>
<td>8-32K core 6u</td>
<td>12u</td>
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<tr>
<td>C-6500</td>
<td>Y</td>
<td>B</td>
<td>4 32 65K core 520n</td>
<td>4.5u</td>
<td>363u</td>
</tr>
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## Digital Computers

<table>
<thead>
<tr>
<th>NAME OF COMPUTER</th>
<th>INTERNAL CHARACTERISTICS</th>
<th>MACHINE PROGRAMMING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NUMBER SYSTEM</td>
<td>MEMORY</td>
</tr>
<tr>
<td></td>
<td>Bits/Digit</td>
<td>Words/Alphabetic</td>
</tr>
<tr>
<td>CDC-6-15</td>
<td>N</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>-- Repeat command, indexing by means of interpretive system only.</td>
<td></td>
</tr>
<tr>
<td>CDC-6-20</td>
<td>Y</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>-- Overflow, parity, illegal address checks. Repeat command for add, subtract, test and logic.</td>
<td></td>
</tr>
<tr>
<td>CDC-160</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Relative and direct addressing; multiply and divide are programmed.</td>
<td></td>
</tr>
<tr>
<td>CDC-160A</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Relative and direct addressing. Parity check on I/O transfers. Automatic check on power failure.</td>
<td></td>
</tr>
<tr>
<td>CDC-1606</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td>CDC-924</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Parity checking on I/O transfers. Logical and masking operations, search instructions, parallel mode of operation, real time clock, program interrupt.</td>
<td></td>
</tr>
<tr>
<td>CDC-924A</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Same as 924 except: additional mask interrupt feature, faster data transfer rates (1/0).</td>
<td></td>
</tr>
<tr>
<td>CDC-1604</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Parity check on I/O transfers. 2 instructions per word. Real-time clock. Program interrupt.</td>
<td></td>
</tr>
<tr>
<td>CDC-1604A</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Same as 1604 except: additional mask interrupt feature, faster data transfer rates (1/0).</td>
<td></td>
</tr>
<tr>
<td>CDC-1700</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Memory protect parity.</td>
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<tr>
<td>CDC-3100</td>
<td>Y</td>
<td>6</td>
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<tr>
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<td>-- Memory protection parity.</td>
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<tr>
<td>CDC-3150</td>
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<td>6</td>
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<tr>
<td></td>
<td>-- Memory protection parity.</td>
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<tr>
<td>CDC-3200</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>-- Microprogramming available in character handling. Complete parity check - one parity bit associated with each 6 byte bit of 24 bit word, BCD arithmetic, character addressing, priority interrupts.</td>
<td></td>
</tr>
<tr>
<td>CDC-3300</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Multiprogramming module.</td>
<td></td>
</tr>
<tr>
<td>CDC-3400</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Parity checking on I/O transfers and storage.</td>
<td></td>
</tr>
<tr>
<td>CDC-3600</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Parity checking on I/O transfers and storage parity. Microprogramming option available. Storage expandable in 16K modules to 262K. Additional data channels to a total of 32 may be added.</td>
<td></td>
</tr>
<tr>
<td>CDC-3800</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td>CDC-6000</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td>CDC-6500</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Memory protection, 2 central processors, 10 peripheral processors.</td>
<td></td>
</tr>
<tr>
<td>CDC-6600</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>-- Indirect addressing only in peripheral processor. Checking on I/O equipment and transfer to and from computer. 10 functional units, 32-12 bit stack with look-ahead and -back.</td>
<td></td>
</tr>
<tr>
<td>CDC-6900</td>
<td>Y</td>
<td>6</td>
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<tr>
<td>CDC-6909</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>-- 3 I/O operation can. Relative (forward and backward) and direct microprogramming.</td>
<td></td>
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</table>

94 COMPUTERS and AUTOMATION for June, 1967
### INTERNAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>NAME OF COMPUTER</th>
<th>NUMBER SYSTEM</th>
<th>MEMORY</th>
<th>TIMING</th>
<th>MACHINE PROGRAMMING</th>
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<tbody>
<tr>
<td></td>
<td>Number Base</td>
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<td>Number of Inst.</td>
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<tr>
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<td>Bits/Digit</td>
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<td></td>
<td>Addresses/Instr.</td>
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<td>Digits/Alphabetic</td>
<td></td>
<td></td>
<td>Indirect Addressing?</td>
</tr>
<tr>
<td></td>
<td>Word Length</td>
<td></td>
<td></td>
<td>Floating Point?</td>
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<tr>
<td>CDC-8092</td>
<td>Y B 6 6 12</td>
<td>2-4K core 4u 8-12u</td>
<td>42 1 Y N</td>
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<tr>
<td>DATamatic 1000</td>
<td>N D 4 6 48</td>
<td>2K core 12u 115u</td>
<td>69 3 N N</td>
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<tr>
<td>DIGIAC 3080</td>
<td>Y B 6 4 24</td>
<td>4K core 4m 500m 5m 5m</td>
<td>1 N Y</td>
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<tr>
<td>DDP-24</td>
<td>Y B 4 6 24</td>
<td>4-32K core 3u 10u 30u 32u</td>
<td>59 1 Y N</td>
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<tr>
<td>DDP-224</td>
<td>Y B 4 6 24</td>
<td>4-65K core .8u 3.0 6.45 17.0</td>
<td>72 1 Y N</td>
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<tr>
<td>DE-60</td>
<td>Y D 4 18 72 32-160 128-160 core 1.65u 3.3u 18.15u 18.975u</td>
<td>64 1 1 Y Y</td>
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<td>DE-600</td>
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<tr>
<td>EAI-640</td>
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<tr>
<td>EAI-8400</td>
<td>Y B 8 4 32</td>
<td>65K core 1u 5.28 8.06 11.39</td>
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<td>EEC 4-50</td>
<td>Y B 8 4 32</td>
<td>128 core .3u 15.6u 72.8u 102u</td>
<td>144 2 15 Y Y</td>
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<td>EEC 4-70</td>
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<td>128 core .3u 15.6u 72.8u 102u</td>
<td>144 2 15 Y Y</td>
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<tr>
<td>FACOM 212</td>
<td>D 13 56K</td>
<td>150m 4500m</td>
<td>0 N N</td>
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<tr>
<td>FACOM 222</td>
<td>D 13 10K</td>
<td>10m 160m</td>
<td>99 N Y</td>
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<tr>
<td>FACOM 230-10</td>
<td>8 V 8 8 core 2.2m 150m</td>
<td>N N</td>
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<tr>
<td>FACOM 230-20</td>
<td>V 65K core 1.8m 76m</td>
<td>2 Y N</td>
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<tr>
<td>FACOM 230-30</td>
<td>V 65K core 2.2m 50m</td>
<td>2 Y Y</td>
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<tr>
<td>FACOM 230-40</td>
<td>V 123K core .75m 19.4m</td>
<td>Y Y</td>
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<tr>
<td>FACOM 230-50</td>
<td>B 42 65K core 2.2m 4.4m</td>
<td>7 Y Y</td>
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<tr>
<td>FACOM 230-60</td>
<td>B 42 129K core .92m 11.5m</td>
<td>7 Y Y</td>
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<tr>
<td>FACOM 231</td>
<td>V 32K 15m 495m</td>
<td>0 Y N</td>
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<tr>
<td>FACOM 241</td>
<td>D 8 9K 10m 120m</td>
<td>8 N N</td>
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<tr>
<td>FACOM 270-10</td>
<td>B 1.7 4K core 2.2m 200m</td>
<td>3 N N</td>
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<tr>
<td>FACOM 270-20</td>
<td>B 18 32K 128K core 2.4m 4.8m</td>
<td>3 Y N</td>
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<tr>
<td>FACOM 270-30</td>
<td>B 10 65K 256K core 2.75m 1.5m</td>
<td>3 Y N</td>
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<tr>
<td>Friden 6010</td>
<td>Y B 4 64 15 core 100u 1.3m 50m</td>
<td>242 1 N N</td>
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<tr>
<td>GE-115</td>
<td>Y B D 4 10 4-16K core 6.5m 112m</td>
<td>39 2 Y N</td>
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</tbody>
</table>

**COMPUTERS and AUTOMATION for June, 1967**

95
### Digital Computers

<table>
<thead>
<tr>
<th>NAME OF COMPUTER</th>
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<th>MEMORY</th>
<th>TIMING</th>
<th>MACHINE PROGRAMMING</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Base</td>
<td>Words</td>
<td>No. Index Registers</td>
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<td>Bits/Digit</td>
<td>Number of Words</td>
<td>Indirect Addressing?</td>
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<td>Digits/Alphabetic</td>
<td>Access Time</td>
<td>Floating Point?</td>
</tr>
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<td>Word Length</td>
<td>Add Time</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Multiply Time</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Divide Time</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Number of Instr.</td>
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<tr>
<td>GE-205</td>
<td>Y B 6 6 20</td>
<td>4-16K core 36u 72u 198u</td>
<td>504u</td>
<td>300+</td>
<td>1 96 Y</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 digits per word. Multiple read-write-compute. MICR document sorter-reader available. Correct storage unit with 199 ms access time; data communications equipment available.</td>
<td></td>
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<tr>
<td>GE-210</td>
<td>Y B 4 28</td>
<td>4-8K core 32u 64u</td>
<td>1760u</td>
<td>120</td>
<td>1 0 N N</td>
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<tr>
<td></td>
<td></td>
<td>All system memory is directly addressable by processors, 1/0 controllers, and real-time devices. Total mission compatibility for commercial, aerospace and ground-based military computers.</td>
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<td>GE-215</td>
<td>Y B 6 3 18</td>
<td>4-16K core 36u 72u</td>
<td>513u</td>
<td>300+</td>
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<tr>
<td>GE-225</td>
<td>Y B 6 3 18</td>
<td>4-16K core 18u</td>
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<tr>
<td>GE-235</td>
<td>Y B 6 3 18</td>
<td>4-16K core 6u 12u</td>
<td>165u</td>
<td>300+</td>
<td>1 120 Y Y</td>
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<tr>
<td>GE-415</td>
<td>Y D 6 24</td>
<td>4-32K core 5.8u 17.4u</td>
<td>390u</td>
<td>200+</td>
<td>1-2 6+ Y Y</td>
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<tr>
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<td>Floating point arithmetic optional. Rotocatable accumulator. Multiple read-write-compute, floating point arithmetic available. Disc storage units available. Direct-access data communications provisions optional.</td>
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<tr>
<td>GE-425</td>
<td>Y D 6 24</td>
<td>8-32K core 5.1u 15.9u</td>
<td>362u</td>
<td>590u</td>
<td>200+</td>
</tr>
<tr>
<td></td>
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<td>Floating point arithmetic optional. 4-bit decimal add and subtract; 3 digits per word. Multiple read-write-compute. MICR document sorter-reader available. Correct storage unit with 199 ms access time; data communications equipment available.</td>
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<tr>
<td>GE-435</td>
<td>Y D 6 24</td>
<td>16-32K core 2.7u 8.8u</td>
<td>250u</td>
<td>450u</td>
<td>200+</td>
</tr>
<tr>
<td>GE-625</td>
<td>Y B 6 3 36</td>
<td>32-262K core 2u 3u 6u</td>
<td>14.5u</td>
<td>170</td>
<td>1 8+ Y Y</td>
</tr>
<tr>
<td></td>
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<td>All system memory is directly addressable by processors, 1/0 controllers, and real-time devices. Total mission compatibility for commercial, aerospace and ground-based military computers.</td>
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</tr>
<tr>
<td>GE-635</td>
<td>Y B 6 3 36</td>
<td>32-262K core 1u 2.7u</td>
<td>5.9u</td>
<td>14.2u</td>
<td>170</td>
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<tr>
<td>GE DATANET-30</td>
<td>Y B 6 3 18</td>
<td>16K core 6.94u 13.88u</td>
<td>76</td>
<td>1 3 Y N</td>
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<tr>
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<td></td>
<td>Interval times for checking. Multiple indexing with indirect addressing.</td>
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</tr>
<tr>
<td>General Precision</td>
<td>Y B 6 4 32</td>
<td>4K disc 5m</td>
<td>.39m</td>
<td>25m</td>
<td>26u</td>
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<tr>
<td>LFP-21</td>
<td></td>
<td>Oscilloscope display of registers.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Precision</td>
<td>N B 4 32</td>
<td>4K drum 8.5m</td>
<td>.25m</td>
<td>17m</td>
<td>17m</td>
</tr>
<tr>
<td>LFP-30</td>
<td></td>
<td>Interlacing of words on drum reduces memory access time. No automatic checking. Oscilloscope display of registers. Programmed subroutines.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Precision</td>
<td>Y B 4 48</td>
<td>4-64K core 2.5u 16u</td>
<td>23u</td>
<td>36u</td>
<td>97</td>
</tr>
<tr>
<td>L-2019</td>
<td></td>
<td>Parity checking throughout system, verified arithmetic unit, dual recording optional in files. Breakdown control, program branching via flip-flops.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Precision</td>
<td>Y B 6 32</td>
<td>8K drum 8.5m</td>
<td>.25m</td>
<td>17m</td>
<td>17m</td>
</tr>
<tr>
<td>RPC-4000</td>
<td></td>
<td>Parity checking of input.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>H-120</td>
<td>Y B 4 1 4</td>
<td>32K core 1.5u 60u</td>
<td>3.7m</td>
<td>3.1m</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multiply, divide programmed. Up to 3 read-write channels.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>H-200</td>
<td>Y B 4 1 4</td>
<td>65K core 1u 42u 413u</td>
<td>213u</td>
<td>40</td>
<td>2 15 Y N</td>
</tr>
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<td>Floating point simulated by software. Use variant character to specialize operation.</td>
<td></td>
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<tr>
<td>H-330</td>
<td>Y B 48 16-131K</td>
<td>1.8u</td>
<td>1.8u</td>
<td>1</td>
<td>24 Y Y</td>
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<tr>
<td></td>
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<td>Instruction look-ahead and overlapped core banks allow increased internal speed. Word size may be 24, 30, 36 or 48 bits. 24 decrement registers available.</td>
<td></td>
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</tr>
<tr>
<td>H-400</td>
<td>Y B 4 8 48 4K</td>
<td>9.25m 102m</td>
<td>1.3m</td>
<td>1.8</td>
<td>66</td>
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<td></td>
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<td>Orthotronic control. Automatic hardware program interrupt.</td>
<td></td>
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<tr>
<td>H-800</td>
<td>Y B 4 8 48 32K</td>
<td>core 3w 24w 162w 132w</td>
<td>60</td>
<td>3 8 Y Y</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>0 multiple channel programming. 16 I/O simultaneous operations.</td>
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</tbody>
</table>
## Digital Computers

### INTERNAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>NAME OF COMPUTER</th>
<th>NUMBER SYSTEM</th>
<th>MEMORY</th>
<th>TIMING</th>
<th>MACHINE PROGRAMMING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Solid State?</td>
<td>Number Type</td>
<td>Bits/Digit</td>
<td>Access Time</td>
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<td></td>
<td></td>
<td>Number Value</td>
<td>Digits/Alphabetic</td>
<td>Word Length</td>
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<td></td>
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<td>Number of Words</td>
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<td></td>
<td></td>
<td>Type</td>
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<td><strong>H-1200</strong></td>
<td>Y B 4 1 4</td>
<td>121K core</td>
<td>.75u</td>
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<td><strong>H-1400</strong></td>
<td>Y B 4 8 48</td>
<td>32K core</td>
<td>6.5u</td>
<td>76u</td>
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<td><strong>H-1600</strong></td>
<td>Y B 4 6 48</td>
<td>65K core</td>
<td>1u</td>
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<td><strong>H-2200</strong></td>
<td>Y B 4 1 4</td>
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<td><strong>H-2400</strong></td>
<td>Y B 4 1 4</td>
<td>524K core</td>
<td>94u</td>
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<td><strong>H-2600</strong></td>
<td>Y B 4 0 48</td>
<td>131K core</td>
<td>250m</td>
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<tr>
<td><strong>IBM-15K</strong></td>
<td>Y 0 6 6 24</td>
<td>48 drum</td>
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<tr>
<td><strong>IBM Homac 305</strong></td>
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<tr>
<td><strong>IBM System/360</strong></td>
<td>Y B 4 2 2</td>
<td>256-1048K core</td>
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<tr>
<td><strong>IBM 360/20</strong></td>
<td>Y B 4 2 2</td>
<td>4-16K core</td>
<td>3.6u</td>
<td>209u</td>
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<td><strong>IBM 650</strong></td>
<td>N D 5 2 10</td>
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<td><strong>IBM 704</strong></td>
<td>N B 3 2 36</td>
<td>4-32K core</td>
<td>12u</td>
<td>24u</td>
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<td><strong>IBM 705 111</strong></td>
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<td>20-800K core</td>
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<tr>
<td><strong>IBM 1130</strong></td>
<td>Y B 16 4-32K</td>
<td>3.6u</td>
<td>8u</td>
<td>25.7u</td>
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<td><strong>IBM 1401</strong></td>
<td>Y D 7 1 1</td>
<td>1-4-16K</td>
<td>11.5u</td>
<td>230u</td>
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<tr>
<td><strong>IBM 1410</strong></td>
<td>Y D 7 1 1</td>
<td>10-260K core</td>
<td>4.5u</td>
<td>110u</td>
</tr>
</tbody>
</table>

