

# COMPUTERS

*and*

## AUTOMATION

DATA PROCESSING • CYBERNETICS • ROBOTS

### THE COMPUTER DIRECTORY AND BUYERS' GUIDE, 1961

the June, 1961 issue of  
"Computers and Automation"

Roster of Organizations in the Computer Field

Buyers' Guide for the Computer Field: Products and  
Services for Sale or Rent

Surveys of Computing and Consulting Services

Descriptions of Computers: Digital, Analog, Special Purpose

Over 500 Areas of Application of Computers

Survey of Robot Suppliers

Survey of Teaching Machine Suppliers

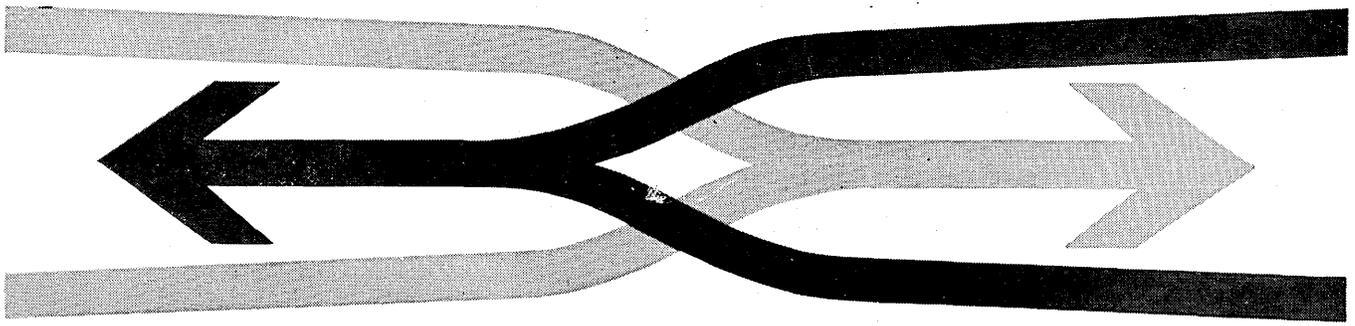
and more besides

JUNE  
1961

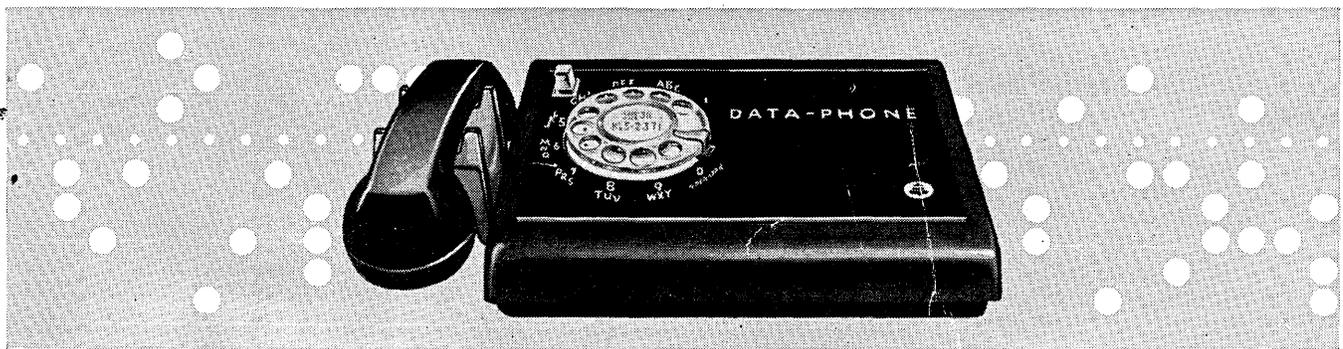
VOL. 10 - NO. 6

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## SOME OF THE IMMEDIATE OPENINGS

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**PROJECT ENGINEER—SYSTEM FUNCTIONAL:** MSEE and 5-7 years' experience design of military electronic equipment with some experience in logic design, electronic packaging, and test equipment design.

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**SENIOR ENGINEER—SUBCONTRACT LIAISON:** BSEE and 3-5 years' experience procurement of electronic equipment, contracts, and specifications.

**LOGIC ENGINEER:** BSEE and 3-5 years' experience in design of logic systems in digital data processing equipment.

**COMMUNICATIONS ENGINEER:** BSEE with 3-5 years' communications experience specializing in long distance propagation techniques with particular emphasis on solutions to multipath effects in the high frequency range.

**CIRCUIT DESIGN ENGINEER:** BSEE and 3-5 years' experience in design and development of solid state digital circuitry. Must have experience in circuit design for reliable opera-

tion under worst case conditions. Background in airborne and ground support test equipment desired.

**TEST ENGINEER—ENVIRONMENTAL:** BSEE 2-3 years' experience planning and performing environmental tests on military electronic equipment.

**ENGINEERING SPECIALIST:** BS and 3-5 years' experience in preparation of technical reports and documents. Must have good working knowledge of electronic equipment.

**FILTER DESIGN ENGINEER:** BSEE and 3-5 years' experience in design and development of bandpass filter networks.

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For these and other professional level opportunities in challenging areas of work, write to:

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COMPUTERS and AUTOMATION for June, 1961

# COMPUTERS *and* AUTOMATION

COMPUTERS AND DATA PROCESSORS, AND THEIR CONSTRUCTION,  
APPLICATIONS, AND IMPLICATIONS, INCLUDING AUTOMATION

Volume 10  
Number 6

JUNE, 1961

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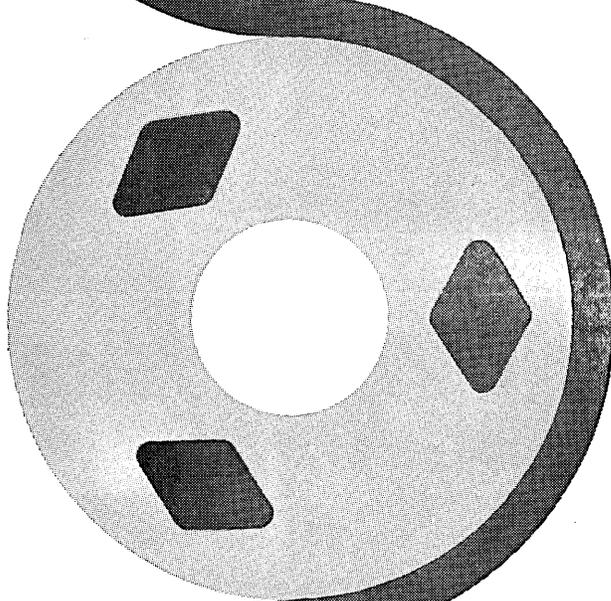
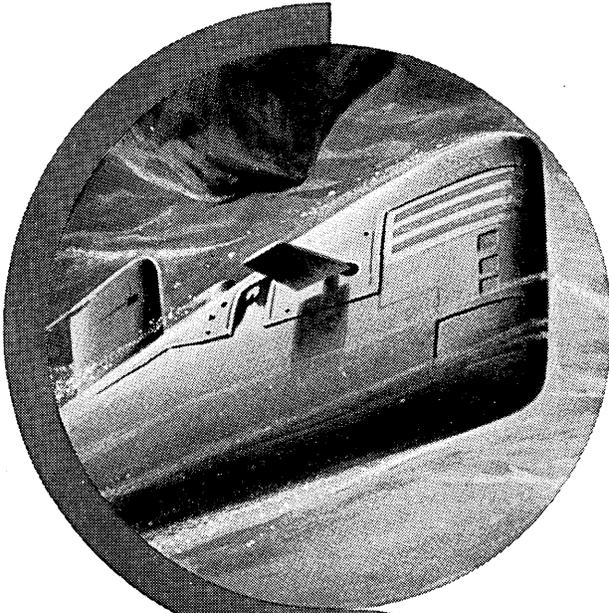
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**The Tape Selected For The Video System In Tiros III!** Orbiting with the Tiros Weather Satellite II, developed by RCA for the National Aeronautics and Space Administration, Soundcraft Tape is used exclusively in both narrow and wide angle video tape systems. Only  $\frac{3}{8}$  of an inch wide, this tape records longitudinally rather than across the width and is the result of over five years of research.

**On The Nuclear Submarine, Sea Dragon,** the first undersea magnetic video tape recorders also developed by RCA, used Soundcraft instrumentation tapes to record and store data on under-ice characteristics of icebergs and ice flows. As man probes deeper and deeper into the unknown, science continues to call on the world's most modern tape plant for reliable magnetic tapes.

Discover how Soundcraft's consistent record of accomplishment can be extended and applied to fulfill your recording needs. Write for complete literature.

\*Soundcraft Instrumentation Tape is, of course, used in Tiros I, and in other vital space projects as well.

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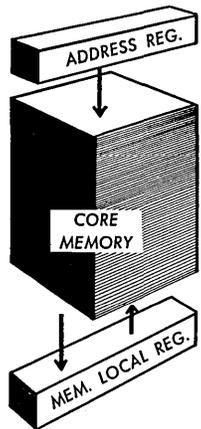
# From Honeywell:

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## *A brief analysis of some of the basic terms used to compare computer performance*

New claims, counter-claims, and comparisons of performance are being made by computer manufacturers every day. To help bring this welter of statistics into focus, Honeywell's Electronic Data Processing Division feels it necessary to define and briefly analyze a number of factors that are being considered in evaluating the relative performance of EDP Systems. Here are some of them:

**MEMORY ACCESS TIME** The memory device most widely used in electronic computers is the coincident-current magnetic core memory. It has three basic parts: An Address Register, a stack or array of magnetic cores, and a Memory Local Register.



When the Address Register receives information identifying a specific location in the core memory, the content of that memory location is transferred to the Memory Local Register, where it becomes available for processing.

Memory Access Time is the time it takes to perform this transfer.

**MEMORY CYCLE TIME** When information is transferred, the content of the memory location is destroyed. However, the information is still available in the Memory Local Register, where it can be, and usually is automatically restored to its original memory location. The time needed to restore this information — Restoration Time — usually equals Memory Access Time.

Memory Cycle Time equals Memory Access Time plus Restoration Time. When new information to be stored is placed in the Memory Local Register for assignment to a memory location, it is inserted during the Restoration Time of a separate memory cycle and the Access Time of that cycle is generally not used.

Memory Cycle Time is often used to compare internal speeds of computers. For a valid comparison, the amount of information transferred during each cycle must be considered. For example, most small computers handle only one character at a time, while large systems often handle eight or more. Computers that utilize words of fixed length do not always handle a full word each cycle. Some handle half-words or quarter-words, and therefore take two or four memory cycles to transfer one computer word.

For comparative purposes, a more explicit expression of computer memory speed is the number of characters stored or retrieved by the memory in one second. On this basis, Honeywell 800 Electronic Data Processing System has an internal speed of 1,670,000 characters per second, far and away the highest speed in its price class. Furthermore, Honeywell 800 utilizes

a separate control memory which often permits overlapping of internal operations, with consequent gains in speed.

**INSTRUCTION TIME** A fundamental measure of computer performance is the rate at which it carries out instructions. These instructions may contain one, two, three, or even four addresses. Honeywell EDP Systems, for example, use a three-address instruction which, on a conservative basis, is equal to about 2.2 one-address instructions.

Also, some types of instructions take longer than others, and when comparing computers it is important to know if instruction times quoted are for comparable operations. Various Honeywell 800 instructions are carried out at speeds ranging from 7,000 to 80,000 per second. The advertised speed of 30,000 operations per second is a conservative average.

**ADD TIME** The expression Add Time has generally been subject to extremely loose interpretation. For example, the Add Time of a three-address addition involves much more in the way of computer operation than the Add Time for a one-address instruction.

Add Time has been defined by some as the rate at which a succession of numbers may be totalled, and by others as the time the electronic circuits take to perform the actual addition, ignoring memory times. To be valid as a comparative function, the definition of Add Time should include the size of the numbers being added, the code they are in (binary or decimal), and whether or not the result involves a change in arithmetic sign.

**OTHER CONSIDERATIONS** There are, of course, several other factors that must be considered in evaluating or comparing the performance of electronic data processing systems. Among these are: use of internal checking, level of reliability, extent of simultaneous operations, and relative importance of certain special features. These and other subjects will be covered in future reports.

### **SEND FOR ADDITIONAL INFORMATION**

In the meantime, if you would like more information about any or all of these subjects, just write to Honeywell EDP Division, Wellesley Hills 81, Mass., or Honeywell Controls Limited, Toronto 17, Ontario.

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### **EMPLOYMENT OPPORTUNITIES**

*Opportunities exist for qualified professional personnel in all phases of EDP, from design to sales. If interested, please direct your confidential inquiry to our personnel director.*

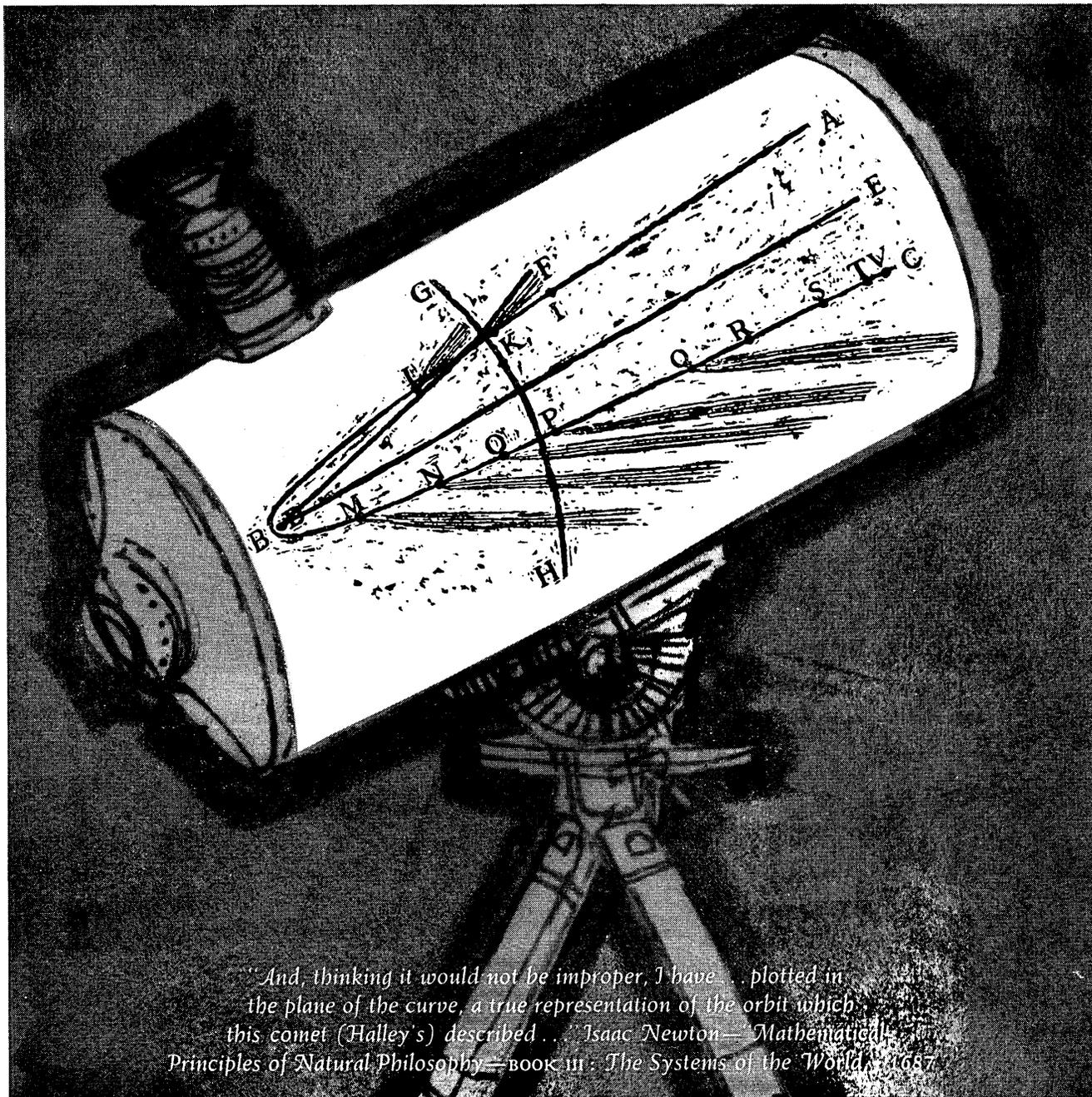
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## Honeywell



*Electronic Data Processing*

## Scientific programmers for Space Technology Leadership



*"And, thinking it would not be improper, I have . . . plotted in the plane of the curve, a true representation of the orbit which this comet (Halley's) described . . . Isaac Newton—Mathematical Principles of Natural Philosophy—book III: The Systems of the World, 1687"*

REPRINTS OF THE DRAWINGS CREATED FOR THIS SERIES, SUITABLE FOR FRAMING, ARE AVAILABLE ON REQUEST.

Thinking it not improper, we invite your attention to the challenging opportunities for scientific programmers at Space Technology Laboratories, Inc. In the tradition of Newton, you might well be interested in helping to develop a better understanding of such phenomena as the orbiting of bodies—celestial and man-made. At STL there is continuing interest in the solution of the broad spectrum of unsolved problems relating to space technology. It is indeed proper, therefore, that we invite you to participate with us in exploring new areas of Space Technology Leadership. Your inquiry will be welcomed and will receive our meticulous attention.

**SPACE TECHNOLOGY LABORATORIES, INC.** P.O. BOX 95005BB, LOS ANGELES 45, CALIFORNIA

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# THE COMPUTER DIRECTORY AND BUYERS' GUIDE, 1961

## Table of Contents

Roster of Organizations in the Computer Field . . . . .	10
Roster of Products and Services: Buyers' Guide to the Computer Field. . . . .	42
Survey of Computing Services . . . . .	88
Survey of Consulting Services . . . . .	96
Descriptions of Digital Computers . . . . .	99
Survey of Commercial Analog Computers . . . . .	117
Survey of Special Purpose Computers and Data Processors . . . . .	119
Automatic Computing Machinery — List of Types. . . . .	128
Components of Automatic Computing Machinery — List of Types . . . . .	131
Over 500 Areas of Application of Computers . . . . .	133
Application Programs Available . . . . .	138
Computer Users Groups — Roster . . . . .	139
Roster of School, College, and University Computer Centers . . . . .	140
Robots — Roster of Organizations, and Survey . . . . .	143
Teaching Machines and Programmed Learning — Roster of Organizations . . . . .	147

## 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 if any.

Aeronutronic Div. Ford Motor Co., Newport Beach, Calif. / Page 154 / Honig-Cooper & Harrington  
 American Telephone & Telegraph Co., 195 Broadway, New York 7, N. Y. / Page 2 / N. W. Ayer & Son, Inc.  
 Bendix Computer Div., 5630 Arbor Vitae St., Los Angeles 45, Calif. / Page 153 / Shaw Advertising, Inc.  
 Bryant Computer Products, a Div. of Ex-Cell-O Corp., 852 Ladd Rd., Walled Lake, Mich. / Page 156 / LaRue Cleveland, Inc.  
 Cambridge Communications Corp., 238 Main St., Cambridge 42, Mass. / Page 79 / Robert Hartwell Gabiné  
 C-E-I-R, Inc., 1200 Jefferson Davis Highway, Arlington 2, Va. / Page 132 / S. G. Stackig, Inc.  
 Columbia University Press, 2960 Broadway, New York 27, N. Y. / Page 116 / Franklin Spier, Inc.  
 Computer Sciences Corp., Malaga Cove Plaza, Palos Verdes, Calif. / Page 95 / Getz & Sandborg, Inc.  
 Dialight Corp., 54 Stewart Ave., Brooklyn 37, N. Y. / Page 85 / H. J. Gold Co.  
 DI/AN Controls, Inc., 944 Dorchester Ave., Boston 25, Mass. / Page 86 / Keyes, Martin & Co.  
 Herbert Halbrecht Associates, Inc., 332 So. Michigan Ave., Chicago 4, Ill. / Page 87 / A. J. Goldsmith & Co.  
 Honeywell EDP Div., Wellesley Hills 81, Mass. / Page 6 / Batten, Barton, Durstine & Osborn

Hughes Aircraft Co., Box 2907, Fullerton 1, Calif. / Page 82 / Foote, Cone & Belding  
 IBM Corp., Data Processing Div., 112 E. Post Rd., White Plains, N. Y. / Pages 126, 127 / Marsteller, Rickard, Gebhardt & Reed, Inc.  
 The Mitre Corporation, P. O. Box 208, 5-MT, Bedford, Mass. / Page 152 / Deutsch & Shea, Inc.  
 National Cash Register Co., Dayton 9, Ohio / Pages 3, 15 / McCann-Erickson, Inc.  
 Philco Corp., Government & Industrial Group, Computer Div., 3900 Welsh Rd., Willow Grove, Pa. / Pages 114, 115 / Maxwell Associates, Inc.  
 Potter Instrument Co., Inc., Sunnyside Blvd., Plainview, N. Y. / Page 155 / Donaldson Associates, Inc.  
 Recordak, Subsidiary of Eastman Kodak Co., 415 Madison Ave., New York 17, N. Y. / Page 150 / J. Walter Thompson Co.  
 Redmond-Fairchild, Inc., 610 So. Arroyo Parkway, Pasadena, Calif. / Page 155 / —  
 Reeves Soundcraft Corp., Great Pasture Rd., Danbury, Conn. / Page 5 / The Wexton Co., Inc.  
 Remington Rand Univac, P. O. Box 6068, San Diego 6, Calif. / Page 83 / Mullen & Associates, Inc.  
 Royal McBee Corp., Port Chester, N. Y. / Page 8 / Young & Rubicam, Inc.  
 Science Materials Center, 59 Fourth Ave., New York 3, N. Y. / Page 149 / Wunderman, Ricotta & Kline, Inc.  
 Space Technology Laboratories, Inc., P. O. Box 95005, Los Angeles, Calif. / Page 7 / Gaynor & Ducas, Inc.  
 Technical Operations, Inc., 3600 M St., N. W., Washington 7, D. C. / Pages 124, 125 / Dawson MacLeod & Stivers

# ROSTER OF ORGANIZATIONS IN THE COMPUTER FIELD

(Cumulative, information as of May 1, 1961)

The purpose of this Roster is to report organizations (all that are known to us) in the computer field: organizations making or developing computing machinery or data-processing machinery; organizations supplying services in the computer field; and organizations supplying components used in the computer field if related to the field (for example, magnetic drums would be such a component).

Entries. Each Roster entry if complete contains: Name of the organization, its address / Telephone number / Description of its main activities, main products in the field, any comments / Types of activities it engages in, size (expressed in number of employees), year established, nature of its interest in the computer field. In cases where we do not have complete information, we put down what we have. Regular entries in this Roster are free.

Accuracy. We have tried to make each entry accurate to the extent of information in our possession. We shall be grateful for any more information or additions or corrections that anyone is kind enough to send us. Although we have tried to be accurate and complete, we assume no liability for any statements expressed or implied.

## Abbreviations

The key to the abbreviations follows:

### Activities

- Ma Manufacturing activity
- Sa Selling activity
- Ra Research and development
- Ca Consulting
- Ga Government activity
- Pa Problem-solving
- Ba Buying activity  
(Used also in combinations as in RMSa "research, manufacturing and selling activity")

### Size

- Ls Large size, over 500 employees
- Ms Medium size, 50 to 500 employees
- Ss Small size, under 50 employees  
(no. in parentheses is approx. no. of employees)

### When Established

- Le Long established organization (1930 or earlier)
- Me Organization established a "medium" time ago (1931 to 1950)

Se Organization established a short time ago (1951 or later)

(no. in parentheses is year of establishment)

### Interest in Computers and Automation

- Dc Digital computing machinery
- Ac Analog computing machinery
- Ic Incidental interests in computing machinery
- Sc Servomechanisms
- Cc Automatic control machinery
- Mc Automatic materials handling machinery

\*C This organization has kindly furnished us with information expressly for the purpose of the Roster and therefore our report is likely to be more complete and accurate than otherwise might be the case. (C for Checking) / 61: information furnished in 1961 / 60: information furnished in 1960 / etc.

## Organization Entry Form

The form to be completed for an entry in the Roster of Organizations follows:

1. Your organization's correct name? \_\_\_\_\_
2. Street address? \_\_\_\_\_
3. City, zone state? \_\_\_\_\_  
Telephone number? \_\_\_\_\_
4. Types of computers, data processors, accessories, components, services, etc., that you produce or offer? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. Types of activity that you engage in:  
( ) Research  
( ) Manufacturing  
( ) Selling  
( ) Consulting  
( ) Other (please explain) \_\_\_\_\_
6. Approximate number of your employees? \_\_\_\_\_
7. Year organization was established? \_\_\_\_\_
8. Listings for two of your executives:  
Name & Title \_\_\_\_\_  
Name & Title \_\_\_\_\_  
This data supplied by \_\_\_\_\_  
Title \_\_\_\_\_ Date \_\_\_\_\_

ROSTER

A

- Accurate Electronics Corp., P. O. Box 935A, Elyria, Ohio / ENdicott 5-1211 / \*C 61  
 Plug and strip type plotting boards, connectors, jacks, jack panels, and terminals / RMSa Ms(50) Se(1952) Ic
- Ace Electronics Associates, Inc., 99 Dover St., Somerville 44, Mass. / SOMerset 6-5130 / \*C 61  
 Potentiometers, linear, non-linear, precision, sub-miniature, micro-miniature; trimmers, conductive plastic / RMSa Ms(160) Se(1954) Ic
- ACF Electronics Div., 48 Lafayette St., Riverdale, Md. / WARfield 7-4444 / \*C 59  
 Special purpose analog computers, test equipment computers, magnetic clutches, simulators / RMSa Ls(1300) Le(ACF, 1899) AIc
- Acheson Colloids Co., a div. of Acheson Industries, Inc., 1640 Washington, Port Huron, Mich. / YUKon 4-4171 / \*C 61  
 Dispersions of colloidal graphite, molybdenum disulfide, and other solids used for surface and conductive coatings / RMSCa Ms(100) Le(1908) Ic
- Actuarial Computing Service, Inc., 1389 Peachtree St., N. E., Atlanta 9, Ga. / TR 5-6727 / \*C 60  
 Specializing in computer applications for the insurance industry, job shop computing / Ca Ss(7) Se(1956) Dc
- Adage, Inc., 292 Main St., Cambridge 42, Mass. / UNiversity 4-6620 / \*C 61  
 Special purpose ambilogical (i. e., combining analog operations and digital logic) computers; high speed, all semiconductor analog-digital converters / MSa Ms(125) Se(1957) DAIC
- ADB Institutet (Scandinavian Automatic Data Processing Institute), Chalmers University of Technology, Gibraltargatan 5, Gothenburg S, Sweden / \*C 61  
 University training in automatic data processing. Consulting, programming, coding, and running problems on Alwac III E (Wegematic 1000) computers for industries in Scandinavia / RCPa Ss(25) Se(1957) Dc
- Addo-x, Inc., 300 Park Ave., New York 22, N. Y. / PLaza 5-5420 / \*C 60  
 Ten-key electric precision adding machines, posting machines, calculators with solenoid input, read-out, tape punch, tape reader for 5, 6, 7 and 8 column codes / Sa Ls(Sweden, 2800; USA, 60) Me(1941) Ic
- Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland 17, Ohio / RE 1-8000 / \*C 60  
 Small, medium and large scale, multi and special purpose electronic data processing systems; card readers, file processor, multi-line serial printer and high speed line printers; electronic facsimile printers; transfer printers; bar code scanners / RMSa Ls (8000) Le(1903) IMc
- Advanced Information Systems Co. (AIS), 3002 Midvale Ave., Los Angeles 34, Calif. / GR 8-9801 / \*C 61  
 Consulting services, applications, program management, and research / RCa Ss(12) Se(1960) DIC
- AEC Computing and Applied Mathematics Center, Institute of Mathematical Sciences, 4 Washington Place, New York 3, N. Y. / OREGon 7-0200 / \*C 60  
 Research and computing service for the Atomic Energy Commission. IBM 704 with peripheral equipment / RCPGa Ms(100) Se(1952) Dc
- Aemco, Div. of Telex, Mankato, Minn. / - / \*C 61  
 Relays, timers, and time switches / MSa ?s ?e Ic
- Aeronca Mfg. Corp., Aerospace Div., Hilltop & Frederick Rds., Baltimore 28, Md. / RIDgeway 7-0200 / \*C 60  
 Digital data processing and handling equipment, code translating and decoding / RMSa Ms(65) Le(1928) Dc
- Aeronutronic, a Div. of Ford Motor Co., Ford Rd., Newport Beach, Calif. / ORIole 5-1234 / \*C 61  
 Complete BIAx memory systems; family of message entry and display systems; magnetic drum memory systems; large high-speed random access units; solid state printed circuit boards; complete military systems for command and control; airborne digital computers / RMSa Ls(2200) Se(1956) DICc
- Aeronutronic Systems, Inc., Computer Div. (a div. of Ford Motor Co.) - name changed to Aeronutronic, a Div. of Ford Motor Co., which see
- Aerovox Corp., Belleville Ave., New Bedford, Mass. / WYman 4-9661 / \*C 59  
 Capacitors - all types, resistors, ferrite cores, jacks, magnets, switches / RMSa Ls(3000) Le (1922) Ic
- Aircraft Armaments, Inc., Industry Lane, Cockeysville, Md. / NORmandy 6-1400 / \*C 61  
 Special purpose computers, simulators, training systems, telemetering systems, and test equipment for land, sea, and air based on custom specifications / RMSa Ls(750) Me(1950) DAIC
- Airflyte Electronics Co., 535 Avenue A, Bayonne, N. J. / HEMlock 6-2230 / \*C 61  
 Analog-digital converters, commutating devices for sampling, programming, etc. / RMSa Ms(75) Me (1948) DAIC
- Airpax Electronics Inc., 6601 N. W. 19th St., Ford Lauderdale, Fla. / LUDlow 3-6160 / \*C 61  
 Differential, analog computer type magnetic amplifiers; complete line of servo, data logging and control systems; choppers, circuit breakers, transformers and telemetry equipment / RMSa Ms(450) Me(1948) Ic
- Aladdin Electronics, A Div. of Aladdin Industries, Inc., 703 Murfreesboro Rd., Nashville 10, Tenn. / CHapel 2-3411 / \*C 61  
 High frequency transformers: pulse, wide-band, duraclad. Ferrite cored inductors. I. F. transformers / RMSa Ls(700) Le(1908) Ic
- Alden Products Co., 1140 N. Main St., Brockton, Mass. / JUNiper 3-0160 / \*C 61  
 Cable assemblies, metal chassis, patch cords, coil winding bobbins, breadboard kits, computer packaged circuits, connectors, magnetic cores, fastening devices, jacks, magnetic storage, lights, indicator systems; components to mount, package, connect, and monitor electronic circuitry and graphic recording systems / MSa Ms(200) Le(1930) Ic
- Alexandria Div., American Machine & Foundry Co., 1025 N. Royal St., Alexandria, Va. / King 8-7221 / \*C 61  
 Data processing applications, digital computer programming, computer simulation, multicolor light and switch indicators for annunciating color coded information on monitored panels or consoles / RMS(systems engineering)a Ms(200) Le(1900) DIC
- Allard Instrument Corp., 146 E. Second St., Mineola, L. I., N. Y. / Pioneer 6-5895 / \*C 60  
 Visual indicators / RMSa Ss(20) Se(1952) Ic
- Allegheny Instrument Co., Inc., 1091 Wills Mountain, Cumberland, Md. / PARKview 4-1200 / \*C 60