**Notes:**
- Parity check, Variable word length.
- Add time refers to 5 digit fields. 60 core words and disk memory are optional. Operation code, bi-quinary, and validity checks. Table look up.
- Multiple channel programming, sense indicator register.
- Parity check.
<table>
<thead>
<tr>
<th>NAME OF COMPUTER</th>
<th>INTERNAL CHARACTERISTICS</th>
<th>NUMBER SYSTEM</th>
<th>MEMORY</th>
<th>TIMING</th>
<th>MACHINE PROGRAMMING</th>
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<tr>
<td></td>
<td></td>
<td>Number Base</td>
<td>Type</td>
<td>Access Time</td>
<td>Add Time</td>
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<td>IBM 1440</td>
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<td>Y D 7 1 1</td>
<td>2-16K</td>
<td>core 11.1u</td>
<td>120u</td>
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<td></td>
<td></td>
<td>- Parity, operation code, validity.</td>
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<tr>
<td>IBM 1460</td>
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<td>Y D 7 1 1</td>
<td>8-16K</td>
<td>core 6u</td>
<td>150m</td>
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<td></td>
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<td>- Parity, character code and address validity checks. paper tape I/O, tele-processing capabilities.</td>
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<td>IBM 1620</td>
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<td>Y D 6 2 V</td>
<td>20-60K</td>
<td>core 20u</td>
<td>560u</td>
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<td>- Parity check. Additional instructions optional. Immediate addressing, branch transmit.</td>
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<tr>
<td>IBM 1620 MODEL II</td>
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<td>Y D 6 2 V</td>
<td>20-60K</td>
<td>core 10u</td>
<td>140u</td>
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<td>- Parity check.</td>
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<td>IBM 1800</td>
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<td>Y B 16 32</td>
<td>4-32K</td>
<td>core 2-4m</td>
<td>4.5u</td>
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<tr>
<td></td>
<td></td>
<td>- Double precision standard.</td>
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<tr>
<td>IBM 7010</td>
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<td>Y D 7 1 1</td>
<td>40-100K</td>
<td>core 2.4u</td>
<td>35.2u</td>
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<tr>
<td></td>
<td></td>
<td>- Parity checking. One or two channels, process overlap, priority interrupt.</td>
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<tr>
<td>IBM 7030 (STRETCH)</td>
<td></td>
<td>Y B 4 6 64</td>
<td>16-262K</td>
<td>core 2.2u</td>
<td>1.5u</td>
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<tr>
<td></td>
<td></td>
<td>- Instruction look ahead and overlapped core banks allow increased internal speed.</td>
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<tr>
<td>IBM 7040</td>
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<td>Y B 4 6 36</td>
<td>4-32K</td>
<td>core 8.0u</td>
<td>16u</td>
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<tr>
<td></td>
<td></td>
<td>- Optional additional instructions: 42. Memory parity, I/O parity, floating point trapping (overflow, underflow). Multiple channel -- memory protection, clock interval timer, double precision floating point.</td>
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<tr>
<td>IBM 7044</td>
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<td>Y B 4 6 36</td>
<td>8-32K</td>
<td>core 2.5u</td>
<td>5u</td>
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<tr>
<td></td>
<td></td>
<td>- Optional additional machine instructions: 42, Memory parity, I/O parity, floating point trapping (overflow, underflow). Multiple channel -- memory protection, clock-interval timer, double precision floating point.</td>
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<tr>
<td>IBM 7070</td>
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<td>Y D 5 2 10</td>
<td>5-10K</td>
<td>core 6u</td>
<td>72u</td>
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<tr>
<td>IBM 7072</td>
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<td>Y D 5 2 10</td>
<td>5-30K</td>
<td>core 5u</td>
<td>12u</td>
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<td>- See remarks under IBM 7070.</td>
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<tr>
<td>IBM 7074</td>
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<td>Y D 5 2 10</td>
<td>5-30K</td>
<td>core 4u</td>
<td>10u</td>
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<td>- See remarks under IBM 7070.</td>
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<td>IBM 7090</td>
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<td>Y D 7 1 V</td>
<td>1K</td>
<td>core 1u</td>
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<td>- Parity checking.</td>
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<tr>
<td>IBM 7090</td>
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<td>Y B 3 2 36</td>
<td>32K</td>
<td>core 2.18u</td>
<td>4.36u</td>
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<td></td>
<td>- Floating point trap, transfer trapping, overflow, underflow, and divide checks. Multiple channel.</td>
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<tr>
<td>IBM 7094 II</td>
<td></td>
<td>Y B 3 2 36</td>
<td>32K</td>
<td>core 1.4u</td>
<td>2.8u</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Floating point, transfer trapping, I/O parity, divide checks. Multiple channel, double precision floating point, instruction overlap.</td>
<td></td>
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<tr>
<td>Mathatron 4280TD</td>
<td></td>
<td>Y D 4 12 48</td>
<td>984</td>
<td>core 4m</td>
<td>17</td>
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<td></td>
<td>- Invalid number print detector. Direct algebraic logic.</td>
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<tr>
<td>Micro-LINC-300</td>
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<td>Y 0 12 1</td>
<td>4-32K</td>
<td>core 1u</td>
<td>2u</td>
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<tr>
<td></td>
<td></td>
<td>- Multiply wired, divide programmed.</td>
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</tbody>
</table>

Digital Computers
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<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Nomrobot XI</td>
<td>Y B 1 6 32 1-2K</td>
<td>drum 6m 3m 26m 7-2m</td>
<td>27 1 0 N Y</td>
<td>-- Two instructions per word. Parity. Tested by program.</td>
</tr>
<tr>
<td>Myriad I/II</td>
<td>Y B 24 32K core .4a 2.5a 19.8u 27.3u</td>
<td>52 1 1 N Y</td>
<td>-- Input/output by common highway. Autonomous access direct to core storage available.</td>
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<tr>
<td>NCR 304</td>
<td>Y B 6 6 60 2.4-4.8K core 60u 600u 2820u 2940u</td>
<td>60 3 30 N Y</td>
<td>-- Parity and echo checking. Instructions are 2 words long. A single-address microprogrammed instruction system is included. Off-line copy permits tape system to copy the 'father' tape offline until account being searched is found. Numbers may be packed and unpacked by command. Self-linking. Magnetic tape is gapless, with automatic repositioning.</td>
<td></td>
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<tr>
<td>NCR 310</td>
<td>Y 0 4 6 12 4K core 6.4u 12.8u</td>
<td>62 1 0 Y N</td>
<td>-- Software package. Computer is a version of the CDC-160. Multiply and divide must be programmed.</td>
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<tr>
<td>NCR 315</td>
<td>Y D 4 6 12 10-80K core 6u 42u 97u 222u</td>
<td>142 1 32 N N</td>
<td>-- Parity and echo checking. Demand interrupt permits priority interrupt of processor by peripherals.</td>
<td></td>
</tr>
<tr>
<td>NCR 315-100</td>
<td>Y D 4 2 12 40K core 6u 42u 393u 1451u</td>
<td>124 1-2 64 N Y</td>
<td>-- Parity check, valid command check, peripheral checks.</td>
<td></td>
</tr>
<tr>
<td>NCR 315-RMC-I</td>
<td>Y D 4 2 12 80K red 800u 6.4u 52.4u 166.8u</td>
<td>178 1-2 64 N Y</td>
<td>-- Dual programming capability with memory barrier, real time interrupt.</td>
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<tr>
<td>NCR 315-RMC-II</td>
<td>Y D 4 2 12 80K red 800u 7.2u 53.2u 167.6u</td>
<td>200 1-2 120 Y Y</td>
<td>-- Parity check, valid command check, peripheral check, program protection check, privilege command check. Program interval timer, individual program protection, hardware I/O trapping.</td>
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<tr>
<td>NCR 390</td>
<td>Y D 4 48 200 core 107u 11m 75m+ 119m+</td>
<td>20 3 0 N N</td>
<td>-- There are 10 &quot;string of address&quot; type instructions, e.g., &quot;sum A through D&quot;. Automatic address incrementing.</td>
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<tr>
<td>NCR 500</td>
<td>Y D 4 8 24 400 core 22.5u 99m 125m 190m</td>
<td>50 4 3 N N</td>
<td>-- Parity check. Double precision circuit, double index modification.</td>
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<tr>
<td>OKIMINITAC-7000</td>
<td>Y B 8 3 24 6S core 2.8u 5.6u 44.8u 96u</td>
<td>50 1 2 Y Y</td>
<td>-- Microprogramming. Optional 16 channel sequence break, program resumes according to interrupting channel. Built-in marginal checking facilities.</td>
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<tr>
<td>PDP-1</td>
<td>Y B 4 6 18 4-65K core 5u 10u 20u 30u</td>
<td>28 1 0 N N</td>
<td>-- Multiply and divide operations programmed. Floating point programmed. Built-in marginal voltage checking, auto-indexing.</td>
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<tr>
<td>PDP-4</td>
<td>Y B 6 4 18 4-32K core 8u 16u 100u 184u</td>
<td>16 1 N Y Y</td>
<td>-- Multiply and divide operations programmed. Floating point programmed. Built-in marginal voltage checking, auto-indexing.</td>
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<tr>
<td>PDP-5</td>
<td>Y B 4 6 12 1-32K core 6u 16u 150u 162u 8 1 0 Y N</td>
<td>-- Built-in marginal voltage checking (with power supply). Auto-indexing: when locations 10-17 are indirectly addressed, contents are indexed by one, then used as effective address.</td>
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<tr>
<td>PDP-6</td>
<td>Y B any any any 16-262K core 4.3a 16.1u 12.4a 363 1 15 Y Y</td>
<td>16 flip flop .4a 2.7u 14.5u 20.5u</td>
<td>-- Sum checking on I/O transfers. Parity on tape and drum transfers. Priority interrupt, variable size byte, block move, list processing instruction.</td>
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<tr>
<td>PDP-7</td>
<td>Y B 4 6 18 4-32K core 0.45u 3.5u 6.1u 9.0u</td>
<td>8 1 8 Y S</td>
<td>-- Parity on each word.</td>
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<tr>
<td>PDP-8</td>
<td>Y B 4 6 12 4-32K core 1.6u 32u 15u 30u</td>
<td>31 1 8 Y S</td>
<td>-- Parity on each word.</td>
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<tr>
<td>PDP-1020</td>
<td>Y B 6 2 16 4K line 1.5m 3m 12m 12m</td>
<td>52 1 1 N N</td>
<td>-- Parity on each word.</td>
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<tr>
<td>Philco 102</td>
<td>Y B 0 4 32 65K core .7u 4.6u</td>
<td>107 2 7 Y N</td>
<td>-- Automatic interrupt. Data parity at all interfaces. Both data and address parity at core.</td>
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</tr>
<tr>
<td>Philco 102N</td>
<td>Y B 0 4 32 65K core .7u 4.6u 15u 26u</td>
<td>127 2 7 Y Y</td>
<td>-- Data parity at all interfaces. Both data and address parity at core.</td>
<td></td>
</tr>
</tbody>
</table>

**Computers and Automation** for June, 1967
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#### Internal Characteristics

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<thead>
<tr>
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<tbody>
<tr>
<td><strong>Philco 2000</strong></td>
<td>Y B D 6 6 6 6</td>
<td>4-32K</td>
<td>3u</td>
<td>80u 700u 2000u 90</td>
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<td>core</td>
<td>Type</td>
<td>Add Time</td>
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<td>Y D 6 6 6 6 6</td>
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<td>Y D 6 6 6 6 6</td>
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<td>14.8u</td>
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<td>3.5u 14u 15.75u</td>
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</tbody>
</table>

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**Notes:**
- Parity checking to and from memory. Hardware instructions for BTD and DBT, BIN to OCT and OCT to BIN, BIN and DEC arithmetic available. Can communicate with a Philco 2000 by means, to memory transfer, all tapes in common, and through the real-time system. Asynchronous logic. Variable or fixed word length. Modular building block concept.

- Repeat modes, asynchronous operation, automatic interrupt.

- Transmission checking. Repeat modes, asynchronous operation, automatic interrupt.

- Transmission parity checking. Four way processing, four repeat modes, automatic interrupt, asynchronous parallel memory access. Look ahead. 7 instructions may be processed simultaneously.

- High-density drum, high-speed disc file systems and real-time systems may be included.

- Multiply and divide are programmed. Scientific model of 301 processor provides high speed fixed or floating point arithmetic operations.

- Indirect addressing limited to scatter and gather operations.

- Variable length instructions are 1/2 word, or 2-1/2 words long. Multiple program processing and operations, real-time interrupt, multi-program operation, communications up to 160 lines, code translate instruction, memory to memory between tapes in common, and through the real-time system. Asynchronous logic. Variable or fixed word length. Modular building block concept.

- Parity checking to/from core, I/O parity. Fully compatible with RCA 301; 4-way simultaneous operations, real-time interrupt, multi-program operation, communications up to 160 lines, code translate instruction, memory to memory between 3301's or 3301 and 301.

- Parity checking, memory consists of magnetostrictive delay lines.

- Instructions comprising a command set are completely microprogrammed. Memory parity, I/O parity, automatic and/or programmed interrupt.

- Breakpoint/entry switch register.

- Breakpoint/entry, keyboard lock out, protected memory area.
<table>
<thead>
<tr>
<th>NAME OF COMPUTER</th>
<th>Solid State?</th>
<th>Number Base</th>
<th>Bits/Digit</th>
<th>Digits/Alphabetic</th>
<th>Word Length</th>
<th>Number of Words</th>
<th>Type</th>
<th>Access Time</th>
<th>Add Time</th>
<th>Multiply Time</th>
<th>Divide Time</th>
<th>Number of Instr.</th>
<th>Addresses/Instr.</th>
<th>No. Index Registers</th>
<th>Indirect Addressing?</th>
<th>Floating Point?</th>
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<td>SCC-660</td>
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<td>Y Y</td>
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<td>4-32K</td>
<td>core</td>
<td>1m</td>
<td>3.5u</td>
<td>14u</td>
<td>15.75u</td>
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<td>-- Breakpoint/entry keyboard lock out, protected memory area.</td>
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<td>16u</td>
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<td>-- Memory parity, I/O parity, I/O rate error, arithmetic checking. Up to 20 automatic time-multiplexed data-chaining I/O channels.</td>
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<td>-- Duplicate arithmetic and comparison circuitry, parity check.</td>
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<td>-- Parity check, some duplicate circuits.</td>
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<td>-- Field selection, automatic checking, interrupt, multiple word operands, scatter read, gather write, addressable clock. Concurrent operation of 8 functionally independent programs.</td>
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<td>-- Illegal function and millisecond timeout checks. Concurrent program operation via automatic interrupts. Jump designators and operand designators. All peripherals have checking.</td>
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<td>-- Automatic checking. Ability to read and punch in same card.</td>
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### Digital Computers

#### Internal Characteristics

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102 COMPUTERS and AUTOMATION for JUNE, 1967
### II. INPUT AND OUTPUT

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*Note: Multiple read-write-compute buffering. Tape format compatible with IBM 729II and 729IV units. Plotter may be added. Vertical and horizontal magnetic tape parity checking. Data communications, disk file. Automatic checking of paper tape.*
### Digital Computers

#### INPUT AND OUTPUT

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<th>MAGNETIC TAPE</th>
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<th>PAPER TAPE</th>
<th>PRINTER SPEED</th>
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- Simultaneous read-write-compute.
- Tape search speed is 2600 char/sec. Optional paper tape punch speeds: 400R, 60P. Magnetic tape editing and checking. Tape reads in both directions. Tape and card operations buffered. Graph plotter, digital differential analyzer may be added.
- Multiple read-write-compute.
- 1/0 operations controlled through 18 levels priority interrupt system. Special linkage unit for visual display consoles and fast buffer memory blocks. Versatile 1/0 system for digital and analog signals. XY incremental plotters.
- Magnetic tape editing, programmed print editing. High print speed refers to wholly numerical lines. Multiple read-write-compute.
- 1 buffer channel standard, second buffer channel optional. Mag-drum, plotter, A/D, typewriter, arithmetic unit.
- 3 bi-directional buffer channels. Simultaneous read, write and compute. Mag-drum, plotter, A/D, typewriter.
- Same as 924.
- Multiple read-write-compute. 3 bi-directional buffer channels. 1 high speed channel.
- Multiple read-write-compute. Disk, drum, typewriter.
- Multiple read, write, and compute. Up to 32 data channels. Satellite computer, disk and drum storage, data display device.
- Multiple read-write-compute. Disk, drum, typewriter.
- New memory reference may be made every 100 nanoseconds.
### INPUT AND OUTPUT

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<th>NAME OF COMPUTER</th>
<th>MAGNETIC TAPE</th>
<th>PUNCHED CARDS</th>
<th>PAPER TAPE</th>
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<td>— I/O equipment same as 160A.</td>
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<td>CDC-8092</td>
<td>— Peripheral equipment same as for 160A. Buffer channel allows 2 I/O operations to take place simultaneously.</td>
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<td>— Parity checking. Optional cycle stealing mode, or total overlap. Block transfers, standard commands, I/O directly with AU, max transfer, I/O rate 166,000 24-bit words/second, I/O options include Plotter, (digital) A/D-D/A channels, bulk storage (drum, core) real time clock, Data phone I/O, Kineplex, etc.</td>
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<td>— Longitudinal and horizontal parity generate and check. Multiple fully overlapped operation of processors and fully buffered I/O units. CRT, drum, disk, A/D, D/A, plotters, analog computers, discrete outputs, discrete inputs, word and character I/O channels, buffered word and character I/O channels, direct memory access units, fully buffered I/O control units for memory complex communication. Independent memories, multiple fully overlapped memory operation.</td>
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--- Simultaneous read-write-compute. Interfaces with all communications terminals.
--- No simultaneous calculating.
--- Parity check on input; reading, writing and computing simultaneously; incremental plotter.
--- No simultaneous paper tape-compute.
--- Financial edit instruction.
<table>
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<tr>
<th>NAME OF COMPUTER</th>
<th>MAGNETIC TAPE</th>
<th>PUNCHED CARDS</th>
<th>PAPER TAPE</th>
<th>PRINTER SPEED</th>
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## COMPUTER CHARACTERISTICS

### IBM 1401
- **Magnetic Tape:**
  - No. of Units: 1
  - Tape Density: 200-556, 800, 1511
  - Tape Speed: 7.2-90K
- **Punched Cards:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 1440
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Paper Tape:**
  - Tape Speed: 150P
  - Words/Tape: 120-600

### IBM 1460
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 1620
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 1620 Model II
- **Magnetic Tape:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 1800
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 7010
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 7030 (STRETCH)
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 7040
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 7044
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 7070
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 7072
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 7074
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 7080
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 7090
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

### IBM 7094 II
- **Magnetic Tape:**
  - Tape Speed: 250P
  - Cards/Min: 800R
  - Char/Sec: 500R
- **Punched Cards:**
  - Tape Speed: 150P
  - Cards/Min: 800R
  - Char/Sec: 500R
  - Lines/Min: 600-1100

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**Notes:**
- IBM characterizes these computers based on their magnetic tape storages, which vary from 800 to 1511 characters per inch. Tape speeds can vary from 7.2 to 90K characters per second.
- The computers support a range of input and output devices, including card readers, magnetic tape readers, and paper tape devices.
- IBM provides automatic checking and real-time input capabilities to enhance data processing efficiency.

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**Computers and Automation for June, 1967**
<table>
<thead>
<tr>
<th>NAME OF COMPUTER</th>
<th>MAGNETIC TAPE</th>
<th>PUNCHED CARDS</th>
<th>PAPER TAPE</th>
<th>PRINTER SPEED</th>
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</table>

**INPUT AND OUTPUT**

**NAME OF COMPUTER**

**MAGNETIC TAPE**

- Electronic interface.
- Keyboard & 80 teletype standard in basic system.

**PUNCHED CARDS**

- Up to 4 in/out devices can be attached. Typewriter, 16 column/sec, card read. Time between characters read, write, or print may be used for computation. X-Y plotter available.

**PAPER TAPE**

- Concurrence achievable by sophisticated multi-level interrupt system.

**PRINTER SPEED**

- High speed printer (24 characters/line) is buffered. Automatic magnetic tape checking; tape editing. Magnetic ink character reader can read 750 MICR documents per minute.
## INPUT AND OUTPUT

<table>
<thead>
<tr>
<th>NAME OF COMPUTER</th>
<th>MAGNETIC TAPE</th>
<th>PUNCHED CARDS</th>
<th>PAPER TAPE</th>
<th>PRINTER SPEED</th>
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</table>

-- Simultaneous read-write-compute. CRT, large drum, time-sharing via communication subsystem, TTY. Parity, sum check.

-- No buffering on input. Output paper tape punch buffered.

-- Automatic checking and edit of magnetic tape and punched cards.

-- Same as Philco 102

-- Automatic checking; editing. Tape is addressable and reads in both directions, 4 tape units can operate simultaneously with computation. The addition of a buffer permits simultaneous printing and card handling with the above. A real-time scanner, clock, and data link with another computer may be added.

-- Automatic checking; editing. Tape can be read in both directions and is addressable. 9 input/output devices can operate simultaneously, 4 can be magnetic tape units. A clock, interval timer, tape translator, and link with another computer may be added.

-- Tape reads in both directions. Automatic checking and editing. 9 input-output devices can operate simultaneously with computation, 4 of the 9 can be magnetic tape units. Real-time devices, on-line disk and drum systems, IBM tape translator, clock, interval timer and a data link system (communication between computers) can be added. Uses Philco 1000 as satellite system.

-- Tape reads in both directions. Random access storage, 3 to 5.4 billion char. Data Disc files available 22-1768K capacity. Read-compute, write-compute, or read-write simultaneously. MICR, OCR, and data communication devices also available. Multiple tape lister, buffered printer, memory to memory 301 to 301 or 301 to 3301.

-- Tapes read in both directions. Read-compute, write-compute, or read-write simultaneously.

-- Tape reads in both directions. Multiple read-write-compute, Multiple operation of independent programs, variable data length operations.

-- Up to 4 simultaneous I/O operations plus computer and buffer device overlap. Buffered card punch and printer. Random access, interrogating typewriters, communication, and timing devices also available.

-- MICR sorter-reader. Single channel.

-- 16 I/O devices and compute. MICR sorter-reader, Single channel.

-- 11 I/O devices and compute.
<table>
<thead>
<tr>
<th>NAME OF COMPUTER</th>
<th>MAGNETIC TAPE</th>
<th>PUNCHED CARDS</th>
<th>PAPER TAPE</th>
<th>PRINTER SPEED</th>
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**COMPUTERS and AUTOMATION** for June, 1967
## Magnetic Tape

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### Computers and Automation for June, 1967
### INPUT AND OUTPUT

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**III. COST AND USE**

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<td>27,000 BTU</td>
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</table>

Digital Computers

COST AND USE

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<th>NAME OF COMPUTER</th>
<th>Average Monthly Rental</th>
<th>Monthly Rental Range</th>
<th>One-Sum Price Range</th>
<th>Power</th>
<th>Floor Space — Sq. Ft.</th>
<th>Air Cond. — Tons</th>
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<td>BR-133</td>
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<td>27,000 BTU</td>
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**COST AND USE**

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<th>NAME OF COMPUTER</th>
<th>Average Monthly Rental</th>
<th>Monthly Rental Range</th>
<th>One-Sum Price Range</th>
<th>Power</th>
<th>Floor Space — Sq. Ft.</th>
<th>Air Cond. — Tons</th>
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<td></td>
<td>- Used principally as a data communication. Room temp, not to exceed 100°F. TOSAS. Highly flexible, multi-purpose, stored program data processor and converter. Word construction is 8 binary digits, parallel throughout, programmable to multiple-precision and to alphanumeric and binary-coded decimal.</td>
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<td>- Scientific, real-time, data reduction, time-shared applications. Easily expanded. DIP, DAP, and FORTRAN II.</td>
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<td>- Scientific, real-time, digital simulation, hybrid simulation, command and control. DAP II, DEP II, FORTRAN (REAL TIME), MONITOR, Subroutine library, Diagnostics, Modular, processors, memories, I/O facilities, system modules for multiprocessor systems, satellite I/O units, modular packaging. Modularity to meet system requirements for multiprocessor speed, large or small memory complexes and I/O facility, featuring ease of use; programming, maintenance.</td>
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<td>NAME OF COMPUTER</td>
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<td>Monthly Rental Range</td>
<td>One-Sum Price Range</td>
<td>Power</td>
<td>Floor Space — Sq. Ft.</td>
<td>Air Cond. — Tons</td>
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<td>General Precision LPG-30</td>
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<td>One-Sun Price Range</td>
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<td>Floor Space — Sq. Ft.</td>
<td>Air Cond. — Tons</td>
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<td>H-120</td>
<td>$3000</td>
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<td>H-330</td>
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<td>$45,000-$75,000</td>
<td>$1,500,000-$2,000,000</td>
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<td>Scientific, business and real-time applications. FORTRAN IV compiler available.</td>
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<td>H-400</td>
<td>$9000</td>
<td>$6000-$14,000</td>
<td>$270,000-$630,000</td>
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<td>EASY Assembly. FORTRAN, COBOL compilers.</td>
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<td>H-800</td>
<td>$22,000</td>
<td>$16,000-$30,000</td>
<td>$720,000-$1,400,000</td>
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<td>1633</td>
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<td>Argus Assembly; FORTRAN, COBOL, FACT compilers.</td>
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<td>H-1200</td>
<td>$9000</td>
<td>$4000-$20,000</td>
<td>$180,000-$900,000</td>
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<td>435</td>
<td>5000</td>
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<td>H-1400</td>
<td>$14,000</td>
<td>$10,000-$22,000</td>
<td>$450,000-$990,000</td>
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<td>Scientific, business and real-time applications. FORTRAN IV and COBOL. Modular construction.</td>
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<td>H-1600</td>
<td>$35,000</td>
<td>$27,000-$60,000</td>
<td>$1,575,000</td>
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<td>13</td>
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<td>Scientific, real-time, business applications. Automath, FACT, COBOL compilers.</td>
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<td>H-2200</td>
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<td>$1,250,000</td>
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<td>Scientific, real-time, business applications. COBOL and FORTRAN compilers.</td>
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<td>H-8200</td>
<td>$36,575</td>
<td>$33,000-$50,000</td>
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<td>$355-$600</td>
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<td>Scientific, real-time, business, process control applications.</td>
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<tr>
<td>IBM Ramac 305</td>
<td>$3600</td>
<td>$2875 and up</td>
<td>$167,850 and up</td>
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<td>370</td>
<td>4</td>
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<td>Business. Extra units easily added; computer built on a modular basis. 305 assembly program. Prices exclusive of tax.</td>
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<tr>
<td>IBM System/360</td>
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<td>*Small tape-card system; **Large 2 channel, tape, disk and extra memory.</td>
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<td>IBM 650</td>
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<td>Scientific, business, SOAP assembly. Extra units easily added. Prices exclusive of tax.</td>
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<tr>
<td>IBM 704</td>
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<td>2200</td>
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<td>Scientific, real-time, business. Computer built on a modular basis; extra units easily added. UASAP and FORTRAN compilers. Prices exclusive of tax.</td>
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<td>IBM 705 III</td>
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<td>85KVA</td>
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<td>15-20</td>
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<td>Business and limited scientific. COBOL, PRINT, Autocoder III compilers. Modular construction; extra units easily added. Prices exclusive of tax.</td>
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<tr>
<td>IBM 709</td>
<td>$55,200</td>
<td>$2,630,000 and up</td>
<td>$150KVA</td>
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<td>Scientific, real-time, business. Compilers: IBM 800, SHARE, FAP, FORTRAN. Modular construction; extra units easily added. Prices exclusive of tax.</td>
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<tr>
<td>IBM 1401</td>
<td>$6500</td>
<td>$1900 and up</td>
<td>$125,150 and up</td>
<td>7-16KVA</td>
<td>450</td>
<td>3.5</td>
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<td>Scientific, business, SYMBOLIC, Autocoder assemblies; FORTRAN compiler. 7KVA without tape units. Prices exclusive of tax. Extra units easily added.</td>
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<tr>
<td>IBM 1410</td>
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<td>$5365 and up</td>
<td>$244,550 and up</td>
<td>29KVA</td>
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<td>Scientific, real-time, business. Basic Autocoder assembly; FORTRAN compiler. Extra units are easily added. Prices exclusive of tax.</td>
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<tr>
<td>IBM 1440</td>
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<td>$90,000 and up</td>
<td>208,230V</td>
<td>1441</td>
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<td>Business. Autocoder, IXCS, File Organization, Utilities, Sort, RPG. Extra units provide upward growth to 1401, 1460, and 1410. Random access, low cost, processing system.</td>
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<tr>
<td>IBM 1460</td>
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<td>$236,000 and up</td>
<td>7-16KV</td>
<td>450</td>
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<td>Symbolic, Autocoder assemblies, FORTRAN compiler. Built on modular basis with extra units easily added.</td>
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<td>IBM 1620</td>
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<td>Scientific, real-time. FORTRAN, GOTO compilers. Symbolic Assembly Program. Floor space refers to computer area only. Extra units easily added. Prices exclusive of tax.</td>
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<td>Name of Computer</td>
<td>Average Monthly Rental</td>
<td>Monthly Rental Range</td>
<td>One-Sum Price Range</td>
<td>Power</td>
<td>Floor Space — Sq. Ft.</td>
<td>Air Cond. — Tons</td>
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<td>IBM 7040</td>
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<td>NCR 304</td>
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<td>NCR 315-501</td>
<td>$9775</td>
<td>$8000-$20,000</td>
<td>$360,000-$2,500,000</td>
<td>120V-60 cycle</td>
<td>2.5kVA</td>
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<td>(MARK I)</td>
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<td>NCR 315-502</td>
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<td>$15,000-$60,000</td>
<td>$575,000-$3,000,000</td>
<td>120V @ 60cps</td>
<td>2.5kVA</td>
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<tr>
<td>(MARK II)</td>
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<td>$1270</td>
<td>$995-$1860</td>
<td>$49,500-$79,000</td>
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<tr>
<td>NCR 500</td>
<td>$1435</td>
<td>$765-$2525</td>
<td>$31,995-$116,445</td>
<td>230V</td>
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## Digital Computers