Data recording and computing systems for ballistic measurements / RMSa Ms(250) Se(1952) ADc  
 Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y. / BUTterfield 8-7403 / \*C 61  
 Relays; sub-miniature switches; solenoid valves / RMSa Ls(900) Me(1938) Ic  
 Allied Research Associates, Inc., 43 Leon St., Boston 15, Mass. / GARRison 7-2434 / \*C 61  
 Service on Bendix G-15 digital computer and a GPS high-speed analog computer; generalized research and development in the physical sciences / RMCA Ms(230) Se(1951) DAic  
 Allies' Products Corp., P. O. Box 188, Kendall 56, Fla. / CEDar 5-5424 / \*C 61  
 Precision carbon-deposited resistors / RSA Ss(10) Se(1951) Ic  
 Alwac Computer Div., El-Tronics, Inc., 13040 S. Cerise Ave., Hawthorne, Calif. / OSBorne 5-0311 / \*C 61  
 General purpose digital computer (ALWAC III-E and IV), computer component parts, card converters, universal tester, magnetic tape transport, magnetic tape buffer, magnetic drums, paper tape console, data reduction and input-output equipment / RMSCa Ms(100) Se(1952) DIc  
 American Bosch Arma Corp., 320 Fulton Ave., Hempstead, N. Y. / — / \*C 61  
 Digital and analog computers, packaged computer circuits, high-speed printers, photoelectric readers, computer test equipment and fire control equipment / MSA ?s ?e DAICc  
 American Data Services, Inc., 2221 S.W. Fifth Ave., Portland 1, Ore. / CAPitol 6-6851 / \*C 61  
 Complete electronic data processing services / Pa Ss(20) Se(1959) Ic  
 American Electronics, Inc., 1725 W. 6th St., Los Angeles 17, Calif. / DUNKirk 5-7401 / \*C 60  
 Instrumentation tape recorders, computer power supplies, data integration and collecting systems; nuclear products, radiation standards, badges and counters; computers, analysis equipment, line printers; magnetic amplifiers; signaling controls; magnetic card and tape readers; resolvers, synchros; telemetering systems / RMSa Ls(2000) Me(1945) DAic  
 American Hydromath Corp., 24-20 Jackson Ave., Long Island City 1, N. Y. / EX 2-4242 / \*C 61  
 Mechanical and electro-mechanical analog computers; special purpose slide rules, quality control computers, mechanical nomographs / RMSCc Ss(10) Me(1940) Ac  
 American Lava Corp., Manufacturers Rd., Chattanooga 5, Tenn. / AMHerst 5-3411 / \*C 61  
 Custom manufacturing services including technical ceramics and metal-ceramic combinations / Ma Ls(over 1000) Le(1902) Ic  
 American Machine & Foundry Co. — see Alexandria Div.  
 American Research & Manufacturing Corp., 920 Halpine Ave., Rockville, Md. / HA 7-7116 / \*C 61  
 Electronic components, preparation of manuals and training aids / RMA Ms(68) Se(1954) Ic

AMP, Inc., Harrisburg, Pa. / JORDan 4-0101 / \*C 61  
 Solderless terminals, connectors, patchcord programming systems and pinboards / Ma Ls(over 3000) Me(1941) Ic  
 Amperex Electronic Corp., 230 Duffy Ave., Hicksville, L. I., N. Y. / WELls 1-6200 / \*C 61  
 Electron tubes and semiconductors (diodes, transistors) / MSA Ls(500) Le(1925) Ic  
 Amperite Co., Inc., 561 Broadway, New York 12, N. Y. / CANal 6-1446 / \*C 59  
 Delay relays, ballast tubes for regulation of current and voltage / RMSa Ms(80) Le(1924) Ic  
 Ampex Computer Products Co., 9937 Jefferson Blvd., Culver City, Calif. / UPTon 0-8571 / \*C 61  
 Tape handlers, ferrite magnetic cores, wired core arrays and stacks, core buffer memories, solid state memory systems / RMSa Ls(570) Me(1948) Ic  
 Ampex Corp., Data Products Co., 934 Charter St., Redwood City, Calif. / EMERson 9-7111 / \*C 60  
 Magnetic tape recorder-reproducers and readers; magnetic tape systems for programming computers; memory systems; input-output devices; digital and analog magnetic storage devices; data recording equipment; facsimile equipment; information retrieval devices / RMSa Ls(2000) Me(1947) Ic  
 Ampex Magnetic Tape Products, a Div. of Ampex Corp., Opelika, Ala. / SH 5-7643 / \*C 61  
 Ampex computer tape, accessories, storage containers, reels, and shipping material / RMSa Ms(275) Me(1946) Ic  
 Amphenol-Borg Electronics Corp., Broadview, Ill. / — / Connectors and potentiometers for computer applications; all types / RMSa Ls Se(1958) Ic  
 Amphenol Cable & Wire Div., Amphenol-Borg Electronics Corp. — name changed to RF Products, a Div. of Amphenol-Borg Electronics Corp., which see  
 Amphenol Connector Div., Amphenol-Borg Electronics Corp., 1830 S. 54th Ave., Chicago 50, Ill. / BISHop 2-1000 / \*C 61  
 AN/MS, RF and rack and panel connectors / RMSa Ls(1600) Me(1932 as American Phenolic) Ic  
 Amplifier Corp. of America, 398 Broadway, New York 13, N. Y. / WORTH 6-2929 / \*C 61  
 Tape recorders, tape decks, transistorized power supplies, transistorized amplifiers, flutter meters, demagnetizers; instruments to order / RMSCPa Ss(25; as an affiliate of Keystone Camera Co., Inc., additional personnel and facilities readily available) Me(1936) Ic  
 Analogue Controls, Inc., 200 Frank Rd., Hicksville, L. I., N. Y. / OVerbrook 1-7300 / \*C 61  
 Precision potentiometers, single and multiple turn; packaged servos and specialized analog and digital computers / RMCA Ms(140) Se(1954) DASic  
 Andersen Laboratories, Inc., 501 New Park Ave., West Hartford 10, Conn. / ADAMS 6-1281 / \*C 60  
 Ultrasonic and lumped constant delay lines and variable ultrasonic delay lines / RMSa Ms(75) Me(1950) DAsC  
 ANelex Corp., 150 Causeway St., Boston 14, Mass. / RICHmond 2-1720 / \*C 61  
 High-speed printers, ANelex print station, airborne printer, printed circuit cards / RMSa Ms(300) Se(1952) Ic

AMERICAN SYSTEMS INC., 1625 East 126th St., Hawthorne, Calif. / PL 6-8301 / \*C 61  
 Design, production of digital systems, subsystems, and peripheral equipment; information processing research and service; application of modern analytical techniques to problems of government, science and industry / RMCG(electronic systems design)a Ms(100) Se(1960) DAISCc

- Applied Dynamics, Inc., Box 612, Ann Arbor, Mich. / NO 2-4493 / \*C 61  
Analog computers, general and special purpose, and associated components / MSa Ss(15) Se(1957) AI(computation service)c
- A R & D A, 135 Main St., Belleville 9, N. J. / PL 9-4902 / \*C 61  
Analog and digital computers made to customer's special requirements; consultants, designers of servomechanisms, measuring and recording systems, telemetering systems / RMCa Ss(12) Se (1956) DAISc
- Arenberg Ultrasonic Lab., Inc., 94 Green St., Jamaica Plain 30, Mass. / JAmaica 2-8640 / \*C 61  
Ultrasonic delay lines, ultrasonic test equipment / RMa Ss(15) Me(1950) Ic
- Argonne National Laboratory, P. O. Box 299, Lemont, Ill. / Clearwater 7-7711 / \*C 59  
Maker of Avidac, Oracle, George, automatic digital computers and other computers, for own use and other government agencies / RGPa Ls(3000) Me (1943) DAIC
- Arma Division, American Bosch Arma Corp., Old Country Rd., Garden City, N. Y. / Pioneer 2-2000 / \*C 61  
Analog, digital, transistorized and miniaturized computers for application in ships, manned aircraft, missiles and ground environment / RMSa Ls(6000) Le(1919, corporation) DAIC
- Armour Research Foundation of Illinois Inst. of Technology, 10 W. 35th St., Chicago 16, Ill. / CALumet 5-9600 / \*C 60  
Univac 1105 research computation facility, computer applications and operations research, information systems studies, mathematical programming, design and development of digital systems / RCPa Ls(1350) Me(1937) DAISCc
- Arnold Ceramics Inc., One East 57th St., New York 22, N. Y. / PLaza 5-8213 / \*C 60  
Long-life, high-stability, carbon-film resistors; high speed compacting presses for memory cores / Sa Ss(6) Me(1940) Ic
- The Arnold Engineering Co., Railroad Ave. & West St., Marengo, Ill. / (Chicago) ANdover 3-6300 / \*C 61  
Magnetic materials / MSa Ls(800) Me(1936) Ic
- Assembly Producers, Inc., 75 Wilson Mills Rd., Chesterland, Ohio / HA 3-3131 / \*C 61  
Contact meter relays, panel meters, "packaged controls," special electronic controls, electrically actuated controls, automatic control equipment / RMSCa Ms(300) Me(1945) DACc
- Association of Data Processing Service Organizations, 1000 Highland Ave., Abington, Pa. / TUrner 7-5759 / \*C 61  
A non-profit association; symposium literature, etc. / Ss(1) Se(1960) Ic
- Astron Corp., 255 Grant Ave., E. Newark, N. J. / HUmboldt 2-7800 / \*C 61  
Various types of paper capacitors, electrolytic capacitors, solid tantalum capacitors, fixed dielectric and R. F. interference noise suppression filters / Ma Ls(600) Se(1950) Ic
- Atlas Precision Products Co. Div. of Prudential Industries, Inc., 3801 Castor Ave., Philadelphia 24, Pa. / JEfferson 5-3700 / \*C 61  
Mechanical analog computers for fire control, radar, etc.; geared mechanisms, servos, etc.; analog-to-digital converters, sub-assemblies; precision gears, differentials, bearings / Ma Ms(200) Me(1929) AIC
- Audio Devices, Inc., 444 Madison Ave., New York 22, N. Y. / PLaza 1-6640 / \*C 61  
Magnetic recording tape, guaranteed defect-free for use in computers; telemetry, seismography, automation / RMSa Ms(150) Me(1937) Ic
- Audio Devices, Inc., Rectifier Div., 620 E. Dyer Rd., Santa Ana, Calif. / Kimberly 5-8241 / \*C 59  
Silicon rectifiers / RMSa Ms(100) Se(1957) Ic
- Audio Instrument Co., Inc., 135 West 14 St., New York 11, N. Y. / ORegon 5-7820 / \*C 61  
Analog time delay devices; logarithmic converters / RMSa Ss(9) Me(1949) Ic
- Auerbach Electronics Corp., Corporate headquarters, 1634 Arch St., Philadelphia 3, Pa. / LOcust 3-7737 / \*C 61  
System engineering and consulting services in information technology. Systems engineering — on-line and off-line data processing, advanced programming design, mathematical analysis; equipment development — computer peripheral equipment, custom tape translators, automatic test equipment, special control systems; product and market planning services — market identification, industrial product analysis, computer comparison studies; programmed teaching services — master training programs, teaching machine programs / RCPGa Ms(92) Se(1957) DACc
- Automated Accounting Center of Conn., 7 Field St., Waterbury, Conn. / PL 6-8389 / \*C 61  
Data processing services. Equipment: Bendix G-15D computer; AN-1 hi-speed paper tape punch/reader; 2 magnetic tape accessories; NCR magnetic ink reader-sorter; 3 flexowriters / SCa Ss(10) Se (1960) Ic
- Automatic Control, Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. / MU 8-8600 / \*C 60  
Monthly engineering and scientific magazine serving control technology as applied to industrial and military systems work / Ss(20) Se(1954) DASCMc
- Automatic Electric Co., Northlake, Ill. / Fillmore 5-7111 / \*C 61  
Relays and rotary stepping switches for industrial control, control systems / RMSa Ls(8500) Le(1891) Ic
- Automation Consultants, Inc., 155 Fifth Ave., New York 10, N. Y. / ORegon 4-6660 / \*C 61  
Handbooks; monthly updating services; newsletter; publisher of "Business Automation News Report" / RCa Ss(12) Se(1954) Ic
- Automation Controls Corp. — acquired by Land Air, Inc., Stepper Motors Div., which see
- Automation Engineers, 344 W. State St., Trenton 8, N. J. / OWen 5-8509 / \*C 60  
Consultants in automatic control machinery, automatic materials handling equipment, and information handling equipment. Designers of specialized data processing equipment, including office machinery coupling mechanisms. Analysis of automation economics; supervision of installations / RCa Ss(20) Me(1942) ICMc
- Automation Management, Inc., 25 Brigham St., Westboro 95, Mass. / FO 6-5377 / \*C 61  
Performance computer; management and automation engineering; contractors of integrated processes / RMSCa Ss(3) Se(1955) Clc
- Automation Progress, 9 Eden St., London N. W. 1, England / Euston 5911 / \*C 58  
Technical magazine on all aspects of automatic production and control / —

Automation Research & Design Associates — see A R & DA  
Autonetics, a Div. of North American Aviation, Inc. —  
name changed to Autonetics Industrial Products, Oper-  
ating Div. of Autonetics, a Div. of North American Avi-  
ation, which see

Autonetics Industrial Products, Operating Div. of Auto-  
netics, a Div. of North American Aviation, Inc.,  
3400 E. 70 St., Long Beach 5, Calif. / MEtcal 4-3220  
/ \*C 61

RECOMP II general purpose, solid state, medium-  
size, compact digital computer — complete computer  
system; RECOMP III low-cost, solid state, large-  
memory digital computer with accessories optional;  
FACITAPE high-speed tape punch (150 ch/sec) and  
reader (600 ch/sec); FACITAPE Console, complete  
high-speed tape reader/punch system in 3 models:  
tape reproducer, tape translator, and computer  
peripheral equipment; magnetic tape units; Versa-  
Tape off-line tape preparation units; NAVAPI pre-  
cision voltage and phase test instrumentation line;  
NIFTE, neon indicating factory test equipment for  
manufacturers of complex wiring systems and elec-  
tronic equipment / RMSa Ls(600) Se(1958) DICMc

## B

Babcock Electronics Corporation, 1640 Monrovia Ave.,  
Costa Mesa, Calif. / LLiberty 8-7705 / \*C 61

Remote control systems, receivers, transmitters,  
encoders, decoders and signal generators / RMSa  
Ls(800) Me(1947) Ic

Babcock Radio Engineering Inc. — name changed to  
Babcock Electronics Corporation, which see

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio  
/ GL 1-4600 / \*C 61

Automatic control equipment, special purpose com-  
puters, data processing equipment, scanners /  
RMSa Ls(1000) Le(1916) DACc

Baird-Atomic, Inc., 33 University Rd., Cambridge 38,  
Mass. / UNiversity 4-7420 / \*C 61

Spectrochemical, electronic and radioisotope in-  
strumentation for analysis and control; electronic  
tubes, proportional counters, electronic counters,  
sorting and counting controls, scientific instruments,  
analog devices, servo-mechanisms, transistors,  
print readers / RMSa Ls(700) Me(1936) Ic

Ballastran, Div. of Telex Inc., 1701 N. Calhoun St., Ft.  
Wayne 7, Ind. / E-9602 / \*C 61

Pulse transformers, speciality transformers /  
Ma Ms(150) Me(1946) Ic

Battelle Memorial Institute, 505 King Ave., Columbus 1,  
Ohio / AX 9-3191 / \*C 61

Research and development in all fields of the physi-  
cal sciences; computer and systems research, com-  
puter programming assistance, model formulation,  
analog and digital computing services, man-machine  
relationships research / RPa Ls(2300) Le(1929)  
DAISCMc

Beckman Instruments, Inc., Berkeley Div., 2200 Wright  
Ave., Richmond, Calif. / LA 6-7730 / \*C 61

General purpose, electronic analog computers, as  
well as operational amplifiers, function generators,  
computing resistors and capacitors in oven, elec-  
tronic multipliers and resolvers, patchbags and patch-  
board and digital control systems / MSa Ms(475)  
Me(1946) DAIC

Beckman Instruments, Inc., Scientific and Process In-  
struments Div., 2500 Harbor Blvd., Fullerton, Calif.  
/ TRoJan 1-4848 / \*C 61

123 data processing system which collects operating  
data, converts to meaningful numbers, and is used  
for study or immediate use in process control.  
Continuous process industries and power utilities  
use the 123 to collect data in pilot plants and as a  
link in complete process computer control systems  
/ RMSa Ls(2000) Le(1935) Dc

Beckman Systems Div., 325 N. Muller Ave., Anaheim,  
Calif. / PProspect 4-5430 / \*C 60

High-speed multi-channel electronic data processing  
systems; data reduction and logging systems; sys-  
tems components; d-c amplifiers; analog-to-digital  
conversion systems; telemetry systems; missile  
checkout systems; data translation systems; military  
study contracts in areas of instrumentation and data  
processing / RMSGa Ms(350) Me(1935, corporation;  
1956, division) DAIC

Bell Aerosystems Company, P. O. Box One, Buffalo 5,  
N. Y. / BUTler 5-7851 (Niagara Falls, N. Y.) / \*C 61

IBM 704 with peripheral equipment / RMSCa  
Ls(3300) Le(1935) DAC

Bell Aircraft Corp., Niagara Frontier Div. — name  
changed to Bell Aerosystems Company, which see

Bendix Corp., Bendix Computer Div., 5630 Arbor Vitae  
St., Los Angeles 45, Calif. / ORchard 0-3640 / \*C 61

G-15 general purpose digital computer and accesso-  
ries, including small-size low-cost digital differen-  
tial analyzer, punched card adapters, magnetic tape  
recorders and readers, plotters, special paper tape  
readers, and other input/output devices. G-20 high  
speed data processing system and accessories, in-  
cluding control buffers, memory modules, magnetic  
and paper tape units, high speed line printers and  
other input/output devices. Also 3-axis flight-control  
system simulator. Contract systems development  
work / RMSa Ls(691) Se(1952) DIC

Bendix Corp., Bendix-Pacific Division, 7250 Laurel Can-  
yon, No. Hollywood, Calif. / POplar 5-1280 / \*C 61

T/M ground stations, data acquisition, area monitor-  
ing, computer buffering and digital transmission sys-  
tems; analog-digital converters, data processing,  
format, conversion and translation equipment; input  
transducers with digital outputs for temperature,  
pressure, time, date, speed, direction and frequency;  
logic modules / RMSa Ls(3550) Le(1915, company;  
1937, this division) DCIC

Bendix Corp., Eclipse-Pioneer Div., Teterboro, N. J. /  
Atlas 8-2000 / \*C 61

Synchros, servo motors and motor generators;  
gyros and related components for servo-mechanisms;  
automatic controls, analog-to-digital converters,  
mechanical and electronic integrators, resolvers,  
Airborne Digital Computer, analog and digital mo-  
dules, memory storage devices / RMSa Ls(10,000)  
Le(1916) DAIC

Bendix Corp., Industrial Controls Section, 21820 Wyoming  
Ave., Detroit 37, Mich. / JO 6-9800 / \*C 61

Numerical control systems for machine tools, cir-  
cuit cards, card testers, servo drives / MSa Ms(140)  
Se(1957) Ic

**BENDIX CORP., RESEARCH LABORATORIES DIV.,**  
 Southfield (Detroit), Mich. / KENwood 7-3300 / \*C 61  
 Research in analog, digital, and hybrid techniques;  
 special purpose analog and digital computing and  
 control systems / RCa Ls(700) Le(1929) DASCMe

Benge Associates, McIntyre Bldg., Spruce and College  
 Sts., Asheville, N. C. / ALpine 2-0852 / \*C 59  
 Management consultants; applications of electronic  
 data processing to office procedures; costs, analysis  
 of clerical routines leading to programming / RCa  
 Ss(6) Me(1939) Cc

Benson-Lehner Corp., 1860 Franklin St., Santa Monica,  
 Calif. / EXbrook 3-9921 / \*C 60

Data reduction, handling, and translating equip-  
 ment; record readers (oscillographic, film, etc.),  
 data storage and retrieval machines; data display  
 devices including line drawing plotters, point and  
 symbol plotters, high precision digital plotters,  
 analog plotters; special readers including map and  
 blue print readers, digital microscopes and com-  
 parators; shaft rotation-to-digital converters; in-  
 ventory and memory systems; electrically controlled  
 typewriters; photo instrument equipment including  
 high speed cameras, tracking and strike cameras,  
 take-off cameras and associated equipment /  
 RMSCa Ms(240) Se(1950) DAc

Edmund C. Berkeley and Associates, 815 Washington St.,  
 Newtonville 60, Mass. / DEcatur 2-5453 or 2-3928 /  
 \*C 61

Courses by mail in automatic computing machinery,  
 mathematics, and other scientific subjects / PCa  
 Ss(3) Me(1948) Dc(affiliated with Berkeley Enter-  
 prises, Inc.)

Berkeley Enterprises, Inc., 815 Washington St., New-  
 tonville 60, Mass. / DEcatur 2-5453 or 2-3928 / \*C 61

Electric brain construction kit for educational pur-  
 poses; Brainiac, Tyniac. Publisher of "Computers  
 and Automation" and other publications. Small ro-  
 bots; robot show-stoppers; Relay Moe (tit-tat-toe  
 machine) / RMSa Ss(6) Se(1954) Dc (affiliated  
 with Edmund C. Berkeley & Associates)

Booz, Allen Applied Research, Inc., 135 La Salle St.,  
 Chicago 3, Ill. (also Glenview, Ill. and Washington,  
 D. C.) / FR 2-1728 (Chicago); OLiver 6-1400 (Washing-  
 ton, D. C.) / \*C 61

Technical consulting in operations research; re-  
 search and development in reliability, applied sta-  
 tistics, electromechanisms, instrumentation, sys-  
 tems analysis, electronics and communications and  
 physics / RCa ?s ?e Ic

Booz, Allen & Hamilton, 135 So. La Salle St., Chicago 3,  
 Ill. (offices also in New York, Washington, D. C.,  
 Cleveland, Detroit, San Francisco, Los Angeles, and  
 Seattle) / FInancial 6-1900 / \*C 61

Management consultants; technical services in  
 electronic and automatic data processing for totally  
 integrated management controls systems for indus-  
 try, commerce, government, and institutions /  
 CPa Ls Le(1914) Ic

Borg-Warner Controls, Div. of Borg-Warner Corp.  
 (formerly BJ Electronics), 3300 Newport Blvd., Santa  
 Ana, Calif. / KLmberly 5-5581 / \*C 61

Miniature magnetic tape recorders; radio frequency  
 test instrumentation; variable reluctance transducers  
 and accelerometers / RMSa Ms(330) Me(1945) Ic

Bourns, Inc., 6135 Magnolia Ave., Riverside, Calif. /  
 OVerland 4-1700 / \*C 61

Trimpot<sup>®</sup> leadscrew actuated potentiometers;  
 potentiometer transducers; AC transducers; in-  
 strument-systems / RMSa Ls(1100) Me(1946) Ic

Bowmar Instrument Corp., 8000 Bluffton Rd., Fort Wayne,  
 Ind. / SHerwood 3121 / \*C 61

Precision mechanical components, precision counters  
 and indicators, precision timing and programming  
 devices, precision electromechanical devices, pre-  
 cision servo packages / RMSa Ms(450) Se(1951) Ic

William Brand - Rex Division, American Enka Corp., 31  
 Sudbury Rd., Concord, Mass. / EMerson 9-9630 / \*C 61

Wire, cable, electrical insulating materials / RMSa  
 Ls(1000) Le(1920) Ic

Brender & Brender, Inc., 3911 Newberry, Wayne, Mich.  
 - no longer have computer; see entry for Technical  
 Advisors, Inc.

Richard D. Brew & Co., Inc., 90 Airport Rd., Concord,  
 N. H. / CA 5-6605 / \*C 61

Delay lines, lumped constant, distributed constant,  
 ultrasonic / RMSa Ms(150) Me(1945) Ic

The Bristol Company, P. O. Box 1790 CAG, Waterbury 20,  
 Conn. / PLaza 6-4451 / \*C 61

Electronic and potentiometric recording, indicating,  
 controlling, signalling; alarm and telemetering in-  
 struments for standard and special functions; com-  
 ponents including choppers, high speed relays, cap-  
 sular elements, remote positioners, pressure  
 switches and transducers; miniature standard and  
 special socket screws; recording papers; data log-  
 ging equipment / RMSa Ls(over 1000) Le(1889) Ic

Broadview Research Corp., 1811 Trousdale Dr., Bur-  
 lington, Calif. / DIamond 4-7625 / \*C 61

Data systems and intelligence systems analysis;  
 scientific and business programming services;  
 assembly routines and compilers; systems simula-  
 tion; operations research techniques / RCPa Ms(100)  
 Se(1951) DAic

Brush Instruments, Div. of Clevite Corp., 37th & Perkins  
 Ave., Cleveland 14, Ohio / ENdicott 1-3315 / \*C 59

Direct writing oscillographs and amplifiers for re-  
 cording systems / RMSa Ms(400) Me(1930) Cc

Bryant Computer Products, Div. of Ex-Cell-O Corp., 850  
 Ladd Rd., Walled Lake, Mich. / MArket 4-4571 / \*C 61

Manufacture amplifiers, recording; code discs; discs,  
 magnetic; drums, magnetic; heads, read/record/er-  
 ase magnetic record/playback units; memories, mag-  
 netic drum; power supplies, regulated; pre-amplifiers;  
 recorders, drum, magnetic; registers, shift / MSa  
 Ms(200) Se(1952) Ic

Bull S. A. Compagnie Des Machines, 94 Avenue Gambetta,  
 Paris 20, France / MEN 81-58 / \*C 59

Punch card machines. Data processing equipment.  
 Scientific GAMMA computers / RMSa Ls(8000)  
 Me(1931) Dc

J. H. Bunnell & Co., 81 Prospect St., Brooklyn 1, N. Y. /  
 ULster 8-0100 / \*C 60

Tape winders, punched tape readers / RMSa Ms(50)  
 Le(1878) Ic

Bureau of the Census, Washington 25, D. C. / \*C 59

Statistical data processing by electronic computing  
 system (Univacs), by commercial punch-card equip-  
 ment, and by special machines designed and built for  
 own use / RCPGa Ms(400 in electronic and mechani-  
 cal processing primary organization units) Le(1890  
 in punch card field) Dc

Burlingame Associates, Ltd., 510 So. Fulton Ave., Mt. Vernon, N. Y. / MO 4-7530 / \*C 61

Analog computers, computing amplifiers and power supplies, analog recorders, analog to digital converters, digital voltmeters / Sa Ss(35) Le(1928) ADic

Burndy Corp., Norwalk, Conn. / TEmple 8-4444 / \*C 61  
Electrical and electronic connectors / RMSa Ls(2200) Le(1924) Ic

Burr and Company, P. O. Box 122, Wellesley Hills 81, Mass. / \*C 61

Equity capital for small firms in the digital computer industry / Ss(2) Se(1959)

Burroughs Corporation, 6071 Second Ave., Detroit 32, Mich. / TRinity 5-2260 / \*C 61

Burroughs 5000, 251, 205 and 220 electronic data processing systems and digital computer components; also the E101 and E103 desk-size electronic digital computers for scientific and general business usages, respectively; Cardatron punched card input-output system; card-to-paper-tape conversion equipment; Datafile magnetic tape storage system; digital computing service, tape handlers, keyboards, magnetic tape filing systems and tape recorders, paper tape punches. Adding machines, bookkeeping machines, etc. / RMSCa Ls(36,000) Le(1885) DIc

Burroughs Corp., Electronic Components Div., Plainfield, N. J. / PL 7-5000 / \*C 61

Digital components and instruments / MSa Ms(200) Se(1956) DIc

Burroughs Corp., Electronic Tube Div., Mt. Bethel Rd., Mt. Bethel, N. J., P. O. Box 1226, Plainfield, N. J. / PL 7-5000 / \*C 60

Beam switching tubes, NIXIE <sup>®</sup> indicator tubes, PIXIE position indicator tubes, BEAM-X switch, TRIXIE drive module for NIXIE pulse control instruments, electronic counters, and visual output devices / MSa Ms(135) Se(1954) Ic

Business Electronics Inc., 420 Market St., San Francisco 11, Calif. / DOuglas 2-0894 / \*C 61

Home study courses in programming for computers, and applications of business problems to computers / CSA Ss(9) Se(1955) DIc

C

California Computer Products, Inc., 8714 Clela St., Downey, Calif. / SPruce 3-4921 / \*C 61

Digital incremental X-Y recorders; magnetic tape plotting systems; digital computer development work / RMSa Ms(50) Se(1951) DIc

California Technical Industries Div. of Textron Inc., 1421 Old County Rd., Belmont, Calif. / LYtell 3-8466 / \*C 60

Automatic test equipment, cable assemblies, computer test equipment, paper tape readers, paper tape punches, paper tape duplicators, punched card readers / RMSa Ms(125) Me(1946) Ic

Calvert Electronics Inc., 536 Broadway, New York 12, N. Y. / CANal 6-7400 / \*C 61

Electronic tubes, diodes and transistors; represents U. S. and European manufacturers / RSA Ss(20) Me(1949) Ic

Cambridge Communications Corp., 238 Main St., Cambridge 42, Mass. / Ki 7-1997 / \*C 60

Abstracting articles and reports on cards / MSa Ss(9) Se(1957) Ic

Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass. / TRowbridge 6-2800 / \*C 61

Miniature transistorized digital modules including flip-flops, inverter-nor logic, gates, buffer amplifiers and level triggers / RMSa Ms(275) Me(1941) Ic

Canadian Applied Research Ltd., 750 Lawrence Ave. W., Toronto 19, Ont., Canada / RUssell 1-1571 / \*C 61

Instrumentation equipment using electronics, mechanics, optics, for application in fields of aviation, photography, aerial survey; automatic film processors, data recording cameras, analog computers, computer test equipment, automatic controls, fire control equipment, geophysical apparatus / MSa Ms(400) Se(1951) ACIc

Canadian Westinghouse Co., Ltd., P. O. Box 510, Hamilton, Ontario, Canada / JAcKson 8-8811 / \*C 60

Analog memory, for solving problems concerned with the simulation of transport delays and problems requiring information storage in analog form / RMSa Ls(1000) Se(1951) AIc

Canning, Sisson & Assoc., Inc., 1140 S. Robertson Blvd., Los Angeles 35, Calif. / BRadshaw 2-8425 / \*C 61

Publishers of "Data Processing Digest" / Sa Ss(5) Se(1954) Ic

Carbide and Carbon Chemicals Company - AEC, Numerical Analysis Department, P. O. Box P, Oak Ridge, Tenn. / LD-220, X8671 / \*C

Numerical analysis using digital computers / RGA Ss(35) Se(1948) Dc

Carstedt Research, Inc., 2501 E. 68th St., Long Beach 5, Calif. / MEtcalF 0-5821 / \*C 59