### Cost and Use

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<tr>
<th>NAME OF COMPUTER</th>
<th>Average Monthly Rental</th>
<th>Monthly Rental Range</th>
<th>One-Sum Price Range</th>
<th>Power</th>
<th>Floor Space — Sq. Ft.</th>
<th>Air Cond. — Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>OKI-MINITAC-7000</td>
<td>$40,000-$800,000</td>
<td>($domestic price)</td>
<td>5KVA</td>
<td>or more</td>
<td>15 2n^2</td>
<td>Yes</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>or more</td>
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<td>Control. Modular construction. OKI-MINITAC-7000 assembler; FORTRAN IV compiler.</td>
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<td>PDP-1</td>
<td>$120,000-$350,000</td>
<td>115V</td>
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<td>Scientific, real-time. Floor space refers to computer and console only. Modular construction, and units easily added. DECAL algebraic assembler and compiler.</td>
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<td>Scientific, real-time. Modular construction, and units easily added. Symbolic Assembly Program, FORTRAN II.</td>
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<tr>
<td>PDP-5</td>
<td>$24,000-$90,000</td>
<td>115V</td>
<td>10</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scientific, real-time. Symbolic assembler and FORTRAN II available.</td>
<td></td>
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<tr>
<td>PDP-6</td>
<td>Purchase only $240,000-$2,000,000</td>
<td>8-20KW</td>
<td>1000</td>
<td>N</td>
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<tr>
<td>PDP-7</td>
<td>$1300</td>
<td>2,1KW</td>
<td>29</td>
<td>N</td>
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<tr>
<td></td>
<td>Scientific, real-time, business. FORTRAN incorporated for 5-coding, mixing symbolic and FORTRAN statements.</td>
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<tr>
<td>PDP-8</td>
<td>$525</td>
<td>$10,000-$75,000</td>
<td>7.5 amp #110V</td>
<td>7</td>
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</tr>
<tr>
<td></td>
<td>Scientific, real-time, process control, monitoring. Modular construction, most units added on plug-in basis. Macro-type assembler with assoc. on-line debugging.</td>
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<tr>
<td>PDS-1020</td>
<td>$600-$850</td>
<td>$26,950-$35,750</td>
<td>110W</td>
<td>11</td>
<td>N</td>
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<tr>
<td></td>
<td>Scientific, not real-time, business. Engineering interpreter, business interpreter.</td>
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<tr>
<td>Philco 102</td>
<td>$12,000</td>
<td>$250,000-$750,000</td>
<td>13kVA</td>
<td>2/3</td>
<td></td>
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<tr>
<td></td>
<td>Real-time, communication oriented. SHAL-A assembler and INFORM. Modular basis with up to 6 computers.</td>
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<tr>
<td>Philco 102M</td>
<td>Same as Philco 102.</td>
<td>1300VA</td>
<td>6.3</td>
<td>1/3</td>
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<tr>
<td>Philco 1000</td>
<td>$7000</td>
<td>$6000-$15,000</td>
<td>$250,000-$750,000</td>
<td>10kW</td>
<td>400</td>
<td>4-6</td>
</tr>
<tr>
<td></td>
<td>Scientific, real-time, business. Since built on modular basis, extra units easily added. OPAL program, utility routines, SORT, conversion programs, XMAS.</td>
<td></td>
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<tr>
<td>Philco 2000-210</td>
<td>$30,000</td>
<td>$20,000-$50,000</td>
<td>$1,000,000-$2,000,000</td>
<td>24kVA</td>
<td>800</td>
<td>10-12</td>
</tr>
<tr>
<td></td>
<td>Scientific, business, real-time. Computer is built on a modular basis and extra units are easily added. TAC, ALTAC, FORTRAN IV, COBOL, TOPS compilers.</td>
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<tr>
<td>Philco 2000-211</td>
<td>$35,000</td>
<td>$25,000-$5S,000</td>
<td>$1,500,000-$2,900,000</td>
<td>24kVA</td>
<td>1300</td>
<td>10-12</td>
</tr>
<tr>
<td></td>
<td>Scientific, business, real-time. Computer is built on a modular basis and extra units are easily added. TAC, ALTAC, FORTRAN IV, COBOL, TOPS compilers.</td>
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<tr>
<td>Philco 2000-212</td>
<td>$55,000</td>
<td>$35,000-$100,000</td>
<td>$1,900,000-$3,500,000</td>
<td>40kW</td>
<td>1300</td>
<td>10-12</td>
</tr>
<tr>
<td></td>
<td>Scientific, real-time, business. Extra units are easily added. TAC, ALTAC, FORTRAN IV, COBOL, TOPS compilers.</td>
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<tr>
<td>Philco 213</td>
<td>$70,000</td>
<td>$55,000-$180,000</td>
<td>$3,000,000-$6,000,000</td>
<td>5kW</td>
<td>1800</td>
<td>12-14</td>
</tr>
<tr>
<td></td>
<td>Scientific, real-time, business. Built on modular basis with extra units easily added. Multi-processing system, 240 KC tapes, fast drums and discs. FORTRAN IV, COBOL, etc.</td>
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<tr>
<td>RCA 301</td>
<td>$7000</td>
<td>$4000-$19,000</td>
<td>$203,000,-$8,600,000</td>
<td>2kVA</td>
<td>400</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Business, scientific, Assembly program. COBOL compiler, FORTRAN, File control processor.</td>
<td></td>
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<tr>
<td>RCA 501</td>
<td>$17,000</td>
<td>$13,700-$29,900</td>
<td>$61,400,-$3,018,300</td>
<td>30kVA</td>
<td>1200</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Business. Assembly and compiler programs. COBOL monitor.</td>
<td></td>
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<tr>
<td>RCA 601</td>
<td>$32,000</td>
<td>$24,000-$65,000</td>
<td>$1,750,000</td>
<td>55kVA</td>
<td>900</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Assembly program. File control processor, Executive system, Generalized sort and merge.</td>
<td></td>
<td></td>
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<tr>
<td>RCA 3301</td>
<td>$14,000</td>
<td>$536,000</td>
<td>23,2kVA</td>
<td>900</td>
<td>5,3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assembly, COBOL, FORTRAN IV, Executive Control system Sort/Merge, Report Program Generator available. Hardware and functional modularity. Units easily added.</td>
<td></td>
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<tr>
<td>RCA Spectra 70/15</td>
<td>$5000</td>
<td>$2655 and up</td>
<td>$125,350</td>
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<td></td>
<td>Assembly system and I/OCS. Modular construction.</td>
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<tr>
<td>RCA Spectra 70/25</td>
<td>$5000</td>
<td>$5020 and up</td>
<td>$271,250</td>
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<tr>
<td></td>
<td>Assembly system, Report program generator. Modular construction.</td>
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<tr>
<td>RCA Spectra 70/35</td>
<td>$8500</td>
<td>$6250 and up</td>
<td>$321,250</td>
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<tr>
<td></td>
<td>Scientific, real-time, business, random access mass storage. COBOL, FORTRAN, Report program generation.</td>
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<tr>
<td>RCA Spectra 70/45</td>
<td>$14,000</td>
<td>$6085 and up</td>
<td>$394,000</td>
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<tr>
<td></td>
<td>Scientific, real-time, business, random access mass storage systems. Same as Spectra 70/35.</td>
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<tr>
<td>NAME OF COMPUTER</td>
<td>Average Monthly Rental</td>
<td>Monthly Rental Range</td>
<td>One-Sum Price Range</td>
<td>Power</td>
<td>Floor Space — Sq. Ft.</td>
<td>Air Cond. — Tons</td>
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<tr>
<td>RCA Spectra 70/46</td>
<td>$26,000</td>
<td>$18,900 and up</td>
<td>$884,700</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>— Scientific, real-time, business, time-sharing system and random access. COBOL, FORTRAN, Report program generator.</td>
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<tr>
<td>RCA Spectra 70/55</td>
<td>$20,000</td>
<td>$13,900 and up</td>
<td>$630,000</td>
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</tr>
<tr>
<td></td>
<td>— Scientific, real-time, business, random access mass storage systems. Same as Spectra 70/35.</td>
<td></td>
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</tr>
<tr>
<td>Raytheon 250</td>
<td>$1200-$1350</td>
<td>$23,500</td>
<td>115V 4</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>— Scientific, engineering. Floor space refers to computer and console only. Modular construction permits extra units to be added easily. SNAP assembly program, NELIAC compiler, FORTRAN II.</td>
<td></td>
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<tr>
<td>Raytheon 520</td>
<td>$2400+</td>
<td>$94,000</td>
<td>110V 24</td>
<td>N</td>
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<tr>
<td>SCC 650</td>
<td>$1500</td>
<td>$1000-$2000</td>
<td>$15,000-$25,000</td>
<td>110V 5</td>
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<td></td>
<td>— Scientific, real-time. FORTRAN compiler. SPL 650 assembler.</td>
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<td>SCC 655</td>
<td>$4000</td>
<td>$2000-$7000</td>
<td>$30,000-$100,000</td>
<td>115V 10</td>
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<tr>
<td></td>
<td>— Scientific, real-time. SPL 655 assembler. FORTRAN compiler.</td>
<td></td>
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<tr>
<td>SCC 660</td>
<td>$4000</td>
<td>$2000-$7000</td>
<td>$30,000-$100,000</td>
<td>115V 10</td>
<td></td>
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<tr>
<td></td>
<td>— Scientific, real-time. SPL 660 assembler. FORTRAN compiler.</td>
<td></td>
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<tr>
<td>SCC 670</td>
<td>$4000</td>
<td>$2000-$7000</td>
<td>$30,000-$100,000</td>
<td>115V 10</td>
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<tr>
<td></td>
<td>— Scientific, real-time. SPL 670 assembler. FORTRAN compiler.</td>
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<tr>
<td>SDS-910</td>
<td>$1790</td>
<td>$23,000-$83,000</td>
<td>.7KW 10</td>
<td>N</td>
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<tr>
<td></td>
<td>— Scientific, real-time. Assembler and FORTRAN II for either computer. ALGOL, Monarch Monitor Routine.</td>
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<tr>
<td>SDS-920</td>
<td>$2690</td>
<td>$33,000-$83,000</td>
<td>.9KW 10</td>
<td>N</td>
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<tr>
<td></td>
<td>— Same as SDS-910.</td>
<td></td>
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<tr>
<td>SDS-930</td>
<td>$5000</td>
<td>$3200-$10,000</td>
<td>$100,000-$250,000</td>
<td>4.7KVA 24</td>
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<tr>
<td></td>
<td>— Scientific, real-time, engineering applications. Symbol and Meta-symbol assembler, FORTRAN II, FORTRAN II routines.</td>
<td></td>
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<tr>
<td>SDS-940</td>
<td>$20,000</td>
<td>$14,000-$25,000</td>
<td>$250,000-$600,000</td>
<td>3KVA 22</td>
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<tr>
<td></td>
<td>— Macro assembler, symbol and Meta symbol. Modular basis. Conversational FORTRAN IV compiler.</td>
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<tr>
<td>SDS-9300</td>
<td>$7500</td>
<td>$5000-$12,000</td>
<td>$150,000-$300,000</td>
<td>4KVA 16</td>
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<tr>
<td></td>
<td>— Symbol and Meta symbol assembler, FORTRAN IV, FORTRAN II routines.</td>
<td></td>
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<tr>
<td>SDS Sigma 2</td>
<td>$2500</td>
<td>$1500-$4000</td>
<td>$26,000-$150,000</td>
<td>208VAC 14</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>— Scientific, real-time, on-line system control. Basic assembler, Math library. FORTRAN IV compiler. Modular basis.</td>
<td></td>
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<tr>
<td>SDS Sigma 5</td>
<td>$10,000</td>
<td>$2500-$20,000</td>
<td>$100,000-$800,000</td>
<td>208VAC 150-200</td>
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<tr>
<td></td>
<td>— Scientific, real-time, business applications. Basic assembler, Meta-symbol assembler, Math library. FORTRAN, COBOL compilers.</td>
<td></td>
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<tr>
<td>SDS Sigma 7</td>
<td>$18,000</td>
<td>$6000-$30,000</td>
<td>$250,000-$1,250,000</td>
<td>208VAC 150-200</td>
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<tr>
<td></td>
<td>— Same as Sigma 2 plus universal time-sharing monitor.</td>
<td></td>
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<tr>
<td>SEL 810A</td>
<td>$75,950-$300,000</td>
<td>115V 4.5</td>
<td></td>
<td>N</td>
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<tr>
<td></td>
<td>— Scientific, real-time, not real-time, process control.</td>
<td></td>
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<tr>
<td>SEL 840A</td>
<td>$54,500-$500,000</td>
<td>3.5KW 12</td>
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<td></td>
<td>— Scientific, real-time process control.</td>
<td></td>
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<tr>
<td>SEMA 2000</td>
<td>$700</td>
<td>$550-$1150</td>
<td>$22,500-$46,500</td>
<td>115V 4</td>
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<tr>
<td></td>
<td>— Real-time, business.</td>
<td></td>
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<tr>
<td>SEMAC</td>
<td>$1350</td>
<td>$1200-$2000</td>
<td>$48,000-$75,000</td>
<td>115V 16</td>
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<tr>
<td></td>
<td>— Business. Built on modular basis with extra units easily added.</td>
<td></td>
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<tr>
<td>Univac 1</td>
<td>$25,000</td>
<td>$20,000-$30,000</td>
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<tr>
<td></td>
<td>— Scientific, real-time, business. Assembly programs: FLOW-MATIC, MATH-MATIC, FLEXI-MATIC, XI.</td>
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<tr>
<td>Univac 11</td>
<td>$28,000</td>
<td>$25,000-$30,000</td>
<td>$1,250,000-$1,500,000</td>
<td>120KVA 2000</td>
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<tr>
<td></td>
<td>— Scientific, business. FORTRAN IV, FLEXI-MATIC, MATH-MATIC, XI assembly programs.</td>
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<tr>
<td>Univac 111</td>
<td>$23,000</td>
<td>$19,000-$75,000</td>
<td>$925,000-$3,600,000</td>
<td>47KVA 750</td>
<td>127,500 BTU</td>
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<tr>
<td></td>
<td>— SALT assembly system, FORTRAN IV, COBOL compiler. Scientific, not real-time, business.</td>
<td></td>
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<tr>
<td>Univac 490</td>
<td>$25,000</td>
<td>$18,000 and up</td>
<td>$610,000 and up</td>
<td>61KVA 196</td>
<td></td>
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<tr>
<td></td>
<td>— Scientific, real-time, business. Extra units easily added. COBOL, SPURT, FORTRAN compilers. Floor space requirements refer to computer area.</td>
<td></td>
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<tr>
<td>Univac 60/120</td>
<td>$1350</td>
<td>$740-$1350</td>
<td>$75,000-$97,500</td>
<td>9KV 350</td>
<td></td>
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<tr>
<td></td>
<td>— Scientific, business. Approx. 18 library routines available. Not built on modular basis, but minimum systems may be expanded by additional selection and program steps. Automatic verification.</td>
<td></td>
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</tr>
<tr>
<td>NAME OF COMPUTER</td>
<td>Average Monthly Rental</td>
<td>Monthly Rental Range</td>
<td>One-Sum Price Range</td>
<td>Power</td>
<td>Floor Space — Sq. Ft.</td>
<td>Air Cond. — Tons</td>
</tr>
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<td>------------------</td>
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<tr>
<td>Univac 1004</td>
<td>$1400</td>
<td>$1150-$1500</td>
<td>$46,000-$66,000</td>
<td>3KV</td>
<td>190</td>
<td>8500 BTU</td>
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<tr>
<td>Univac 1050</td>
<td>$5500</td>
<td>$2500-$15,000</td>
<td>$100,000-$600,000</td>
<td>10kVA</td>
<td>375</td>
<td>2000 cu.ft.</td>
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<tr>
<td>Univac 1103A</td>
<td>$35,000</td>
<td>$21,500-$45,000</td>
<td>$922,000-$9,900,000</td>
<td>8kVA</td>
<td>1600</td>
<td>20</td>
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<tr>
<td>Univac 1105</td>
<td>$43,000</td>
<td>$33,060-$55,000</td>
<td>$1,612,000-$2,700,000</td>
<td>17kVA</td>
<td>3100</td>
<td>35</td>
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<td>Univac 1107</td>
<td>$50,000</td>
<td>$40,000-$60,000</td>
<td>$1,800,000-$2,700,000</td>
<td>9kVA</td>
<td>1200</td>
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<td>Univac 1108</td>
<td>$60,000</td>
<td>$50,000-$75,000</td>
<td>$2,000,000-$3,000,000</td>
<td>13kVA</td>
<td>1600</td>
<td>40,000 BTU</td>
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<td>Univac 9200</td>
<td>$1125</td>
<td>$1040-$1200</td>
<td>$39,350-$75,000</td>
<td>190-260V</td>
<td>240</td>
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<td>Univac 9300</td>
<td>$3750</td>
<td>$3250-$7500</td>
<td>$62,360-$345,000</td>
<td>190-260V</td>
<td>240</td>
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<td>Univac File Computer I</td>
<td>$15,000</td>
<td>$8000-$12,000</td>
<td>$384,000-$10,108,000</td>
<td>75kVA</td>
<td>1400</td>
<td>60</td>
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<td>Univac File Computer II</td>
<td>$115,000</td>
<td>$112,500 and up</td>
<td>$7,000,000 and up</td>
<td>350kVA</td>
<td>3000</td>
<td>90</td>
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<td>Univac Larc</td>
<td>$135,000</td>
<td>$135,000 and up</td>
<td>$7,000,000 and up</td>
<td>350kVA</td>
<td>3000</td>
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<td>Univac SS 80/90</td>
<td>$8000</td>
<td>$6470-$15,000</td>
<td>$350,000-$750,000</td>
<td>20-38KV</td>
<td>925</td>
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<tr>
<td>Univac SS 80/901</td>
<td>$8500</td>
<td>$6970-$15,000</td>
<td>$350,000-$750,000</td>
<td>20-38KV</td>
<td>925</td>
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**Notes:**
- Scientific, business, real-time. Memory capacity may be increased from 8K char. to 32K char. in increments of 4K char. The 1050 using I11C tape units, is compatible with IBM 1410, 705, 7070, 7080, 7090 systems. PAL Assembly system COBOL and FORTRAN available. Modular and field expandable.
- Scientific, real-time, business. AIMACO and UNICODE and USE compilers. Extra units easily added.
- Scientific, real-time, business. ALGOL, FORTRAN, compilers.
- Scientific, real-time, business, non-real-time, business, time-sharing. COBOL, FORTRAN, ALGOL, compilers.
- Not real-time, business. Modular basis.
- Assembler. RPG, FORTRAN, COBOL compilers.
- Scientific, real-time, business. FLAP assembly system.
- Scientific, business. Second computer unit can be added. SAL assembly.
- Scientific, business. Extra units easily added. Assembly programs: COBOL, S0UP II, UNITRAN, PROGENY compilers. STEP is a modular version of the Solid State 80/90, for users not requiring a full system.
- Scientific, business, S-4 assembly system. Up to 20 tape units may be employed through use of a second synchronizer.
- Scientific, not real-time.
- No information given.
- Scientific, not-real-time, business.
Following is a roster of college and university computer centers. Much of the information is based on returns from a current mailing and on information previously published in Computers and Automation.

In the following, each entry, if complete, contains: Name and address / Year information was checked / Purpose / Commercial Services / Equipment / Courses Offered / Remarks / Size of staff (S) / Year established (E)

For computer identifications, see the survey of digital and analog and hybrid computers.

Abraham Baldwin College, Center for Education and research / coml svc / IBM 1401-8K / 2-term program; Technical Support -- data processing, Programming; Educational/Burrough's Education for undergraduates and graduates / coml svc / IBM 1620-120K / 2-3 peripheral units with printer, card reader-punch, 2 labs - programming courses in FORTRAN, Cobol / None but plan to use DMP Minidisk Systems; Computer Science and Engineering, Junior College. Junior College, Jr., La Guardia Air-

Academy of Aeronautics, La Guardia Aircraft, Flushing, N.Y. 11371 / 67

Academy of Aeronautics, La Guardia Aircraft, Flushing, N.Y. 11371 / 67

Academy of Aeronautics, La Guardia Aircraft, Flushing, N.Y. 11371 / 67

Educational Burrough's E101 computer and peripheral equipment; Computer Concepts and Programming; Analysis of Circuity / S 45 / E 32

Akron, The Univ. of, The Computer Center, 302 E. Buchtel, Akron, O. 44304 / 67

Educational, research, and administrative support -- data processing, computer and management sciences / coml svc / IBM 650-40K, 2-magnetic tape and 3-disk drives: IBM 1401-4K, card-reader punch, and printer system; IBM 1130-8K, disk card-reader-punch, printer and plottersystem / Computer-Science I and II, and Special Topics in Computer Science (by Math Dept.)/ In fall of 1967, a 2-year associate degree program in Data Processing will be offered by the Community and Technical College; also an IBM 360/40, 296K system will be installed / S 45 / E 63

Alabama, Univ. of, P.O. Box 2511, University, Ala. / 67

Educational / Research, service / Univ Sec / Solid-State 80: Univac 1004 with remote access to 1107: 5 remote access terminals for administrative computer; IBM 360/20; Introduction to Computer Science: Programming; Numerical Analysis; Management and Marketing: Application courses / S 30 (all but part-time) / E 61

Alfred Univ., Computing Center, Alfred, N.Y. / 67

Research and education (undergraduate and graduate) / coml svc / IBM 1620/1, 40K, card, plus 1311 disk and printer; unit record equipment / Introduction to Computing Techniques / S 4 / E 63

Anderson College, Box 447, Anmarillo, Tex. 79105 / 67

Education / Unit record equipment; IBM 1401 computer with disk and tape drives / Several data processing certificated and degree programs offered day and evening / S 6 / E 62

Anderson College, Anderson, Ind. 46011 / 67

Education and administration / coml svc / IBM 1620 Model I with 1622 card reader-punch and 2 IBM 1131 disk drives / 1 machine peripheral equipment and punch card equipment / Introduction to Computers and Data Processing; Computers (Hardware Oriented): Numerical Analysis; Electronic Data Processing in Business / S 4 / E 65

Angelo State College, Box 9308, San Angelo, Tex. 76901 / 67

Education: administration / IBM 1620/20; Introduction to Computer Programming; Advanced Computer Programming: Machine Accounting; Electronic Data Processing; Statistical Techniques: General purpose and specialized; IBM 360 order postponed / S 5 / E 63

Antelope Valley College, 3041 West Ave. K, Lancaster, Ca. 93534 / 67

Train computer programmers / IBM System 360/20, keypunches, sorters, NCP, etc.: Data processing courses: Service Machine Accounting; Introduction to Computer Programming / S 2 / E 63

Appalachian State Teachers College, Computer Center, Boone, N.C. 28607 / 67

Faculty and student research, administrative offices and coursework / IBM 1620 with peripheral and unit record equipment / FORTRAN Programming, Introduction to Computer Science, Technical Programming, Data Processing in Business / S 6 / E 63

Arkansas, Univ. of, Computing Center, Fayetteville, Ark. 72701 / 67


Arkansas State University, name changed to Univ. of Texas at Arlington, which acquired Antelope Valley College, 3041 West Ave. K, Lancaster, Ca. 93534 / 67

Atlanta Univ., P.O. Box 205, 223 Chestnut St., S.W., Atlanta, Ga. 30314 / 67

Registration and computing all finances / - / Into to Electronic Computers / S 3 / E 54

Auburn Community College, Franklin St., Auburn, N.Y. / 67

Training data processing operators, programmers, systems and procedures personnel / IBM 1401-OK, 8 keypunches, verifier, 2 sorters, reproducer, tab., collator, interpreter, computer; 2 labs - Unit Record, Introduction to Data Processing Machines (Unit Record); Introduction to Computers: Systems & Procedures: Programming I & II: Computer Case Studies I & II; Math of Data Processing I & II; Numerical Methods and Fortran / S 4 / E 64

Auburn Univ., Computer Center, Auburn, Ala. / 67


Augustana College, Rock Island, Ill. 61201 / 67

Education and administration / IBM 1130, IBM equipment Computer programming / S 5 / E 65

Automation Institute of Philadelphia, 1622 Chestnut St., Philadelphia, Pa. 19103 / 17

Data Processing education on a post secondary level / IBM 1401: IBM unit record equipment / Computer Programming: Office Automation: Keypunching / Formerly the Automatic

COMPUTERS and AUTOMATION for JUNE, 1967

Beloit College Computing Center, Beloit, Wis. 53512 / 67

Acquaint Liberal Arts students with the versatile use of computers / coml svc / IBM 1802-16K, disk-card, remote access, computer programming courses in Programming for Engineers; FORTRAN Primer: Concepts of EDP; Languages / S 4 / E 62

Bethany College, Box 232, Bethany, W. Va. 26023 / 67

Administrative and educational / IBM series 50: IBM 360-20 / Introduction to Data Processing / S 3 / E 63

Bishop's Univ., Lennoxville, Quebec, Canada / 67

Research and teaching / IBM 1620-20X card input/output / Under vision / S 0 permanent / E 60

Boise College, 1907 Campus Dr., Boise, Idaho / 67

All administrative and instruction al areas / IBM 1401-1311 - 2-year programmer curriculum; FORTRAN for Math & Sciences Majors; Business Management Games / S 5 / E 66

Bowdoin College, Computing Center, Brunswick, Me. 04011 / 67

Educational / Administrative / coml svc / IBM 1620, 1622, 1623, 1443, 1311, Models 2 6 3 and 2 keypunches / FORTRAN Programming; Numerical Analysis: Mathematical Statistics: Linear Programming; Econometric Statistics / S 3 / E 65

Bradley University Computer Center, Holmes & Laura Aves., Peoria, Ill. / 67

Education for undergraduates and graduates / coml svc / IBM 1620-1; 1622-11: DBC 1401; 2 keypunch: two IBM 1311 disk files: sorter and keypunch / Fortran Programming: Basic Assembler Programming: Graduation in Computer Science / S 3 / E 63

Brigham Young Univ., Computer Research Center, Provo, Utah 84601 / 67

Student training, faculty and student research, administration data processing / coml svc / IBM 7040-tape; IBM 1401 / Computers and Their Use: Computer Program Languages: Algorithmic Languages and Compilers: Information Systems Analysis: and others / S 45 / E 58

British Columbia, Univ. of, Computing Centre, Vancouver, B.C., Canada / 67

Education and research / coml svc / IBM 7040 / Undergraduate courses in Science and Engineering, M.S. in Computer Science / IBM 7044 on order for 1967: IBM 360-67 expected 1968 / S 25 / E 67

Broome Technical Community College, Binghamton, N.Y. / 67

Education / IBM 1130 card reader-punch with disk cart recorder / Polytechnic Division, Business Education and Administrative / Computer Programming / Introduction to Commercial Programming; Numerical Methods: Digital Computer Programming / S 3 / E 63

Broward County, Junior College of, 3001 S.W. Davie Rd., Ft. Lauderdale, Fla.

Computer Science and Automation Div. of Pierce Junior College, September, 1967 delivery of IBM 360/20 / S 22 / E 59

Bellarmine College, 2000 North Pl., Louisville, Ky. 40202 / 67

Education: preparation for CDP certificate / None but plan to use service bureau for supplementing course work; Emphasis on Principles: Accounting 406 Systems and Programming / S 2 / E 62

COMPUTERS and AUTOMATION for JUNE, 1967
Calgary, Univ. of, Data Centre, Calgary, Alta, Canada / 67

University research, instruction and administration / IBM 360-Model 30 (6OK) with 4 disk drives and 2 tape / Several computing science and extension courses / S 28 / 60

California State College at Hayward, California at Riverside, California, Carleton College, Northfield, Minn. / 67

COMPUTERS Center, Lewisburg, Pa. / 67

Academic research and education / coml svc / IBM 7040 with peripheral equipment. Methodology and Programming Numerical Analysis: extension courses in Business and Scientific Programming / S 20 / 63

California State College at Hayward / 67

Instructional and research / IBM 1620-40K, card punch equipment / some courses in Business & Economics: Physics & Chemistry use our facilities to a limited extent / S 6 / 64

California State Polytechnic College, San Luis Obispo, Cali. / 67

Undergraduate instruction and computation facilities for all departments / IBM 1620 Model I / Computer Science: Data Processing Programming, System Analysis, Systems Programming, Boolean Algebra, Numerical Analysis, etc. / S 5 / 64

California, Univ. of, Computer Center, Davis, Cal. / 67

Education and research on computer application and development/ IBM 7044: Calcomp plotter, Model 750 / Introduction to Advanced Programming Language (non-credit) / S 22 / 60

Carleton College, Northfield, Minn. / 65057 / 67

Education and administrative services / IBM 1620 card system; IBM 1401 card system: unit record equipment / FORTAN, SPS and Numerical Analysis / S 4 / 64

Carroll College, Waukesha, Wis. 53186 / 67

Education / institutional research: administrative applications / IBM 360/30; unit record equipment / Two-year tech and three-semester certificate program for programmers / S 12 / 62

Bucknell Univ., Lewisburg Computing Center, Lewisburg, Pa. 17045 / 67

Education / coml svc / IBM 1620 Model I with 2 Disks, plotter, printer, 60K, digital clock: 5-026's and 407 Equipment for Computers: Programming: Numerical Analysis and Advanced Seminars / S 16 / 61

Central Connecticut State College, Central Connecticut State College, 1615 Stanley St., New Britain, Conn. / 67

Education and administration / IBM 1401-12K; two 1311's; 1403 printer; 1402 card read punch / FORTAN, COBOL, Unit Record, Introduction to Computers / S 2 / 66

Central Florida Junior College, P.O. Box 1380, Ocala, Fla. 32670 / 67

Education, research, administration / IBM 1130, card read punch, disk, printer, IBM unit record / Basic Data Processing: Introduction to Programming / S 3 / E 63

Central Missouri State College, Data Processing Center, Warrensburg, Mo. 64093 / 67

Teaching, research and administrative / IBM 1401-12K; IBM 1620-4OK; Seven courses in data processing, ranging from Introduction to Unit Record Equipment to Data Processing Field projects / Computer courses in Business General Management: and three mathematics computer courses / S 9 / 61

Central Washington College, Ellensburg, Wash. 98926 / 67

Administration and education / IBM 1620-1622, IBM 360/20 and peripheral equipment / Advanced Programming: Numerical Analysis: Automated Office Practice / S 11 / 64

Cerritos College, 11110 E. Alondra Blvd., Norwalk, Cal. 90651 / 67

Instructional, student records and administrative statistics / Honeywell H-200, Opt IBM 1230 data collection and analysis / Data processing "majors": Assembly Language, FORTAN / Adding COBOL, Fall 1967 / S 6 / 62

Chaffey College, 5005 Haven Ave., Alta Loma, Cal. 91701 / 67

Education / IBM 1401 disk computer: keypuncher, verifier, sorter, collator, interpreter, reproducing punch / Introduction to Data Processing: Computer Programming: Systems 6415 / 67

Chicago State College, 6800 S. Stewart Ave., Chicago, Ill. 60621 / 67

Administration, education (teaching of 24 hours in Data Processing), research / IBM 1401-166 with 4 tape drives: 1230 test scoring machine: unit record installation / Eight 3-hour graduate level courses: proposal pending for MBA in Data Processing / S 13 / E 1660-school: 1964-courses

Chicago, Univ. of, Computation Center, Chicago, Ill. 60637 / 66

Research and education / 7094/7040 execution/peripheral processing system / Certificate in Information Sciences offers S.M., Ph.D. program / CHAOS system for 7040 peripheral processing locally developed, also math subroutines for IBM 7090 series and System 360 / S 60 / 62

Cincinnati, Univ. of, Computing Center, Cincinnati, O. / 67

Computer service for the entire University / IBM 1620 with 40K core, 1311 disk: 1410, five 729-11 tapes, 1403 printer: 7040(16K)-1401, nine 729 tape units, System 360/40, 131K, 5 tapes, three 1311 disks / None / S 30 / E 66

The Citadel, The Military College of South Carolina, Charleston, S.C. / 67

Education and administration / coml svc / IBM 1620 computer system with disk pack, FORTAN on 1620: IBM 1401 card system, basic Auto-coder on 1401 / Basic programming to students at night on 1401: basic programming to day and night students / S 8 / 64

Clark Univ., 950 Main St., Worcester, Mass. 01610 / 67


Clarke College, Dubuque, Ia. 52001 / 67

Education and research / IBM 1130 installed in May (replaces 1620) includes printer, paper-tape I/O, disk storage, 2 Friden Flexwriters and a Bi-Tran 6 computer trainer (Fabri-Tek) / Introduction to Computer Sciences: Information Science: Computer & Programming Systems: Theory of Automatic Simulation: Heuristic Programming: Numerical Analysis I & II: Constructive Logic / Undergraduate minor in c.s. may be combined with any major; adult courses & special group seminars / S 6 / E 65

Clarkson College, Potsdam, N.Y. 13676 / 67

Education and research / IBM 1620 Model I: IBM 360/44 / Fortran program: Computer science: / S 7 / 60

Clemson Univ. Computing Center, Clemson, S.C. / 67

Teaching and research / coml svc (limited) / IBM 360/40 / Computer Programming: Computer Principles, Numerical Methods, Formal Languages / S 10 / E 61

Colorado School of Mines, Golden, Colo. 80401 / 67

Education and research / CDC 6000, LISP-30 / Programming for all students, computing taught as integral part of engineering education by most departments / S 7 / E 64

Compton College, 1111 E. Artesia Blvd., Compton, Cal. 90221 / 67


Concordia College, Moorhead, Minn. 56560 / 67


Connecticut, Univ. of, University Computer Center, Storrs, Conn. 06268 / 67

Computer facilities for all types of University research and education / IBM 7040 with 8 tapes, 1301 disk, 1401 I/O: IBM 1620 with disk and
College and University Computer Centers

Detroit College of Business, 124 Blvd., Dearborn, Mich. 48126 / E 61
Dalhousie Univ., Halifax, Canada / C 67
Denver, Colorado / E 62
Dartmouth College, Kiewit Computation Center, Hanover, N.H. / C 67
Education and research / coml svc / IBM 1620; IBM 1850 / Numerical Analysis / S 10 / E 62

Dayton, Univ. of, Computer Facility, Dayta, O. / C 67
Instructors, research, administrative faculty, students and teachers / Burroughs 220, NCR 3048 / Undergraduate degree in Computer Science; graduate degree in Information Science / S 8 / E 57

Del Mar Technical Institute, Engineering Technology, Corpus Christi, Tex. 78404 / C 67
Education of engineering technicians / Burroughs 205 Datatron; IBM 704; IBM 1401 (Fall 1967) / Computer Programming and Circuit Applications / S 3 / E 61

Denison Univ., Granville, 0. / C 67
Education: faculty and student research / IBM 1130 with card input and core storage; 8K memory / FORTRAN Programming: Elementary Numerical Methods; Numerical Analysis / S 3 / E 64

Denver, Univ. of, Denver, Colo. 80210 / C 67
Research and education / coml svc / Burroughs 85500; time sharing added in January 1967 / Programming: Numerical Analysis / Engineering and business courses use computer. Also, doing research in computer-aided instruction / S 5 / E 64

De Paul Univ., 25 E. Jackson, Chicago, Ill. / C 67
Administrative and student research / IBM 1401; Introduction to Computer Programming Courses / S 5 / E 64

Detroit College of Business, 4801 Oakken Blvd., Dearborn, Mich. 48126 / C 67
Education / Unit record equipment -- rent computer time / Fundamentals of Data Processing; Punch Card Accounting; Introduction to Electronic Computers; Computer Programming I & II: Advanced Computer Languages: Systems & Procedures I & II / S 3 / E 59

Denver Technical Institute, 4141 W. Belmont Ave., Chicago, Ill. 60641 / C 67
Student and educational use / Rem. Band 409-28; IBM 1401 / Digital and analog courses / S 6 / E 31

East Tennessee State Univ., Computer Center, Johnson City, Tenn. / C 67
Education, research and administration / IBM 1401-16K tape disk oriented system and unit record equipment / Introduction to Digital Computer Programming: Computer Languages; Numerical Analysis; Advanced Programming: Punch-Card Computing, for all students / S 12 / E 61

Evansville College -- name changed to Univ. of Evansville, which see / Evansville, Univ. of, Evansville, Ind. 47704 / C 67
Educational and institutional data processing / IBM 1620, 1622, 1443, and peripheral equipment: IBM 515 with Mark 96 Reduction to Programming; Digital Computing: Numerical Methods: 5-6 Data Processing courses / formerly Evansville College / S 3 / E 63

Fayetteville State College, Fayetteville, N.C. / C 67
Teaching device in statistics / Monitors: IBM 1401-30; loan: use the computer at Fort Bragg and North Carolina State Univ. at Raleigh, N.C. / IBM 360/40, 1401-30, 360/30 -- taught in connection with a class in statistics to teach other students to operate and the language / S 1 / E 64

Flint Community Junior College, Computer Center, 1401 W. River St., Flint, Mich. 48503 / C 67
Instruction for students: faculty and student research / IBM 1620 and 1622: IBM Unit Record Equipment / Eleven courses in Business Electronic Data Processing and two courses by the Science and Mathematics Department / S 3 / E 63

Florida State University Computing Center, Gainesville, Fla. / C 67
Education and research / coml svc (limited); IBM 360/50, 709; IBM 1401, 1620 / Computer Programming / S 40 / E 62

Fort Hays Kansas State College, Hays, Kan. 67601 / C 67
Process applications of registrar and business office / IBM 1620 and peripheral equipment / Vocational education courses in unit record operation / S 3 / E 59

Florida Atlantic Computing Center, Boca Raton, Fla. / C 67
Survey of Data Processing; Scientific Computer Programming / IBM 1401 System, 16K, 2 Disk drives due in August 1967 to replace 1620 system / S 4 / E 63

Franklin & Marshall College, Lancaster, Pa. 17604 / C 67
Research and education / IBM 1130-OK, disc cards / S 1 / E 64

Fullerton Junior College, 321 E. Chapman Ave., Fullerton, Calif. / C 67
Education and training for operators and programmers / IBM 1620 and peripheral equipment, use of Honeywell 200 / Survey of Data Processing, Theory and Practice / S 254 Card reader punch / S 3 / E 61

Gallaudet College, Washington, D.C. 20002 / C 67
Education: research on deafness and related subjects / IBM 1620 Model I and peripheral equipment / Programming courses / S 32K, 2 disk on order--scheduled for Nov. 1967 / S 4 / E 62

General Motors Institute, 1700 W. Third Ave., Flint, Mich. / C 67
Acreddited engineering college / IBM 1620-110K card, 1 disk, 1627 graph plotter, 1402 tape punch / IBM 1401-12K, 1 disk drives, 1402 card reader/punch, 1403 printer, punched card equipment, 2 on-line tele typists; AD-40 & AD-64 analog computers / Introduction to Computing, for all students / S 10 / E 63

Georgetown University, Computation Center, 37th and 0 Sts., N.W., Washington, D.C. 20007 / C 67
Educational research / IBM 1620 Model II; 6K core storage, IBM 1311 disk drives, peripheral equipment / Phys. Dept. offers credit courses: inform., non-credit credits offered by Center / IBM 360/40 to be installed Sept. 1967 will replace the 1620 and have tape and disk auxiliary storage capabilities / S 10 / E 63

Education and research / IBM 360 Model 40, 128K, Universal instruction set, 4 disk drives (2311), 4 tape drives (2400, 800 BPI), 1403 printer, 2540 card reader punch / S 10 / E 63

Georgia Institute of Technology, Atlanta, Ga. 30332 / C 67
Education and research / coml svc / IBM 360/40, 1401, 1620: IBM 1401's; teaching applications of registrar and business office / IBM 1620 and peripheral equipment / IBM 515 with Mark 96 Reduction to Programming / IBM 360/50, 1401-E. / S 3 / E 63

Georgia State College, Computing Center, 33 Gilmer St., S.E., Atlanta, Ga. 30303 / C 67
Instructor in computer science and assistance with faculty research / coml svc / IBM 7040 with 32K main memory; IBM 1301 disk storage unit: seven IBM 7330 tape drives; IBM 1402, 1403 / Introduction to Computer Programming and Logic; Computer Languages / S 21 / E 59

Georgia University of, Athens, Ga. 30601 / C 67
Education and research / coml svc / IBM 360/65, 7094; two IBM 1401's; IBM 1620 / Five courses / S 80 / E 65

Grays Harbor College, Aberdeen, Wash. 98520 / C 67
Train programmers through a terminal, two-year vocational program / IBM 1620 card system with 1311 disk storage: IBM unit record equipment / Unit Record Operations & Wiring Computer Programming: Data Processing Applications: System Analysis; Systems Development & Design / S 2 / E 64

Hawaii, Univ. of, Statistical and Compu t ing Center, 2252 Correa Rd., Honolulu, Hawaii 96822 / C 67
Academic research, teaching and administration / coml svc / IBM 1401, IBM 7040, IBM 360/50 / Short courses in several languages and credit courses -- computer oriented / S 10 / E 63

Heald College Automation Center, 1235 Van Ness Ave., San Francisco, Calif. 94109 / C 67
Education / IBM 360, Model 20, 0K, 2 Disk; 17 keypunch machines; printing keypunch, verifier, accounting machine; reproducing punch; collator: sorter / Card Punch, Tabulating, Computer Operators and Computer

124

COMPUTERS and AUTOMATION for June, 1967
College and University Computer Centers

Programmers: planning a Systems & Procedure course / Heald College was established 1863. / S / E 59

Hinds Junior College, Raymond, Miss. 33154 / C 67

Touching and administrative work / IBM 1620 unit equipment / Basic Data Processing: Basic Computer Systems Design: etc. / S / T / E 62

Hofstra Univ., Computer Center, Hempstead, L.I., N.Y. 11550 / C 67

Serving the academic functions of the University / IBM 1130 system, 407.72 computer systems, verifier, interpreter and reproducer / Given only by existing Academic Departments, such as Business, Engineering and Psychology / Student training and faculty research / S / E 63

Holy Cross, College of the, Data Processing Center, Worcester, Mass. C 67

Unundergraduate education, faculty research, administrative services / IBM 1620, 1622, 1311 (2), 1443, unit record equipment, calculator, Computer Programming and Languages (3 credit elective), / S / E 65

Humboldt State College, Compuer Center, Arcata, Calif. 95521 / C 67

Education / IBM 1620 Model T-40K, Business, Mathematics, Extension Course / S / E 65

Idaho, Univ. of, Computer Center, Moscow, Id. 30343 / C 67

General university computing / IBM 1620-40K; two 1311 disk files; unit record equipment / Computer programming and applications / IBM System / 360/40, 65K, three 2311 disk drives will replace the IBM in November 1967 / S / E 62

Illinois Institute of Technology, 8 West 35th St., Chicago, Ill. 60616 / C 67

Education, research, administration / coml svc / IBM 360/40 with IBM 2702 / Seven undergraduate and six graduate courses in Information Science; very extensive secondary school Computer Science program / S / E 67

Illinois Teachers College (South) - name changed to Chicago State College, which see / S / E 67

Illinois Univ., Univ. of, Department of Computer Science, Urbana, Ill. 61801 / C 67

Education and research in design of computers and of their components, methods of computer use and related mathematical problems; research and instructional use by students and faculty / IBM 360/40; IBM 360/75; IBM 7094; Illiac II / Twenty-nine courses range from Introduction to Automatic Digital Computing: to Thomas Mather's and Doctoral candidates / Illiac III and Illiac IV under development / S / E 63

Indiana University of Pennsylvania, Clarion Hall, Indiana, Pa. 15701 / C 67

Education, research, student and university administration / IBM 1620-1622 peripheral equipment / Computer Programming: Numerical Analysis; Automatic Data Processing (for certified teachers only) IBM 360 to be installed December 196? / S / E 63

Indiana University Research Computing Center, IFIBER Bldg., Bloomington, Ind. 47401 / C 67

Research and education / CDC 3600-CDC 3400 with shared core-65K and peripheral equipment / 3600 Fortran: Introduction to Computing / courses offered in COBOL, FORTRAN / S / E 63

Iowa, State College of, Cedar Falls, Ia. 60614 / C 67

Service to the college on all phases / IBM 1620 unit equipment / Basic machine (unit record) and computer programming, "Elements of Data Processing" / S / E 63

Iowa State Univ., Computer Center, 125 Service Bldg., Ames, Ia. 50010 / C 67

Scientific computing, computer science research, administrative data processing / coml svc / IBM 360 Model 40 & Model 50; IBM 1401: 2 S 53910 and IBM 1401 in Ames Lab. / S / E 62

Iowa, Univ. of, University Computer Center, Iowa City, Ia. 52240 / C 67

Research and education / coni svc / (limited) IBM 1311 and unit record equipment V G VI tape units (2 switchable), 1301 disk, 1622 card reader: IBM 1401, 1402 card reader, 1403 printer / Non-courses, University courses especially Computer Science / Access. 1200 projects with IBM 360-30, 262K bytes, to be installed in June replacing 360/40 / S / E 65

John Carroll Univ., University Heights, Cleveland, O. 41418 / C 67

Research, academic work, administrative systems / coni svc / GE-215-BK, four tapes, reader, punch, printer, console typewriter / Numerical Methods; FORTRAN, COBOL under continuing education / S / E 67

Johns Hopkins Univ., University, Baltimore, Md. 21218 / C 67

Computer services for education and research / IBM 7094 - 1401 / Informal courses in FORTRAN I, BASIC, other programming languages: courses are given by Academic Departments / Data link no longer used - 7094 and 1401 on 30 / S / E 65

Kalamazoo College, Kalamazoo, Mich. 49001 / C 67

Education and administrative / coni svc / IBM 1311-1620-20K; IBM punch card equipment / Programming; Numerical Analysis / S / E 64

Kellogg Community College, Battle Creek, Mich. 49016 / C 67

Training programmers and unit record supervisors / IBM 1401 -12K, -1403, 1402, two 1311's / Automoder, COBOL, RPG, FORTRAN / S / E 63

Kent State Univ., Computer Center, 202 Merrill Hall, Kent, O. 44240 / C 67

Education-and research / IBM 1620, 1622, 44118, 3600-30, 65K, two 1311 disk files and punch equipment / S / E 64

King's College, Wilkes-Barre, Pa. 18702 / C 67

Education / coni svc / IBM 1620-1311 and unit record equipment / Electronic Data Processing: FORTRAN Programming; Operational Research Linear Programming / Major program (B.S. degree) offered in Data Processing / S / E 63

L. A. Harbor College, 1111 Figuena Pl., Wilmington, Cal. 90744 / C 67

Education / IBM 1620 card system, Electronic Data Processing; Office and advanced / S / E 62