Magnetic cores / MSa Ms(75) Se(1951) Ic

CBS Electronics, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. / SPring 4-2360 / \*C 61

Electron tubes, semiconductors (transistors and diodes), microelectronics (microcircuits and computer memories) / RMSa Ls(3000) Le(1921) Ic

CBS Laboratories, a Division of Columbia Broadcasting System, Inc., 227 High Ridge Rd., Stamford, Conn. / DAVis 5-4321 / \*C 61

VIDIAC Model 3SG-10 solid-state character generator / RMSCa Ms(250) Me(1936) Ic

C-E-I-R, Inc., 1200 Jefferson Davis Highway, Arlington 2, Va. (also: New York City; Los Angeles; Houston; Hartford; San Francisco; Palo Alto; Boston; Dugway, Utah; Fort Huachuca, Ariz.; London, England; Paris, France) / OTis 4-6377 / \*C 61

Computing and consulting services. Offer IBM 704, IBM 7090 and peripheral equipment; programming / RCPa Ms(320) Se(1954) Ic

Celco, 70 Island Ave., Mahwah, N. J. / DAVis 7-1123 / \*C 60

Deflection yokes, magnetic amplifiers, transformers / RM(development)a Ms(125) Se(1950) Ic

Centralab (The Electronics Div. of Globe Union Inc.), 900 E. Keefe Ave., Milwaukee, Wisc. / WO 2-9200 / \*C 60

Electronic components: switches, capacitors, packaged electronic circuits, computer circuits (plug-in, potted, printed), transistor amplifiers, variable resistors / Sa Ls(5000) Le(1922) Ic

Century Electronics & Instruments, Inc., 1333 N. Utica St., Tulsa 10, Okla. / LU 4-7111 / \*C 61

Multi-channel recording oscillographs of direct writing, electrophotographic, and conventional photographic types; vibration and stress analysis systems; data recording equipment and cameras; input-output

- devices; galvanometers; null balance recording potentiometers, UV direct writing oscillograph / RMA Ms(250) Me(1945) Ic
- C G Electronics Corp., 15000 Central, E., Albuquerque, New Mexico / AXtel 9-7601  
Digital data acquisition and reduction systems, data reduction services, digital telemetry systems. Plug-in, potted, printed circuits, analog and digital computers; digital computing services; consulting services; geophysical apparatus, information retrieval devices, input-output devices, electronic integrators, inventory systems, memory systems, translating equipment, visual output devices / RMSCa Ms(110) Se(1954) DAic
- CGS Laboratories, Inc., Routes 7 and 35, Ridgefield, Conn. / Idlewood 8-6571 / \*C 59  
TRAK <sup>®</sup> Morse-to-Teletypewriter Code Converters, TWX-to-CCIT Translators / RMSa Ms(160) Me(1947) Ic
- Chadwick-Helmuth Co., 472 E. Duarte Rd., Monrovia, Calif. / Elliot 8-4567 / \*C 61  
Electronic multiplier, oscilloscope sweep control, pulse camera, slow motion sampling / RMSCa Ss(12) Se(1953) Ac
- Chrono-log Corp., Box 4587, Philadelphia 31, Pa. / Hilltop 6-1816 / \*C 61  
Real-time reference systems for digital computers, including time and date. Electromechanical devices in the digital field; digital clocks, calendars, displays; programming devices, mechanical counters, input-output devices, visual output devices, digital printout systems. Consultants in process control applications and systems, computer control, both industrial and military / MSCa Ss(8) Se(1956) Dc
- Cinch Manufacturing Corp., 1026 S. Homan Ave., Chicago 24, Ill. / - / \*C 59  
Components for computers; tube sockets, connectors, printed wiring boards, terminal boards, etc. / RMSCa Ls(1400) Le(1924) Ic
- Circuit Engineering, 102 Ellis Rd., Weston 93, Mass. / TWinbrook 4-6071 / \*C 60  
Consultants. Transistor, magnetic, electronic, conductive, and other information handling circuits / Ca Ss Se(1954) Ic
- C. P. Clare & Co., 3101 W. Pratt Blvd., Chicago 45, Ill. / AM 2-7700 / \*C 61  
Sealed contact reed relays, mercury wetted contact relays / MSa Ls(1600) Me(1937) Ic
- Clarkson Press Inc., 189 Van Rensselaer St., Buffalo 10, N. Y. / TL 3-7500 / \*C 61  
GC data processing forms, GC panel LOGIC, GC forms-handling equipment / RMSa Ms(125) Me(1947) Ic
- Clarostat Mfg. Co., Inc., Dover, N. H. / SHerwood 2-1120 \*C 61  
Precision potentiometers (wirewound and composition element), switches, wirewound power resistors / RMSCa Ls(1400) Le(1922) Ic
- Clary Corporation, 408 Junipero St., San Gabriel, Calif. / CUmberland 3-2724 / \*C 61  
Solid state digital computers, arithmetic centers, high-speed line printers and tape perforating equipment / RMSa Ls(800) Me(1939) Dlc
- Clevite Transistor, 200 Smith St., Waltham 54, Mass. / TWinbrook 4-7780 / \*C 61  
Gold bonded germanium diodes, silicon alloy diodes, silicon mesa diodes, silicon diffused rectifiers, ger-
- manium alloy power transistors / RMSa Ls(1500) Se(1952) Ic
- Clevite Transistor Products — name changed to Clevite Transistor, which see
- Clifton Precision Products Co., Inc., Marple at Broadway, Clifton Heights, Pa. / MADison 2-1000 (Area Code 215) / \*C 61  
Synchros, seromotors, resolvers, vernier resolvers, air navigation computers, servo assemblies / Ma Ls(1200) Me(1946) DAic
- Collins Radio Co., Information & Science Center and Communication & Data Processing Div., 19700 San Joaquin Rd., Newport Beach, Calif. / Kimberly 9-2911 / \*C 61  
Collins Kineplex data communications systems for transmission of punched card, magnetic tape and other digital information over telephone line, radio circuit or other voice channels. Commercial and military digital data communications systems and equipment. Also communication and data processing service for business and industry / RMSCa Ls(1200) Me(1933) Dlc
- Colorado Research Corp., Broomfield, Colo. / (Denver) HARRison 9-3501 / \*C 60  
Analog computers, angle encoders, television picture digitizers, microwave refractometers, printed circuit subassemblies, digital data processing equipment to order / RMSa Ms(65) Se(1956) DAic
- Columbia Technical Corp., 24-30 Brooklyn-Queens Expressway, West, Woodside 77, N. Y. / YELLOWstone 2-0800 / \*C 61  
Delay lines, wide-band RF transformers, protective coatings / RMSCa Ms(70) Se(1950) Ic
- Comar Electric Co., 3349 Addison St., Chicago 18, Ill. / JUniper 8-2410 / \*C 60  
Relays, including hermetically sealed and sub-miniature, solenoids, coils and switches / MSa Ms(430) Me(1942) Ic
- Commonwealth Scientific and Industrial Organization, Radiophysics Div., Sydney, New South Wales, Australia  
Maker of CSIRO Mark I electronic digital computer of Inst. for Advanced Study type / RCGPa DAC
- Comptometer Corp., 5600 W. Jarvis Ave., Chicago 48, Ill. / Niles 7-5800 / \*C 61  
Duplex and Simplex Comptometer adding-calculating machines, Comptograph 10-key adding machines, Electrowriter written communications equipment, telegraphic word counter, tape winding equipment, data conversion equipment / RMSa Ls(2000) Le(1889) Ic
- Comptron Corp., 778 Pleasant St., Belmont 79, Mass. / IV 4-8954 / \*C 59  
Transistorized computer components; amplifiers, logical plug-in, printed circuits; consulting services; controls, electronic counters, power supplies, shift registers / RMSCa Ss(6) Se(1956) Dlc
- Compumatix Inc., 440 So. Brentwood Blvd., St. Louis 5, Mo. / PA 6-2770 / \*C 61  
Consultants on all computers including systems and procedures, data processing on the LGP-30, IBM 650, IBM 702, IBM 705 / RCa Ss(10) Se(1956) DAic
- Computer Control Co., Inc., 983 Concord St., Framingham, Mass. / TRinity 5-6185 and CEDar 5-6220 / \*C 61  
High-speed plug-in digital computer modules, special purpose digital data handling systems, computer language converters, random access magnetic core memories, stored program computers, code bar

- switches, magnostriuctive delay lines / RMSCa Ms(200) Se(1952) Ic
- Computer Engineering Associates, Inc., 350 No. Halstead St., Pasadena, Calif. / ELgin 5-7121 / \*C60  
Direct analog computer / RMSCa Ss(45) Se(1952) Ac
- Computer Equipment Corp., 1931 Pontius Ave., Los Angeles 25, Calif. / GRanite 8-0464 / \*C60  
Hybrid electronic systems combining analog and digital techniques; test instrumentation / RMSa Ss(25) Se(1958) DAic
- Computer Instruments Corp., 92 Madison Ave., Hempstead, L. I., N. Y. / IVanhoe 3-8200 / \*C59  
Precision carbon film potentiometers and pressure transducers; precision switches / RMSa Ms(100) Se(1950) Ic
- Computer-Measurements Co., Div. of Pacific Industries, Inc., 12970 Bradley Ave., Sylmar, Calif. / EMpire 7-2161 / \*C  
Digital frequency counting, timing, controlling and recording instruments. Motion picture film processing equipment / MSa Ms(140) Me(1949) DIc
- Computer Operations, Inc., 600 Old Country Rd., Garden City, L. I., N. Y. / Pioneer 1-5180 / \*C 61  
Computer programming, systems analysis and design, mathematical analysis, engineering and commercial computation and data processing / RC(contract programming, data processing)a Ss(6) Se(1960) DAic
- Computer Sciences Corp., Malaga Cove Plaza, Palos Verdes, Calif. (General Offices); 400 Park Ave., New York 22, N. Y. (New York Div.) / Los Angeles: SPring 2-1179; New York: PLaza 2-6885 / \*C 61  
Complete computing services; small to large-scale computers available. Data processing (both commercial and scientific). Consulting; including analysis, programming, training, machine processing, feasibility studies, systems programming / RCPa Ss(42) Se(1959) DIc
- Computer Systems, Inc., Culver Rd., Monmouth Junction, N. J. / DA 9-2351 / \*C 61  
General purpose analog computers, DFG's, multipliers, servos, plotting boards, and rental of computing services / RMSCa Ms(150) Se(1950 as Mid Century Instrumatic Corp.) AIc
- Computers and Automation, 815 Washington St., Newtonville 6Q, Mass. / DEcatur 2-5453 or 2-3928 / \*C 61  
Computer and data processing magazine published 13 times a year by Berkeley Enterprises, Inc. / MSa Ss(6) Se(1951) Ic
- Computing Devices of Canada Ltd., P. O. Box 508 (Hwy. 15, Bells Corners), Ottawa 4, Ontario, Canada / TA 8-2711 / \*C 61  
Marketing in Canada of the Bendix G-20 and G-15 digital computers and accessories, Benson-Lehner data reduction equipment, Clary computer and printers, and those products manufactured by the Systems Division of Epsco, Inc. / RMSCa Ls(1000) Me(1948) DIc
- Computronics, Inc., 5310 E. Pacific Pl., Denver 22, Colo. / SKyline 6-3608 / \*C 61  
Special and general purpose analog computer systems and components / RMSCa Ss(20) Se(1959) AIc
- Condenser Products Div., New Haven Clock & Watch Co., 140 Hamilton St., New Haven, Conn. / SP 7-5411 / \*C 59  
Capacitors, power supplies, pulse forming networks / RMSa Ms(350) Le(1870) Ic
- Consolidated Avionics Corp., 800 Shames Dr., Westbury, N. Y. / ED 4-8400 / \*C 61  
Transistorized power supplies, automatic test equipment, digital systems, logic modules / RMSa Ms(110) Se(1955) DAic
- Consolidated Controls Corp., 16 Durant Ave., Bethel, Conn. / Pioneer 3-6721 / \*C 61  
Magnetic storage and memory systems, automatic controls, digital automation, magnetic drums, switches, robots, transducers / RMSa Ms(225) Se(1957) DAICMc
- Consolidated Electrodynamics Corp., 360 Sierra Madre Villa, Pasadena, Calif. / MUrray 1-8421 or SY 6-9381 / \*C 61  
Electronic instruments for measurement, analysis, and control; instrumentation systems for dynamic testing; amplifiers; automatic control equipment, printed circuits, automatic controls, analog to digital converters, digital and analog data-handling and conversion systems, (Sadie Millisadic, etc.), data processing and data recording equipment, information retrieval devices, input-output devices, regulated power supplies, magnetic tape readers, magnetic storage systems, tape handlers, magnetic tape filing systems and recorders, converter magnetic tape to punch card, telemetering systems, transducers, systems engineering / RMSa Ls(3000) Me(1937) DAC
- Consolidated Systems Corp., 1500 Shamrock, Monrovia, Calif. / - / \*C 61  
MicroSADIC, an analog-to-digital converter / ?a ?s ?e Ic
- Control Data Corp., 501 Park Ave., Minneapolis 15, Minn. / FEderal 9-0947 / \*C 59  
Digital computers, systems, and devices; gyros, accelerometers, magnetic amplifiers, guidance and communications systems; converters; data processing equipment; resolvers, synchros, translating equipment; visual output devices / RMSa Ms(350) Se(1957) DIc
- Control Electronics Co., Inc., 10 Stepar Place, Huntington Station, L. I., N. Y. / HA 7-7961 / \*C 59  
Computer components; electromagnetic delay lines, lumped constant and distributed constant, fixed and variable, sonic delay lines, audio and high frequency filters. VHF-UHF frequency calibrator, direct reading phase angle meter. Electronic instruments, special power supplies / RMSa Ss(50) Se(1951) Ic
- Control Switch Div., Controls Co. of America, 4218 W. Lake St., Chicago 24, Ill. / VA 6-3100 / \*C 60  
Switches, lighted panel components, complete electromechanical sub-assemblies / MSa Ls(600) Se(1960 merger) Ic
- Convair, a Div. of General Dynamics Corp., Fort Worth, Tex., P. O. Box 748, Fort Worth 16, Tex. / PE 8-7311 / \*C 60  
Radar and electronic countermeasures simulators. Flight simulators with/without human factors environment. Analog computing support equipment, including patch board verifiers, electronic multipliers, and diode function generators. Special purpose digital computing systems, including input/output devices, real time coordinate rotation computer (CORDIC), and zing direct analogy passive element computer (DAEAC). Three axis flight table, real time and repetitive electronic differential

- analyzers, active element heat flow analyzer, and IBM 704 with off-line peripheral equipment / RMSC (design)a Ls(700) Me(1942) DAC
- Convair-Astronautics Electronics Dept., a Div. of General Dynamics, 5001 Kearny Villa Rd., (Box 1128, SD 12), San Diego 11, Calif. / BRowning 7-8900 / \*C 60  
High-speed automatic data-acquisition and interpretation systems. Special and general purpose analog computing systems and equipment, including photoformers; memories for functions of one and two variables; magnetic-tape memories. Special purpose digital equipment available for use, real time coordinate transformation, tape plot, format translators. Analog-computer test equipment, combined analog-digital simulations through addaverter. Computing services on IBM 7090 and 650 computers / RMSCa Ls(1800) Se(1957) Ic
- Convair Electronics, a Div. of General Dynamics Corp., P. O. Box 1950, San Diego 12, Calif. / CYpress 6-6611 / \*C 60  
High-speed automatic data-acquisition and interpretation systems. Special purpose analog computing systems and equipment including photoformers; memories for functions of one and two variables; magnetic-tape memories. Special purpose digital equipment, real time coordinate transformation computers, tape-to-plot systems, format translators. Analog-computer test equipment. Computing services on IBM 704 and 650 computers / RMSC(design)a Ls(800) Me(1942) DAIC
- Convair, Nuclear Research & Development Section, Fort Worth, Tex. / PE 8-7311, Ext. 3577 / \*C 61  
Data handling and processing equipment / RMSCa Ms(200) Se(1950, department) Ic
- Convair/Pomona, Convair Div. of General Dynamics Corp., 1675 W. 5th St., P. O. Box 1011, Pomona, Calif. / NAtional 9-5111 / \*C 61  
Automatic test equipment for product evaluation of control systems and data links. Automatic continuous monitoring equipment for pulse systems. Statistical quality control data analysis systems. Automatic mechanical inspection devices including analog-digital computation for analysis of variables. Special purpose manual and automatic equipment for r.f. system evaluation. Target simulation systems, weapon system computers, and radar systems development / R MS(design)a Ls(6200) Se (1951, Pomona Operating Div.) ICc
- Cook Electric Co., 2700 Southport Ave., Chicago 14, Ill. / Diversey 8-6700 / \*C 61  
Automatic controls and equipment, data recording cameras and equipment; consulting services and Univac solid state computing services, electrical and information converters; geophysical apparatus; magnetic and digital tape readers and recording heads; relays, stepping switches, magnetic tape recorders; telemetering systems / RMCa Ls(4800) Le(1897) DAIC
- Cornell-Dubilier Electronics Div., Federal Pacific Electric Co., 50 Paris St., Newark 1, N. J. / MArket 4-7500 / \*C 61  
Capacitors, filters, delay lines, relays, silicon rectifiers / MSa Ls(4000) Le(1910) Ic
- Corning Glass Works, Corning Electronic Components, 550 High St., Bradford, Pa. / FOrEst 2-5571 / \*C 61  
Electronic components, capacitors, printed circuit boards, ultrasonic delay lines, resistors, trimmers, attenuator plates, level switches, metallized glass components / RMSa Ls(13,000) Le(1851) DAIC
- Creed & Co., Ltd., Telegraph House, Croydon, Surrey, England / MUnicipal 2424 / \*C 59  
Wide range of teleprinters and punched tape equipment for communications, data processing, automation / RMSCa Ls(2000) Le(1909) DIc
- Cresmont Electronics, a Div. of Crestmont Consolidated Corp., 2201 W. Burbank Blvd., Burbank, Calif. / VICToria 9-6481 / \*C 61  
Manufacture perforated tape programmed controllers, paper tape readers, solid state commutator simulators, solid state decommutators, solid state commutators, as well as data acquisition systems and supervisory control systems / RMSa Ss(6) Se(1960) Ic
- Cubic Corporation, San Diego 11, Calif. / BRowning 7-6780 / \*C 61  
Transistorized playback system; transistorized digital recording system; digital computers, analog to digital converters, data processing and translating equipment / RMSa Ms(500) Se(1950) DAIC

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- Dale Electronics, Inc., Box 488, Columbus, Neb. / LOCust 4-3131 / \*C 61  
Resistors, capacitors, trimmer potentiometers, cable assemblies, logic circuits, resistor networks / Ma Ls(1000) Se(1951) Ic
- Dale Products, Inc. — name changed to Dale Electronics, Inc, which see
- Dasol Corp., 14 Charlton St., New York 14, N. Y. / CHelsea 3-1800 / \*C 59  
Consulting services and systems engineering, specializing in integrated data processing and materials handling systems, associated with physical distribution of product lines, including materials, allocation, inventory controls, customer order processing and warehousing / Ca Ss(15) Se(1954) Ic
- Data Instruments Division Telecomputing Corp., 12838 Saticoy St., N. Hollywood, Calif. / TRiangle 7-8181 / \*C 61  
Paper tape reader, paper tape perforator, data reduction systems, electronic counter, paper tape to card, counters telemetry PAM/PDM, telemetry decommutator, digital instruments / RMSCa Ms(106) Me(1947) DAC
- Datamatic Div., Minneapolis-Honeywell Regulator Co. — name changed to Honeywell Electronic Data Processing Div., which see
- Datamation, Inc., 1500 Tryon Ave., W. Englewood, N. J. / TE 3-1350 / \*C 61  
Data processing, electronics, service / Ca Ss(38) Se(1959) Ic
- Data Processing Corporation of America, 375 Park Ave., New York 22, N. Y. / PLaza 3-4260 / \*C 61  
Management and operation of data processing systems service centers, including programming and electronic computer services / RCPa Ss Se(1958) DIc
- Data Processing Digest (Canning, Sisson & Assoc.), 1140 S. Robertson Blvd., Los Angeles 35, Calif. / BRadshaw 2-8425 / \*C 61

- Monthly bibliographic service in electronic data processing and related fields / RMSa Ss(5) Se(1954) Dc
- Data Processing, Inc., 1334 Main St., Waltham 54, Mass. / TWinbrook 9-2000 / \*C 61  
Analytical and programming services for digital computer applications / Ca Ss(16) Se(1957) Dc
- Data Sciences Inc., 230 Middle Neck Rd., Great Neck, N. Y. / HUNter 7-0220 / \*C 61  
Information managing problems / Ca Ss Se(1960) DICc
- Data Systems Dept., Norden Div., United Aircraft Corp., 13210 Crenshaw Blvd., Gardena, Calif. / FA 1-1775 / \*C 60  
Tape controls for machine tools and paper handling mark sensing digital systems / RMSa Ms(250) Se(1955) Dic
- Data Systems Division (formerly PDP Division), American Electronics, Inc., 10 E. 40th St., New York 16, N. Y. / LExington 2-3494 / \*C 60  
Data collecting systems; Data Integrator for data collecting and integration which combines pre-punched, variable, and measurable information into tape; Mek-a-Punch, portable card punch for commercial and industrial use / RMSa Ms(230) Me(1930) Dic
- Data Tech, 238 Main St., Cambridge 42, Mass. / UNiversity 8-6018, 8127 / \*C 61  
Digital shaft position encoders, direct-reading and incremental, function generators / RMa Ss(8) Se(1960) Ic
- Datex Corp., 1307 So. Myrtle Ave., Monrovia, Calif. / Eliott 9-5381 / \*C 61  
Analog-to-digital shaft position encoders; automatic controls; complete data recording and control systems, including card readers and printers; input-output devices, pressure scanners / RMSCa Ms(220) Se(1958) DAIC
- The Daven Co., Route 10, Livingston, N. J. / WYman 2-4300 / \*C 61  
AC summing amplifier networks (RC); AC and DC resistance networks; integrating networks; differentiating networks; phase shifters; voltage ratio standards; plug-in, potted circuits; computer components; embedded assemblies and components; static power supplies; resistors; stepping switches. Consulting services / RMSCa Ls(1149) Le(1930) AIC
- Daystrom, Inc., Control Systems Division, 4455 Miramar Rd., La Jolla, Calif. / GL 4-0421 / \*C 61  
Digital computers, analog computers, special-purpose digital systems, fuel safety systems, data reduction, memory systems, Magsense <sup>®</sup> detectors and alarms, systems engineering and service force. Complete solid state digital process control systems and components; transistorized random access magnetic core memory systems; tape-to-tape converters / RMSa Ms(250) Se(1956) DAICc
- Daystrom, Inc., Military Electronics Division, Archbald, Pa. / Jerrmy, Pa. 1100 / \*C 61  
Special purpose data handling equipment to military specifications / RMa Ls(1500) Se(1951) DAIC
- Daystrom, Inc., Weston Instruments Div., 614 Frelinghuysen Ave., Newark 12, N. J. / - / \*C 61  
Instruments and components; indicating, recording, and controlling instruments; product resolvers, input-output devices, multipliers, relays, and resistors / RMSa ?s ?e Ic
- Daystrom-Wiancko Engineering Co., 255 No. Halstead Ave., Pasadena, Calif. / EL 5-7186 / \*C 61  
Telemetry, control and data acquisition systems; pressure, acceleration and force transducers; test and calibration instruments / RMSa Ms(225) Me(1946) Ic
- The de Florez Co., Inc., 200 Sylvan Ave., Englewood Cliffs, N. J. / LOwell 7-3990 / \*C 59  
Register controls, servomechanisms, control systems, mechanical design. Research and development. Synthetic training devices / RMCa Ms(50) Se(1948) DAICc
- DeJur-Amsco Corp., Electronics Div., 45-01 Northern Blvd., Long Island City 1, N. Y. / RAvenswood 1-8000 / \*C 61  
Precision potentiometers, panel instruments, transducers, precision electrical connectors / RMSa Ms(500) Le(1922) Ic
- Delco Radio Division, General Motors Corp., 700 East Firmin St., Kokomo, Ind. / GLadstone 2-8211 / \*C 61  
Digital control computers — airborne, ground and special purpose; power transistors — up to 50 amp; solid-state precision power supplies; silicon rectifiers — up to 125 amp; solid-state industrial control circuits; digital module circuits, buffer memory system, data format converters / RMS(study programs) Ls(4000) Me(1936) Dic
- Delttime, Inc., 608 Fayette Ave., Mamaroneck, N. Y. / OW 8-5800 / \*C 61  
Delay lines (magnetostrictive) / RMa Ms(65) Se(1956) Ic
- Dennison Mfg. Co., Machines Systems Div., Howard St., Framingham, Mass. / TRinity 3-3511 / \*C 61  
Print punch tickets — single or multiple stub-coded basic input media / RMSa Ls(3000, Dennison) Le(1844, Dennison) Ic
- Designers for Industry, Inc., 4241 Fulton Parkway, Cleveland 9, Ohio / SH 9-0700 / \*C 61  
Research and development including prototype production. Electronic and mechanical engineering; specialists in manufacturing engineering. Developers and assemblers of special test and assembly equipment / RMSCa Ms(225) Me(1935) Ic
- Dialight Corp., 60 Stewart Ave., Brooklyn 37, N. Y. / HYacinth 7-7600 / \*C 61  
Indicator lights, pilot lights, ultra-miniature indicator lights ("Datalites") for computer and automation fields. Data-Strip and Data-Matrix for computers, etc. Telephone light strips and indicator lights; transistorized indicator lights. Oil-tight indicator lights for heavy-duty industrial applications / RMSa Ms(250) Me(1937) Ic
- Dialtron Corporation, 203 Harrison Pl., Brooklyn 37, N. Y. / HYacinth 7-7600 / \*C 61  
Thermal time delay relays / RMSa Ms(230) Me(1938) Ic
- Diamonite Products Mfg. Co., McConkey St. Ext., Shreve, Ohio / JO 7-4211 / \*C 61  
Computer components of alumina ceramics, high strength, low loss, high density, electrical insulating, vacuum tight, readily metallized. Sizes available subminiature through abnormal requirements / RMSa Ms(150) Me(1940) Ic
- DI/AN Controls, Inc., 40 Leon St., Boston 15, Mass. / Highlands 5-5640 / \*C 60  
Buffer storages, memories, special purpose digital and analog computers, code and format converters,

- digital computer elements, counters, magnetic and transistor shift registers and logical elements, transistor circuit packages, plug-in circuits, servo amplifiers, special instrumentation equipment / RMSc Ms(60) Se(1958) DAIC
- Dian Laboratories, Inc., 611 Broadway, New York 12, N. Y. / VI 6-4155 / \*C 61  
D. C. analog computers — analog computing services. Analog computing services; general purpose analog computers. Design and construction of special purpose computers, simulators, and trainers / RMCPa Ss(10) Se(1955) Ac
- John Diebold & Associates, Inc., 40 Wall St., New York 5, N. Y. / WH 3-9115 / \*C 60  
Management consultants specializing in management science and automatic data processing. Counsel; training; courses; published subscription information service / C(training)a Ss(30) Se(1954) Ic
- Diehl Mfg. Co., 1225 Finnerne Ave., Somerville, N. J. / RA 5-2200 / \*C 59  
Servomotors; tachometers, resolvers; servo amplifiers; servo systems; high frequency phase shifters / RMSa Ls(2700) Le(1888) Ic
- Digital Development Corp., 7541 Eads Ave., La Jolla, Calif. / GI 9-3383 / \*C 61  
Memory drums and systems / RMa Ss(10) Se(1959) Dc
- Digital Equipment Corp., Main St., Maynard, Mass. / TWinoaks 7-8821 / \*C 61  
Digital computers, special computer systems, memory test systems, digital system modules, digital laboratory modules, digital training modules, digital classroom modules / RMSa Ms(158) Se(1957) Dc
- Digital Service Labs, 23922 Crenshaw Blvd., Torrance, Calif. / DAvenport 5-0711 / \*C 59  
Electronic computers, service test equipment, and paper tape preparation equipment / RMSCa Ss(8) Se(1955) DAIC
- Digitronics Corporation, Albertson Ave., Albertson, N. Y. / HI 4-1000 / \*C 61  
Photoelectric and digital computing and data processing systems; auxiliary tape processing equipment including tape interrogators, converters, tape tester; clutches, high speed perforated tape readers; "Dial-O-Verter" system / MSa Ms(150) Se(1957) DICc
- DIT-MCO, Inc., Electronics Div., 911 Broadway, Kansas City 5, Mo. / HArrison 1-0011 / \*C 61  
Automatic circuit analyzers, logic circuit testers and electro-mechanical systems analyzers / Ma Ms(86) Se(1952) Ic
- Donner Scientific Co., 888 Galindo St., Concord, Calif. / MULberry 2-6161 / \*C 59  
Analog computers; multipliers; delay and function generators; amplifiers / RMSa Ms(200) Se(1953) ACc
- Dorsett Electronics, Inc., 119 W. Boyd, Norman, Okla. / JEFFerson 4-3750 / \*C 61  
Special analog computers / RMSa Ms(450) Se(1950) Ac
- Dorsett Laboratories, Inc. — name changed to Dorsett Electronics, Inc., which see
- Douglas Aircraft Co., Inc., Douglas Computing Service, Dept. G-31, Santa Monica, Calif. / EX 9-9311, ext. 2122 / \*C 60  
Rental of excess digital computing machine time on the wide range of business and scientific computers / CAa Dc
- Dresser Electronics, SIE Div., a division of Dresser Industries, Inc., 10201 Westheimer Rd., Houston 42, Tex. / SUNset 2-2000 / \*C 61  
Analog computers, special purpose military and industrial digital and analog systems, digital computers, solid state analog/digital and digital/analog converters, magnetic amplifiers, integrators, automatic control systems, telemetry systems, reading and recording heads. Geophysical instruments, government contracting, heavy manufacturing, consulting services / RMSa Ls(750) Me(1945) DAICc
- Arnold I. Dumey, 29 Barberry Lane, Roslyn Heights, N. Y. / MAYfair 1-7239 / \*C 61  
Consultant, data handling problems / Ca Ss Se(1954) DIC
- Dynacor, Inc., a subsidiary of Sprague Electric Co., 1014 Westmore Ave., Rockville, Md. / — / \*C 61  
Magnetic cores / Ic
- Dynatech Corp., 639 Massachusetts Ave., Cambridge 39, Mass. / UNiversity 8-8050 / \*C 61  
Problem formulation, programming and solution on any type of analog or digital computer / RCa Ss(35) Se(1956) DACc