Lansing Community College, 419 N. Capitol Ave., Lansing, Mich. 48914 / C 67

Administrative work and education / coni svc / IBM 1620 peripheral equipment / Introduction to Data Processing: 1620 Programming; 1401 Autocoder; COBOL; FORTRAN: System Development / S / E 63

Lee College, Box 810, Baytown, Tex. 77520 / C 67

Instruction and administration / IBM 1401: punch card equipment / Introduction to Data Processing Programming I and II: Unit Record Operation Equipment; Accounting Systems, etc. / S / E 64

Lehigh Univ., Bethlehem, Pa. / C 67

Education and research / GE 225 and remote sites by cooperative arrangement / Engineering, Math and Accounting Departments offer programming, languages, operating systems and information system courses / S / E 57

Lewis College, Educational Data Center, Route 53, Lockport, Ill. 60441 / C 67

Educational need for coni svc / Honeywell 5020-40K; 5 tape computer 500 points IBM tab equipment / Fundamentals of Data Processing: Business Data Processing (COBOL) / S / E 64

Loma Linda Univ., Scientific Computation Facility, Loma Linda, Calif. / C 67

Research, education, statistical data computation / IBM 1620 Model II with peripheral equipment / Non credit programming course, 2-hr credit course in data processing / access to IBM 360-75 at UCLA by means of Western Union Broadband / S / E 64

Long Beach City College, 4901 E. Carson St., Long Beach, Cal. 90808 / C 67

Education of college level students / IBM 1620, 1311 disks and punch card equipment; all items of educational accounting machines / Principles of Data Processing, Computer Programming, FORTRAN, COBOL 5/5, 360 RPG, etc. / S / E 64

Louisiana Polytechnic Institute Computing Center, Box 2215 Tech. Sta., Ruston, La. 71270 / C 67

Instruction, research, administrative data processing / coni svc / IBM System 360-30, disks and tapes, IBM 1620-40K disk and peripheral equipment / Supports all undergraduate and graduate courses in programming and data processing; evening seminars in Computer Programming and Machine Operation / S / E 61

Lower Columbia College, Longview, Wash. / C 67

Educational data processing / IBM 1401-1311 disk system / 2-yr. curriculum leading to Assoc. Tech Arts degree / S / E 64

Loyola College, 7141 Sherbrooke St. W., Montreal, Que., Canada / C 67

Educational / IBM 1620, card 3OK / Computing Science; FORTRAN Programming; Elementary Numerical Analysis / S / E 64

Lyons Township High School Dist 204, 100 S. Pleasant Side Rd., La Grange, Ill. 60525 / C 67

Data Processing training for High School and Adult Evening; High School administration / IBM unit record (Series 50); Burroughs 2003 / High School vocational courses, Unit Record Computer; High School Math (FORTRAN) / adult evening school / S / E 65

COMPUTERS and AUTOMATION for June, 1967 125
New York at Brooklyn, State Univ. of, Downtown Medical Center, 450 Clarkson Ave., Brooklyn, N.Y. 11203 / °C 67
Hospital information system, student records, scientific computation / IBM 1401-15K; 2 disk standard unit record; IBM series 50 / Full curriculum in Unit Record, Autocoder; FORTRAN IV; COBOL / HPC / S / E 66
New York at Plattsburgh, State Univ. of, Plattsburgh, N.Y. / °C 67
Instruction / IBM 1440 with 10 1050's / Computer Science / S / E 65
New York at Syracuse, State Univ. of, College of Forestry, Syracuse, N.Y. / °C 67
Education and research / IBM 1620 Model II; 60K; 2 disk drives, hi-speed card sorters; memory 1/10, 1627 plotter / Introduction to Computer Programming; Concepts & Applications / S / E 65
New York College at Oswego, State Univ. of, P.S. Hall, Oswego, N.Y. / °C 67
Instruction, research, administrative applications / IBM 1130, Model II; IBM 1401 card sorter; IBM 056 card reader, 1132 on-line printer, student и staff computing facilities for students and to staff; credit courses open to all registered students with and without calculus background / S / E 64
New York Unv., Heights Academic Computing Facility, University Heights, New York, N.Y. 10453 / °C 67
Education; unsponsored and academic research / IBM 360 Model 30, 64K; (2) 2311 disk files; 250 cps communication link, 5 typewriter terminals / Humanities; Data Processing; Scientific Computation courses / S / E 61
North Dakota State School of Science, Wahpeton, N.D. / °C 67
Education oriented computer programmers / comIV svc / IBM 1620 - 20K, card-1443; punch card equipment / Electromechanical Machining, Programming Applications; Systems, 5 terms of IBM Programming, FORTRAN, Keypunch / S / E 7
North Dakota State Univ., Fargo, N.C. / °C 67
Educational, research / comIV svc / IBM 1620 - 40K, Card 1/30; IBM 1311 magnetic disk drive / Beginning & Advanced FORTRAN Programing, Symbolic Programming, Digital Logic, Computer Systems / S / E 61
North Dakota, Univ. of, P.O. Box 8282, University Station, Grand Forks, N.D. / °C 67
Administrative and scientific computing / comIV svc / IBM 360 Model 30-E, 3 disk drives; IBM 1620; punch card equipment / FORTRAN for Engineers; Numerical Analysis; Statistics; / S / E 61
Northeastern Louisiana State College, 4001 Main St., Monroe, La. / °C 67
Administrative, accounting, and student records / IBM 1620-1622 with unit record system; IBM 1130 / Introduction, FORTRAN Programming, Systems Analysis, Business Programming / 1401 disc system to replace 1620 in June 1967 / S / E 63
Northeastern Oklahoma A&M College, Data Processing, Miami, Okla. / °C 67
Introduction / IBM 1620, 1311 disk file and punch equipment / Business data processing curriculum / S / E 5
North Texas State Univ., School of Business Administration, P.O. Box, Denton, Tex. 76203 / °C 67
Education, research, administration / IBM 1620 with card and printer 1-0 and peripheral equipment; IBM 1401 with two disc packs and two tape drives and peripheral equipment / Digital Computer Programming; Numerical Analysis; Principles of Data Processing; Data Processing Systems Analysis / Problems in Electronic Data Processing / S / 55
Northern University, Vogelback Computing Center, 2129 Sheridan Rd., Evanston, Ill. 60201 / °C 67
Research and education / CDC 3600 computer system / Approx. 125 computer-oriented classes; non-credit FORTRAN classes / S / 30 / E 57
Norwich Univ., Northfield, Vt. 05663 / °C 67
Education / comIV svc / IBM 1620 with peripheral equipment / Introduction to Computer Programming; Numerical Analysis; Advanced Computer Programming / S / E 62
Notre Dame Computing Center, Univ. of Notre Dame, Ind. 46556 / °C 67
Administration, education and research / comIV svc / Univ. 1107 computer with on-line peripheral equipment; full complement of off-line peripheral equipment; CalComp Digital Incremental Plotter / Twenty courses given in conjunction with the center including: Introduction to Computers & Programming; Finite Mathematic, Numerical Methods & Data Processing / S / 24 / E 61
Occidental College, Los Angeles, Cal. 90067 / °C 67
Education / comIV svc / IBM 1620 Model II, 1211, 1622, 20K memory / Computer Programming and Applications; Numerical Analysis; Econometrics / S / E 63
Ohio State Univ., 1419 E 14th Kinnear Rd., Columbus, Ohio, 43212 / °C 67
Provide computing facilities for instruction and research program of University of Science / S / E 7094; IBM 1620 / B.S., M.S. Computer Science through the Div. of Computer Science / S / E 12
Ohio Wesleyan Univ., Delaware, O. 43015 / °C 67
Introduction (Math) / IBM 1620 Model 11; 1622 / Non-credit programming: Numerical Analysis Courses / S / E 63
Ohio Northern University, College of Liberal Arts, Chillicothe, Ohio 45601 / °C 67
Teaching / comIV svc / IBM 1130 to be installed Sept. 1967 / Programming; Numerical Analysis; Statistics; Data Processing / Using Univ. of Okla.'s IBM 1620 and G-15 until own computer delivered / S / E 65
Ohio State Univ., University Computing Center, Stillwater, Okla. 74074 / °C 67
Education & research / comIV svc / IBM 7040; peripheral equipment / Non-credit language courses / S / 14 / E 56
Old Dominion College, School of Engineering, Box 6173, Norfolk, Va. 23508 / °C 67
Educational / IBM 1620; IBM 1622; IBM 407; IBM 056; IBM 026 / Introduction to Computers & Programming; Intermediate Computer Programming; Introduction to Digital Computers; Methods of Engineering Analysis; Statistics and Quality Control / S / 22 / E 64
Oregon State University Computer Center, Corvallis, Ore. 97331 / °C 67
Provide computing facilities for instruction, research, and administrative purposes / CDC 3300; IBM 1620; ALMAC III; NEBULA (University designed and constructed); PDP-8 / courses related to computing given in Mathematics, Physical Science and Engineering, Business Administration / S / 100 / E 66
Ottawa Univ., Computing Center, 700 King Edward, Ottawa 2, Ont., Canada / °C 67
Providing computing facilities for the University and outside users / comIV svc / IBM 960, Model 40, 120K core / Numerical Analysis; Computer Programming; Scientific Computation / Contemplated Equipment - 2311 disk drive / S / E 62
Pacific, Univ. of the, Dept. of Electrical Engineering, Stockton, Cal. 95204 / °C 67
Teaching / LOP-20 with high speed read punch and off-line flexowriter / Computer Programming / S / E 64
Peirce Junior College Automation Div., name change to Automation Institute of Philadelphia, which see Pennsylvania; Univ. of, Computer Center, 3901 Market St., Philadelphia, Pa. / °C 67
Education and research / Two IBM 7040's; two IBM 1401's; two IBM 1620's; two RCP 4006's; three IBM 9165's; three PDP-8's and an IBM System 360 / 40 / Computing courses given / S / E 60
Polytechnic Institute of Brooklyn, Computer Center, 333 Jay St., Brooklyn, N.Y. 11201 / °C 67
Educational / comIV svc / IBM 7040 with full options and channel B; IBM 1401, 1402, 1403; 0-77K tape drives; punch card equipment / half-semi- and one week non-credit courses in FORTRAN IV and WAP languages (open to all registered students and to staff); credit courses by academic department / S / E 60
Pomona College Computer Center, Claremont, Cal. / °C 67

COMPUTERS and AUTOMATION for June, 1967 127
College and University Computer Centers

Cal. 9171 / °C 67
Educational and administrative / IBM 360 - 40, 32K, 1442 reader-punch, 1443 printer, 4 tape drives, 1 disk drive, console typewriter, on-line CALCOMP plotter / Introduction to Computer Science, Numerical Analysis, Programming Languages / S 3 / E 67

Prince George's Community College, 5000 Silver Hill Rd., Suitland, Md. 20268 / °C 67
Junior college / IBM 1401 computer / Two courses: Introduction to EDP; Basic Programming Concepts / S 4 / E 64

Princeton University Computer Center, Princeton, N.J. 08540 / °C 67
Education and scientific research / IBM 7094-1410; 7044-1410; 1410; 1620; 360/40, 360/90, 360/590, 1150 / Extensive use within a number of courses in natural and social sciences / S 2 / E 65

Randolph-Macon College, Computer Center, Ashland, Va. 23005 / °C 67
Undergraduate liberal arts education for men / IBM 1620 Model I, card off-line 407 / Three semester sequence in Computer Science; Numerical Analysis; Linear Algebra / S 3 / E 65

Reed College, Portland, Ore. 97202 / °C 67
Education and research for faculty and students / coml svc / IBM 1130 with disk, plus associated card equipment / Extensive use within a number of courses in natural and social sciences / S 2 / E 65

Rhode Island College Computer Center, Mt. Pleasant Ave., Providence, R.I. 02908 / °C 67
Administration, education, R.I. State Test Scoring Service / coml svc / IBM 1401 disk with peripheral / FORTRAN IV for faculty and students / S 9 / E 65

Rhode Island Univ. of, Kingston, R.I. / °C 67
Research and education for entire university / IBM 360-40, 128K, 3 disks, 2 tape drives, 2260 and 1050 remote consoles / Computer Science; Introduction to Digital Computers; Scientific Applications of Digital Computers; Problems in Computer Science; Digital Computation / S 10 / E 59

Richmond Professional Institute, 5000 Mt. Pleasant Ave., Providence, R.I. 02908 / °C 67
Education and research / IBM 1401, 1402, 1403; peripheral equipment / IBM unit record equipment / SFS, FORTRAN & Autocoder Programming; Math; Problems in Computer Science; FORTRAN Programming; Math for Scientists & Engineers; Data Processing for Business / S 2 / E 64

St. Cloud State College, St. Cloud, Minn. 56301 / °C 67
Education / IBM 1620, 1622; IBM 1401, 1402, 1403; peripheral equipment / IBM unit record equipment / SFS, FORTRAN & Autocoder Programming; Math; Problems in Computer Science; FORTRAN Programming; Math for Scientists & Engineers; Data Processing for Business / S 2 / E 64

St. Edward's Univ., Austin, Tex. 78704 / °C 67
Mainly educational; some administrative support / coml svc / IBM 1600-1622 Model I; 026 card punch; 002 sort / Introduction to digital computer programming required of all science and business students; Numerical Analysis for science students / S 1 / E 64

St. Francis Xavier Univ., P.O. Box 74, Antigonish, N.S., Canada / °C 67
Education and research / coml svc / IBM 1620-40K; off-line printer, sort, two keypunch machines / Math; Introduction Numerical Analysis / S 4 / E 64

St. Mary's Univ., 2700 Cincinnati Ave., San Antonio, Tex. 78228 / °C 67
Education, research and administrative support / coml svc / IBM 1401-12K, two 1311 disk drives, IBM 1620 card system / Introduction to Programming; Numerical Methods for Computers / S 4 / E 62

St. Thomas College, of, 2115 Summit Ave., St. Paul, Minn. 55101 / °C 67
Education / coml svc / Control Data 160A, peripheral equipment and supporting tab equipment / Data Processing for Business; Numerical Analysis & Computer Programming; Applied Statistics; Computer Programming / S 13 / E 64

St. Thomas Univ., of, 3812 Montrose Blvd., Houston, Tex. 77006 / °C 67
Teaching programming and furnishing computing facility to students / coml svc / COBOL; computer; 2 magnetic tape unit / Algebra for computation; Elementary Statistics; Digital Computer Programming; Differential Equations; Numerical Analysis; Introduction to Math Statistics / Center

to be abolished in 1969 / S 3 / E 64

San Francisco State College, Computer Center, 1503 San Pedro, San Antonio, Tex. / °C 67
Education and administrative / IBM 1620 Model PCC / Business' Data Processing, Introductory Programming / S 0 / E 64

San Antonio College Computer Center, 1503 San Pedro, San Antonio, Tex. / °C 67
Education and administrative / IBM 1440; IBM 1401; punch card equipment / Programming and Accounting; Computer Concepts; Programming; Systems and Procedures; Advanced Systems & Procedures / S 10 / E 54

San Jacinto College, 8060 Spencer Hwy., Pasadena, Tex. 77355 / °C 67
Teaching 1967 / IBM 1620 and unit record equipment / two in unit recording; two in programming; survey or introduction; systems & procedures; 2-yr. associate of arts in data processing / Replacement of computer under consideration / S 2 / E 50

San Joaquin Delta College, Data Processing Dept., 2001 Kentzington Way, Stockton, Cal. / °C 67
Education in data processing / IBM 1620; IBM 1401; tab equipment, key-punch, sort, 1442 accounting machine, collator, reproducer / 1620-1401 FORTRAN; Fundamentals of Data Processing, Functional Wiring / S 3 / E 19

San Mateo College, of, 1700 W. Hillsdale Blvd., San Mateo, Cal. / °C 67
Education and administrative / IBM 1620 with 1 disk file, 600 1pm Data Products printer; Honeywell 200-24K, printer, reader-punch, typewriter console, 4-2050 disk types, 1 disk drive / Introduction to Data Processing; Electro-Mechanical Equipment; Data Processing Systems and Procedures; Basic Computer Programming; Computer Programming Systems; Advanced Computer Systems; COBOL Programming; Keypunch; Data Processing Field Projects; Introduction to Numerical Methods; FORTRAN Programming / S 10 / E 63

Santa Ana College, 1530 W. Seventh St., Santa Ana, Cal. 92705 / °C 67
Instruction and record processing / Burroughs 2500 disk-tape system, peripheral equipment degree in Business Data Processing, AA degree in Computer Science / 2500 third generation computer to be installed in July 1967

Scranton Univ. of, Scranton, Pa. 18510 / °C 67
Educational and commercial / coml svc / Burroughs 205 cardatron & Datafile full system / Programming for 205 & Algol; Advance Programming & Numerical Analysis / New computer in Spring 1968 / S 7 / E 65

Seton Hall Univ., Computer Center, S. Orange, N.J. / °C 67
Support of faculty and student research; educational program and computer science; administrative data processing / 1620-200 disk file / 1443 Printer; unit record support equipment / Numerical Analysis, Numerical Methods in Matrix Algebra; Numerical Methods in Ordinary Differential Equations; Numerical Methods in Partial Differential Equations; Computer Programming & Numerical Methods; Introduction to Electronic Data Processing; Theory

COMPUTERS and AUTOMATION for June, 1967

128
analog computers; 1 GE time sharing digital terminal / Elective courses for cadets Planning to add more GE time sharing digital terminals / S 40 / E 63 analog: 67 digital

U.S. Military Academy, West Point, N.Y. 10993 / E 67

Computer instruction, computer-extending instruction, computer-assisted learning, educational research / GE 225, 6 tapes, high speed printer, card reader, card punch; DATANET-30 communications processor, IBM disk file; two satellite GE-225's with card reader (electrically connected to DATANET-30), high speed printer; 15 remote terminals for time-sharing / Computer programming and use integral to core curriculum starting with 40 classroom hours as part of Engineering Fundamentals in lst semester freshman year, and extending through 4-year course. Elective courses in computer fundamentals & systems analysis, hardware, numeric methods, operations research, management engineering, etc. Business type data processing support for Academy in separate A.G. Data Processing Center / S 16 / E 60

U.S. Naval Postgraduate School, Monterey, Cal. 93940 / E 67

Education and research; scientific and engineering computing / IBM 360 Model 67, IBM 1401, CDC 160 / 30 different computer courses / S 23 / E 60

Utah State Univ., Logan, Utah 84321 / E 66

Education and research / coml svc / IBM 1620-I, 40k core, card 1/0; Honeywell 110, 40k core, card 1/0; Univac 1004 linked to an 1108 at the Univ. of Utah, Salt Lake City / Data Processing / Computer Programming / Programming Business Problems; Programming Scientific Problems; Advanced Programming; Compiler Languages; Monitors and Systems Design; Techniques in Operations Research; offer degree program with emphasis in mathematics or in management science / S 10 / E 61