## E

- Eastman Kodak Co., 343 State St., Rochester 4, N. Y. / LOcust 2-6000 / \*C 61  
Photographic equipment, staple synthetic and organic chemicals and dyestuffs; facsimile equipment (photocopy); recording paper / RMSa Ls(50,000) Le(1889) Ic
- Ebasco Services Incorporated, 2 Rector St., New York 6, N. Y. / DIgby 4-4400 / and elsewhere / \*C 61  
Management consultants; consulting services in applications of electronic data processing to accounting and business systems; feasibility studies; installations / CPa Ls(1600) Le(1905) DIC
- Edin, a Div. of Epsco, Inc., 207 Main St., Worcester 8, Mass. / PL 7-8394 / \*C 61  
Industrial and medical electronic instruments, oscillograph recorders and amplifiers, frequency analyzers, weld analyzers, recording papers / RMSa Ss(45) Me(1935) Ic
- Thomas A. Edison Industries, Instrument Div. of McGraw-Edison Co., 36 Lakeside Ave., West Orange, N. J. / ORange 3-6800 / \*C 61  
Servo motors, motor generators, gear heads, electro-mechanical packages. Time delay relays, thermostats and sensitive D. C. relays / Ma Ms(350) Le(1928) ISc
- Edo Corp., 13-10 111th St., College Point 56, N. Y. / HIckory 5-6000 / \*C 60  
Delay lines / RMSa Ls(500) Le(1925) Ic
- Efcon, Inc., (subsidiary of General Instrument Corp.), Patterson Place, Roosevelt Field, Garden City, L. I., N. Y. / Pioneer 1-4200 / \*C 61  
Plastic film capacitors / MSa Ms(50) Se(1952) Ic
- Elco Corp., "M" St. below Erie Ave., Philadelphia 24, Pa. / CU 9-5500 / \*C 61  
Connectors, sockets, tube shields, card cages (printed circuit) / RMSa Ms(490) Me(1947) Ic
- The Electrada Corp., 11244 Playa St., Culver City, Calif. / UPTon 0-9883 / \*C 61  
Data Entry Console, i. e., Datacom; input-output devices / RMSa Ms(77) Se(1959) Ic
- Electralab Printed Electronics Corp., 175 "A" St., Needham Heights 94, Mass. / Hillcrest 4-3912 / \*C 61  
Printed wiring and printed circuit assemblies; PROTOMAKA — a laboratory unit for making printed

- wiring boards for prototypes / MSa Ms(250) Se (1952) Ic
- Electric Specialty Co., 211 South St., Stamford, Conn. / Ffreside 8-6203 / \*C 60  
Digital and analog computer power supply systems / Ma Ms(300) Le(1913) DAic
- Electro Instruments, Inc., 3540 Aero Court, San Diego 11, Calif. / BRowning 7-6590 / \*C 60  
Digital voltmeters; digital ohmmeters, digital ratiometers, analog-to-digital converters, data converters, frequency counters, X-Y recorders, wideband DC amplifiers, go no-go systems, automation systems, digital testers, and other digital instruments / RMSa Ms(450) Se(1954) DAic
- N. V. Electrologica, Stadhouders, Paleisstraat 9, plantsoen 214, The Hague, The Netherlands / 514641 / \*C 61  
Digital computers, high speed tape reader, high speed printer, transistorized magnetic core memory up to more than 30,000 words of 27 bits, including sign; time-sharing features; input-output; punched tape and cards, magnetic tape, typewriter / RMSCa Ms(130) Se(1956) DIC
- Electro-Mec Division of Waltham Precision Instrument Co., Inc., 47-51 33rd St., Long Island City 1, N. Y. / STillwell 6-3402 / \*C 61  
Potentiometers, precision, variable, wirewound; DIGITOMETERS (trade name), analog to digital converters; goniometer, precision shaft positioner, to evaluate, test and calibrate potentiometers / RMSa Ms(160) Se(1950) DAic
- Electro-Mec Laboratory, Inc. — name changed to Electro-Mec Division of Waltham Precision Instrument Co., Inc., which see
- Electro-Mechanical Research, Inc., P. O. Box 3041, Sarasota, Fla. / RInging 6-1148; ASCOP Div., P. O. Box 44, Princeton, N. J., SW 9-1000 / \*C 61  
Digital decommutators, shaft encoders, all types of telemetry, transducers, industrial telemetering and supervisory control, data handling systems, automatic signalling controls, photomultiplier tubes / RMSa Ls(750) Me(1942) DICc
- Electrometric Division of Whitewater Electronics, Inc., 136 W. Main St., Whitewater, Wisc. / 986 / \*C 59  
Delay lines for computers and radar systems; inductors of any type / RMSa Ms(150) Se(1955) Ic
- Electro-Miniatures Corp., 606 Huyler St., So. Hackensack, N. J. / HUbbard 9-7770 / \*C 61  
Slip rings, ring and brush assemblies, coded commutators, rotary switches / RMa Ms(110) Se(1954) ICc
- The Electro-Motive Mfg. Co., Inc., So. Park & John St., Willimantic, Conn. / HA 3-4551 / \*C 61  
Capacitors / Ma Ls(1800) Le(1933) Ic
- Electronic Associates, Inc., Long Branch Ave., Long Branch, N. J. / CApital 9-1100 / \*C 61  
Analog computers, x-y recorders, magnetic tape data plotting systems. Analog computing centers / RMSCa Ls(1100) Me(1945) Aic
- Electronic Business Services, 3266 Hunts Point Rd., Bellevue, Wash. / GLencourt 4-5810 / \*C 61  
Consultants in automation and data processing service specializing in the needs of small and moderate size business firms, prototype digital data processor under construction / RMSCPba Ss(3) Se(1955) DCMc
- Electronic Contractors, Inc., 2101 S. E. 6th St., Portland 14, Ore. / BE 4-3515 / \*C 61  
AC network computers and analyzers, Enns power network computer / MSa Ss(20) Se(1953) Ac
- Electronic Counters, Inc., 155 Eileen Way, Syosset, L. I., N. Y. / WALnut 1-5000 / \*C 61  
Computer programmed counters and digital meters, shift registers, high speed or quick look digital recorders / MSa Ss(15) Se(1960) DIC
- Electronic Data Processing Center, Inc., 2221 S. W. 5th Ave., Portland 1, Ore. / CApitol 6-6851 / \*C 60  
Complete electronic data processing services with supporting technical staff / RCa Ss(8) Se(1959) Ic
- Electronics Development Corp., 3743 Cahuenga Blvd., No. Hollywood, Calif. / TRiangle 7-3223 / \*C 60  
RF wideband data/transmission systems / RMSa Ss(20) Se(1955) Ic
- Electronic Engineering Company of California, 1601 E. Chestnut Ave., Santa Ana, Calif. / Klmberly 7-5501 / \*C 61  
Electronic research and development in the fields of precision timing equipment, data processing and translating equipment and guided missile test range equipment; card-to-magnetic-tape converters, magnetic-tape-to-card converters; paper tape readers, paper tape programmer, paper tape spooler / RMSCa Ms(300) Me(1947) Ic
- The Electronic Nuclear Systems Corp., 3054 Excelsior Blvd., Minneapolis 16, Minn. / WALnut 7-7971 / \*C 61  
Automatic control equipment; circuits; digital and special purpose computers; analog-to-digital and digital-to-analog converters; data recording equipment; data reduction equipment; magnetic heads; input/output devices; character and photoelectric readers; scanners; visual output devices / Ra Ms(50-60) Se(1960) DAICc
- Electropac, Inc., 62 Union St., Peterborough, N. H. / WA 4-64N / \*C 61  
Assembly of electronic packages and modules on a contract basis and custom harness and cable assemblies / MSa Ss(45) Se(1960) Ic
- Electro Precision Corp., P. O. Box 669, Arkadelphia, Ark. / CHapel 6-2272 / \*C 59  
General purpose and special purpose analog computers, computer components, and servo mechanisms / RMSa Ss(20) Se(1958) AISc
- Electro Products Laboratories, Inc., 4501 N. Ravenswood Ave., Chicago 40, Ill. / LOngbeach 1-1707 / \*C 61  
Metal sensing transducers, over/under speed controls, electronic tachometers / RMSa Ms(50) Me(1936) DAISMc
- Electro Scientific Industries, 7524 S. W. Macadam Ave., Portland 19, Ore. / CH 6-3331 / \*C 61  
Analog computer for complex algebraic functions / RMSa Ms(125) Me(1947) Ac
- Elgenco, Inc., 1555 14th St., Santa Monica, Calif. / EX 3-3023 / \*C 61  
Electronic noise generators, computer auxiliary equipment / RMSa Ss(12) Se(1955) Ic
- Elgin Micronics Division, Elgin National Watch Co., 366 Bluff City Blvd., Elgin, Ill. / SH 2-5700 / \*C 61  
Sub-miniature magnetic recorders, analog-to-digital encoders, time code generators and precision sub-miniature mechanical components / RMSa Ms(500, 3 plants) Se(1950) Aic
- Elliott Addressing Machine Co. — name changed to Elliott Industries, Inc., which see
- Elliott Bros. (London) Ltd., Century-Works, Lewisham, London, S. E. 13, England, and Computing Machine Div., Elstree Way, Borehamwood, Herts., England / Tideway 2323, ELstree 2040 / \*C 59

- Servomechanisms; Elliott 402, 405, 405M, 802, electronic digital computers, punched card reader, punched tape reader; GPAC (General purpose analog computer). Computing services; components, instrumentation and control for process industries / RMSCPa Ls(3500) Le(1800) DASCc
- Elliott Industries, Inc., 143 Albany St., Cambridge 39, Mass. / TRowbridge 6-2020 / \*C 61
- Addressing machines and data-imprinting systems; addressing stencils of various sizes, including punch card stencil (3-1/4 x 7-3/8). Punched paper tape-to-stencil converters. Punch card and punch stencil comparing and selective addressing / MSA Ms(400) Le(1900) Ic
- El-Rad Manufacturing Company, 4300 N. California Ave., Chicago 18, Ill. / IRving 8-7300 / \*C 61
- Delay lines and pulse transformers for computer application / Ma Ms(300) Me(1944) Ic
- Embree Electronics Corp., 993 Farmington Ave., West Hartford 7, Conn. / ADams 2-5144 / \*C 61
- Electronic analog computers, operational and stabilizing amplifiers, DC power supplies, operational six-packs / RMSCa Ss(10) Se(1959) AIC
- Engineered Electronics Co., 1441 E. Chestnut Ave., Santa Ana, Calif. / KI 7-5651 / \*C 61
- Transistorized plug in modules, indicators and decodes. High-density MiniWeld Packaging. Complete line of digital building blocks. Line includes transistorized plug-in modules, transistorized Minisig indicators, and transistorized decade counters. Systems development racks, patch cords, power plugs and power supplies available for patching up preliminary systems prior to production work. All units use standard pin connections / RMSa Ms(150) Me(1950) Ic
- Engineers Northwest, 1554 Nicollet Ave., Minneapolis 3, Minn. / Re 5541 / \*C 59
- Test-scoring machines and equipment / RMSCa Ss(45) Me(1945) DAC
- The English Electric Company Ltd., English Electric House, Strand, London, W. C. 2, England / Covent Garden 1234 / \*C 61
- KDP10, KDF9, KDN2 and DATAPAC data processing and data handling systems / RMSCa Ls(1100) Dc
- Epsco, Inc., 275 Massachusetts Ave., Cambridge 3, Mass. / UNiversity 4-4950 / \*C 61
- Computer components and equipment: shift registers and assemblies, buffer storage units, converters, printers, telemetry systems, special purpose computers, monitoring systems, computer linkages and format recorders / RMSa Ls(1200) Se(1954) DAIC
- ESC Electronics Corp., 534 Bergen Blvd., Palisades Park, N. J. / WIndsor 7-0400 / \*C 61
- Delay lines, pulse forming networks, pulse transformers, filters, embedded assemblies and components, shift registers, miniature pulse transformers, etc. / RMSa Ms(180) Se(1953) Ic
- E-Z Sort Systems, Ltd., 45 Second St., San Francisco 5, Calif. / GARfield 1-8005 / \*C 61
- Edge-punched cards for filing and sorting data. Special cards for correlation of facts. Control systems for a number of electronic computers / RMA Ms(246) Me(1935) Ic
- F**
- Facit, Inc., 404 4th Ave., New York 16, N. Y. (subsidiary of AB Atvidabergs Industrier, Stockholm, Sweden) / MURrayhill 4-5842 / \*C 59
- Desk calculators, adding machines, Odhner adding machine with multiplying features; typewriters, etc. (In 1390 A. D., copper mining) / RMSa Ls(5000) Le(1390 A. D.) Dc
- Fae Instrument Corp., Norden Lane, Huntington Station, L. I., N. Y. / AR 1-0300 / \*C 61
- Magnetic clutches and brakes, mechanical differentials, gear heads and speed reducers, bellows coupling, design servo systems / M(design special servo systems)a Ss(25) Se(1951) Ic
- Fairchild Camera and Instrument Corp., Defense Products Div., Robbins Lane, Syosset, L. I., N. Y. / WELls 1-4500 / \*C 61
- Reconnaissance and mapping systems; data processing and display systems; communication and special radar systems; electronic control and support equipment; ordnance products / RMSa Ls(1500) Le(1920) Ic
- Fairchild Controls Corp., Components Div., 225 Park Ave., Hicksville, N. Y. / WELls 8-5600 / \*C 61
- Precision potentiometers, rate gyros, accelerometers, solid-state strain gage and potentiometer-type pressure transducers, computing converters, electronic generators / RMSa Ms(500) Le(1920) Ic
- Fairchild Graphic Equipment, Div. of Fairchild Camera & Instrument Corp., Fairchild Dr., Plainview, L. I., N. Y. / WELls 8-9600 / \*C 61
- Tape perforators and operating units for local or distant automatic control of Linotypes and Inter-types / MSA Ms(250) Me(1948) Ic
- Fairchild Semiconductor Corp., 545 Whisman Rd., Mountain View, Calif. / YOrkshire 8-8161 / \*C 61
- Diffused silicon planar transistors, diffused silicon planar diodes; Micrologic Elements: transistor test equipment / RMSa Ls(1500) Se(1957) Ic
- Fair, Isaac & Co., Inc., 156 Montgomery St., San Francisco 4, Calif. / \*C 61
- Consultants in operations research, computing and data processing / RCa ?s ?e Ic
- Fansteel Metallurgical Corp., North Chicago, Ill. / DEXter 6-4900 / \*C 60
- Tantalum capacitors, silicon rectifiers and selenium rectifiers / RMSa Ls(2000) Le(1907) Ic
- Farrand Controls Inc., 99 Wall St., Valhalla, N. Y. / ROKkwell 1-2600 / \*C 61
- Linear and rotary control equipment / RMSCa Ms Se(1956) Ic
- Farrand Optical Co., Inc., Bronx Blvd. and E. 238 St., New York 70, N. Y. / FAirbanks 4-2200 / \*C 59
- Gunfire control apparatus, rangefinders, optical and electronic sighting equipment, automatic trackers, infrared search and scanning systems, analog-digital converters, analog computers, etc. / RMSCa Ls(500) Le(1923) DASCc
- Farrington Electronics Inc., New England Industrial Center, Needham Hgts. 94, Mass. / HIGHLANDS 4-5000 / \*C 60
- Optical scanners, addressers, imprinters, plastic identification tokens / MSA Ms(250) Le(1908) Ic

- Feedback Controls, Inc., 8 Erie Dr., Natick, Mass. / OLympic 3-3441 / \*C 61  
Magnetic amplifiers, quadrature rejectors, data repeaters, servo multipliers, servomotor gearheads, analog computers, computer test equipment / RMSa Ms(75) Se(1954) A1c
- Fenwal, Inc., 362 Pleasant St., Ashland, Mass. / TRinity 5-6111 / \*C 61  
Temperature controls, fire detection systems, monitoring systems / Ma Ls(700) Me(1935) Cc
- Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N.Y. / Circle 7-0911 / agent for Ferranti Ltd., Moston, England, and Ferranti-Packard Electric Ltd., Toronto, Can. / mfg. plants in Brooklyn, N.Y., and Hempstead, N.Y. / \*C 60  
General purpose digital computers (Pegasus, Mercury, Perseus, Sirius, Argus, etc.) special purpose data processing systems, high speed paper tape readers, magnetic drums, magnetostriction delay lines, digital position measuring equipment, Ferranti Business transactor, paper tape to magnetic tape converter, automatic control equipment, translating equipment, storage systems, memory systems / RMSa Ls (14,000) Le(1896) D1c
- Ferranti-Packard Electric Ltd. (Electronics Div.), 16 Industry St., Toronto 15, Canada / ROger 2-3661 / \*C 61  
General and special purpose digital computers, paper tape readers, magnetic storage drums, special input-output equipment / RMSCa Ms(400) Le(1913) D1c
- Ferroxcube Corp. of America, 2900 E. Bridge St., Saugerties, N.Y. / CHerry 6-2811 / \*C 60  
Ferrite cores, including pot cores, cup cores, recording heads, and microminiature toroids with square hysteresis loop; memory arrays, thermistors, varistors, light-dependent resistors, ceramic permanent magnets, resistors, pulse transformers / MSa Ms(200) Se(1949) 1c
- Financial Publishing Co., 82 Brookline Ave., Boston 15, Mass. / KEnmore 6-1827 / \*C 59  
Computing service: digital; card programmed calculators, punch card / RMSa Ms(60) Le(1890) Dc
- Fischbach, McCoach & Associates, Inc., 122 East 42nd St., New York 17, N.Y. / MUrray Hill 2-5696 / \*C 61  
Management consultants specializing in application of scientific techniques to business-type problems. Complete service in appraisals and installation of electronic data processing and control systems / Ca Ss(10) Se(1959) DA1Sc
- Fischer & Porter Co., County Line Rd., Warminster, Pa. / OSborne 5-6000 / \*C 61  
Data acquisition equipment / Ma Ls(1500) Me (1937) 1c
- Flight Research, Inc., P.O. Box 1-F, Richmond 1, Va. / REpublic 7-4163 / \*C 60  
Photographic data recording equipment; data recording cameras (pulse and cine). Automatic exposure control, intervalometer, clutches. Autopilot Omni Coupler / RMSa Ss(35) Me(1946) 1c
- Michael Flynn Mfg. Co., 700 E. Godfrey Ave., Philadelphia 24, Pa. / FIdelity 2-5500 / \*C 61  
Raised floor systems for E. D. P. installations / Ma Ms(500) Me(1935) 1c
- FMA, Inc., 142 Nevada St., El Segundo, Calif. / EA 2-0072 / \*C 61  
Digital, photographic, information storage and retrieval / RMSCa Ms(54) Se(1959) D1c
- Ford Instrument Co., Div. of Sperry Rand Corp., 31-10 Thomson Ave., Long Island City 1, N.Y. / STillwell 4-9000 / \*C 61  
Fire control systems, analog and digital computers, missile guidance systems, servo motors, differential and integrator elements, instruments for shipborne and airborne armament and navigational control, nuclear reactors, computers, systems, drives, and precision components; magnetic amplifiers; automatic control systems; thermionic devices / RMSa Ls(3000) Le(1915) DA1Cc
- The Foxboro Co., 38 Neponset Ave., Foxboro, Mass. / Kingswood 3-5311 / \*C 60  
On-line process control computer, data logger, data accumulator, remote supervisory control system, input/output equipment, process control instrumentation / Ma Ls(2500) Le(1908) 1Cc
- Franklin Electronics Inc., E. 4th St., Bridgeport, Pa. / BRoadway 2-4800 / \*C 60  
Data reduction systems; digital voltmeters / RMSa Ms(90) Se(1951) 1c
- Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / NEptune 8-0700 / \*C 61  
Automatic desk calculators; adding machines; Flexo-writer — automatic writing machine; Computyper — automatic writing-computing machine; Add-Punch — code tape adding-listing machine; Code Converter — automatic tape-to-tape converter; Selectadata — automatic tape reader-selector-sorter; Teledata — automatic 5-8 channel tape transmitter-receiver; Collectadata — automatic data collection system; Compos-O-Line — sequential card data processing camera. Complete line of equipment for reading, punching, verifying, converting, and transmitting common language tape, edge-punched cards, or tabulating cards. Complete line of data processing equipment / RMSGa Ls(8100) Me(1934) D1Sc

## G

- The Gamewell Co., 1238 Chestnut St., Newton Upper Falls 64, Mass. / BIgelow 4-1240 / \*C 61  
Precision potentiometers and rotary switches / Ma Ms(500) Le(1855) 1c
- GAP Instrument Corp., S. Main St., Newtown, Conn. / GA 6-2518 / \*C 61  
Servo gear trains, servo breadboards, step motors / Ma Ss(15) Se(1954) 1c
- Eugene Garfield Associates — name changed to Institute for Scientific Information, Inc., which see
- H. S. Gellman & Co. Ltd., 481 University Ave., Toronto 2, Ontario, Canada / EMpire 4-4247 / \*C 61  
Systems consultants specializing in automatic data processing and operations research / Ca Ss(15) Se(1955) D1c
- General Automatics, Inc., 331 Alma St., Palo Alto, Calif. / DAVenport 1-8727 / \*C 61  
Special purpose analog and digital computers, automatic control equipment, automatic charge systems, analog less-than-limit sensors, go/no-go comparators, and timer-comparators / RMSCa Ss(15) Se(1954) DACc
- General Ceramics Corporation, Crows Mill Rd., Keasbey, N. J. (near Perth Amboy) / VALley 6-5100 / \*C 59  
Ferrites, technical ceramics, magnetic memory

- cores and storage planes, memories, ceramic to metal seals; insulators; terminals / RMSa Ls(500) Le(1906) Ic
- General Computers, Inc., 9000 W. Pico Blvd., Los Angeles 35, Calif. / BRadshaw 2-6010 / \*C 60
- Analog computers, card programmed function generators, amplifiers / RMSa Ss(25) Se(1957) AIC
- General Controls Co., 801 Allen Ave., Glendale 1, Calif. / Victoria 9-2181 / \*C 61
- Automatic controls for product or process. Counters and counting devices, actuators, magnetic valves, Hydromotor <sup>®</sup> electrohydraulic valves and actuators, industrial controls and instruments, mercury switches, Klikswitch <sup>®</sup> snap-acting switches, time switches (sequence), transformer-relays, contactors, limit controls (temperature) precision potentiometers, turns counters / Ma Ls(3000) Me(1936) CIC
- General Cybernetics Corp., affiliate of The Angle Computer Co., Inc., 1751 No. Coronado St., Los Angeles 26, Calif. / NORmandy 3-1300 / \*C
- Linear motion transducer reporting 1/10,000 of an inch position change; high-speed converters of punched cards to tape; industrial automation, electronic gages for automation processes, etc. Successor of General Cybernetics Associates / RCMSa Ss(18) Se(1953) DAICc
- General Dynamics/Electronics, Information Technology Division, 1895 Hancock St., San Diego 12, Calif. / CYpress 8-8331 / \*C 61
- Computer readout devices, high speed electronic printers, high speed communications printers, microfilm recorders, plug-in and potted circuits, special purpose computers, digital devices for display of computer information, input and visual output devices (the charactron), numerical control systems, facsimile printing systems, data acquisition systems, reactor controls / RMa Ls(600) Se(1955) DIC
- General Electric Communication Products Dept., P. O. Box 4197, Lynchburg, Va. / VICTor 6-7311 / \*C 61
- Microwave equipment providing the communications link for computer equipment / RMSCa Ls Le Ic
- General Electric Co., 316 East 9th St., Owensboro, Ky. / 3-2401 / \*C 60
- General Electric Five-Star Computer Tubes, industrial and computer electronic tubes; commercial glass, metal, and miniature tubes; military miniature, sub-miniature, and ceramic tubes; computer tubes specially designed and manufactured to meet the requirements of all types of computers / RMSa Ls(6500) Le(1917) DAIC
- General Electric Co., Schenectady, N. Y.
- Computing service: analog; network analyzer AC and DC, differential analyzer; not restricted as to users / RCPa AIC
- General Electric Co., Capacitor Dept., Electronic Capacitor Section, P. O. Box 158, Irmo, S. C. / ALpine 2-6332 / \*C 60
- Capacitors for computers / RMSa Ls(500 plus) Le(before 1900) Ic
- General Electric Co., Capacitor Dept., John St., Hudson Falls, N. Y. / 518-RH7-3341 / \*C 61
- Capacitors for electric and electronic applications / Ma Ls(1000 plus) Le(1878) Ic
- General Electric Co., Computer Dept., 13430 North Black Canyon Highway, Phoenix, Ariz. / WIndsor 3-2351 / \*C 61
- Information processing systems, computing and consulting services, automatic controls and equipment, document reading and handling equipment — for business, industrial, scientific, engineering and financial endeavor / RMSCa Ls(3000) Se(1956) DAICc
- General Electric Co., Defense Systems Dept., 300 South Geddes St., Syracuse, N. Y. / GR 6-4411, Ext. 6523 / \*C 61
- General Electric Electronic System Evaluator. Analysis, design and implementation of small through large information systems including the functions of collection, reduction, manipulation, storage, retrieval and information presentations / RMSa Ls (2600) Se(1958) DAIC
- General Electric Co., Light Military Electronics Dept., French Rd., Utica, N. Y. / SW 7-1000 / \*C 61
- Light weight digital, analog, and hybrid computers for military applications from undersea to aerospace / RMSa Ls(7000) Se(1952) DAC
- General Electric Co., Low Voltage Switchgear Dept., Mountain View Rd., Lynchburg, Va. / 3-6571 / \*C 59
- DC power supplies for computers or computer systems; airborne transformer-rectifiers for DC power; military, industrial, and special purpose, complete DC power systems or components / RMSCa Ls(2000) Le(1916) DAIC
- General Electric Co., Receiving Tube Dept., 11840 W. Olympic Blvd., Los Angeles 64, Calif. / GRanite 9-7765 / \*C 59
- Industrial and computer electronic tubes; commercial glass, metal, and miniature tubes; military miniature, subminiature, and ceramic tubes; computer tubes specially designed and manufactured to meet the requirements of all types of computers / RMSa Ls(?) Le(1875) DAIC
- General Instrument Corp., Semiconductor Division, 65 Gouverneur St., Newark 4, N. J. / HUmboldt 5-2100 / \*C 61
- Silicon rectifiers, germanium and silicon transistors, germanium and silicon diodes, zener diodes, circuit-caps, special product assemblies / RMSa Ls(2200) Le(1923) Ic
- General Kinetics Inc., 2611 Shirlington Rd., Arlington 6, Va. / JACkson 5-4055 / \*C 61
- Services in: digital computer programming; programming research; computer test equipment. Programming services for all general purpose computers. Recommendation, design, and construction of automatic-programming-automatic-checking systems to fit specific needs. Mathematical studies; numerical analysis; data-reduction information retrieval; magnetic tape testers; magnetic tape ultrasonic cleaners; acceptance test equipment; problem solving / RMSPCa Ss Se(1954) DICMc
- General Mills, Inc., 1620 Central Ave., Minneapolis 13, Minn. / STerling 9-8811 / \*C 61
- Digital computers (special and general purpose), computer components, analog-to-digital converters, automatic handling equipment / RMSa Ls(1500) Le(1928) DIMc
- General Precision Laboratory Inc. — name changed to GPL Div., General Precision, Inc., which see General Transistor Corp., 91-27 138th Pl., Jamaica 35, N. Y. / HICKory 1-1000 / \*C 60
- Transistors — germanium and silicon types; precision resistors; germanium diodes, semiconductors, magnetic reading and recording heads / RMSa Ls(1000) Sc (1954) Ic

Genesys Corp., 10131 National Blvd., Los Angeles 34, Calif. / Upton 0-4671 / \*C 59

Digital process control systems, data processing systems, single and multi-disc magnetic memories, digital readout indicators / RMSa Ms(100) Se(1958) DIc

Genisco, Inc., 2233 Federal Ave., Los Angeles 64, Calif. / GR 9-4331 / \*C 60

Transducers and memory drum motors / Ma Ms (280) Me(1946) Ic

The Geotechnical Corp., 3401 Shiloh Rd., Garland, Tex. / BR 8-8102 / \*C 61

Analog data transmission equipment for radio or telephone circuits, data processing systems, automatic-processing film recorders, motorized film viewers. Geophysical and seismological instruments. Low-noise, low-frequency capability /

RMSC(field programs)a Ms(350) Me(1936) DAICc

Gille Associates, Inc., 22nd Floor Book Tower, Detroit 26, Mich. / WO 2-8040 / \*C 61

Data processing monthly magazine, Data Processing Annual; data processing handbooks / Ss(25) Se(1952) Ic

Gilmore Industries, Inc., 13015 Woodland Ave., Cleveland 20, Ohio / RA 1-6400 / \*C 61

Electronic control and data handling equipment; scanners, analog to digital converters, force instrumentation, transducer instrumentation, card to magnetic tape and paper tape converters, data loggers, automatic controls and equipment / RMSa Ms(70) Se (1953) DICc

Goodyear Aircraft Corp., 1210 Massillon Rd., Akron 15, Ohio / REpublic 3-6361 / \*C 60

Large scale digitally controlled analog computers. Special purpose computers. Control and data processing devices using AC or DC analog or digital computing techniques / RMSa Ls(10,000) Le(1925) DACc

Gordon Enterprises, 5362 N. Cahuenga Blvd., North Hollywood, Calif. / POlar 6-3725 / \*C 61

Data recording, processing, and reduction equipment; cameras; counters; fire control equipment; geophysical apparatus; punch card machines and readers / RMSa Ms(115) Me(1945) Ic

GPE Controls, Inc., 240 E. Ontario St., Chicago 11, Ill. / WHitehall 4-3700 / \*C 60

Components: Electric flow, position, and furnace pressure transmitters; floating indicator and ratio indicator controllers; electronic controllers; electro-hydraulic valve actuators / RMSa Ms(400) Me(1931) Ic

GPL Division, General Precision, Inc., 63 Bedford Rd., Pleasantville, N. Y. / ROgers 9-5000 / \*C 61

Data processing and display systems for air traffic control. A commercial computer output-display-update device / RMSa Ls(2000) Me(1945) Ic

GPS Instrument Co., Inc., 180 Needham St., Newton 64, Mass. / DEcatur 2-8110 / \*C 61

Compressed time-scale computers, statistical and iterative accessories, computer center rental / MSa Ss(38) Se(1955) AIC

Guardian Electric Manufacturing Company, 1550 W. Carroll, Chicago 7, Ill. / CHesapeake 3-1100 / \*C 60

Electro-magnetic controls, complete control systems, components for computers; relays, solenoids, switches, stepping relays, hermetically sealed elements, etc. / RMSa Ls(1000) Se(1957) Ic

Gulton Industries, Inc., 212 Durham Ave., Metuchen, N. J. / LIBerty 8-2800 / \*C 61

Telemetry diversity combiners; magnetic tape editors; correlation computer; amplitude probability distribution analyzer; spectrum analyzers. Medical electrical equipment, ultrasonic flowmeter for measurement and control; transducers, automatic control equipment, cables and connectors, amplifiers, cathode followers and filters, airborne tape recorders, data recording equipment; capacitors, delay lines, memory systems; ceramic coatings / RMa Ls(1000) Me(1942) DAIC

## H

Hagan Chemicals & Controls, Inc., Rte. 60 & Campbell's Run Rd., Pittsburgh 30, Pa. / WALnut 2-3737 / \*C 61

Open hearth, blast furnace and soaking pit control systems; magnetic amplifiers and control units; patchboards; combustion controls; electro-pneumatic converters; power positioners; temperature, pressure, flow level scanners / RMSC(technical field service)a Ls(1300) Le(1918) ICc

Herbert Halbrecht Associates, Inc., 332 So. Michigan Ave., Chicago 4, Ill. / HARRison 7-2876 / \*C 61