Utah, Univ. of, Computer Center, Salt Lake City, Utah 84112 / E 67

Research and education at university / coml svc / UNIVAC 1100-65K, 4 FH 4324, FASTRAND II, 4 UNIVAC 104's, 6 tapes, CDC 3200, IBM 1401, H-200, PDP-8 / Computer Science. Application, B.S., M.S., Ph.D offered in Computer Science / S 4 / E 58

Valparaiso Univ., Valparaiso, Ind. 46383 / E 67

Informal liberal arts students of computer potentials; administrative use / IBM 1620-1710 with 1311 control system (instructional use); IBM 360/20, tapes (administrative use); unit record equipment / Introduction to Programming; Numerical Analysis; non-credit language courses, e.g., FORTRAN / S 5 / E 61

Vassar College, Poughkeepsie, N.Y. 12601 / E 67

Faculty and student research; education: liberal college business / IBM 360, Model 30 E. - disks / Introductory programming (no credit); intermediate level semester course in St. Vincent's College, proprietary course (Fall year) at advanced level in Math / S 8 / E 66

Vincennes University Junior College, 1139 N. 4th St., Vincennes, Ind. 47591 / E 67

Education and administration / IBM 1620-20K with 1443, and IBM unit record equipment; 1 year introductory secretarial data processing, two-year in Science Data Processing, two-year in Industrial Data Processing / Use considerable student help (work-study) / S 4 / E 62

Virginia Polytechnic Institute, Computing Center, Blacksburg, Va. / E 67

Service center for scientific, administrative applications, and instruction / coml svc / IBM 7040, 2 IBM 1401 tape systems and unit record equipment / Programming courses by academic departments / S 25 / E 56

Virginia State College, Computer Center, Box 205, Petersburg, Va. 23803 / E 67

Liberal arts and sciences, and teacher education / IBM 1620-60K; IBM unit record equipment / Basic Computer Concepts, Computer Programming in FORTRAN II and SPS / Computer science courses are now required in accounting courses / S 4 / E 66

Washington & Lee Univ., Lexington, Va. 24450 / E 67

Educational tool and administrative processing / IBM 1620 w/1443 printer and IBM tab equipment / Computer Programming / Programming Business Problems; Programming Scientific Problems; Advanced Programming; Compiler Languages; Monitors and Systems Design; Techniques in Operations Research; offer degree program with emphasis in mathematics or in management science / S 10 / E 61

Washington Univ., St. Louis, Mo. 63130 / E 67

Research, training / coml svc / IBM 360-50; IBM 8700; IBM 1401's; IBM 1710; PDP-5; Four lines; six programmed consoles / Planning adult evening classes; expected to up-grade to 3rd generation computer in 12 months / S 5 / E 62

Washington State Univ., Computing Center & Program in Information Science, Pullman, Wash. 99163 / E 67

Education and research / IBM 360-67 / Full graduate program in Information Science / S 50 / E 57

Washington Univ., Skinker & Lindell Bivs., St. Louis, Mo. 63130 / E 67

Research, training / coml svc / IBM 360-50; IBM 7072; two IBM 1401's; IBM 1710; PDP-5; Four lines; six programmed consoles / Programming in several computer languages; the School of Engineering and Applied Science has programs leading to a M.S. and Ph.D / S 100 / E 56

Washington Univ., of, Computer Center, Seattle, Wash. 98105 / E 67

Education, Research, Administration / IBM 7094-7040, Burroughs 5500 / M.S. and Ph.D. in Computer Science / S 100 / E 56

Waterloo, Univ. of, Computing Center, University of Waterloo, Waterloo, Ontario, Canada / E 67

Research and education / coml svc, limited / IBM 7040/7040, Burroughs 5500 / M.S. and Ph.D. in Computer Science / S 100 / E 56

Wayne State Univ., Computing & Data Processing Center, Detroit, Mich. 48202 / E 67

Academically sponsored research; instruction in computer science; University administrative use / IBM 7074, IBM 1460, IBM 650 / 57 courses offered / S 155 / E 47

Webber State College, 3750 Harrison, Ogden, Utah 84403 / E 67

Two-year technician program for data processing / IBM 1401-0K, w/disk (1311 drives) / Several courses in 1 and related programmer training / Conversion of IBM 1620 to DEC in December 1967 / S 5 / E 63

Westchester Community College Institutional Development, 75 Grasslands Rd., Valhalla, N.Y. 10595 / E 67

Education / Burroughs 205 with magnetic tape key punch / Basic programming & FORTRAN / S 1 / E 64

Western Reserve Univ., Documentation Center, 10031 Magnolia Dr., Cleveland, O. 44120 / E 67

Basic research in techniques for organization and utilization of data in the information sciences / coml svc / GE-225 with card, paper tape, magnetic tape capacities; data phone and minimal tab equipment / Information Processing, Self-Organizing Systems, Introduction to Computer Programming / S 15 / E 55

Western State College of Colorado, Gunnison, Colo. 81230 / E 67

Education and administration / IBM 1620-1622 Model I; unit record equipment / Computer Programming / S 4 / E 63

West Georgia College, Carrollton, Ga. 30117 / E 67

Computational services for education and college administration / IBM 1650 model 1-60K, 2 disk drives, on-line printer, peripheral equipment / Mathematics 200; Introduction to Computer Programming / S 7 / E 64

Westminster College, Fulton, Mo. 65251 / E 67

Education, student and faculty research, and school business / IBM 1620-1622 Model I; unit record tape / Beginning and Advanced Programming / S 1 / E 63

West Virginia Institute of Technology, Montgomery, W.Va. 25138 / E 67

Education and administration / coml svc / 1130 / Computer Programming (engineering, science, business) / S / E 66

West Virginia Univ., Morgantown, W.Va. 26506 / E 67

Provide computer service for research, instruction and administrative / coml svc / IBM 7040-32K; IBM 1401-12K / Industrial Engineering; Mathematics / S 60 / E 63

Wheaton College, 501 E. Seminary Ave., Wheaton, Ill. 60187 / E 67

Education, research, and business management and registration applications / coml svc / 1620-1622 and peripheral equipment / Basic programming courses using SPS and FORTRAN / S 5 / E 59

Wilkes College, Wilkes-Barre, Pa. 18703 / E 67

Scientific computation in conjunction with graduate and undergraduate programs / Burroughs 205, with magnetic tape units / Advanced student individual study / S 2 / E 65

Winston, Univ. of, Computing Centre, Windsor, Ont. Canada / E 67

130

COMPUTERS AND AUTOMATION for June, 1967
NEW COMPUTER AND INFORMATION SCIENCES—II
edited by Julius T. Tou
Presents original, authoritative articles with an interdisciplinary approach to various aspects of computer and information sciences. Topics range from biological memory to natural language processing.
July 1967, 368 pp., $10.00

COMPUTER PROGRAMMING AND COMPUTER SYSTEMS
by Anthony Hassitt
This first comprehensive computer programming text on the intermediate level provides an introduction to machine language programming, monitor systems, computer hardware, and advanced programming. Machine language and assembly language programming are discussed in the context of the IBM 7090, CDC 3600 and the IBM 360. Also covered in detail are the dynamic uses of memory in both research and industry.
1967, 374 pp., $10.75

CONTROL SYSTEMS FUNCTIONS AND PROGRAMMING APPROACHES
by Dimitris N. Chorafas
Volumes 27A and 27B of Mathematics in Science and Engineering Series
Presents the first work especially designed and written for the rapidly growing field of control systems function. This presentation of digital automation begins with data collection and tele-transmission problems and proceeds to cover the mathematical and logical background of real-time applications. The author presents fundamental programming aspects for on-line duty and discusses a wide variety of practical applications.
VOLUME A: THEORY 1966, 255 pp., $16.00
VOLUME B: APPLICATIONS 1966, 276 pp., $11.00

RUSSIAN-ENGLISH DICTIONARY AND READER IN THE CYBERNETICAL SCIENCES
by Samuel Kotz
This is the first Russian-English dictionary of terms and expressions in all main fields of the cybernetical sciences. It also contains a Russian reader with an inter-linear translation in English. The dictionary section, which contains more than 8000 terms and expressions, is concentrated on specifically "cybernetical" terms, descriptive words, and explanatory expressions.
1966, 214 pp., $11.00

Colleges and Universities

Education and research, administrative work / com sv / IBM 1401-11, 40K core memory, 2-1311 disc drives, card 1/0, off-line 407 / Courses offered by departments of mathematics and electrical engineering: Computer Science option in Electrical Engineering / S 2 / E 64
Wisconsin at Milwaukee, Univ. of, Computer Center, Milwaukee, Wis. 53201 / #67
Instruction, research, administration / IBM 1401 and peripherals, IBM 1620 II and peripheral units: record equipment / Engineering Applications, FORTRAN Programming, Systems Programming / S 30 / E 63
Wisconsin State Univ., La Crosse, Wis. / #67
Educational-administrative, teaching and research / IBM 1130, IBM 1401, sorter, collator, interpreter; both computers disk systems / Introduction to Computer Science, Computer Organization & Programming, Numerical Analysis by Computer / S 5 / E 66
Wisconsin State Univ., Schofield Hall, Eau Claire, Wis. 54701 / #67
Instructional, research and administrative use for faculty and staff / 2 offices, 2 rooms plus storage; IBM 1401, 1402, 1403, 1406 (10K), 1407, two 1311 discs and 7330 tape / Two mathematics courses, a business course, and some use in other areas (sociology, psychology) / Growing rapidly / S 6 / E 62
Wisconsin, Univ. of, Computing Center, 1210 W. Dayton St, 3600 Sterling Hall, Madison, Wis. / #67
Research and educational work / com sv / CDC 3600 with CDC 924 and link satellites; CDC 1604B/160; IBM 1460; Burroughs 5500 with terminals / Introduction to Programming (no credit); credit courses given by Computer Sciences Dept. / S 101 / E 64
Wooster, The College of, Wooster, 0. 44691 / #67
Administrative services and educational facility / IBM 1620 computer, 1622 card reader-card punch and unit record equipment / Programming / S 4 / E 60
Yale Computer Center, 175 Whitney Ave., New Haven, Conn. / #67
Research and education for University / IBM 7094-7040 DCS, IBM 1401 / FORTRAN, MAD, SN808L / S 45 / E 57
York Junior College, Country Club Road, York, Pa. 17405 / #67
Educational and administrative / IBM 1620 with card reader and card punch / Introduction to Data Processing: Basic Computer Systems; Fortran Programming; 1440 Programming; Computer Systems Analysis / Beginning studies of a more modern data processing system / S 9 / E 62
Youngstown Univ., 410 Wick Ave., Youngstown, O. 44503 / #67
Education and research / com sv / IBM 1620 with card input/output; IBM 403 as printer and related auxiliary equipment / Computer Techniques; Principles of Business Computer / IBM 360-20 and 360-40 on order / S 8 / E 63

Computer Program Design
(Southern California)

HUGHES Guidance and Controls Division has several openings for qualified persons who have the ability to create complex digital computer programs—and the desire to do the job thoroughly and efficiently. Satisfaction of current commitments on such systems as: PHOENIX, IJRAM, VATE and ASG-18 requires experience in the design of real-time command and control programs, or of software programs for execution on an IBM 7094 or QE 635 computer.
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- Automation of Electronic Equipment Design

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# ROSTER OF COMPUTER ASSOCIATIONS

Following is a roster of Computer Associations, not including "Users' Groups"; for these, see page 137.

## I. INTERNATIONAL FEDERATION FOR INFORMATION PROCESSING

### A. Headquarters

International Federation for Information Processing  
C/o The British Computer Society  
23 Dorset Square  
London, N.W.1, England

### B. Members

#### ARGENTINA

Sociedad Argentina de Caculo  
c/o Ing. E. B. Ciancaglini  
Juan B. Justo 2418  
Olivos (Pcia. Bs. As.), Argentina

#### AUSTRALIA

Australian National Committee on Computation & Automatic Control  
c/o L. J. Cohn, F.I.A.  
P.O. Box 1210 K  
Melbourne, Australia

#### AUSTRIA

Austrian Productivity Centre (APC)-Austrian Committee for Automation  
c/o Prof. Dr. H. Zemanek  
IBM Laboratory Vienna  
Parkring 10  
Vienna 1, Austria

#### BELGIUM

Société Belge pour l'Application des Methodes Scientifiques de Gestion  
c/o Prof. A. Linsman  
Centre de Calcul de l'Université de Liège  
15 Avenue de Tilleuls  
Liège, Belgium

#### BRAZIL

Brazilian Association of Electronic Computers (ABRACE)  
c/o Jose Andrade  
Rua Araujo Porto Alegre, 36-5º andar  
Divisão Electronica  
Rio de Janeiro, G.B. -22 00, Brazil

#### BULGARIA

Bulgarian Academy of Sciences  
c/o Prof. Dr. L. Iliiev  
1. "7th November" Street  
Sofia, Bulgaria

#### CANADA

The Computing and Data Processing Society of Canada  
c/o Prof. T. E. Hull  
Dept. of Mathematics  
University of Toronto  
Toronto 5, Ontario, Canada

#### CZECHOSLOVAKIA

Czechoslovak National Committee for IFIP  
c/o Ing. I. Plenderleith  
Institute of Technical Cybernetics  
of the Slovak Academy of Sciences  
Dubravove cesta  
Bratislava-Petrunka, C.S.S.R.

#### DENMARK

The Danish Academy of Technical Sciences  
c/o N. I. Bech  
A/S Regnecentralen  
Falun Alee 1  
Copenhagen F, Denmark

#### FINLAND

The Finnish Association for Data Processing  
c/o Prof. P. Lasonen  
Finland Institute of Technology  
Otaniemi (Helsinki), Finland

#### FRANCE

Association Francaise d'Informatique et de Recherche Operationelle (AFIORD)  
c/o J. Cartron  
Directeur General de la S.A.C.S.  
35 Boulevard Brune  
Paris 14ème, France

#### GERMANY

Deutsche Arbeitsgemeinschaft für Rechenmaschinen (DABAI)  
c/o Prof. Dr. F. L. Bauer  
Technische Hochschule München  
Mathematisches Institut  
Arcistrasse 21  
D8 München 2, Germany

#### HUNGARY

The Section for Information Processing, Cybernetics & Operation Research, Federation of Technical & Scientific Societies  
c/o Prof. Dr. I. Kadar, Director  
Computing Centre of Building Industry  
Budapest XII  
Alma u. 5, Hungary

#### ISRAEL

Information Processing Association of Israel (IPA)  
c/o Dr. D. Chevion, Director  
Office Mechanization Centre  
Hakizya-Ronema  
P.O. Box 3016  
Jerusalem, Israel

#### ITALY

Associazione Italiana per il Calcolo Automatico (A.I.C.A.)  
c/o Prof. A. Ghizzetti  
C.N.R.  
Piazzale della Scienze 7  
Rome, Italy

#### JAPAN

Information Processing Society of Japan  
c/o Prof. Ziro Tamaki  
Japan Electronic Industry Development Association  
35 Kotohira-cho, Shiba  
Minato-ku  
Tokyo, Japan

#### MEXICO

Mexican Association for Computing & Information Processing  
c/o Ing. S. F. Beltran, Director  
Electronic Computing Center  
National University of Mexico  
Mexico City

#### NETHERLANDS

Nederlands Rekenmachine Genootschap  
c/o Prof. Dr. Ir. A. van Wijngaarden  
Mathematisch Centrum  
Zuiderparkstraat 49  
Amsterdam-O, The Netherlands

#### NORWAY

Norwegian Society for Electronic Information Processing  
c/o S. A. Øvergaard  
Kjeller Computer Installation  
P. O. Box 70  
Kjeller, Norway

#### POLAND

Polish Academy of Sciences  
c/o Prof. Dr. L. Lukaszewicz  
Instytut Matematycznych  
Warszawa 2, ul. Koszykowa 79  
Poland

#### SPAIN

Consejo Superior de Investigaciones Científicas  
c/o Prof. J. G. Santamanses, Director  
Instituto de Electricidad y Automática  
Facultad de Ciencias Fisicas  
Cuidad Universitaria  
Madrid 3, Spain

#### SWEDEN

Swedish Society for Information Processing  
c/o B. Langefors  
The Institution for Information Processing - AB  
Royal Institute of Technology  
Stockholm 70, Sweden

#### SWITZERLAND

Swiss Federation for Automatic Control  
c/o Prof. Dr. A. P. Spieker  
AG Brown Boveri & Co.  
5401 Baden, Switzerland
II. ASSOCIATION FOR COMPUTING MACHINERY, INC.

A. Headquarters

Association for Computing Machinery, Inc.
211 East 43rd St.
New York, N.Y. 10017

B. Chapters

ALABAMA
Auburn University Student Chapter
c/o John Cope
Auburn University Computing Center
Auburn, Ala. 36830

Birmingham Area Chapter
c/o William G. Mylius, Jr.
The Rust Engineering Co.
1130 S. 22 St.
Birmingham, Ala. 35205

University of Alabama Student Chapter
c/o R. H. Worthen
64 Bellview Drive
Tuscaloosa, Ala. 35401

ARIZONA
University of Arizona Student Chapter
c/o Gordon Thompson
SU P.O. Box 10489
Tucson, Ariz. 85720

CALIFORNIA
Orange County Chapter
c/o F. W. Springe
Antonelics Dept. 345-1
Box 4171, Bldg. 222
Anaheim, Cal. 92803

University of California (Berkeley) Student Chapter
c/o Charles Bremaugh
2521 Piedmont St.
Berkeley, Cal. 94704

Antelope Valley Chapter
c/o L. J. Runchey
308 Vieweg Circle
China Lake, Cal. 93555

Claremont College’s Student Chapter
c/o Talbot Smith
Harvey Mudd College
Claremont, Cal. 91716

San Fernando Valley Chapter
c/o Albert Deutsch
P.O. Box 11
Endojo, Cal. 91316

California State College at Fullerton Student Chapter
c/o Ross Utterberg
1718 Sunny Crest Dr.
Fullerton, Cal. 92632

San Francisco Bay Area Chapter
c/o M. B. Halstead
Lockheed Missile & Space Co.
2070 Fallen Lane
Los Altos, Cal. 94022

Stanford University Student Chapter
c/o M. G. Testler
106 Pine Lane
Los Altos, Cal. 94022
U.S. Naval Postgraduate School Student Chapter
c/o Lt. D. L. McMichael
USN Post Graduate School
P.O. Box 115
Monterey, Cal. 93940

Los Angeles Valley College Student Chapter
c/o R. L. Hogue
8106 Bellingham
N. Hollywood, Cal. 91605

Los Angeles Chapter
c/o David P. Weinberg
TRW Systems
1 Space Park
Redondo Beach, Cal. 90278

Arrowhead (San Bernardino/Riverside) Chapter
c/o W. L. Folsom
IBM Corp.
P.O. Box 567
Riverside, Cal. 92502

Sacramento Chapter
c/o R. D. Glaus
Arrowjet General Corp., Dept. 2380
P. O. Box 1947
Sacramento, Cal. 95809

San Diego State College Student Chapter
c/o E. E. Holmerud
4208 Dakota Dr.
San Diego, Cal. 92115

San Diego Chapter
c/o Charles H. Gutelius
General Dynamics/Convair
P. O. Box 1126, Mail Zone 59500
San Diego, Cal. 92112

Santa Barbara Chapter
c/o Paul M. Krasno
G. E. Tempco
P. O. Box 1080
Santa Barbara, Cal. 93102

COLORADO
Pikes Peak Chapter
c/o Lt. Col. J. C. Baird
Dept. of Astronautics, USAF Academy
Colorado Springs, Colo.