Management consultants, personnel and executive recruitment specialists in the fields of Electronic Data Processing, Operations Research, Mathematical Sciences, and Scientific Management / Ca Ss(7) Se(1957) DIc

Hallamore Electronics, Div. of the Siegler Corp., 714 No. Brookhurst Ave., Anaheim, Calif. / PROspect 4-1010 / \*C 61

Instrumentation and telemetering, airborne control, automatic ground support and test, and closed circuit television systems / RMSa Ls(1000) Se(1952) Ic

Hammarlund Automation Div. of Telechrome Mfg. Corp., 185 Dixon Ave., Amityville, L. I., N. Y. / LI 1-3600 / \*C 61

Data acquisition systems, analog-digital converters / RMS(engineering)a Ms(300) ?e DIc

Harrison Laboratories, Inc., 45 Industrial Rd., Berkeley Heights, N. J. / 464-1234 / \*C 61

Highly regulated DC power supplies, product development / Ma Ms(50) Se(1954) Ic

Harvey-Wells Electronics, Inc., 14 Huron Dr., Natick, Mass. / CEDar 5-7372 / \*C 61

Digital computers, digital systems, instruments, components / Ma Ss(20) Me(1940) DIc

Hathaway Denver, 5800 E. Jewell Ave., Denver 22, Colo. / SK 6-8301 / \*C 61

Electronic commutator high-speed switches / RMa Ms(374) Me(1939) Ic

Hathaway Instrument Co. (subsidiary of Hamilton Watch Co.), 1315 So. Clarkson St., Denver 10, Colo. / SPRuce 7-2696 / \*C 59

Transducers, analog and digital recorders, oscillographs, circuit analysis, etc. / RCMSa Ms(80) Me(1939) Ic

The A. W. Haydon Co., 232 N. Elm St., Waterbury 20, Conn. / PL 6-4481 / \*C 61

AC and DC timing motors, custom designed timing devices, elapsed time indicators, electronic timers, time delay relays, intervalometers, repeat cycle timers, stop clocks, subminiature timers. Automa-

- tic controls, tachometers / RMSa Ms(500) Me (1945) ICc
- Edward Bernard Healy, Jr., Management Consultant, One 74th St., Brooklyn, N. Y. / Shore Road 5-7027 / \*C 61  
Management counsel in systems analysis; equipment evaluation; organization and facilities planning; personnel recruitment, testing, selection and training; installation programs for electronic computer and other automatic data processing systems in business, industry, and government / CGPa Ss(1) Se(1959) Dc
- Heath Company (HEATHKIT), subsidiary of Daystrom Inc., Benton Harbor, Mich. / YUkon 3-3961 / \*C 61  
Analog computer and components in easy-to-build kit form / Ma Ls(575) Me(1946) AIc
- Helipot Div. of Beckman Instruments, Inc., 2500 Harbor Blvd., Fullerton, Calif. / TRoJan 1-4848 / \*C 61  
Precision potentiometers, single-and-multiturn, linear and non-linear; servomotors, velocity-damp, inertia-damp, seromotor-rate-generators; panel meters, expanded scale meters; turns-counting dials; delay lines / RMSa Ls(900, approx.) Me(1944) IC
- Hermes Electronics Co., 75 Cambridge Parkway, Cambridge 42, Mass. / UNiversity 4-7200 / \*C 61  
Digital timing and magnetic tape search units, precision oscillators, language translators and film readers / RMa Ms(240) Se(1955) IC
- Hewlett-Packard Company, 1501 Page Mill Rd., Palo Alto, Calif. / DAVenport 6-7000 / \*C 60  
Electronic test equipment; AC and pulse amplifiers, oscilloscopes, cameras, computer test equipment, digital voltmeters, electronic frequency and pulse counters, digital recorders with analog output, digital recorders with 10-line input, electronic function generators, pulse generators, digital delay generators, DC regulated power supplies, tachometer transducers and indicators / RMSa Ls(2300) Le(1939) DAIC
- Hillburn Electronic Products Co., 55 Nassau Ave., Brooklyn 22, N. Y. / STagg 2-3875 / \*C 60  
Relays, solenoids, counters, for computer and other uses / RMSa Ms Me(1945) IC
- S. Himmelstein & Co., 3300 W. Peterson Ave., Chicago 45, Ill. / IRving 8-9850 / \*C 61  
Magnetic recording systems, computer peripheral equipments, data processing systems engineering / Cc Ss(3) Se(1960) DIC
- Hoffman Electronics Corp., Semiconductor Div., 1001 N. Arden Dr., El Monte, Calif. / CU 3-7191 / \*C 61  
Silicon diodes, silicon transistors, silicon photo-voltaic "readout" cells and capsules / RMSa Ls(1000) Se(1953) IC
- Hogan Faximile Corp., a subsidiary of TELautograph Corp., 635 Greenwich St., New York 14, N. Y. / CHelsea 2-7855 / \*C 61  
High-speed printers and plotters, facsimile equipment, recording papers, communications systems, information retrieval devices, scanners, addressing machines, data processing machinery, data recording equipment, input-output devices, data reduction equipment, visual output devices / RMa Ms(85) Le(1928) IC
- N. V. Hollandse Signaalapparaten, Zuidelijke Havenweg 40, Hengelo (0), Netherlands / 5850 / \*C 59  
Automatic weapon control systems, such as integrated naval weapon control systems, providing long range warning, aircraft control, target indication and fire control against air, surface and subsurface targets; automatic air traffic control system SATCO; air defence systems / RMSa Ls(1800) Le(1922) DAICc
- Honeywell Electronic Data Processing Div., 60 Walnut St., Wellesley Hills 81, Mass. / CEdar 5-7450 / \*C 61  
Electronic data processing systems. Sales, rental, service bureau / RMSa Ls(3000) Se(1955) DIC
- The Hoover Company, Electronics Div., 110 W. Timonium Rd., Timonium, Md. / CLearbrook 2-4000 / \*C 61  
Special magnetic amplifiers, special A/D converters, telemetering systems, and components / RMSa Ms(100) Se(1952) IC
- Hoover Electronics Company — name changed to The Hoover Company, Electronics Division, which see HRB-Singer, Inc. (a subsidiary of the Singer Mfg. Co.), Science Park, State College, Pa. / ADam 7-7611 / \*C 60  
Data processing consulting; custom inventory control systems; special purpose analog and digital computers / RMSCa Ls(600) Se(1947) DAC
- Hughes - Fullerton, 1401 Malvern Ave., Fullerton, Calif. / TRoJan 1-3232 / \*C 61  
Radar tracking equipment, programmable computers, special purpose computers / RMa Ls(7000) Le(1935) IC
- Hughes Semiconductor Division, 500 Superior Ave., Newport Beach, Calif. / LI 8-0671 or MA 9-3271 / \*C 61  
Transistors, diodes, rectifiers, capacitors, voltage regulator diodes / RMSa Ls(2000) Se(1952) IC
- Hydro Molding Company Inc., 100 Sharron Ave., Plattsburgh, N. Y. / JOrdan 1-5320 / \*C 61  
Precision molded plastic components / Ma Ms(125) Se(1950) IC

I

- The I. D. R. Co. (Industrial Data Reduction), 4740 Spruce St., Philadelphia 39, Pa. / GRAnite 2-5023 / \*C 61  
Full line data processing with specialty of publishing industry services / Cc ?s Se(1961) DIC
- IMC Magnetics Corp., Arizona Div., 917 W. Madison, Phoenix, Ariz. / ALpine 4-7294 / \*C 60  
Hydraulic and pneumatic valves, pressure switches, pressure regulators, filters, accumulators / RMSa Ss(30) Se(1956) IC
- IMC Magnetics Corp., Eastern Div., 570 Main St., Westbury, L. I., N. Y. / EDgewood 4-7070 / \*C 61  
Blowers and fans, hysteresis synchronous motors, torque motors, servo motors, induction motors. Blowers and fans used for cooling electronic equipment; motors used as tape drives and in closed loop servo systems / Ma Ms(200) Se(1951) IC
- IMC Magnetics Corp., Gray & Kuhn Div., 80 Swalm St., Westbury, L. I., N. Y. / EDgewood 3-2194 / \*C 60  
Delay lines, filters, toroids / RMSa Ms(60) Se(1956) IC
- IMC Magnetics Corp., Western Div., 6058 Walker Ave., Maywood, Calif. / LUDlow 3-4785 / \*C 61  
Manufacture linear and rotary solenoids, step-servo motors, synchros and resolvers / Ma Ms(120) ?e IC
- Imtra Corp., 11 University Rd., Cambridge 38, Mass. / UNiversity 4-4350 / \*C 61  
Magnetic storage drums, importer; tape, punches and readers / Ba Ss(2) Se(1952) IC
- Indiana Steel Products, Div. of Indiana General Corp., 405 Elm St., Valparaiso, Ind. / HOWard 2-3131 / \*C 61  
Permanent magnets / RMSCa Ls(650) Le(1908) IC

- Industrial Development Engineering Associates, Inc. (I. D. E. A., Inc.), 7900 Pendleton Pike, Indianapolis 26, Ind. / Liberty 7-3581 / \*C 61  
Components, readouts, digital and alpha-numeric / RMSa Ms(200) Me(1945) Dlc
- Industrial Nucleonics Corp., 650 Ackerman Rd., Columbus 2, Ohio / AMherst 7-6351 / \*C 61  
AccuRay industrial process measurement and automatic control systems, data reduction and readout systems / RMSa Ms(500) Se(1950) Clc
- Industrial Products-Danbury Knudsen Div., Amphenol-Borg Electronics Corp., 33 E. Franklin, Danbury, Conn. / PIoneer 3-9272 / \*C 60  
RF and R & P connectors; switches / RMa Ms(450) Le(1919 as Danbury Knudsen) Ic
- Industro Transistor Corporation, 35-10 36th Ave., Long Island City 6, N.Y. / EXeter 2-8000 / \*C 60  
Industro Transistor Value Automatic Computer (ITVAC), a digital computer for testing transistors; also manufacture computer transistors / RMSa Ms(125) Se(1957) Dlc
- Information Systems, Inc., 7350 North Ridgeway Ave., Skokie, Ill. / ORchard 5-2500 / \*C 61  
General purpose digital computer and industrial information systems / RMSCa Ms(400) Se(1959) DCC
- Information Systems, Inc., Computer Div., 10131 National Blvd., Los Angeles 34, Calif. / UPTon 0-4671 or VERmont 7-5333 / \*C 61  
Digital computer systems, disc and drum memories, punched card and punched tape readers, digital indicators / RMSa Ms(150) Se(1958) Dlc
- Ingenjörfirma Nordisk ADB AB, Danderydsgatan 30, Stockholm 0, Sweden / 10 52 05 / \*C 61  
Consulting engineer in civil engineering and data processing. Specializing in road planning and construction, and static calculations / Ca Ss(18) Se(1959) Ic
- The Institute of Management Sciences, P.O. Box 273, Pleasantville, N.Y. / \*C 61  
Non-profit scientific society, publishers of quarterly journal "Management Science" / Se(1954) Ic
- Institute for Scientific Information, Inc., 33 So. 17th St., Philadelphia 3, Pa. / LO 4-4400 / \*C 61  
Consulting, research, publications, facsimile hardware, information engineering / RC (publishing)a Ms(55) Se(1955) Ic
- Instrument Control Co., 2309 Snelling, Minneapolis 4, Minn. / PA 1-5335 / \*C 61  
Spot welder control systems / RMSa Ss(40) Me(1945) Ic
- Instrument Development Laboratories, Inc., 67 Mechanic St., Attleboro, Mass. / CASTle 2-3880 / \*C 61  
A-D converters, rotary switches, pyrometers, colorimeters. Research, development, production of precision components to customer order / RMSa Ms(200) Me(1947) DAic
- Instrument Society of America, Penn-Sheraton Hotel, 530 Wm. Penn Place, Pittsburgh 19, Pa. / ATLantic 1-3171 / \*C 61  
Professional, technical society serving the field of instrumentation, data handling, computation, and automatic control systems. Publishes "ISA Journal" / PCa Ss(42) Me(1946) Ic
- Intercontinental Dynamics Corp., 170 Coolidge Ave., Englewood, N.J. / LOWell 7-3600 / \*C 61  
Random noise electronic generators / RMSa Ss(45) Se(1956) Ic
- International Business Machines Corp., 590 Madison Ave., New York 22, N.Y. / PLaza 3-1900 / \*C 59  
Punch card machines. IBM 650, magnetic drum computer. IBM 704, 705, and 709, automatic electronic computers with magnetic tape and magnetic core storage. IBM 632, electronic typing calculator. IBM 610, automatic decimal point computer. Electronic calculating punches 604 and 607. Accounting machines and data processing equipment, etc. / RMSa Ls(84,000) Le(1911) Dc
- International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / WH 9-1900 / \*C 61  
A complete line of data processing systems and equipment including the IBM 7070, 7072, 7074, 7080, 7090, 1401, 1410 and 1620 transistorized data processing systems; 1710 control system; 704, 705, 705-III, 709, 650, RAMAC 305 data processing systems; Magnetic Character Sensing Equipment; 604, 609 and 609 B-1 calculators; 1418 Optical Character Reader; IBM TELE-PROCESSING equipment including the 357 Data Collection System with Badge Reader, 1001 Data Transmission System, 1009 Data Transmission Unit, 7701 Magnetic Tape Transmission Terminal, and Data Transceivers; 870 Document Writing System; 824/826 Typewriter Card Punch; 7765 paper tape to magnetic tape converter; 63 card controlled tape punch; 46/47 tape to card punch; 740/780 cathode ray tube recorder, and a full range of punched card equipment including the low-cost Series 50 line. Also, a complete line of supplies, including punched cards, magnetically encoded paper checks, pretested magnetic tapes, and other materials used to get information in and out of data processing machines / RMSa Ls(20,000 Data Processing Division) Le(1911, C-T-R Co., later became IBM Corp.) Dlc
- International Business Machines Corp., Federal Systems Division, 326 E. Montgomery Ave., Rockville, Md. / GA 4-6700 and HA 7-4110 / \*C 61  
Electronic information handling and control systems for U.S. government space, defense, and civil programs. Systems management, systems development, research, engineering, production, installation, and field support / RMSGPC (systems)a Ls(12,000) Se(1955) Ic
- International Computers and Tabulators, Ltd., Gloucester House, 149 Park Lane, London W.1, England / HYde Park 8080 / \*C 61  
Punched card equipment and electronic digital computers, card to paper tape converters, paper tape to card converters, data processing and recording equipment, magnetic drums, input-output devices, memory systems, office machines, line-a-time and high speed printers, magnetic card paper tape and punch card readers, magnetic tape filing systems, readers, and recorders, paper tape / RMSCa Ls(20,000) Le(1908) DISc
- International Diode Corp., 90 Forrest St., Jersey City 4, N.J. / HE 2-0242 / \*C 61  
Germanium crystal computer diodes with high switching speeds / RMSa Ss(15) Se(1959) Ic
- International Rectifier Corp., 233 Kansas St., El Segundo, Calif. / OREGon 8-6281 / \*C 61  
Silicon diodes, silicon readout photocells / RMSa Ls(950) Me(1947) Ic
- International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa. / WALnut 2-8900 / \*C 61

Resistors (composition, film, power wire wound, precision wire wound and special application); potentiometers, flexible etched cables, circuits and laminates; multiconductor flat wire cable; pressure and displacement transducers; low pressure cell; power supplies; rectifiers and diodes / RMSa Ls Le Ic

International Tel. & Tel. Corp., Industrial Products Div., 15191 Bledsoe St., San Fernando, Calif. / EMpire 7-6161 / \*C 60

Large screen oscilloscopes, monitors, and storage tube oscilloscopes for readout / RMSa Ms(300 - div.) Se(1955 - div.) Ic

Invac Corp., 14 Huron Dr., E. Natick Industrial Park, Natick, Mass. / Olympic 5-1611 / \*C 61

Electronic data processing equipment: communication systems (teleprinter); encoders (binary); perforators - computer tape (computer-controlled, keyboard-controlled, manual); printers (keyboard); readers (tape, punched tape photoelectric); switches (power control, pushbutton); tape decks (paper tape) / RMSa Ss(9) Se(1960) Ic

Itek Corp., 1605 Trapelo Rd., Waltham 54, Mass. / TWinbrook 3-8700 / \*C 59

Information retrieval devices and techniques; research and development in the field of information technology / RCGPa Ls(700) Se(1957) Ic

ITT Federal Div., International Tel. & Tel. Corp., 100 Kingsland Rd., Clifton, N. J. / NOrth 7-3600 / \*C 60

Radar, Elm, and sonar simulators, missile, aircraft, guidance, radar and weapon system automatic check-out equipment / Ma Ls(4000) Le(1920) Ic

ITT Federal Laboratories, a Division of International Tel. and Tel. Corp., 500 Washington Ave., Nutley 10, N. J. / NOrth 1-1100 / \*C 61

ITT 025 data processor / RMa Ls(6088) Le(1920) Dc

ITT Kellogg (formerly Kellogg Switchboard & Supply Co.), 6650 So. Cicero Ave., Chicago 38, Ill. / POrtsmouth 7-6900 / \*C 60

Complete switching systems for industrial applications. Wire transmission equipment, telephone switching equipment, digital computing equipment, radio multiplexing equipment / RMSCa Ls(3500) Le(1897) Dlc

## J

Jefferson Electric Co., 25th and Madison Sts., Bellwood, Ill. / MANSfield 6-7161 / \*C 61

Constant voltage and low voltage control transformers / Ma Ls(1300) Le(1915) Ic

Johnson Electronics Inc., Highway 17-92, P. O. Box 1675, Casselberry, Fla. / TErrace 8-2111 / \*C 61

Toroids, sub-miniature and pulse transformers, magamps, embedded assemblies and components, cable assemblies, amplifiers, coils, electrical converters, power supplies, electric magnets / Ma Ms(100) Se(1951) Ic

Jonker Business Machines, Inc., 404 No. Frederick Ave., Gaithersburg, Md. / WIndsor 8-9203 / \*C 61

Information and data retrieval equipment and management consulting services / RMSCa Ss(25) Se(1960) Ic

## K

Kay Electric Co., Maple Ave., Pine Brook, N. J. / CAPital 6-4000 / \*C 61

Electronic test instruments / Ma Ms(110) Me(1947) Ic

KCS Ltd., 20 Spadina Rd., Toronto 4, Ont., Canada / WALnut 4-3381 / \*C 61

Management and technical consultants: electronic computing, data processing, operations research, economic surveys, statistical analyses, feasibility studies. Services: high-speed computing, data processing, tabulating / RCPa Ss(50) Se(1954) Dc

Kearfott Co., Inc., Clifton, N. J. / GRegory 2-1000 / \*C Analog-digital converter; digital-analog converter; servo motors, synchros, resolvers, integrating tachometer generators; analog and digital computers / RMSa Ls(3000) Le(1916) DAISc

A. T. Kearney & Co., 135 So. La Salle St., Chicago 3, Ill. / STate 2-2868 / \*C 61

Management consultants, technical service in applications of all brands of equipment in data processing field to industry, transportation, government and commerce / Ca Ms(100, plus) Me(before 1935) DAISCMc

Kellogg Switchboard & Supply Co. - name changed to ITT Kellogg, which see

Kemtron Electron Products, Inc., 14 Prince Place, Newburyport, Mass. / HO 2-4464 / \*C 59

Semiconductor devices, components / RMSa Ms Se(1948) Ic

Kepeco, Inc., 131-38 Sanford Ave., Flushing 52, N. Y. / IN 1-7000 / \*C 61

Manufacturers of voltage regulated power supplies / RMSa Ms(100) Me(1946) Ic

Ketay Dept., Norden Division, United Aircraft Corp., Jericho Turnpike, Commack, N. Y. / FOrEst 8-5500 / \*C 61

Synchros, resolvers, gyroscopes, servo motors, amplifiers, tachometers, potentiometers, magnetic shaft angle encoders / RMSa Ms(500) Me(1944) ISc

Walter Kidde & Co., Inc., Industrial & Marine Division, 441 Main St., Belleville 9, N. J. / PLymouth 9-5000 / \*C 61

Fire detecting and extinguishing equipment / RMSCa Ls Le(1917) ICMc

Walter Kidde & Co., Inc., Kidde Electronics Laboratories, 441 Brighton Rd., Clifton, N. J. / GRegory 2-5000 / \*C 61

Static relays, thermistors, varistors, static inverters, static converters, and solid state power supplies / RMSCa Ls Le(1917) ICMc

Kidde Ultrasonic & Detection Alarms, Division Walter Kidde & Co., Inc., 441 Brighton Rd., Clifton, N. J. / GRegory 2-5000 / \*C 61

Automatic fire detection systems; engineered proprietary alarm systems console; ultrasonic, photoelectric, and capacitance burglar alarm systems; temperature monitoring systems / RMSCa Ls Le(1917) ISCc

A. Kimball Co., 8 Rewe St., Brooklyn 11, N. Y. / STagg 2-2701 / \*C 61

Kimball PM75 print-punch machine; KR reader, reads tags, converting into punched cards / MSa Ms(200) Le(1876) Ic

The Walter S. Kraus Co., 48-02 43 St., Woodside 77,  
N. Y. / Stillwell 4-5922 / \*C 61

Electronic controls for exact control / RMa Ss(17)  
Me(1941) Ic

L

Laboratory for Electronics, Inc., Computer Products Div.,  
1079 Commonwealth Ave., Boston 15, Mass. / Algon-  
quin 4-4235 / \*C 59

HD (high density) file, magnetic drums and heads,  
magnetic bulk storage device for use with data pro-  
cessing or computer systems. SM symbol generator  
and viewer. Special digital systems designed to cus-  
tomer requirements. Advanced research in special  
devices and applied physics for the computer field.  
Computer components. Data processing and record-  
ing equipment. Digital computers. Information re-  
trieval devices; photoelectric readers, printers,  
visual output devices / RMSa Ls(890) Me(1946) DMIC

Laboratory for Electronics, Inc. (Monterey Laboratory),  
305 Webster St., Monterey, Calif. / Frontier 5-4133 /  
\*C 61

Computer programming; operations research; sys-  
tems analysis / RCa Ss(27) Me(1946) DIC

Land-Air, Inc., Stepper Motors Division, 16226 S. Broad-  
way, Gardena, Calif. / Faculty 1-5811 / \*C 61

Relays — telephone, power and dry-reed. Stepping  
motors / RMa Ms(150) Me(1949) Ic

Land-Air, Inc., Subsidiary of California Eastern Aviation,  
Inc., 7444 W. Wilson Ave., Chicago 31, Ill / Underhill  
7-7550 / \*C 61

Computer service using Electronics Associates' 1631  
analog computer and Bendix G-15 digital computer /  
RMSCa Ls(2500) Me(1946) DAC

Landis & Gyr, Inc., 45 West 45th St., New York 36, N. Y.  
/ Judson 6-4644 / \*C 61

Impulse counters, single decade impulse counters,  
add-subtract and totalizing counters, printing count-  
ers / MSa Ls(over 10,000 in this and associated  
companies — 17 this office) Le(1927) Ic

Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia 44,  
Pa. / Davenport 9-4900 / \*C 61

Analog and digital computers for industrial process  
applications; also data loggers for industrial use /  
RMSa Ls(3000) Le(1900) DAIC

Lewyt Mfg. Corp., Long Island City 1, N. Y. / EX 2-5050  
/ \*C 59

Special purpose computing systems (analog and digital)  
for industry and military; digital display systems, am-  
plifiers, automatic controls and equipment; integrators,  
correlators, electronic counters, multipliers; informa-  
tion converters of all types; inventory and magnetic  
storage systems; shift registers; character readers;  
cooling devices for memory cores and electronic com-  
ponents / RMSa ?s ?c DAIC

Librascope, Inc., Commercial Division, 100 East Tujunga  
Ave., Burbank, Calif. / Victoria 9-6061 / \*C 59

General purpose digital computers, industrial pro-  
cess control computers, shaft-to-digital encoders,  
magnetic drum memory systems, magnetic drums,  
read-record heads and amplifiers, X-Y plotters,  
punched card/punched tape-to-plotter converters,  
mechanical sine wave generator, mechanical inte-  
grators, differentials, and sine-cosine mechanisms,

miniature servos and servo amplifiers / RMSa Ms  
(250) Me(1946) DIC

Librascope Div., General Precision, Inc., 808 Western  
Ave., Glendale 1, Calif. / Citrus 4-6541 / \*C 60

Digital and analog, general and special purpose com-  
puters, computer components, data processing sys-  
tems, etc. LIBRATROL-500 and LIBRATROL-1000  
industrial control computers; LGP-30 and RPC-4000  
business and scientific computers / RMSa Ls(4000)  
Me(1937) DAIC

Link Division, General Precision, Inc., Binghamton, N. Y.  
/ RA 3-9311 / \*C 61

Analog, digital and hybrid computers; process con-  
trol and flight simulators / RMa Ls(2500) Le(1929)  
DAIC

Edwin A. Lipps Engineering, 1511 Colorado Ave., Santa  
Monica, Calif. / EXbrook 3-0449 / \*C 61

Micro-magnetic instruments; magnetic tape record-  
ing and reading heads; consulting services; memory  
systems; magnetic tape readers / RMSCa Ms(150)  
Me(1948) Ic

Littlefuse, Inc., 1865 Miner St., Des Plaines, Ill. /  
Vanderbilt 4-1188 / \*C 61

Fuses, fuse mountings, fuse posts and other circuit  
protective devices / RMSa Ms(475) Le(1927) Ic

Litton Industries, Electronic Equipments Div., 336 No.  
Foothill Rd., Beverly Hills, Calif. (also Potentiometer  
Div., 215 S. Fulton Ave., Mt. Vernon, N. Y.) / CR  
4-7411 / \*C 60

Inertial navigation systems, digital differential analy-  
zers, airborne data processing systems, airborne  
computers, flight control systems, analog-digital  
converters, accelerometers. Precision potentio-  
meters, resistors / RMSa Ls(19,700 all divisions)  
Se(1953) DAIC

Lloyd Industries, 40 Grove St., So. Hackensack, N. J. / -  
/ \*C 61

Vernier type code discs, incremental pickoffs / Ic  
Lockheed Electronics Co., U.S. Highway 22, Plainfield,  
N. J. / PL 7-1600 / \*C 61

Special purpose digital and analog computers / RMSa  
Ls(2000) Me(1945) DAC

Lockheed Electronics Co., Avionics and Industrial Products  
Div., 6201 E. Randolph St., Los Angeles 44, Calif. /  
OV 5-7070 / \*C 61

Electronic ceramics consisting of ferrites, ferrite  
cores, memory planes, logic module assemblies,  
multi-aperture devices, recording heads, and  
memory units / RMa Ms(500) Se(1959) Ic

Lockheed Electronics Co., Information Technology Div.,  
U.S. Highway No. 1, Metuchen, N. J. / Liberty 9-4430  
/ \*C 60

Special purpose computers, data processing systems,  
data storage, data display, data reduction and digital  
timing devices / RMS(application engrg, installation)  
Ms(200) Me(1945) DAIC

Logabax S. A., 146, Champs Elysées, Paris 7, France /  
Elysée 61-64 / \*C 60

198 and 207-register automatic accounting machines;  
several hundred headings analyzing equipment "TELE-  
BAX." Automatic connection with punch card or com-  
puting machines / RMSa Ls(700) Se(1949) Dc

Loral Electronics Corp., 825 Bronx River Ave., New  
York 72, N. Y. / TI 2-9500 / \*C 61

Special purpose digital and analog computers /  
RMSCa Ls(2100) Me(1948) DAC

Loyola Laboratories, P. O. Box 90074, Airport Station  
(6415 W. 89th St.), Los Angeles 45, Calif. / OR  
8-1686 / \*C 61

Consulting. Sampling integrator (VANNUS I) built  
on request / RMCa Ss(3) Se(1956) Ic

Lumen, Div. of Telex, Joliet, Ill. / - / \*C 61

Magnetic amplifiers / MSa ?s ?e Ic

## M

Machine Computing Services, 138 South Second East, Salt  
Lake City 11, Utah / DAvis 8-9446 / \*C 61

Broker of idle computer and punched card equipment  
time / SCa Ss(4) Se(1960) DIc

F. B. MacLaren & Co., Inc., 15 Stepar Place, Huntington  
Station, L. I., N. Y. / HAmilton 3-4433 / \*C 61

Analog computers, servomechanisms, servo ampli-  
fiers, electro-mechanical assemblies / Ma Ss(11)  
Se(1950) AIC

The Magnavox Company, 2131 Bueter Rd., Fort Wayne,  
Indiana / E-9721 / \*C 60

Analog-to-digital converters; analog and digital  
computers; data processing equipment; magnetic  
drums; magnetic and film data processing systems  
/ RMSa Ls(5000) Le(1911) DAIC

Magne Head Division, General Instrument Corp., 3216

W. El Segundo Blvd., Hawthorne, Calif. / SPring  
2-2351, OSborne 9-3377 / \*C 61

Magnetic memory drums, magnetic drum and tape  
heads / RMSa Ms(100) Se(1956) Ic

Magnetic Research Corp., 3160 W. El Segundo Blvd.,  
Hawthorne, Calif. / OSborne 5-1171 / \*C 59

Components / RMSa Ms(158) Se(1952) ICc

Magnetics Inc., Butler, Pa. / BUTler 7-1745 / \*C 61

Tape wound cores of high-permeability materials  
for computer shift registers and buffers / RMSa  
Ms(300) Se(1949) Ic

P. R. Mallory & Co., Inc. — name changed to Mallory  
Capacitor Co., which see

Mallory Capacitor Co., a division of P. R. Mallory & Co.,  
Inc., 3029 E. Washington St., Indianapolis, Ind. /  
ME 4-8674 / \*C 61

Aluminum electrolytic capacitors for the computer  
industry / Ma Ls(1000) Le(1916) Ic

Management Assistance, Inc., 40 Exchange Place, New  
York 5, N. Y. / HA 2-1234 / \*C 61

Data processing equipment, leasing and selling re-  
conditioned IBM data processing equipment / RMSa  
Ms(60) Se(1957) DIc

Management and Business Automation, 600 W. Jackson  
Blvd., Chicago 6, Ill. / DEarborn 2-3206 / \*C 61

Monthly magazine devoted to business automation  
and data processing for corporate and middle manage-  
ment. Covers systems, machine accounting, com-  
munications and use of business forms for manage-  
ment in all types of industry, commerce, institutions  
and the government / Ms(publishing)a Ss(24) Se  
(1958) Ic

Marchant Division of Smith-Corona Marchant Inc., 6701  
San Pablo Ave., Oakland 8, Calif. / OLYmpic 2-6500  
/ \*C 60

Automatic electric calculators (desk type) / RMSa  
Ls(2900) Le(1910) Ic

Markite Corp., 155 Waverly Place, New York 14, N. Y. /  
OREgon 5-1384 / \*C 61

Precision potentiometers; conductive plastic type.

Rotary and rectilinear configuration; both functional  
and linear output, for computers and servo controls  
/ RMSa Ms(325) Me(1946) Ic

Mathematischer Beratungs- und Programmierungsdienst  
GmbH., Dortmund, Kleppingstr. 26, Germany / 2 63 53  
/ \*C 61

Consulting for all problems of data processing with  
punch card machines or electronic computers; prob-  
lem analysis and problem solving on electronic com-  
puters; organization of flow of data, programming;  
operations research / RCPa Ss(35) Se(1957) DAIC

Mauchly Associates, Inc., 50 E. Butler Ave., Ambler,  
Pa. / MI 6-0181 / \*C 59

Recognition, formulation, and solution of technical  
and operational problems; computer programming  
and systems analysis / Ca Ss(6) Se(1959) DAIC

Maurey Instrument Corp., 7917 S. Exchange Ave., Chicago  
17, Ill. / REgent 1-1717 / \*C 61

Potentiometers: precision, single-turn, wirewound,  
linear, non-linear / RMSCa Ms(66) Se(1953) Ic

Maxson Electronics Corp., 475 Tenth Ave., New York 17,  
N. Y. / LOngacre 5-1900 / \*C 61

Amplifiers, magnetic amplifiers, automatic control  
equipment, plotting boards, computers, digital com-  
puters, digital computing services, analog to digital  
converters, fire control equipment, regulated power  
supplies, analog computers, servo mechanisms,  
telemetering; antennas, communication / RMSa  
Ls(996) Me(1935) DAICc

The W. L. Maxson Corp. — name changed to Maxson Elec-  
tronics Corp., which see

H. B. Maynard & Co., Inc., 718 Wallace Ave., Pittsburgh  
21, Pa. / FRemont 1-9600 / \*C 61

Management consultants. Feasibility studies, opera-  
tions research, linear programming applications,  
cost reduction programs, management controls,  
office work measurement and controls, office meth-  
ods improvement, training in office methods and  
systems / RCPa Ms(100) Me(1934) DAICc

McDonnell Aircraft, Box 516, St. Louis 66, Mo. / PEr-  
shing 1-2121 / \*C 61

Data processing consultant service for science or  
business; analog and digital data processing machine  
time for science or business; special purpose tape  
automatic preparation equipment (digital type) /  
RMSCa Ls(22,000) Me(1939) DAIC

Memorex Corp., 2000 El Camino Real, Mountain View,  
Calif. / YORkshire 7-6955 / \*C 61

Magnetic tape / RMA Ss(25) Se(1961) Ic

Micro Switch, a division of Minneapolis-Honeywell Regu-  
lator Co., 11 W. Spring St., Freeport, Ill. / ADams  
2-1122 / \*C 61

Precision snap-action switches and mercury switches  
/ MSa ?s ?e Ic

Microtech Research Co. — name changed to Dynatech Corp.,  
which see

Microtran Co., Inc., 145 E. Mineola Ave., Valley Stream,  
N. Y. / LOcust 1-6050 / \*C 61

Transformers / Ma Ms(85) Se(1951) Ic

Midwest Research Institute, 425 Volker Blvd., Kansas  
City 10, Mo. / LOgan 1-0202 / \*C 61

Studies in application of digital and analog computers  
to business and scientific problems; mathematical  
analysis and computation; computing service; IBM  
1620; contract research; economics research; opera-  
tions research; systems engineering / RPa Ms(300)  
Me(1944) DAIC

Midwestern Instruments, Inc., 41st & Sheridan Rd., P. O. Box 7509, Tulsa 18, Okla. / NAtional 7-1111 / \*C 61  
M3000 digital tape system — oscillographs; tape recorders-reproducers / RMSCa Ms(500) Se(1950) DIc

Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y. / SPring 7-7670 / \*C 61  
Self-powered miniature sound recorder-reproducer. Conference recorders, briefcase recorders-reproducers, telephone recorders-reproducers, permanent recorders (non-magnetic). Controls, automatic and signaling; permanent drums; reading and recording heads; memory systems; mechanical readers, non-magnetic tape recorders; paper tape readers; permanent non-alterable recordings up to 12 hours on a single compact belt costing as low as 3¢ per hour. Recordings are indexed. Winding or re-winding not necessary / RMSa Ms(54) Le(1924) Ic

H. Jefferson Mills, Jr., Management Consultant, 375 Park Ave., New York 22, N. Y. / PL 3-4260 / \*C 61  
Management counsel in systems analysis, equipment evaluation, organization and facilities planning; personnel recruitment, selection and training; and installation programs for electronic computer and other automatic data processing systems in business, industry and government / RCPa Ss Se(1954) DIc

Mincom Division, Minnesota Mining and Manufacturing Co., 2049 S. Barrington Ave., Los Angeles 25, Calif. / BRadshaw 2-9971 and GRanite 9-3751 / \*C 61  
General instrumentation recorder-reproducers and video band recorder-reproducers / RMSa Ms(250) Me(1949) Ic

Minneapolis-Honeywell Regulator Co., Aeronautical Div., Florida Facility, 13350 U.S. Highway 19, St. Petersburg, Fla. / HEmlock 5-1151 / \*C 61  
Digital computers, airborne, light weight, high speed, high capacity. General purpose and differential analyzers. Memory drums, buffer memory systems, digital encoders, pulse generators, SCR switches / Ma Ls(1500) Le(1875) DIc

Minneapolis-Honeywell Regulator Co., Boston Div., 40 Life St., Boston 35, Mass. / ALgonquin 4-5200 / \*C 60  
Linear accelerometers, electronic test equipment, d-c data handling amplifiers and preamplifiers, d-c null indicators, precision temperature control units, and synchros / RMSa Ls(1000) Le(1886) SIc

Minneapolis-Honeywell Regulator Co., Industrial Products Group, Wayne & Windrim Aves., Philadelphia 44, Pa. / DA 9-8300 / \*C 61  
Digital computers; analog data recorder-transcriber; simulators / RMSa ?s Le(1885) DAIC

Minneapolis-Honeywell Regulator Co., Industrial Systems Div., 10721 Hanna St., Beltsville, Md. / GRanite 4-6700 / \*C 60  
Magnetic tape products; systems and techniques for data acquisition, reduction and analysis; recorders and transcribers of digital data; analog to digital converters; magnetic reading and recording heads; magnetic tape readers and recorders / RMSa Ms(400) Se(1956) DIc

Minneapolis-Honeywell Regulator Co., Special Systems Div., Queen & So. Bailey Sts., Pottstown, Pa. / FA 3-4000 / \*C 61  
General purpose digital computer for on-line real-time applications; digital data handling systems; special purpose analog computer systems; development, assembly, and maintenance of these systems /

MSCa Ls(over 500) Se(1960, Special Systems Div.) DAIC

Minnesota Mining and Manufacturing Co., 900 Bush Ave., St. Paul 6, Minn. / PR 6-8511 / \*C 61  
Magnetic instrumentation tape and accessories / RMSa Ls(19,000) Le(1902) Ic

Minute Maid Co., Data Processing Div., 1200 W. Colonial Dr., Orlando, Fla. / GA 4-2225 / \*C 61  
Office system and management services, including service bureau for converting paper tape to cards and processing IBM cards. IBM 1401 and NCR 304 services available in late 1961 / Ca Ss(40) Se(1947) DIc

Minute Maid Corporation — name changed to Minute Maid Co., which see

Monarch Metal Products, Inc., MacArthur Ave., New Windsor (Newburgh), N. Y. / JOhn 2-3100 / \*C 60  
Data processing auxiliary equipment and tape handling and storage equipment / RMSa Ms(65) Me(1945) Ic

Monitor Systems, Inc., Dept. D-1, Fort Washington Industrial Park, Fort Washington, Pa. / Mitchell 6-8100 / \*C 60  
Digital data recording systems, scanning systems, automatic checkout and monitoring systems, special purpose computers, etc. / RMSCa Ss(33) Se(1958) DIcC

Monroe Calculating Machine Co., Inc., 555 Mitchell St., Orange, N. J. / ORange 3-6600 / \*C 61  
Digital computers, punch tape, punch card data processing machines (adding and accounting) / MSA Ls(5000) Le(1912) DIc

Monroe Industries, Inc., 930 36th St., S. E., Grand Rapids 8, Mich. / CH 1-3648 / \*C 61  
Lighted, marked plastic and metal parts and assemblies / RMa Ms(105) Se(1953) Ic

Moran Instrument Corp., 170 E. Orange Grove Blvd., Pasadena, Calif. / SYcamore 6-7158 / \*C 61  
Special servo systems; resolution multipliers, calibrators, regulated high voltage power supply, radiation measurement equipment, radar survey equipment, radar navigation equipment, servo data printer / RMSCa Ss(15) Me(1949) Ic

F. L. Moseley Co., 409 No. Fair Oaks, Pasadena, Calif. / RYan 1-0208 / \*C 61  
X-Y recorders (with time base); card and tape translators; logarithmic amplifiers; digital voltmeters; curve followers, computer accessories / RMSa Ms(125) Se(1950) Ic

Motorola Semiconductor Products Inc., 5005 East McDowell Rd., Phoenix 10, Ariz. / 273-6900 / \*C 61  
Transistors, rectifiers, zener diodes / RMSa Ls(3000) Se(1954) Ic

## N

National Bureau of Standards, Applied Mathematics Div., Washington 25, D. C. / Emerson 2-4040 / \*C 60  
Computing service, using IBM 704, for government and government contractors only / RGPCa Ms(80) Me(1947) DC

National Bureau of Standards, Data Processing Systems Div., Washington 25, D. C. / EMerson 2-4040 / \*C 60  
Digital and analog computers, data processing and control systems, input-output devices, storage elements, transistors, diodes, delay lines, etc. (for government only). Designed, assembled, and main-

- tain and use Seac; designed and assembled Dyseac; designed several special purpose machines / RMSa Ms(95) Me(1946) DAC
- The National Cash Register Co., Main & K Sts., Dayton 9, Ohio / BAldwin 6-1411 / \*C 61  
NCR 390, 315, 304 data processing systems; electronic bank posting machines; punched paper tape recorders; card punch couplers; input-output devices; digital computers; magnetic cores / RMSa Ls(40,000) Le(1884) DIc
- National Data Processing Corp., 4703 Ross Ave., Dallas 21, Tex. / TA 7-5021 / \*C 61  
Complete MICR bank document processing systems including high-speed document processors, audit listers, and dictionary look-up units. MICR document encoding devices to print the amount, account number, and transit number fields. Readatron credit card systems including charge sale recorders and optical character readers / RMSa Ms(200) Se(1957) Ic
- National Scientific Laboratories, Inc., 2010 Massachusetts Ave., N.W., Washington 6, D.C. / HUdson 3-4030 / \*C 60  
Research and development only / Ra Ms(200) Me(1948) Ic
- National Union Electric Corp., Electronics Div., 1201 E. Bell St., Bloomington, Ill. / 967-6041 / \*C 61  
Special purpose electron tubes / RMa Ss(35) Le(1930) Ic
- Navigation Computer Corp., Valley Forge Industrial Park, Norristown, Pa. / GLendale 2-6531 / \*C 61  
Two complete lines of transistorized digital systems modules. Two complete lines of digital readouts. Special computer systems. Analog to digital converters / RMSa Ms(100) Se(1955) Dc
- New London Instrument Co., Inc., 82 Union St., New London, Conn. / GIbson 3-8451 / \*C 60  
Analog computers / RMa Ss(26) Me(1949) Ac
- Simon M. Newman, 2027 Que St., N.W., Washington 9, D.C. / DU 7-4672 / \*C 61  
Consultation in documentation, specializing in information retrieval / Ca Ss(0) Se(1961) Ic
- The Newton Co., 55 Elm St., Manchester, Conn. / MITchell 3-1543 / \*C 61  
Data processing equipment. Analog to digital converters; grey to decimal converters; simulators / RMa Ms(75) Se(1952) DIc
- The Nissho Company, Ltd., 30, Imabashi-3, Higashiku, Osaka, Japan / - / \*C 61  
Sales and service for data processing systems; cooperate with prospects for system survey and data processing planning / Sca ?s ?e DAic
- NJE Corporation, 20 Boright Ave., Kenilworth, N. J. / BR 2-6000 / \*C 60  
Electronic power supplies / RMa Ms(150) Se(1955) Ic
- Non-Linear Systems, Inc., Del Mar Airport, Del Mar, Calif. / SKYline 5-1134 / \*C 61  
Digital voltmeters, ohmmeters, ratiometers; oscillogram trace readers, precision wirewound resistors, electronic measurement instruments for missile, nuclear, scientific and manufacturing fields; digital readouts, data processing and recording equipment, scanners, visual output devices, analog to digital converters / RMSa Ms(250) Se(1952) DAic
- Norden Division of United Aircraft Corp., Helen St., Norwalk, Conn. / TEmpLe 8-4471 / \*C 61  
Electronic rotating components; encoders, synchros, tachometers, gyros, potentiometers / RMSa Ls(2300) Le(1928) Ic
- Norden Division, United Aircraft Corp., Data Systems Dept., 3501 Harbor Blvd., Costa Mesa, Calif. / Kimberly 5-9351 / \*C 61  
High-speed mark sensing equipment; special purpose data processing equipment / RMSa Ms(250) Se DIc
- North Electric Company, 553 S. Market St., Galion, Ohio / HO 8-2420 / \*C 59  
Data processing and computer systems, automatic controls, switching centrals and related components, switches, relays / RMSa Ls(1500) Le(1884) Ic
- Northrop Corp., 9744 Wilshire Blvd., Beverly Hills, Calif. / CRestview 4-8061 / \*C 61  
Digital and analog computers / RMSa Ls(16,000) Me(1939) DAC
- Norton Associates, Inc., 240 Old Country Rd., Hicksville, N. Y. / OVerbrook 1-6181 / \*C 61  
Standard and special magnetic record, playback, and erase heads in single and multi-track arrangements for magnetic tape, film, drum, and magnetic ink character recognition / RMSCa Ss(less than 50) Se(1955) Ic
- Nuclear Development Corporation of America, 5 New St., White Plains, N. Y. / White Plains 8-5800 / \*C 60  
Burroughs 205 with magnetic tapes. IBM tab equipment. Mathematical analysis, programming, coding, computing, systems analysis, on an hourly or per job basis / RCPa Ms(250) Me(1948) Dc
- Nucleonic Products Company, Inc., 3133 East 12th St., Los Angeles 23, Calif. / AN 2-3503 / \*C 61  
Diodes, thermistors, varistors / Ma Ms(under 500) Se(1954) Ic

O

- Olivetti Corp. of America, 375 Park Ave., New York 22, N. Y. / PLaza 1-5333 / and Ing. C. Olivetti & Co., S. P. A., Ivrea, Italy / \*C 59  
Single and duplex register adding machines. Single and dual register printing calculators / RMSa Ls(24,000) Le(1908) Dc
- Omnitronics, Inc., Subsidiary of Borg-Warner Corp., 511 N. Broad St., Philadelphia 23, Pa. / WALnut 5-4343 / \*C 61  
Digital communication systems; space electronic devices and systems; digital data handling equipment such as checkout equipment, small special purpose computers, tape-to-tape converters, editors, and buffering equipment. Communications terminal equipment such as high-speed photoelectric tape readers, recorders, and displays / RMSCa Ls Se DASCc
- Opad Electric Co., 43 Walker St., New York 13, N. Y. / WOrth 6-0380 / \*C 59  
AC and DC power supplies, voltage and current regulators, specialized test equipment, automatic controls; sorting and counting controls; power frequency electrical converters; rectifiers / RMSa Ss Me(1947) ICc
- John Oster Mfg. Co., Avionic Div., One Main St., Racine, Wisc. / MELrose 7-4445 / \*C 61  
Servos, synchros, resolvers, dc motors, servo torque units, motor-tachometers, computers, indi-

cators / RMa Ls(1200) Le(1924, company; 1951, Avionic Division) Ic  
Otis Elevator Co., 35 Ryerson St., Brooklyn 5, N. Y. / ULster 5-6800 / \*C 61  
Analog computers, peripheral equipment / RMSa Ms(750) Le(1853, Corp.; 1954, Division) AIc  
Owen Laboratories, Inc., 55 Beacon Place, Pasadena, Calif. / MUrray 1-6901 / \*C 61  
Semiconductor test equipment / Ma Ss(10) Me(1947) Ic

P

Pacific Magnetic Corporation, Electronic Center, Romoland, Calif. OLympia 7-2637 (Perris Exchange) / \*C 59  
Logic type magnetic amplifiers, transformers, power supplies, toroids; fault-finding systems, using logic type magnetic amplifiers / RMSa Ss(15) Se(1958) Ic  
Pacific Semiconductors, Inc., 12955 Chadron Ave., Hawthorne, Calif. / OSborn 9-2281 / \*C 61  
Silicon diodes and silicon transistors / RMa Ls (3000) Se(1955) Ic  
Packard Bell Computer Corp., 1905 Armacost Ave., Los Angeles 25, Calif. / BR 2-9161 / \*C 61  
PB250 general purpose digital computer; digital systems; digital instrumentation components / RMSa Ms(350) Se(1957) DIc  
Panellit — a Division of Information Systems, Inc., 7401 No. Hamlin Ave., Skokie, Ill. / ORchard 5-2500/\*C 61  
Coordinated controls centers; annunciators and alarm systems, electrical control panels, benchboards and switchboards / Ma Ms(330) Me(1944) Ic  
The Ralph M. Parsons Co., Electronics Div., 151 S. De Lacey Ave., Pasadena, Calif. / (Los Angeles) MUrray 1-0461 / \*C 60  
Systems engineering, and manufacturing of electronic instrumentation, telemetry, timing systems, miss-distance indicators, precision delay lines, and precision transponders / RMSa Ms(200) Se(1952) Ic  
P C A Electronics Inc., 16799 Schoenborn St., Sepulveda, Calif. / EMpire 2-0761 / \*C 61  
Miniature pulse transformers, delay lines, toroids, telemetering filters / RMSa Ms(120) Me(1948) Ic  
Pendar, Inc., 14744 Arminta St., Van Nuys, Calif. / TRiangle 3-3136 / \*C 61  
Illuminated pushbutton panel and console switches and indicators; complete locking and interlocking gang-switch assemblies; keyboard, key-operated, and special design switches; miniature power resistors and resistor cards; high vibration relays / RMSa Ms(50) Me(1946) Ic  
The Perkin-Elmer Corp., Main Ave., Norwalk, Conn. / VICTor 7-0414 / \*C 61  
Electronic-optical systems, chemical analytical instruments, electronic components. Recording missile track systems, infrared systems, analog computers, potentiometers / RMSa Ls(1500) Me(1936) AIc  
Phaoston Instrument and Electronic Co., 151 Pasadena Ave., South Pasadena, Calif. / CLinton 5-1471 / \*C 60  
Electric panel meters, test instruments, portable laboratory standards, relays / RMSa Ms(450) Me(1937) Ic  
George A. Philbrick Researches, Inc., 127 Clarendon St., Boston, Mass. / CO 6-5375 / \*C 61

Electronic analog computers, computer components; computer packaged circuits; magnetic amplifiers; regulated power supplies; consulting services; electronic function generators; electronic integrators; electronic multipliers / RMC(computation services)a Ms(under 500) Me(1947) AIc  
Philco Corp., Government and Industrial Group, Computer Div., 3900 Welsh Rd., Willow Grove, Pa. / OLdfield 9-7700, Ext. 230 / \*C 61  
Philco 2000 all-transistor, large-scale data processing systems, electronics systems in communications scientific systems, closed-circuit TV, microwave and military products; digital computers; digital computing services. Card to magnetic tape, card to paper tape, magnetic tape to paper tape, magnetic tape to card, converters. High-speed printers; high-speed card punch; high-speed card readers; in-circuit transistor testers; visual display devices; air traffic control systems; data processing machinery; fire control equipment / RMSCa Ls(6000) Le(1892) DIc  
Philco Corp., Lansdale Div., Church Rd., Lansdale, Pa. / ULysses 5-4681 / \*C 61  
A complete line of switching transistors / RMSa Ls Me Ic  
Philco Technological Center, P. O. Box 4730, Philadelphia 34, Pa. / NE 4-5100 / \*C 61  
Computer and transistor correspondence study courses / S(education)a Ss(25) Se(1957) Ic  
Philips Electronic Instruments, 750 So. Fulton Ave., Mt. Vernon, N. Y. / MOUNT Vernon 4-4500 / \*C 61  
X-ray diffractometers, spectrographs, cameras and detectors, industrial radio-graphic equipment — x-ray and isotopes, electron microscopes, plating thickness gauges, process control instrumentation, electronic and nuclear measuring equipment / RMSCa Ms(350) Me(1942) Ic  
Phillips Control Corp., 59 Washington St., Joliet, Ill. / Saratoga 3-3431 / \*C 60  
Digital and analog computers / RMSa Ms(500) Me(1947) DAic  
Photomechanisms, Inc., 15 Stepar Place, Huntington Station, L. I., N. Y. / HA 3-4411 / \*C 61  
Photo-mechanical and electro-optical instrumentation. Rapid access photographic processing equipment. Ground and airborne instrumentation systems / RMSa Ms(70) Se(1952) Ic  
Photon, Inc., 58 Charles St., Cambridge 41, Mass. / UNiversity 4-8400 / \*C 60  
Machinery for composing type by photography / RCMSa Ms(100) Me(1940) DIc  
Pi-Square Engineering Co., Inc., 127 Clarendon St., Boston 16, Mass. / COMmonwealth 6-5375 / \*C 59  
Analysis and solution of engineering problems. Computing services. Analog computing equipment available / RCPa Ss Se(1954) ASCc  
Plastic Capacitors Inc., 2620 No. Clybourn Ave., Chicago 14, Ill. / DIVERsey 8-3735 / \*C 61  
Manufacture capacitors, power supplies, and pulse forming networks / Ma Ms(100) Se(1952) Ic  
Polyphase Instrument Co., E. Fourth St., Bridgeport, Pa. / BRoadway 9-4660 / \*C 61  
Magnetic components: delay lines, magnetic amplifiers; pulse and specialty transformers, filters, coils / RMSa Ms(80) Se(1948) Ic  
James Addison Potter, Consulting Engineer, 81 Rumford St., West Hartford 7, Conn. / ADams 2-5935 / \*C 61  
Plan, staff, and execute projects in research, de-

velopment and design, sales engineering, management consulting, and automation systems consulting / RCPa Ss Se(1960) DAICc  
 Potter Instrument Co., Sunnyside Blvd., Plainview, L. I., N. Y. / OVerbrook 1-3200 / \*C 61  
 Peripheral equipment for digital computers / RMSa Ms(330) Me(1945) DIC  
 Potter & Brumfield, Princeton, Ind. / FUlton 5-5251 / \*C 61  
 Electro-magnetic relays / Ma Ls(1500) Me(1932) Ic  
 Princeton Electronics Corp., 178 Alexander St., Princeton, N. J. / WAlnut 1-2020 / \*C 61  
 Semiconductor diodes / RMa Ss(25) Se(1960) Ic

### Q

Quantum, Inc., Computer Center, Lufbery Ave., Wallingford, Conn. / CO 9-7765 / \*C 61  
 IBM 1620 computer: tape card input-output, tape to card, card to tape, keypunch, sorter, printer.  
 Computer service in engineering, science, management reporting, etc. / RCa Ss(5, Computing Center; 30, Quantum, Inc.) Me(1960, Center; 1948, Quantum) Ic

### R

Radiation Incorp., P. O. Box 37, Melbourne, Fla. / Parkway 3-1511 / \*C 60  
 Research; ground-air telemetry and data link systems; computer input systems and equipment (data processing, programming, communication translating, converting); computer output systems and equipment (recorders and printers) / RMS(service company)a Ls(2000) Se(1950) Ic  
 Radio Corp. of America, Electron Tube Division, 415 So. Fifth St., Harrison, N. J. / HU 5-3900 / \*C 61  
 Manufacture comprehensive line of electron tubes for entertainment, communications, industry, and military applications. Sell test equipment, batteries, sound tape / MSa ?s ?e Ic  
 Radio Corp. of America, Electronic Data Processing Div., Front & Cooper Sts., Camden 2, N. J. / WOODlawn 3-3800 / \*C 59  
 General purpose electronic data processing systems / RMSa Ls(78,000) Le(1919) Ic  
 Radio Corp. of America, Precision Electronic Instruments Div., Bldg. 15-1, Camden, N. J.  
 Magnetic tape recorders / RMSa Ic  
 Radio Corp. of America, Semiconductor and Materials Div., Route 202, Somerville, N. J. / RAndolph 2-3200 / \*C 60  
 Transistors, silicon rectifiers, ferrite devices and micromodules / RMS(complete application engineering service)a Ls Le Ic  
 Radio Receptor Co., subsidiary of General Instrument Corp., 240 Wythe Ave., Brooklyn, N. Y. / EVergreen 8-6000 / \*C 59  
 Selenium rectifiers, power supplies / RMSa. Ls (640) Le(1922) Ic  
 Ramo-Wooldridge, a Division of Thompson Ramo Wooldridge Inc., 8433 Fallbrook Ave., Canoga Park, Calif. / DI 6-6000 / \*C 61  
 Digital computers for industrial process control, scientific and data processing; electronic and photo-

graphic display devices / RMSa Ls(1200) Se(1953) DICc  
 Rank Precision Industries Ltd., Electronics Dept., Sulgrave Rd., Hammersmith, London, W.6, England / Shepherds Bush 2050 / \*C 61  
 Xeronic high-speed computer printer / RMSCa Ls (3500) Me(1948) Ic  
 Ransom Research, Inc., P. O. Box 269, 374 West Eighth St., San Pedro, Calif. / TErMinal 2-1128 / \*C 60  
 Consulting and computing services; manufacture of digital systems, computing and logical control systems to customer specifications; converters; counters. Joint research and development programs with customers / RMa Ss(25) Se(1955) DACc  
 Raytheon Co., Communications and Data Processing Operation, 1415 Boston-Providence Turnpike, Norwood, Mass. / - / \*C 61  
 A/D converters, multiplexers, digital building blocks, data acquisition systems / RMSa Ms(400) Se(1959) DAIC  
 Raytheon Co., Industrial Components Div., 55 Chapel St., Newton 58, Mass. / BiGelow 4-7500 / \*C 61  
 Reliable miniature and subminiature electron tubes, high density modules, miniaturized light indicators, decade counters, magnetostriction filters, recording storage tubes and special cathode ray tubes, electrostatic printer tubes for computer output data, piezoelectric accelerometer, and Raytheon Raysistor<sup>®</sup> relays / RMSCa Ls(2500) Le(1926) Ic  
 Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / Hillcrest 4-6700 / \*C 61  
 Transistors: silicon and germanium for switching, computers, and general purpose use; AF-RF-VHF; NPN-PNP, single and double-ended submins.  
 Diodes: germanium and silicon; point contact, gold bonded, diffused junction for switching, computer and general purpose use. Silicon rectifiers: plug-in, wire-in, solder-in, compact, encapsulated semiconductor circuit modules / RMSa Ls(over 40,000) Le(1922) Ic  
 J. B. Rea Co., Inc., Electronics Division, 2202 Broadway, Santa Monica, Calif. / EX 3-3768 / \*C 59  
 Readix digital computer; analog to digital converter, magnetic drums; magnetic reading and recording heads; automatic data handling systems; tape handlers; research and development; memory systems; 60 and 400 cycle voltage stabilizers / RMSCa Ss(30) Se(1951) DAICc  
 Recordak Corp. (a subsidiary of Eastman Kodak Corp.), 415 Madison Ave., New York 17, N. Y. / MU 8-1212 / \*C 61  
 Recordak DACOM System, computer output system on 16mm microfilm / Sa ?s Le(1928) Ic  
 Redmond-Fairchild Inc., 610 So. Arroyo Pkway., Pasadena, Calif. / MU 1-6721 / \*C 61  
 Magnetic data storage drums / Ma Ss(40) Se(1951) Ic  
 Reeves Instrument Corp., Roosevelt Field, Garden City, N. Y. / Pioneer 6-8100 / \*C 61  
 Analog computers and systems, analog-to-digital and digital-to-analog converters, gyros, resolvers, servo mechanism system, radar and guidance systems, computing services, data recording equipment, computers for simulation, automation and control, differential analyzers, electronic integrators / RMSa Ls(1600) Me(1942) Ac

Reeves Soundcraft Corp., 15 Great Pasture Rd., Danbury, Conn. / PI 3-7601 / \*C 60

Magnetic recording tapes for all computer instrumentation, and industrial applications / RMSa Ms(200) Me(1946) Ic

Reinhold Book Div., Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. / MU 8-8600 / \*C 61

Technical books on the subjects of computers, automation, automatic control and electronics / Ss(40) Le(1926) Ic

Remington Rand Division of Sperry Rand Corp., 315 Park Ave. So., New York 10, N.Y. / SPring 7-8000 / \*C 61

Digital electronic computing systems (Univac), computing services, office machines, and systems / RMSa Ls(8000) Le(1876) DIc

Reon Resistor Corp., 155 Saw Mill River Rd., Yonkers, N.Y. / YOnkers 5-9850 / \*C 61

Precision wirewound resistors, composition variable resistors / Ma Ms(50) Se(1952) DAic

Republic Aviation Corp., Missile Systems Div., 223 Jericho Turnpike, Mineola, L. I., N.Y. / Pioneer 2-4013 / \*C 61

Facilities: analog computer; products: digital computers and digital devices, and A-to-D and D-to-A converters / RMa Ms(250) Se(1952) DAic

Rese Engineering, Inc., "A" and Courtland Sts., Philadelphia 20, Pa. / GL 5-9000 / \*C 61

Data retrieval systems, special purpose computers, data storage systems and buffers, pulse generators, transistor logic circuits / MCA Ms(100) Se(1953) Ic

Resistance Products Co., 914 S. 13th St., Harrisburg, Pa. / CEDar 6-5081 / \*C 61

Resistors: wire wound, high voltage, high frequency, high megohm, metal film and resistance networks / Ma Ms(315) Me(1947) Ic

RF Products, a Division of Amphenol-Borg Electronics Corp., 33 E. Franklin St., Danbury, Conn. / Pioneer 3-9272 / \*C 61

Coaxial cable and wire, coaxial connectors, coaxial switches (relays) / RMSa Ls(750) Se(1960) Ic

Richardson Camera Co., Inc., 2526 North Ontario St., P. O. Box 3066, Burbank, Calif. / VICTORIA 9-4636 / \*C 61

Custom design, engineering and manufacturing services for products applicable to the use of film. Proprietary items include various models of film readers, projectors, precision film transports for sizes from 16mm to 140mm and electronic counters for display and recording of information acquired by data film. Translation of this information may be in standard computer formats such as perforated tape, punched cards, electric typewriter, etc. / RMSa Ss(30) Me(1953) Ic

Rotron Manufacturing Company, Inc., Hasbrouck Lane, Woodstock, N.Y. / ORiole 9-2401 / \*C 61

Cooling equipment, fans, and blowers for flushing computer consoles, cabinets and boxes / RMSa Ms(460) Me(1949) Ic

Royal Electric Corp., 95 Grand Ave., Pawtucket, R.I. / PAwtucket 2-8600 / \*C 61

Wire, cable, line cords, wiring devices / Ma Ls(950) Le(1923) Ic

Royal-McBee Corp., Westchester Ave., Port Chester, N.Y. / WEStmore 7-3000 / \*C 60

Royal Precision electronic computers and data processing systems / Sa Ls(8000) Se(1954) Dc