Rocky Mountain Chapter
c/o W. T. Evans
G. E. Computer Dept.
P. O. Box 2351
Denver, Colo. 80201

CONNECTICUT
Hartford State Technical Institute Student Chapter
c/o Ronald St. John
Hartford State Technical Institute
Hartford, Conn. 06106

New Haven Area Chapter
c/o R. F. Rosin
Computer Center, Yale University
175 Whitney Ave.
New Haven, Conn. 06520

DISTRICT OF COLUMBIA
Washington, D.C. Chapter
c/o Carl Hamner
Univac, Sperry Rand Corp.
2121 Wisconsin Ave., N.W.
Washington, D.C. 20007

FLORIDA
Northeast Florida Chapter
c/o M. Binter

DEPT. of Management
Gainesville, Fla. 32601

Central Florida Chapter
c/o L. B. Collins
P. O. Box 514
Patrick AFB, Fla. 32925

Northwest Florida Chapter
c/o E. P. Niles, Jr.
Florida State University Computing Center
Tallahassee, Fla. 32306

Palm Beach Area Chapter
c/o D. J. Buttmann
c/o J. Russy Drive
West Palm Beach, Fla.

GEORGIA
University of Georgia Student Chapter
c/o John T. Camp
Georgia University Sta. Box 2033
Athens, Ga. 30602

Georgia State Student Chapter
c/o E. Taylor Murray
Georgia State Student Chapter ACM
620 Amsterdam Ave., N.E.
Atlanta, Ga. 30303

Georgia Institute of Technology Student Chapter
c/o E. L. Townsend
1971 Dunlap Ave.
East Point, Ga. 30344

IOWA
University of Iowa Student Chapter
c/o Norberta Hein
University of Iowa, NTA East Mall
Iowa City, Ia. 52240

ILLINOIS
Southern Illinois Student Chapter
c/o Lynn Donnell
Southern Illinois University Computing Center
Carbondale, Ill. 62901

University of Illinois Student Chapter
c/o L. R. McDowell
50 E. Healey St.
Champaign, Ill. 61802

Chicago Chapter
c/o Peter Lykos
Illinois Institute of Technology
Chemistry Bldg.
33rd & Dearborn Sts.
Chicago, Ill. 60616

University of Chicago Student Chapter
c/o B. J. Pamos
University of Chicago Dept. of Education
SUGS Kingsman Ave.
Chicago, Ill. 60637

INDIANA
Indiana University Student Chapter
c/o William E. Riley
Wright Quad, Box 432
Indiana University
Bloomington, Ind.

Central Indiana Chapter
c/o James R. Heardon
BNA, Mail Location 10210
501 N. LaSalle St.
Indianapolis, Ind. 46201

Michigan (Michigan-Indiana) Chapter
c/o George I. Brown
Bendix Corp., Aerospace Div.
717 Bendix Dr., Plant 50
South Bend, Ind. 46620

Purdue University Student Chapter
c/o Thomas DeLutis
618 Crestview Pl.
W. Lafayette, Ind. 47906

KENTUCKY
Kentucky Chapter
c/o Martin B. Solomon, Jr.
University of Kentucky Computing Centre
Computer Associations

MISSISSIPPI
University of Southern Mississippi
Student Chapter
c/o C. L. Lewis
Univ. of So. Mississippi
Southern Sta. Box 1867
Hattiesburg, Miss. 39402

MISSOURI
Kansas City, Missouri Chapter
c/o R. C. Myche
Gulf Oil Corp., Spencer Chemical Div.
1004 Baltimore
Kansas City, Mo. 64105
University of Missouri, Rolla Student Chapter
c/o Henri J. Van Naerssen
Computer Science Center, University of Missouri
Rolla, Mo. 65401
St. Louis, Missouri Chapter
c/o J. N. Cooper
Washington University Computing Center
200 Sever Hall
St. Louis, Mo. 63130
Washington University Student Chapter
c/o Carol A. Frankford
Box 3299, 6515 Wydown
St. Louis, Mo. 63165

NEBRASKA
Midlands, Nebraska Chapter
c/o William E. Walden
University Computing Center
University of Omaha
 Omaha, Nebr. 68101

NEW JERSEY
Delaware Valley Chapter
c/o Ray Dash
RCA-EDP Bldg., 204-2
Wharton Hill, N. J. 08101
Stevens Institute of Technology Student Chapter
c/o Lowie Goldklang
Stevens Inst. of Technology
Castle Point Station
 Hoboken, N. J. 07030

NEW MEXICO
Greater Rio Grande Chapter
c/o J. L. Tischhauser, Jr.
Computing Programming, Sandia Corp.
P. O. Box N. Y. 12602
Albuquerque, N. M. 87115

NEW YORK
Hudson-Hoeshawk Chapter
c/o C. E. Carlson
N. Y. State Dept. of Works
The State Campus
Albany, N. Y.
Manhattan College Student Chapter
c/o Frank P. Sansone
294 King St.
Armonk, N. Y. 10031
Long Island University Student Chapter
c/o Charles S. Isaacs
37 Hawthorne St.
 Brooklyn, N. Y. 11205
New York University Student Chapter
c/o Matthew Parrick
265 Quentin Rd.
 Brooklyn, N. Y. 11223
Polytechnic Institute of Brooklyn Student Chapter
c/o S. W. Brick
Computing Center, Polytechnic Institute of Brooklyn
333 Jay St.
 Brooklyn, N. Y.
Niagara Frontier (Buffalo) Chapter
c/o D. Didiseg
SUNY at Buffalo
527 Riverdale Ave.
 Buffalo, N. Y. 14207

SUNY at Buffalo Student Chapter
(State University of New York)
c/o James Callan
328 Bedell Dr.
Buffalo, N. Y. 14226
New York Southern Tier Chapter
c/o B. C. Gause
Endicott Product Test Lab.
IBM, Dept. 773
Endicott, N. Y.
Cornell University Student Chapter
c/o Thomas H. Hershon
Cornell Computer Center, Cornell University
Ithaca, N. Y. 14850
Kingston Chapter
c/o James L. Cleveland
IBM Corp., S.D. Div., Dept. 674
Kingston, N. Y. 12401
City College of New York Student Chapter
c/o Bruce P. Margolin
The City College Computer Center
Steinman Hall, Room 4
Convent Ave. at 140th St.
New York, N. Y. 10031
Long Island Chapter
c/o David Fox
Fox Computer Services Inc.
135 W. 30th St.
New York, N. Y. 10020
New York City Chapter
c/o Sam Matsa
IBM Corp.
590 Madison Ave.
 New York, N. Y. 10022
New York Institute of Technology Student Chapter
c/o Michael Pizzarrelli
N. Y. Institute of Technology
135 W. 70th St.
New York, N. Y. 10023
Northern New Jersey Chapter
c/o Cecile Smolen
150 E. 61st St.
New York, N. Y. 10021
Westchester-Fairfield County Chapter
c/o Leon Davidson
Union Carbide Corp.
270 Park Ave.
New York, N. Y. 10017
Poughkeepsie Chapter
c/o James G. Monsma
Education Research Center, IBM Corp.
Poughkeepsie, N. Y. 12601
Vassar College Student Chapter
c/o Anne Lonsburg
Vassar College
344 Main St.
Poughkeepsie, N. Y. 12601
Rochester, New York Chapter
c/o R. C. Hastings
IBM Corp.
540 Main St., East
Rochester, N. Y. 14604
Rome, Utica Chapter
c/o Patricia W. Lengendorf
Box 545
Rome, N. Y. 13440
Syracuse Chapter
c/o Otway G. Pardoe
Syracuse University Computing Center
Rm. 122, Machinery Hall
Syracuse, N. Y. 13210
Queensborough Community College Student Chapter
c/o R. W. McManus
89-38 86th St.
Woodhaven, N. Y. 11421

NORTHERN CAROLINA
Central Carolina Chapter
c/o J. W. Hanson
University of North Carolina
Computation Center
Chapel Hill, N. C. 27707
Winchester-Salem Chapter

MINNESOTA
Twin Cities Chapter
c/o William R. Nolke
P.O. Box 1058
Minneapolis, Minn. 55440

LOUISIANA
University of Southern Louisiana
Student Chapter
c/o S. E. Hargreaves
USL Computing Center, Univ. of
Southern Louisiana
Lafayette, La. 70501
Louisiana Polytechnic Institute
Student Chapter
c/o J. R. Herrington
2910 Milton St.
Shreveport, La. 71109
Shreveport, Louisiana Chapter
c/o G. G. Lewis
United Gas Corp.
Box 1407
Shreveport, La. 71102
Greater New Orleans Chapter
c/o S. A. Voorhis
Univac, Sperry Rand
520 Old Spanish Trail
Slidell, La. 70458

MARYLAND
University of Maryland Student Chapter
c/o James Ruddell
Computer Science Center
University of Maryland
College Park, Md. 20740
Chesapeake Bay Area Chapter
c/o William Gleckler
Control Data Corp.
11428 Rockville Pike
Rockville, Md. 20852

MASSACHUSETTS
University of Massachusetts Student Chapter
c/o Kathleen H. Cowles
University of Massachusetts
Research Computer Center
Amherst, Mass. 01002
Greater Boston Chapter
c/o Richard C. Miller
Bedford, Mass. 01730

MICHIGAN
University of Michigan Student Chapter
c/o R. J. Srotenka
Computing Center
1000 N. University Bldg.
Ann Arbor, Mich. 48104
Metropolitan Detroit Chapter
c/o R. J. Sullivan
GM Manufacturing Staff
7-234 GM Bldg., 3044 W. Grand Blvd.
Detroit, Mich. 48204
Wayne State University Student Chapter
c/o A. A. Petrin
4077 N. Campbell
Detroit, Mich. 48210
Michigan State University Student Chapter
c/o Harley D. Dahljelm
208 Computer Center
Michigan State University
East Lansing, Mich. 48823
Mid-Michigan Chapter
c/o Kenneth G. Day
MIT Corp.
608 S. Washington
Lansing, Mich. 48933

NEBRASKA
Midlands, Nebraska Chapter
c/o William E. Walden
University Computing Center
University of Omaha
 Omaha, Nebr. 68101

NEW JERSEY
Delaware Valley Chapter
c/o Ray Dash
RCA-EDP Bldg., 204-2
Wharton Hill, N. J. 08101
Stevens Institute of Technology Student Chapter
c/o Lowie Goldklang
Stevens Inst. of Technology
Castle Point Station
 Hoboken, N. J. 07030

NEW MEXICO
Greater Rio Grande Chapter
c/o J. L. Tischhauser, Jr.
Computing Programming, Sandia Corp.
P. O. Box N. Y. 12602
Albuquerque, N. M. 87115

NEW YORK
Hudson-Hoeshawk Chapter
c/o C. E. Carlson
N. Y. State Dept. of Works
The State Campus
Albany, N. Y.
Manhattan College Student Chapter
c/o Frank P. Sansone
294 King St.
Armonk, N. Y. 10031
Long Island University Student Chapter
c/o Charles S. Isaacs
37 Hawthorne St.
 Brooklyn, N. Y. 11205
New York University Student Chapter
c/o Matthew Parrick
265 Quentin Rd.
 Brooklyn, N. Y. 11223
Polytechnic Institute of Brooklyn Student Chapter
c/o S. W. Brick
Computing Center, Polytechnic Institute of Brooklyn
333 Jay St.
 Brooklyn, N. Y.
Niagara Frontier (Buffalo) Chapter
c/o D. Didiseg
SUNY at Buffalo
527 Riverdale Ave.
 Buffalo, N. Y. 14207

COMPUTERS and AUTOMATION for JUNE, 1967
Computer Associations

Treasurer
 c/o Slavic Dept., Wayne State Univ.
 151 A.S.B. 1
Detroit, Mich. 48202

Association Internationale pour le Calcul Analogique
 50 Ave. Franklin D. Roosevelt
Bruxelles, Belgium

Association of Data Processing Service Organizations (ADAPSO)
c/o W. H. Evans, Executive V.P.
947 Old York Rd.
Princeton, N.J. 08540

Biometrical Instrumentation Advisory Council (BIAC)
c/o Lloyd E. Slater, Secretary
Case Institute of Technology
Cleveland, O. O.

Business Equipment Manufacturers Association
c/o Harry C. Anderson, President
205 E. 42nd St.
New York, N.Y. 10017

Data Processing Cards & Forms Manufacturers Association
211 E. 43rd St.
New York, N.Y. 10017

Data Processing Management Association
c/o E. Calvin Elliott, Executive Director
505 Busse Highway
Park Ridge, 111. 60068

Data Processing Supplies Association
c/o C. A. Greathead, Executive Director
211 E. 43rd St.
New York, N.Y. 10017

European Computer Manufacturers Association
(ECCMA)
Rue du Rhône 114
1204 Geneva, Switzerland

IEEE Computer Group
c/o Keith W. Uncapher, Chairman
The RAND Corp.
1700 Main St.
Santa Monica, Cal. 90406

Institute of Electrical & Electronics Engineers (IEEE)
Box A, Lenox Hill Station
One E. 79th St.
New York 21, N. Y.

Institute of Information Storage & Retrieval
c/o Marvin W. Wofsey
Center for Technology & Administration
The American University
Washington 6, D. C.

Institution Society of America
c/o Herbert S. Kindler, Exec. Director
530 William Penn Place
Pittsburgh, Pa. 15219

International Association for Cybernetics
Palais des Expositions
Place André Bijkmans
Namur, Belgium

International Automation Congress & Exposition
c/o Richard Rimbach Associates
933 Ridge Ave.
Pittsburgh 12, Pa.

International Computation Centre
211 E. 43rd St.

New York 17, N.Y.
Numerical Control Society
c/o Mary Ann DeVries, Admin. Sec'y.
44 Nassau St.
Princeton, N.J. 08540

Schweizerische Gesellschaft fur Automatik
c/o Dr. A. von Schultess
Wasserwerkstrasse 53
8006 Zurich, Switzerland

SHARE Design Automation Project
c/o J. Behar
J.C. Drp.
125 Park Ave.
New York, N.Y. 10022

Simulation Councils, Inc.
c/o George Rogers, Secretary
P.O. Box 2228
La Jolla, Cal. 92037

Systems & Procedures Association
c/o Richard L. Irwin, Executive Director
24507 Bagley Rd.
Cleveland, O. 44136

Applications

(Continued from page 86)

Diplomatic records — implications of prevailing attitudes: analysis, summaries

Election statistics — implications: analysis, summaries

Ambiguity determinations

Dead languages: deciphering, verification of translations

Author determination via key function words

Automatic abstracting

Bibliography construction

Concordance construction

Index construction

Word style: analysis, summaries

Word frequency counts, analysis

9. Literature

Author determination via key function words

Author determination via style analysis

Automatic abstracting

Bibliography construction

Concordance construction

Index construction

Poetry style: analysis

Proofreading "Quik-index" by keyword of titles in context

10. Music

Composition

Composition features such as range, phrases, refrains, cadences, etc.: analysis, synthesis, simulation

Harmonies: analysis

Music information: analysis, retrieval, storage

Music printing

Simulation and models

Sounds: analysis, synthesis

Statistical analysis of style

ADVERTISING INDEX

Following is the index of advertisements. Each item contains: Name and address of the advertiser / page number where the advertisement appears / name of agency

Academic Press, 111 Fifth Ave., New York, N.Y. 10003 / Page 131 / Flamm Advertising

American Telephone & Telegraph Co., 195 Broadway, New York, N.Y. 10007 / Page 2 / N. W. Ayer & Son

Auerbach Corp., 121 N. Broad St., Philadelphia, Pa. 19107 / Page 77 / --

Berkley Enterprises, Inc., 015 Washington St., Newtonville, Mass. 02160 / Pages 38, 39 / --

Burroughs Corporation, 6071 Second Blvd., Detroit, Mich. 48232 / Page 78 / Campbell-Ewald Co.

CALMA Company, 346 Mathew St., Santa Clara, Calif. 95050 / Page 71 / Sara-toga Advertising

California Computer Products, 305 Muller Ave., Anaheim, Calif. / Page 90 / Campbell-Witham, Inc.


Consolidated Electrodynamics Corp. (Data-tape Div.), 360 Sierra Madre Villa, Pasadena, Calif. 91109 / Page 82 / Hixon & Jorgensen, Inc.

Data Machines, 12200 N. Nebraska Ave., Newport Beach, Calif. / Page 57 / Durel Advertising

Digital Equipment Corp., 146 Main St., Maynard, Mass. 01754 / Page 3 / Knib & Schneider Inc.

Graham Magnetics Inc., Graham, Texas 76046 / Page 139 / Witherspoon and Associates


Scientific Data Systems, 1649 17th St., Santa Monica, Calif. / Page 79b / Doyle, Dane Bernbach, Inc.

Sedgwick Printers, Inc., 410 East Sixty-Secend St., New York, N.Y. 10021 / Page 40 / Dowden & Solovitz

Time Share Corporation, Lyne Rd., Box 301, Hanover, N.H. 03755 / Page 67 / Allied Advertising Agency Inc.

UBS Corporation, 1811 Trousdale, Burlingame, Calif. / Page 76 / Hal Lawrence Inc.

Classified Advertisements

BUY, SELL & LEASE ALL USED COMPUTERS AND IBM 026 TO 407

MICHIGAN BUSINESS MACHINES
1375 Square Lake Road
Traverse City, Michigan 49684

SCRAP TAPES WANTED

TOP $5 PAID FOR METAL ALLOY TAPES OF ALL KINDS

RELIABLE METAL CO.
21 Clark Street
Randolph, Mass. 02368

136

COMPUTERS and AUTOMATION for JUNE, 1967
ROSTER OF COMPUTER USERS' GROUPS

Abbreviations:  S - size / E - year established

ACUTE (Accountants Computer Users for Technical Exchange)
R. S. McCarthy, P.O. Box 4076, Grand Central Station, New York, N.Y. / S ? / E ?

CEPA (Civil Engineering Program Applications)
Dr. A. K. Spalding, Tibbetts, Abbott, McCarthy & Stratton, 375 Park Ave., New York, N.Y. / S ? / E ?

COMMON (formerly 1620 Users Group) IBM
1130, 1620/1710, 1800, 3600 systems
Int'l Sec'y-Treas., Charles E. Mauldin, Jr., COMMON; Computer and EDP Labs., University of Oklahoma, Norman, Okla. 73069 / S 1100 / E 59

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