Rutherford Electronics Co., 8944 Lindblade St., Culver City, Calif. / VERmont 7-5273 / \*C 60

Electronic test equipment. Pulse instrumentation, pulse generators, accurate time delay generators / RMSa Ms(80) Se(1950) Ic

Ryan Transdata Inc., Harbor Dr., San Diego, Calif. / CY 6-6681 / \*C 60

Automated office retrieval systems (nothing ready for marketing yet) / RMSa Ss(21) Se(1960) Ic

## S

Saab Aircraft Co., Electronics Div.; Bureau for Engineering Data Processing; Saab Electronic Sales Div.; Linköping, Sweden / 013/30020 / \*C 61

Digital computers; commercial and technical data processing, process control, special purpose, airborne, ground. Converters. Magnetic tape systems. Numerical control systems. Computing service / RMSa Ls(550) Me(1949) DIc

Sage Electronics Corp., One Country Club Rd., East Rochester, N.Y. / LUdlow 6-8010 / \*C 61

Wirewound power resistors / Ma Ms(75) Me(1948) Ic  
Sanborn Company, 175 Wyman St., Waltham 54, Mass. / TWINbrook 4-6300 / \*C 61

Oscillographic recording instruments and systems, X-Y recorders and transducers / Ma Ls(900) Le(1917) Ic

Sanders Associates, Inc., 95 Canal St., Nashua, N.H. / TUxedo 3-3321 / \*C 61

TRI-PLATE module mounts for semiconductors including series double-ended cartridges, pigtail diodes, T0-18 and T0-5 transistors / RMSa Ls(2000) Se(1951) Ic

Sangamo Electric Co., 1222 North Eleventh St., Springfield, Ill. / KINGSwood 4-6411 / \*C 61

Capacitors, inductive components, magnetic tape transports and record/reproduce systems / RMSa Ls(4500) Le(1899) Ic

Santa Anita Engineering Co., 3270 E. Foothill Blvd., Pasadena, Calif. / MU 1-7441 / \*C 61

Electronic enclosures, cabinets and consoles / Ma Ms(50) Me(1945) Ic

Saunders & Co., 8 Prospect St., Waltham 54, Mass. / TW 4-6071 / \*C 60

Manufacturers representatives (instructions, components, mechanisms) / Sa Ss(3) Se(1954) Ic

Scientific Computing Service, 23 Bedford Square, London W.C.1, England / MUseum 0808 / \*C 61

Problem solving, mathematical and statistical consulting. Digital computing service / RCPa Ss(15) Me(1937) DIc

THE SERVICE BUREAU CORP., A SUBSIDIARY OF IBM, 425 Park Ave., New York 22, N.Y. / PLaza 1-5600 / \*C 61

Data processing, programming, systems analysis, and machine services on a contractual basis for business and scientific problems using IBM 650, 1401, 7070, 704, 709, 7090, dataplotting, MICR sorter-reader, and unit record equipment. Offices in 70 cities. Extensive computer application experience in very many fields. Data processing systems are available on an hourly basis / RCGPa Ls(1600) Me(1932) DAISCc

- Servomechanisms/Inc., 200 No. Aviation Blvd., El Segundo, Calif. / OSborne 5-7111 / \*C 61  
Air data computers, transducers, motors, transformers, ground support equipment / RMa Ls(800) Me(1946) DAISCc
- Shand and Jurs Co., 2600 Eighth St., Berkeley 10, Calif. / THornwall 8-2345 / \*C 61  
Dataloggers, telemetering systems, data-handling equipment / RMSa Ms(175) Le(1920) Ic
- Shepard Laboratories, Inc., 480 Morris Ave., Summit, N. J. / CRestview 3-5255 / \*C 61  
High-speed input-output accessories for computers and EDPS (typers, decoders, tape transports, etc.) / RMCa Ss(40) Me(1944) Ic
- Marc Showitz & Associates, Inc., 12838 Weber Way, Hawthorne, Calif. / OR 8-5401 / \*C 61  
Consulting in systems, logic and circuit design; mathematical analysis, computer programming / Ca Ss(13) Se(1957) Ic
- F.W. Sickles Division, General Instrument Corp., 165 Front St., Chicopee, Mass. / LYceum 4-4781 / \*C 60  
Computer components; electromagnetic delay lines, lumped constant and distributed constant, fixed and variable step; audio and ultrasonic filters; toroidal inductors; embedded assemblies; L-C tuned circuits; etc. / RMSa Ls(2500) Le(1921) Ic
- Sigma Instruments, Inc., 170 Pearl St., S. Braintree 85, Mass. / VICTor 3-5000 / \*C 59  
Sensitive, polarized, keying, latching, photoelectric, high release, magnetic amplifier, relays; synchronous stepping motors; relay test sets / RMSa Ls(750) Me(1935) Ic
- N. E. Slavin & Co., 38-40 E. Cross St., Somerville 45, Mass. / MO 6-3320 / \*C 60  
Producers stainless steel shim stock / MSa Ss(6) Me(1945) Ic
- Smith-Corona Marchant Inc., 410 Park Ave., New York 22, N. Y. / PLaza 2-2700 / \*C 61  
Data processing and recording systems for special applications; communications systems for data processing systems. Adding machines, electric controlled typewriters; desk calculators, magnetic to paper tape converters; paper to magnetic tape converters; input/output devices; office machines; high-speed and keyboard printers; magnetic tape, mechanical, paper tape and photo-electric readers, magnetic tape recorders and storage systems; paper tape punches; translating equipment / RMSa Ls(10,000) Le(1903) Ic
- Societe D'Electronique Et D'Automatisme, 138, Boulevard de Verdun Courbevoie, (Seine), France / DEFense 41-20 / \*C 59  
Analog computers Type O. M. E. L-2 and O. M. E. P-2 with non linear components and recorders; flight simulators; digital computers Type CAB 500 and 3.000 for scientific applications and data processing, using punched tape and magnetic tape; input and output equipment, tape reader, paper tape punches. Electronic high speed printers "NUMEROGRAPH"; digital to analog converter "ENAC"; automation devices, coders, storage, etc.; numerical control / RMSa Ls(500) Se(1948) DASCIC
- Sola Electric Co., Busse Rd. at Lunt, Elk Grove, Ill. / HEMpstead 9-2800 / \*C 60  
Voltage-regulated ac and dc power sources for most types of data processing equipment / Ma Ms(500) Le(1929) Ic
- Sorensen & Co., Inc., a subsidiary of Raytheon Co., Richards Ave., So. Norwalk, Conn. / TEmple 8-6571 / \*C 61  
Regulated power supplies — voltage regulators / RMSa Ms(400) Me(1934) Ic
- Soroban Engineering, Inc., Box 1717, Melbourne, Fla. / Parkway 3-7221 / \*C 61  
Data input-output systems; data preparation devices; output tabulating devices; coding keyboards; paper tape readers and perforators; specialized data computing systems and consulting services on all of above; computer components; relays; storage systems; paper tape punches and readers; translating equipment; electric controlled typewriters / RMSCa Ms(190) Se(1954) Ic
- Southern Electronics Corp., 150 West Cypress Ave., Burbank, Calif. / VICToria 9-3193 / \*C 61  
Precision film capacitors. Inventors of an adjustable polystyrene capacitor, used in the integrator of most analog computers. RC networks, feedback filters, and integrator networks used in several special purpose computers / RMSa Ms(64) Se(1951) Ic
- Southwestern Computing Service, Inc., 910 S. Boston, Tulsa, Okla. / GI 7-8146 / \*C 61  
Computing service, solving data reduction, engineering and business problems; IBM 604, Alvac III, and associated equipment / RCPa Ss(10) Se(1953) DAC
- Southwestern Industrial Electronics Co. — name changed to Dresser Electronics, SIE Div., a division of Dresser Industries, Inc., which see
- Space Technology Laboratories, Inc., 2400 E. El Segundo Blvd., El Segundo, Calif. / OS 5-4677 / \*C 61  
Service on data processing equipment (2 IBM 7090's) / R(computer user)a Ls(4400) Se(1954) DAICc
- Specialties, Inc., Skunks Misery Rd., Syosset, N. Y. / WALnut 1-2345 / \*C 60  
Flight computers; mach. computers; altitude, air-speed, air data, engine pressure ratio, pneumatic test equipment; controllers / RMSa Ms(450) Me(1942) ICc
- Spectrol Electronics Corp., 1704 South Del Mar Ave., San Gabriel, Calif. / ATLantic 7-9761 / (eastern plant) 1250 Shames Dr., Westbury, L. I., N. Y. / EDGewood 3-5850 / \*C 60  
Precision potentiometers; precision mechanisms; transistorized converters and inverters, power supplies, switches; resistors, variable, linear and non-linear / RMSa Ms(400) Se(1955) Ic
- Sperry Farragut Co., Division of Sperry Rand Corp., Bristol, Tenn. / WO 8-1151 / \*C 61  
Amplifiers; packaged computer circuits, plug-in circuits, printed circuits; computer type coils; analog computers; computer components; fire control equipment; and systems engineering / RMa Ls(850) Se(1951) AICc
- Sperry Gyroscope Co., Division of Sperry Rand Corp., Great Neck, N. Y. / LR 4-0111 / \*C 61  
Research, design development and manufacture of digital and analog computers for underwater, surface and airborne applications, including general purpose and special miniature computers for airborne and space applications; data processing equipment; electronic digital to analog and analog to digital conversion equipment; counter-measures systems; check-out equipment; magnetic drums and memory systems; stable platforms, gyroscopes and accelerometers for

- inertial guidance systems for ships, aircraft and missiles, specializing in automatic transistorized, miniaturized devices / RMSCa Ls(17,500) Le(1910) DAic
- Sperry Semiconductor Div. of Sperry Rand Corp., Wilson Ave., S. Norwalk, Conn. / VOlunteer 6-1641 / \*C 60  
Silicon diodes, transistors, rectifiers, semiconductor products / RMSa Ms(300) Se(1956) Ic
- Sprague Electric Co., 377 Marshall St., North Adams, Mass. / MOhawk 3-5311 / \*C 61  
Transistors, switching, PEDC, MADT, MAT, SAT. Capacitors: miniature, and low dielectric hysteresis loss, for computer applications. Standard capacitors; precision and power type resistors; pulse transformers; radio interference filters; shift registers; printed circuits; packaged logic circuits / RMSa Ls(6500) Le(1926) Ic
- Stackpole Carbon Co., Stackpole St., St. Mary's, Pa. / TErminAl 4-1521 / \*C 61  
Anti-corrosion and chemical anodes; electric motor and generator brushes; precious metal contacts; carbon and graphite seals; mechanical carbon and graphite; carbon and graphite bearings; resistors; switches; soft ferrites; permanent ceramic magnets; and magnetic powder / Ma Ls(2500) Le(1906) Ic
- The Standard Electric Time Co., 89 Logan St., Springfield 2, Mass. / REpublic 6-7237 / \*C 59  
Analog computers, electric time systems, timing instruments and devices, signaling and communication systems, laboratory power distribution systems, McIlroy fluid network analyzer / RMSa Ms(450) Le(1884) AIc
- The Standard Register Co., 626 Albany St., Dayton 1, Ohio / BAldwin 3-6181 / \*C 61  
Data recording and translating equipment / RMSa Ls(3500) Le(1912) Ic
- Stanford Research Institute, 333 Ravenswood, Menlo Park, Calif. / DAvenport 6-6200 / \*C 61  
Ra Ls(1825) Me(1946) DAc
- Statistical Instrument Company, 25 Sutton Place South, New York 22, N.Y. / PL 2-1089 / \*C 61  
Statistical processing equipment; computer test equipment, analog-to-digital and digital-to-analog information converters, random signal and number generators, amplitude distribution analyzers, audio spectrum analyzers / RCa Ss(6) Se(1953) Ic
- Stereotronics, 300 Ellis Rd., Weston 93, Mass. / TWinbrook 4-6071 / \*C 60  
Solid-state information-handling devices; transistor, magnetic, ferroelectric applications / RMSa Ss(2) Se(1954) Ic
- Sterling Instrument division of Designatronics, 17 Matinecock Ave., Port Washington, N.Y. / PO 7-8200 / \*C 61  
Field engineers available on a national basis for component consultation; 20,000 stock electro-mechanical components (servo) / RMSCa Ms(150) Se(1958) Ic
- Sterling Precision Corp. — name changed to Sterling Instrument division of Designatronics, which see
- D. M. Steward Manufacturing Co., P. O. Box 510, Chattanooga, Tenn. / TAylor 1-1561 / \*C 61  
Ferrites and other technical ceramics, ferrite magnetic cores, recording heads, pulse transformer cores / RMSa Ms(150) Le(1876) Ic
- Strand Engineering Co., 7300 Huron River Dr., Dexter, Mich. / HA 6-5111 / \*C 61  
Special purpose data processing; analog computation; automatic control, materials handling, inspection systems / RMa Ms(50) Se(1955) DAICc
- Stromberg-Carlson Division of General Dynamics Corp., 100 Carlson Rd., Rochester 3, N.Y. / HUbbard 2-2200 / \*C 60  
Special purpose data processing, high speed data communication, data acquisition and logging, high speed readout and display / RMSa Ls(9000) Le(1894) Ic
- Stromberg-Carlson-San Diego — name changed to General Dynamics/Electronics, Information Technology Division, which see
- SturruP, Inc., 50 Silver St., Middleton, Conn. / DIamond 6-9681 / \*C 59  
Ultrasonic delay lines, transducers, etc., for computer and other uses / RMSa Ms(60) Se(1951) Ic
- Sunshine Scientific Instrument Co., 1810 Grant Ave., Philadelphia 15, Pa. / ORchard 3-5600 / \*C 60  
Testing and measuring equipment, calibration, certification. Analog field plotter, prototypes, precision electromechanical assemblies, mechanical components / RMSa Ss(35) Me(1947) AIc
- Superex Electronics Corp., 4-6 Radford Pl., Yonkers, N.Y. / YONkers 5-6906 / \*C 61  
Cable assemblies, plug in and printed circuits, coils, ferrite cores, jacks, transformers, headphones, headsets, and other components / RMSa Ms(60) Se(1950) Ic
- Sutherland Co., 1112 First National Bank Co., Peoria, Ill. / 3-5431 / \*C 60  
Digital computers for business applications / Ca Ss(20) Se(1950) Dc
- Sylvania Electric Products Inc., 1740 Broadway, New York, N.Y. / JUdson 6-2424 / \*C 61  
Electronic tubes, semi-conductors, diodes, lighting devices / RMa Ls(29,000) Le(1901) Ic
- Sylvania Electric Products, Inc., 100 First Ave., Waltham, Mass. / TWinbrook 3-9200 / \*C 59  
Research and development activities for general and special purpose computers, data handling devices and computer components / RPa ?s Se(1955) Ic
- Sylvania Electric Products Inc., Semiconductor Division, 100 Sylvan Rd., Woburn, Mass. / WElls 3-3500 / \*C 59  
Transistors, germanium diodes, silicon junction diodes, silicon power rectifiers, microwave diodes / RMSa Ls Le Ic
- Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc., 63 Second Ave., Waltham 54, Mass. / TWinbrook 4-9770 / \*C 61  
Digital data processing systems, devices, equipments, sub-assemblies, memories, coils, general and special purpose computers, data handling and data conversion systems, simulators, computer components / RMa Ls(6000) Se(1955) DAICc
- System Development Corp., 2500 Colorado Ave., Santa Monica, Calif. / EXbrook 3-9411 / \*C 61  
Perform design, analysis, implementation and training of large data processing systems / Ra Ls(3600) Se(1956) Ic
- Systems Division of Beckman Instruments, Inc., 2400 Harbor Blvd., Fullerton, Calif. / TRoJan 1-4848 / \*C 61  
Complete design and manufacture of data acquisition

and data processing systems and systems components / RMSC(systems management contracts to industry and the military) a Ls(536) Se(1953) DAIC  
 Systems Laboratories Corp., a div. of Electronic Specialty Co., 5121 San Fernando Rd., Los Angeles 39, Calif. / CH 5-3771 / \*C 60  
 Systems analyses, specifications and simulation of advanced systems, computer service bureau to industry / RC(computer service bureau) a Ls(625) Se(1956) Ic  
 Systron-Donner Corp., 950 Galindo St., Concord, Calif. / MULberry 2-3650 / \*C 61  
 Electronic test instrumentation (counters, converters, timers, clocks, oscillators, analog recorders, digital recorders); complete data handling; automatic checkout systems / RMSa Ms(132) Se(1957) Dc

T

Taller Cooper Division, American Electronics, Inc., 75 Front St., Brooklyn, N. Y. / \*C 60  
 Toll collection and control equipment, measuring and readout systems  
 Tally Register Corp., 1310 Mercer St., Seattle 9, Wash. / MAIN 4-0760 / \*C 61  
 Paper tape perforators; paper tape readers; paper tape preparation, duplication, and verification equipment; digital data handling and processing systems; high speed digital plotter; special digital systems design / RMSCa Ms(58) Se(1951) DIC  
 Taurus Corp., 8 Coryell St., Lambertville, N. J. / EXport 7-1570 / \*C 60  
 Static punched card readers, teflon insulated terminals / MSa Ss(32) Se(1956) Ic  
 Technical Advisors, Inc., Municipal Court Bldg., Ann Arbor, Mich.; 3603 Lemmon Ave., Dallas 19, Tex.; 3033 No. Central, Phoenix 12, Ariz. / (Mich.) NORmandy 2-1159; (Tex.) LAKeside 6-1658; (Ariz.) AMherst 4-1715 / \*C 61  
 Digital computer service bureau using LGP-30 and RPC-4000 / Ca Ss(15) Se(1954) Dc  
 Technical Information Company Ltd., Chancery House, Chancery Lane, London, W. C. 2, England / \*C 61  
 Publishers of "Computer Abstracts" and "Computer News" / Ms(130) Se(1951) Ic  
 Technical Operations, Inc., South Ave., Burlington, Mass. / BR 2-2000 / \*C 61  
 Industrial, commercial and military operations research; automatic programming systems and digital simulations, data processing systems; transistorized power supplies (manufactured by subsidiary) / RSCa Ms(350) Se(1951) Ic  
 Technical Operations, Inc., 305 Webster St., Monterey, Calif. / FRontier 5-4133 / \*C 60  
 Military, industrial, commercial operations research; systems analysis, design and equipment specification; programming / RCGPa  
 Techniques Inc., 40 Jay St., Englewood, N. J. / LOWell 9-5333 / \*C 61  
 Printed circuits; blank modular P. C. boards with circuits for digital operations; photo-etched metal parts / RMSa Ss(under 50) Se(1954) Ic  
 Technitrol, Inc., 1952 East Allegheny Ave., Philadelphia 34, Pa. / GARfield 6-9105 / \*C 61  
 Computer peripheral equipment, custom built digital computers, components, pulse transformers, delay lines / RMSa Ms(200) Me(1947) DIC

Technology Instrument Corp., 531 Main St., Acton, Mass. / COLonial 3-7711 / \*C 61  
 Infinite resolution potentiometers; special research and development facilities; clutches and brakes; carbon film fixed resistors, wirewound resistors, lumped constant delay lines, trimmers, environmental testing services, measuring instruments, miniature commutators, amplifiers, timers, voltage regulators / RMSa Ms Me(1956) Ic  
 Telecomputing Corp., 915 No. Citrus Ave., Los Angeles 38, Calif. / HOLlywood 4-3171 / \*C 60  
 Data analysis and processing equipment, special purpose computers, data reduction analysis and counselling / RMSCa Ls(3000) Se(1952) DAICc  
 Telectro Industries Corp., 35-16 37th St., Long Island City, N. Y. / YELlowstone 2-8600 / \*C 59  
 Plotting boards, cable assemblies, analog to digital converters, card to magnetic tape converters, magnetic tape to card converters, data processing machinery, data recording equipment, facsimile equipment, mechanical generators, magnetic-reading-recording heads, electronic integrators, readers, simulators, magnetic storage systems, telemetering systems / RMSa Ms(200) Se(1948) Ic.  
 Tele-Dynamics Division of American Bosch Arma, 5000 Parkside Ave., Philadelphia 31, Pa. / TRinity 8-3000 / \*C 61  
 Printer/reader, multistylis plotter and circuit modules / RMSa Ls(590) Me(1948, division) Ic  
 Telemeter Magnetics, Inc. - name changed to Ampex Computer Products Co., which see  
 The Teleregister Corp., 445 Fairfield Ave., Stamford, Conn. / FI 8-4291 / \*C 61  
 Data processing systems, designed for particular applications, including input/output, integrated communications; data display and storage facilities, and central processors. Over 1,000,000 hours' experience with commercial on-line operation: systems designed, built and maintained / MS(systems engineering) a Ls(1100) Le(1928) Ic  
 Teletype Corp., 5555 Touhy Ave., Skokie, Ill. / CORnelia 7-6700; ORchard 6-1000 / \*C 61  
 Message and data communications equipment. Tape readers and tape punches for computer input/output. Page printers / RMSa Ls(5100) Le(1907) Ic  
 Telex, Inc., 1633 Eustis Street, St. Paul 1, Minn. / MIDway 6-7211 / \*C 61  
 Magnetic disc memories, magnetic amplifiers, transformers, relays, indicator lights / RMSa Ls(2000) Me(1939) Ic  
 The Teller Company, 101 Hansen Ave., P. O. Box 989, Butler, Pa. / BUTler 75-739 / \*C 59  
 Automatic controls, step motors, digital and analog computers, systems engineering / RMSCa Ms(80) Se(1951) DACc  
 Texas Instruments Incorporated, 13500 No. Central Expressway, Dallas 22, Texas / ADams 5-3111 / \*C 61  
 Semiconductor products and components, silicon and germanium transistors, silicon diodes and rectifiers, resistors, tantalum capacitors / RMSa Ls(8000) Se(1954) Ic  
 Texas Instruments Incorporated, Semiconductor Components Div., Box 5012, Dallas 22, Texas / AD 5-3111 / \*C 61  
 Transistors (germanium and silicon); solid circuit semiconductor networks; silicon diodes; silicon rectifiers; capacitors; resistors / RMSa Ls(over 7000) Se(1952) Semiconductor Mfg.) Ic

Thermosen, Inc., 375 Fairfield Ave., Stamford, Conn. /  
DAvis 5-1324 / \*C 59

Temperature limited diodes, silicon power rectifiers, electronic tubes, semiconductors / RMSa Ms Se(1951) Ic

The Thompson-Ramo-Wooldridge Products Co. — name changed to TRW Computers Co., which see  
Traid Corp., 17136 Ventura Blvd., Encino, Calif. (P. O. Box 648) / TRIangle 3-3373 / \*C 61

Photographic instrumentation equipment, high-speed and data recording motion picture cameras and related accessories / RMSCa Ss(25) Me(1946) Ic

Transitron Electronic Corp., 168 Albion St., Wakefield, Mass. / CRYstal 9-4500 / \*C 61

Silicon transistors, diodes, rectifiers, controlled rectifiers, references and regulators, switches, micro-components, capacitors and encapsulations / RMSa Ls Se(1952) Ic

Trio Laboratories, Inc., DuPont Rd., Plainview, L. I., N. Y. / OVerbrook 1-0400 / \*C 61

Analog component for solving three dimensional equations (RODIAC); all transistor voltage comparator; voltage monitor; test instruments / RMSa Ms (65) Se(1954) AIC

TRW Computers Co., a division of Thompson Ramo Wooldridge Inc., 8433 Fallbrook Ave., Canoga Park, Calif. / DI 7-9771 / \*C 61

Digital control computers and systems engineering / S(systems engineering)a Ms(120) Se(1958) DICc

Tucor, Inc., 18 Marshall St., So. Norwalk, Conn. — computer product line sold to Electronic Industries, Inc., 18 Marshall St., So. Norwalk, Conn.

Tung-Sol Electric, Inc., 95 8th Ave., Newark 4, N. J. / HUmiboldt 2-4200 / \*C 59

Electron tubes, semi-conductors, miniature lamps, diodes, germanium transistors / RMSa Ls(7000) Le(1904) Ic

## U

Underwood Corporation, One Park Ave., New York 16, N. Y. / ORegon 9-3400 / \*C 59

Adding and accounting machines; manual and electric typewriters; Data-Flo systems including wide range of automatic electric typewriters and adding machines, paper tape reading and punching, punch card reading and punching, all integrated under plug-board program control; servotypers, master-typers, and servomasters; automatic electric typewriters for input and output in instrumentation, data logging, and computing equipment; Underwood Electronic Business Computer (UEBC) small size, low cost computer with paper tape input and output / RMSa Ls(13,000) Le(1894) DISc

Union Switch & Signal, Div. of Westinghouse Air Brake Co., Braddock Ave., Pittsburgh 18, Pa. / CHurchill 2-5000 / \*C 61

"Readall" readout instruments, miniature and sub-miniature relays, remote control systems for railroads and pipelines / RMSa Ls(2150) Le(1881) IC(control systems engineering)c

U. S. Air Force, Analytical Systems Branch, Data Processing Div., Headquarters USAF, Pentagon Bldg., Washington 25, D. C. / OX 7-7712 / \*C 61

Government systems consulting and problem solving (management problems as opposed to engineering) / CGPa Ss(25) Me(1948) Ic

U. S. Air Force, Cambridge Research Center, 230 Albany St., Cambridge 39, Mass. / UNiversity 4-4720

Developed the ABC (Automatic Binary Computer). Has a Computer Research Corp. -102 / Ga Ms Me DIc

U. S. Air Force, Digital Computation Branch (WCL-JEU), Wright Air Development Center, Wright-Patterson Air Force Base, Dayton, Ohio / CL 3-7111 (Dayton) Ext. 28235 / \*C 59

Computation services and associated research on three large-scale digital computers, including two Univac Scientifics (1103 and 1103A). Punch card machines. For government use only / RCGPa Ms (50) Se(1950) Dc

U. S. Air Force, Inst. of Technology, Wright-Patterson Air Force Base, Ohio / \*C 59

Philbrick, Reac, and Geda analog computing machines in regular use, also RECOMP II digital computer / RGa Ms(300) Se(1946) DAIC

U. S. Air Force, Systems Dynamic Analysis Division, Wright-Patterson Air Force Base, Ohio / CL 3-7111, Ext. 28235, 33264 / \*C 60

Computing service (for air force use) has Univac 1103A; system dynamic simulator (Reeves analog); Bendix DDA; analog and digital scientific computation / RCGa Ms(59) Se(1950) DAC

U. S. Army, Ballistic Research Laboratories, Aberdeen Proving Ground, Maryland / CRestwood 2-4000, Ext. 43271 / \*C 61

High-speed digital computers and computing service for government and government contractors / RCGPa Ms(120) Me(1940) Dc

U. S. Naval Weapons Laboratory, Computation and Analysis Lab., Dahlgren, Va. / NOrth 3-2511 / \*C 61

Mathematical analysis and research, programming, engineering, computing, and data processing services for government and government contractors only; operate NORC and IBM 7090 computers, Universal Data Transcriber and a variety of auxiliary equipment / RCPGa Ms(325) Me(1942) Dc

U. S. Navy, Aviation Supply Office, Data Processing Div., 700 Robbins Ave., Philadelphia 11, Pa. / PI 2-1010, X388 / \*C 61

Operates IBM 650, IBM 705 (two), and IBM 1401 (six) for inventory control; tranceiver and EAM equipment. Government use only / Ga Ms(335) Se(EDPM, 1952) Dc

U. S. Semiconductor Products, a division of United Industrial Corp., 3540 West Osborn Rd., Phoenix, Ariz. / BRowning 2-1341 / \*C 60

Silicon zener and rectifier diodes, silicon voltage regulating diodes, silicon crystals, tantalum capacitors (wet and dry electrolyte) / RMSCa Ms(175) Se(1957) Ic

## V

Valor Instruments, Inc., 13214 Crenshaw Blvd., Gardena, Calif. / FAculty 1-2280 / \*C 61

Power supplies, delay lines, pulse transformers, chokes and inductors / MSa Ms(70) Se(1955) Ic

Vari typer Corp., 720 Frelinghuysen Ave., Newark 12, N. J. / BIgelow 2-2600 / \*C 61

Vari-typer that composes type for reproduction by any duplicating method. Fotolist System, that automatically processes data on file cards into lists for directories, parts and price lists, indexes, etc. / RMSa Ls(900) Me(1933) Ic

Veeder-Root Inc., 70 Sargeant St., Hartford, Conn. /  
Ja 7-7201 / \*C 61  
Analog-to-digital converters; electronic counters  
and controls; mechanical, electro-mechanical and  
instrument counting devices for all counting re-  
quirements / RMSCa Ls(850) Le(1928) Ic

Vernistat Division of the Perkin-Elmer Corp., 771 Main  
Ave., Norwalk, Conn. / VVictor 7-0411 / \*C 61  
Vernistat a.c. potentiometers, adjustable function  
generators, special components / RMSa Ms(67)  
Se(1954) Ic

Vickers Inc., Electric Products Division (Division of  
Sperry Rand Corp.), 1815 Locust St., St. Louis 3,  
Mo. / CEntral 1-5830 / \*C 61  
Magnetic amplifiers — 0.2W to 1000KW; synchro-  
nizers; servomechanisms; power control systems /  
RMSa Ls(550) Me(1948) Sc

Vitramon, Inc., P.O. Box 544, Bridgeport 1, Conn. /  
AMherst 8-6261 / \*C 61  
Ceramic and porcelain capacitors / RMa Ms(500)  
Me(1948) Ic

Vought Electronics, P.O. Box 1500, Arlington, Texas /  
ANDrews 2-3211 / \*C 61  
Digital, analog, and DDA computers for guidance,  
fix-taking, real time and automatic control. Digital  
actuators and converters, problem solving, comput-  
er programming, and machine time (IBM 650/704) /  
RMSCPa Ls(600) Se(1959) DAICc

### W

The Walkirt Co., 141 West Hazel St., Inglewood 3, Calif.  
/ OR 8-4814 / \*C 61  
Plug-in pulse circuit packages; complete counters,  
multivibrators, amplifiers, gates, triggers, pulse  
generators, etc. / RMSa Ss(35) Me(1948) Ic

Wang Laboratories Inc., 12 Huron Drive, Natick, Mass.  
/ OL 3-3910 (Boston line, CE 7-9572) / \*C 61  
Special purpose digital systems and devices; digital  
building blocks, block tape readers, encoders,  
numerical controls, programmed pulse generators  
/ RMSCa Ss(15) Se(1951) DICc

Ward Leonard Electric Co., 90 South St., Mt. Vernon,  
N.Y. / \*C 59  
Electric control devices: resistors, relays, rheo-  
stats, contactors, etc. / RMSa Ls(1000) Le(1892)  
Ic

Wayne-George Corporation, 588 Commonwealth Ave.,  
Boston 15, Mass. / COpley 7-8425 / \*C 60  
Analog-to-digital converters and associated data  
handling equipment; special purpose digital comput-  
ers / RMSCa Ms(60) Se(1956) DAC

Western Electronic Co., 717 Dexter Ave., Seattle 9, Wash.  
/ AT 4-0200 / \*C 61  
Heat radiation analog our "Reastan". Also the gen-  
eral use "Western Electronic analog computer" /  
RMSa Ss(25) Me(1946) Ac

Westgate Laboratory, Inc., 506 S. High St., Yellow  
Springs, Ohio / ROckwell 7-7375 (Dayton, Ohio —  
Victor 9-1330) / \*C 61  
Research, development, prototype, and small lot  
production in electronics, physics, optics and photo-  
graphy; simulators and missile guidance equipment,  
digital computing and consulting services, controls,  
X-Y plotters and vehicle position displays, radio  
receivers and transmitters, industrial instrumenta-

tion, can leak testers, airborne servo systems for  
cooling of electronic equipment, eye movement  
cameras, air traffic control instrumentation /  
RMCa Ss(35) Se(1956) DICc

Westinghouse Electric Corp., 4454 Genessee St., P.O.  
Box 2025, Buffalo 5, N.Y. / NF 2-1500 / \*C 61  
Custom industrial control computers. Data logging  
equipment and programming controls / MSa Ls  
(6000) Le(1885) DIC

Westinghouse Electric Corp., 700 Braddock Ave., East  
Pittsburgh, Pa. / EX 1-2800 / \*C 61  
Digital: Prodac industrial control computer for  
automatic control of electric utility generating sta-  
tions and pipelines. Analog: economic dispatch  
computer for dispatching power on electric utility  
systems / Ma Ls(over 100,000) Le(prior to 1900)  
DAc

Westinghouse Electric Corp., Air Arm Division, P.O.  
Box 746, Baltimore 3, Md. / SO 1-1000 / \*C 61  
Analog and digital computers, analog/digital and  
digital/analog converters, and other complete line  
of peripheral equipment for military systems /  
RMSCa Ls(4000) Se(1951) DAIC

Westinghouse Electric Corp., Electronic Tube Division,  
Box 284, Elmira, N.Y. / RE 9-3611 / \*C 61  
Receiving tubes: image, storage, multiplier photo-  
tubes; special purpose tubes; military and industrial  
cathode ray tubes / RMSa Ls(2500) Le(before 1930)  
Ic

Westinghouse Electric Corp., Semiconductor Dept., Young-  
wood, Pa. / WA 5-7272 (Youngwood); CH 2-7400 (Pitts-  
burgh) / \*C 61  
Silicon rectifiers; silicon transistors; Trinistor<sup>®</sup>  
controlled rectifiers; thermoelectric coolers; ther-  
moelectric generators; hall generators; molecular  
functional electronic blocks / RMSa Ls Se(1956) Ic

Westrex Corp., 111 Eighth Ave., New York 11, N.Y. /  
CH 3-2300 / \*C 59  
Magnetic recording equipment and associated items.  
Magnetic heads / RMSCa Ls(1400) Me(1926) Ic

Westronics, Inc., 3605 McCart St., Ft. Worth 10, Tex.  
/ WA 3-8211 / \*C 61  
Manufacturer of strip chart recorders / RMSa  
Ss(42) Me(1946) Ic

Wharf Engineering Laboratories, Fenny Compton, Leam-  
ington Spa, Warwicks, England (American agents —  
Imtra Corp., 11 University Rd., Cambridge 38, Mass.)  
/ Fenny Compton 230 / \*C 61  
Magnetic storage drums, tape readers, tape punches,  
switching transformers / RMSa Ss(10) Me(1948) Ic

Wheeler Electronic Corp., Subsidiary of Sperry-Rand Corp.,  
150 E. Aurora St., Waterbury 20, Conn. / PLaza  
4-5191 / \*C 59  
Transformers, communication systems (computer  
types), regulated power supplies, cable assemblies  
/ RMSa Ls(500, plus) Le(1909) Ic

Wheeler-Fairchild, Inc. — name changed to Redmond-  
Fairchild Inc., which see

Wheelock Signals, Inc., 273 Branchport Ave., Long  
Branch, N.J. / CApitol 2-6880 / \*C 61  
Miniature and special relays for computing equip-  
ment; wire contact plug-in, microminiature, sensi-  
tive, high speed, etc. / MSa Ms(200) Le(1925) Ic

Whitewater Electronics Inc., 136 W. Main St., White-  
water, Wisc. / 986 / \*C 61  
Coils and delay lines / RMa Ms(100) Se(1955) Ic

Whitnon Mfg. Co., Rte. 6 and New Britain Ave., Farming-

# BUYERS' GUIDE FOR THE COMPUTER FIELD: PRODUCTS AND SERVICES FOR SALE OR RENT

(Cumulative, information as of May 1, 1961)

The purpose of this roster "The Buyers' Guide for the Computer Field: Products and Services for Sale or Rent" is to give information about the existence and in many cases the properties of every product or service in the computer field that is offered for sale or rent and about which we have received information in 1961. We have not tried this year to index entries re information received 1960 and earlier. This is the fifth cumulative edition of this roster.

**Kinds of Entries.** There are three kinds of entries in this list: full entries; cross reference entries; and name entries. A full entry contains or should contain the following information:

Name of supplier and address / name or identification of product or service / DESCR: a brief description of the product in about 25 words or more / USE: how it is used / price range, and whether for sale or rent.

Every entry is subject to editing.

Cross-reference entries show that a product listed under one product heading is described more fully under another product heading.

Name entries consist of just the name of the organization, listed under the product class.

**Corrections.** We have tried to make each entry correct to the extent of information in our possession. But it is inevitable that at least some errors have occurred, and we shall be glad to publish corrections.

**Questionnaire.** Nearly all the entries in this roster have been derived from answers to questionnaires which we sent out twice (in February and March) to over 700 suppliers in the computer field. The entries have been derived from answers given on the "Product Entry Form," which follows:

## Product Entry Form for THE COMPUTER DIRECTORY and BUYERS' GUIDE, 1961

THIS IS THE INFORMATION WE WANT FROM YOU:

1. Name or identification of product (or service)? \_\_\_\_\_
2. Brief description? \_\_\_\_\_  
\_\_\_\_\_
3. How is it used? \_\_\_\_\_
4. Price range? Between \_\_\_\_\_ and \_\_\_\_\_
5. Under what particular heading should it be listed?  
(See the 1960 list of 180 headings) \_\_\_\_\_

**Note:** Up to 25 words (subject to editing) will be published FREE.

If you want more than 25 words published, the charge for up to 50 words (still subject to editing) is \$10.00.

( ) Please give us 50 words. Enclosed is \$10.00.

If you wish to FLAG your entry so that it will be quickly noticed, you can choose CAPITAL LETTERS for the name of YOUR COMPANY and YOUR PRODUCT, and a black ruled line all around your entry so that it is boxed, and the charge is \$15.00.

( ) Please FLAG our entry as described. Enclosed is \$15.00.

Organization \_\_\_\_\_  
Address \_\_\_\_\_  
This data supplied by \_\_\_\_\_  
Title \_\_\_\_\_ Date \_\_\_\_\_

## LIST OF HEADINGS

As a guide to the products and services offered in the computer field, please refer to the following list of some 201 headings under which products and services are classified. There is overlapping among these headings; it may be necessary or desirable to look under more than one heading.

<b>A:</b> Adding Machines	_____ A1	— Printed Circuit	_____ B2A
Addressing Machines	_____ A2	— Strip Type	_____ B3
Amplifiers . . . . .	_____ A3	Bobbins, Coil Winding	_____ B4
— Magnetic	_____ A4	Breadboard Kits	_____ B6
Analog Computers (SEE Computers, Analog)		<b>C:</b> Cable	_____ C1
Automatic Assembly Equipment	_____ A5	Cable Assemblies	_____ C2
Automatic Control Equipment	_____ A6	Cameras . . . . .	_____ C3
Automatic Test Equipment	_____ A7	— Data Recording	_____ C3A
<b>B:</b> Boards — Plotting	_____ B1	Capacitors (Computer Types)	_____ C4
— Plug	_____ B2	Cards (SEE ALSO Punch Cards)	_____ C5
		— Punch	_____ C6
		— Magnetic	_____ C7

Chassis — Metal	C8	Data Recording Equipment	D2	Potentiometers (Computer	P7
Circuits . . . .		(SEE ALSO Input/Output		Types)	
— Arithmetical (for Digital		devices)	D2	Power Supplies — Regu-	P8
Computers)	C9	Data Reduction Equipment	D2A	lated	P8
— Computer, Packaged	C10	Delay Lines (Computer		Printers . . . .	P9
— Logical (for Digital		Types)	D3	— High Speed	P10
Computers)	C11	Desk Calculators	D4	— Keyboard	P11
— Plug-in	C12	Dials	D5	— Line-a-time	P12
— Potted	C13	Differential Analyzers	D6	Programming Services	P12A
— Printed	C14	Digital Computers (SEE		Publications . . . .	P13
Clutches . . . .	C15	Computers, Digital)		— Magazines	P15
— Magnetic	C16	Diodes (Computer		Punch Card Machines	P16
Coatings . . . .	C17	Types) . . . .	D7	R: Readers . . . .	R1
— Conductive	C18	— Germanium	D8	— Character	R2
— Protective	C19	— Power	D9	— Film	R2.5
— Salt Spray Resistant	C20	— Silicon	D10	— Magnetic Card	R3
Coils (Computer Types)	C21	Discs, Magnetic	D11	— Magnetic Tape	R4
Communications Systems		Drums, Magnetic	D12	— Mechanical	R5
(Computer Types)	C22	E: Economic Research	E0	— Paper Tape	R6
Computers (SEE ALSO		Education (SEE ALSO		— Photoelectric	R7
specific types)	C22A	Courses)	E1	— Punch Card	R8
Computers, Analog	C23	Embedded Assemblies and		Recording Papers	R9
Computers, Digital	C24	Components	E2	Rectifiers	R10
Computers, Special Purpose	C24A	F: Facsimile Equipment	F1	Registers, Shift	R11
Computers, Test Equipment	C25	Fans and Blowers	F1A	Relays (Computer Types)	R12
Computer Components (SEE		Fasteners and Fastening		Resistors	R13
ALSO specific types)	C26	Devices	F2	Resolvers . . . .	R14
Computing Services . . . .	C27	Fire Control Equipment	F3	— Coordinate Transform	R15
— Digital	C28	Fire Detecting and Extinguishing		— Product	R16
Connectors	C29	Equipment	F4	— Sine-Cosine	R17
Consulting Services	C30	Floors	F5	Robots	R18
Controls . . . .	C31	Fuses	F6	S: Scanners	S1
— Automatic	C32	G: Generators, Function . . . .	G1	Semiconductors	S2
— Signaling	C33	— Electronic	G2	Servomechanisms	S2A
— Sorting and Counting	C34	— Mechanical	G3	Simulators	S3
Converters, Electrical . . . .	C35	Geophysical Apparatus	G4	Sockets	S3A
— High Frequency	C36	H: Heads, Magnetic . . . .	H1	Storage Systems . . . .	S4
— Low Frequency	C37	— Reading	H2	— Magnetic	S5
— Power Frequency	C38	— Recording	H3	Switches . . . .	S6
Converters, Informa-		I: Indicators (Computer Types)	I1	— Stepping	S7
tion . . . .	C39	Information Retrieval Devices	I2	Synchros	S8
— Analog to Digital	C40	Information Engineering	I2A	Systems Engineering	S9
— Card to Magnetic Tape	C41	Input/Output Devices	I3	T: Tachometers	T1
— Card to Paper Tape	C42	Integrators . . . .	I4	Tape Handlers	T2
— Code	C42A	— Electronic	I5	Tape, Magnetic . . . .	T3
— Computing	C43	— Mechanical	I6	— Filing Systems	T3A
— Digital to Analog	C44	Inventory Systems	I7	— Readers	T4
— Magnetic Tape to Card	C45	Investment Assistance	I8	— Recorders	T5
— Magnetic Tape to Paper		J: Jacks	J1	— Reels	T5A
Tape	C46	K: Keyboards	K1	Tape, Paper . . . .	T6
— Magnetic Tape to Mag-		L: Lights, Indicator	L1	— Filing Systems	T7
netic Tape	C46A	M: Magnets	M1	— Punches	T8
— Paper Tape to Card	C47	Memory Systems	M2	— Readers	T9
— Paper Tape to Magnetic		Motors	M2A	Telemetry Systems	T10
Tape	C48	Multipliers . . . .	M3	Terminals	T11
Cords	C49	— Diode	M4	Test Equipment	T11.1
Cores . . . .	C50	— Electronic	M5	Thin-films, Magnetic	T11.2
— Ferrite	C51	— Frequency	M6	Timing Devices	T11.3
— Magnetic	C52	— Servo	M7	Transducers	T11A
Counters . . . .	C53	O: Office Machines	O1	Transformers . . . .	T12
— Electronic	C54	Operations Research	O2	— Pulse	T13
— Frequency	C55	P: Panels . . . .	P1	Transistors . . . .	T14
— Mechanical	C56	— Jack	P2	— Germanium	T15
— Proportional	C57	— Relay Rack	P3	— Silicon	T16
Courses by Mail (Computer		Paper Tape	P4	Translating Equipment	T17
Field)	C58	Patch Cords	P5	Typewriters, Electric, Con-	
D: Data Processing Machinery		Plotters (SEE ALSO Boards —		trolled	T18
(SEE ALSO specific types)	D1	Plotting)	P6	Tubes, Electronic	T19
		Plugboards	P6A	V: Visual Output Devices	V1

ROSTER

A1. ADDING MACHINES

Burroughs Corporation  
Clary Corporation -- see P4  
Comptometer Corp.  
Friden, Inc., 2350 Washington Ave.,  
San Leandro, Calif. / Natural way  
adding machine / DESCR: ten-key  
adding machine with visual check  
dials, natural way keyboard, auto-  
matic credit balance, automatic  
step-over of multiplicand and other  
features for rapid multiplication /  
USE: general application / A1  
Smith-Corona Marchant Inc.

A2. ADDRESSING MACHINES

Elliott Industries, Inc., 143 Albany  
St., Cambridge 39, Mass. / address-  
ing machines and data-imprinting  
systems / DESCR: repetitive data  
imprinting employing stencils for  
the transcribing of an inked im-  
pression to mailing pieces or docu-  
ments / USE: mechanical devices  
bring document and stencil together  
repetitively imprinting the docu-  
ments manually, semi-automatic or  
fully automatic depending upon the  
machine / \$200 and up / A2

A3. AMPLIFIERS

Airpax Electronics Inc., 6601 N. W.  
19th St., Ft. Lauderdale, Fla. /  
FERRAC magnetic amplifier / DESCR:  
type M-5175 DC magnetic amplifier  
delivers a linear output voltage of  
at least  $\pm 7.5$  volts DC into a 1000  
ohm load with signal levels in the  
millivolt range / USE: DC amplifi-  
cation / \$145 to \$172 / A3  
American Research & Manufacturing  
Corp. -- see P13  
Amplifier Corp. of America, 398 Broad-  
way, New York 13, N.Y. / amplifiers/  
DESCR: transistorized audio ampli-  
fiers to order / A3  
Applied Dynamics, Inc. -- see C23  
Beckman Instruments, Inc., Berkeley  
Div.  
Bryant Computer Products, Div. of  
Ex-Cello-Corp.  
Burlingame Associates, Ltd.  
Consolidated Electrodynamics Corp.,  
360 Sierra Madre Villa, Pasadena,  
Calif. / signal conditioning equip-  
ment / DESCR: multichannel carrier  
amplifiers, bridge balances, D-C  
amplifiers / USE: to amplify and  
condition raw data signals prior to  
recording / A3  
Control Electronics Co. Inc. -- see D3  
The Daven Co.  
Edin, a Div. of Epsco, Inc.  
Embree Electronics Corp. -- see C23  
General Computers, Inc., 9000 W Pico  
Blvd., Los Angeles 35, Calif. /  
Model 2-A DC amplifier / DESCR:  
operational amplifier (not chopper  
stabilized). Open loop gain 100,000.  
Output 10 ma at  $\pm 100$  volts. Drift  
less than 5 mv/hour. Can be chop-

per stabilized with companion model  
2-C amplifier / USE: summer, ampli-  
fier, integrator / \$50 / A3  
General Computers, Inc., \*a / Model  
3-A DC amplifier / DESCR: computer  
type operational amplifier. Open  
loop gain 200,000,000. Output:  
~~135~~ 35 ma at ~~1100~~ 100 volts. Frequency  
response 100,000 cps. Offset less  
than 100 microvolts / USE: summer,  
amplifier, integrator / \$135 to  
\$150 / A3

GPS Instrument Co., Inc. -- see C23  
Gulton Industries, Inc.  
Johnson Electronics, Inc.  
Ketay Dept., Norden Division, United  
Aircraft Corp.

F. B. McLaren & Co., Inc., 15 Stepar  
Place, Huntington Station, L.I.,  
N.Y. / packaged servo amplifiers /  
DESCR: instrument servo amplifiers  
for A.C. or D.C. error signals, us-  
ing MIL specification components  
encapsulated in plug-in housing.  
Tube or transistor types are avail-  
able / USE: plug-in assembly for  
servo systems / \$100 to \$350 / A3  
Maxson Electronics Corp.  
F. L. Moseley Co.  
Packard Bell Computer Corp. -- see C24  
George A. Philbrick Researches, Inc.  
-- see C23  
Redmond-Fairchild Inc. -- see D12  
Sanborn Company -- see D2  
Servomechanisms/Inc.  
Sperry Farragut Co., Division of  
Sperry Rand Corp.  
Systems Division of Beckman Instru-  
ments, Inc. -- see D2A  
The Walkirt Co.

A4. MAGNETIC AMPLIFIERS

Airpax Electronics Inc. -- see A3 and  
C35  
American Research & Manufacturing  
Corp. -- see P13  
Burlingame Associates, Ltd.  
Dian Laboratories, Inc., 611 Broadway,  
New York 12, N.Y. / d-c amplifier /  
DESCR: chopper-stabilized with 10  
kc bandwidth and drift less than 30  
 $\mu$ v/day. New balance amplifier gives  
years of trouble-free operation /  
USE: all inputs and outputs avail-  
able at patchbay / \$350 per dual  
amplifier / A4  
Dresser Electronics, SIE Division, a  
division of Dresser Industries, Inc.  
Feedback Controls, Inc.  
The Hoover Company, Electronics Div.  
Johnson Electronics, Inc.  
Lumen, Div. of Telex, Joliet, Ill. /  
magnetic amplifiers / DESCR: solid-  
state amplifiers applicable to a  
wide range of control devices in-  
cluding computers / \$10 to \$2000 /  
A4  
Maxson Electronics Corp.  
Polyphase Instrument Co., E. Fourth  
St., Bridgeport, Pa. / magnetic  
components / DESCR: pulse and spe-  
cialty transformers, delay lines,  
magnetic amplifiers, filters, coils /  
USE: circuit component / \$3 to  
\$300 / A4  
Potter Instrument Co., Sunnyside Blvd.,  
Plainview, L.I., N.Y. / magnetic

tape and perforated tape amplifiers/  
DESCR: these amplifiers can be used  
with digital magnetic and photoelec-  
tric head assemblies on a tape  
transport / USE: to record and  
playback information / \$800 to  
\$3500 / A4

Servomechanisms/Inc.  
Sperry Farragut Co., Division of Sperry  
Rand Corp.  
Telex, Inc.  
Vickers Inc., Electric Products Divi-  
sion (Division of Sperry Rand Corp.)

A5. AUTOMATIC ASSEMBLY EQUIPMENT

Automation Management Inc. -- see S9  
Consolidated Controls Corp., 16 Durant  
Ave., Bethel, Conn. / automatic as-  
sembly equipment / DESCR: UNIMATE'S  
manipulator has memory easily taught  
to perform any tedious, hazardous,  
hot or noisy sequence of operations,  
and upon completion, can learn an-  
other sequence / \$25,000 and up / A5  
Saab Aircraft Co., Bureau for Engi-  
neering Data Processing, Linköping,  
Sweden / Saab general purpose con-  
trol system / DESCR: flexible,  
solid-state calculator system.  
Punched tape input, output convert-  
ers / USE: industrial applications,  
sequence control and numerical con-  
touring control / typical system  
\$25,000 / A5  
Saab Aircraft Co., Bureau for Engi-  
neering Data Processing, \*a / Saab  
MTC 5 machine tool control system /  
DESCR: simple reliable system. 5-  
or 8-inch punched tape input. Con-  
secutive control / USE: positioning  
and rectilinear cutting operations /  
\$4500 and up / A5

A6. AUTOMATIC CONTROL EQUIPMENT

Airpax Electronics Inc. -- see A3 and  
C35  
Assembly Producers, Inc.  
Automation Management Inc. -- see S9  
Bailey Meter Co., 1050 Ivanhoe Rd.,  
Cleveland 10, Ohio / Bailey 720  
Systems / DESCR: pneumatic and elec-  
tric, analog and digital; may be  
single-element control or multi-  
element control with computing ele-  
ments / USE: power and process  
control / A6  
Bendix Corp., Bendix-Pacific Division,  
7250 Laurel Canyon, No. Hollywood,  
Calif. / automatic control equipment/  
DESCR: custom equipment based upon  
standard components and circuits / A6  
The Bendix Corp., Eclipse-Pioneer Div.  
Bendix Corp., Research Laboratories  
Div., Southfield (Detroit), Mich. /  
automatic control equipment / DESCR:  
special-purpose numerical machine-  
tool control systems and computer-  
controlled checkout equipment;  
adaptive controls; industrial plant  
and process controls / A6  
The Bristol Company, P. O. Box 1790  
CAG, Waterbury 20, Conn. / control-  
lers and recording controllers /  
DESCR: controllers and recording  
controllers for temperature, flow

pressure, voltage, density, etc.  
Round and strip chart available / A6  
Canadian Applied Research Ltd., 750  
Lawrence Ave. W., Toronto 19, Ont.,  
Canada / automatic tri-film proces-  
sor / DESCR: transportable proces-  
sor with standard 400 foot magazine,  
four 16 mm., two 35 mm. or one 70 mm.  
film can be processed simultaneously;  
no threading required; automatic oper-  
ation after loading / USE: develop-  
ops and dries film automatically at  
speeds up to 6 feet per min. /  
\$6670 to \$7000 / A6

Computer-Measurements Co., Division  
of Pacific Industries, Inc. -- see  
C54

Consolidated Controls Corp. -- see A5,  
D12, M2, and R18

Convair/Pomona, Convair Division of  
General Dynamics Corp.

Cook Electric Co.

Crestmont Electronics, A Division of  
Crestmont Consolidated Corp., 2201  
W. Burbank Blvd., Burbank, Calif. /  
perforated tape controller / DESCR:  
8-channel numerical control tape  
programmers for automation and pro-  
cess control applications. Solid  
state commutators, commutator simu-  
lators, and decommutators for tele-  
metering and data acquisition sys-  
tems / \$895 to \$1275 / A6

Datex Corp., 1307 So. Myrtle Ave.,  
Monrovia, Calif. / card-programmed  
steel mill control system / DESCR:  
controls all operations of a plate  
mill -- automatically starts, stops,  
reverses and positions slabs; sets  
roll openings of reversing mill,  
roughing scalebreakers, etc. / USE:  
installed to work with individual  
stands / \$200,000 and up / A6

Datex Corp., \*a / antenna positioning  
and control system / DESCR: posi-  
tions and records data from radar  
and radiotelescope antennas, also  
controlling antenna position, or  
following preset course / USE: in  
radar tracking, in space vehicle  
and probe tracking, in research, in  
radio astronomy / \$50,000 to  
\$60,000 / A6

Electronic Associates, Inc. -- see  
C24A

The Electro Nuclear Systems Corp.  
Electro Products Laboratories, Inc.,  
4501 N. Ravenswood Ave., Chicago  
40, Ill. / magnetic pickups / DESCR:  
magnetic pickups generate frequency/  
voltage proportional to speed of any  
ferrous metal objects interrupting  
their magnetic fields, without con-  
tact / \$18.50 and up / A6

Fairchild Graphic Equipment, Div. of  
Fairchild Camera & Instrument Corp.

Farrand Controls Inc., 99 Wall St.,  
Valhalla, N.Y. / Inductosyn / DESCR:  
rotary and linear type transducers  
and related electronics for servo  
control. The Inductosyn is sup-  
plied in rotary discs and linear  
scales and sliders / USE: angular  
reporting in missile programs and  
linear and rotary control of ma-  
chine tools / \$300 for transducer  
to \$15,000 for systems / A6

Fenwal, Inc.

General Automatics, Inc.

General Controls Co.

General Mills, Inc., 1620 Central  
Ave., Minneapolis 13, Minn. / ana-  
log controller / DESCR: functions  
as an "electrical cam" to provide  
automatic control of repetitive,  
analog motions of machines and  
equipment / USE: production line  
automation / A6

Gulton Industries, Inc.

Hagan Chemicals & Controls, Inc., Rte.  
60 & Campbell's Run Rd., Pittsburgh  
30, Pa. / controls systems / DESCR:  
control of blast furnace blowing  
and metering. Control of open  
hearth fuel/air input. Soaking pit  
controls govern pit temperature,  
fuel/air ratio and pit pressure /  
A6

Hammarlund Automation Div. of Tele-  
chrome Mfg. Corp., 185 Dixon Ave.,  
Amityville, L.I., N.Y. / data ac-  
quisition and remote control sys-  
tems / DESCR: centralized opera-  
tions control systems, telemetering  
and supervisory controls, bulk load-  
ing and blending systems / \$5000 to  
\$200,000 / A6

Industrial Nucleonics Corp., 650  
Ackerman Rd., Columbus 2, Ohio /  
AccuRay process control systems /  
DESCR: (1) AccuRay measurement  
and control systems for sheet ma-  
terial processing for such indus-  
tries as Paper, Rubber, Plastics,  
Metals. (2) AccuRay composition  
analysis systems for the process  
industries (chemicals, food, petro-  
leum, etc.) (3) tank and bin  
level measurement and control sys-  
tems. (4) container control sys-  
tems for food, beer, and small con-  
tainers. (5) cigarette control  
systems / USE: stream measurement  
and control / \$500 to \$100,000 / A6

Maxson Electronics Corp.

Miles Reproducer Co., Inc.

Reeves Instrument Corp.

Servomechanisms/Inc.

Strand Engineering Co., 7300 Huron  
River Dr., Dexter, Mich. / automa-  
tic inspection systems / DESCR:  
custom design and fabrication of  
automatic inspection systems in-  
cluding automatic material handling,  
optical, mechanical and magnetic  
inspection techniques. Material  
sorting. Automatic data print-out/  
USE: process control, product  
quality control, sorting / A6

Sylvania Electronic Systems, a Divi-  
sion of Sylvania Electric Products  
Inc.

Teletype Corp. -- see C22

Wang Laboratories Inc., 12 Huron  
Drive, Natick, Mass. / Weditrol  
numerical control system / DESCR:  
electromechanical tape control us-  
ing telephone relays, Wang block  
tape reader, and decimal encoder:  
for point-to-point and continuous  
straight line paths (picture fram-  
ing) / USE: applied to machine  
tools, welding, punching, shearing  
and automation equipment / \$11,000  
to \$15,000 / A6

Westinghouse Electric Corp., 4454  
Genessee St., P. O. Box 2025, Buf-  
falo 5, N.Y. / PRODAC (Programmed

Digital Automatic Control) / DESCR:  
customized rugged industrial automa-  
tic control and computer systems em-  
ploying digital techniques and using  
transistorized NOR circuitry, core  
memory, etc. to provide completely  
static equipment / USE: for automa-  
tion of industrial processes /  
\$50,000 to \$500,000 / A6  
Wright Engineering Co., Inc.

#### A7. AUTOMATIC TEST EQUIPMENT

Auerbach Electronics Corp., 1634 Arch  
St., Philadelphia 3, Pa. / transis-  
tor test equipment / DESCR: automa-  
tic transistor test equipment for  
data storage and sorting of transis-  
tor parameters, identifying a transi-  
stor's complete type classification  
in one pass / A7

#### B1. BOARDS, PLOTTING

Accurate Electronics Corp.  
Computer Systems, Inc. -- see C23  
Heath Co. (HEATHKIT), subsidiary of  
Daystrom Inc. -- see C23  
Maxson Electronics Corp.  
Sylvania Electronic Systems, a Divi-  
sion of Sylvania Electric Products  
Inc.

#### B2. BOARDS, PLUG

Accurate Electronics Corp.  
Cambridge Thermionic Corp.  
Heath Co. (HEATHKIT), subsidiary of  
Daystrom Co. -- see C23  
Wang Laboratories Inc. -- see C14

#### B2A. BOARDS, PRINTED CIRCUIT

Monroe Industries, Inc. -- see V1

#### B3. BOARDS, STRIP TYPE

Accurate Electronics Corp.

#### B4. BOBBINS, COIL WINDING

Alden Products Co.

#### B6. BREADBOARD KITS

Alden Products Co.  
Servomechanisms/Inc.  
Sterling Instrument division of  
Designatronics  
Techniques Inc., 40 Jay St., Engle-  
wood, N.J. / printed circuit kit /  
DESCR: all materials necessary to  
build prototype printed circuits in  
the laboratory are included in sev-  
eral comprehensive kits / \$5 to  
\$60 / B6  
Wang Laboratories Inc. -- see C14

#### C1. CABLE

William Brand -- Rex Division, Ameri-  
can Enka Corp., 31 Sudbury Rd.,

Concord, Mass. / plastic wire and cable / DESCR: hook-up wire, coaxial and multiconductor cables for interconnection, signal transmission, power etc.; meets MIL and commercial specifications / USE: as above / C1  
Gulton Industries, Inc.

RF Products, a Division of Amphenol-Borg Electronics Corp., 33 E. Franklin St., Danbury, Conn. / coaxial cable and assemblies / DESCR: rigid, flexible, large, sub-miniature, high-temperature RG type cable in great variety of sizes, designs and materials / USE: transmission of RF energy / \$30 to \$10,000 per 1000 feet / C1

Royal Electric Corp., 95 Grand Ave., Pawtucket, R.I. / wire, cable, line cords, wiring devices / DESCR: insulated wires (electrical); coaxial, triaxial, control, signal and MIL-Spec cables; line cords for electrical power supply; electrical attachment caps and connectors / C1

## C2. CABLE ASSEMBLIES

Alden Products Co.  
William Brand -- Rex Division, American Enka Corp.

Cadre Industries Corp.  
Dale Electronics, Inc., Box 488, Columbus, Neb. / cable assemblies / DESCR: all types of special cable assemblies and wiring harnesses made. Molded and potted junctions and connectors / USE: all special wiring applications / prices on request / C2

Elco Corp., "M" St. below Erie Ave., Philadelphia 24, Pa. / cable assemblies / DESCR: cable harnessing, assembly to connectors / USE: electrical interconnection / price varies according to requirements / C2

Electropac Inc.  
Johnson Electronics, Inc.  
Superelex Electronics Corp.

## C3. CAMERAS

Canadian Applied Research Ltd. -- see C3A

Century Electronics & Instruments, Inc.  
Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / Compos-O-Line / DESCR: high-speed sequential card data processing camera. Photographically converts original source data from cards into positive or reversed negatives or reproduction proofs, ready for plate-making and printing / USE: publishing lists, directories, manuals, etc. / C3

The Geotechnical Corp. -- see D2  
The Perkin-Elmer Corp. -- see C3A

Philips Electronic Instruments  
Photomechanisms, Inc., 15 Stepar Place, L.I., N.Y. / Model 225 cine x-ray camera / DESCR: phase-synchronized 16 mm motion picture camera for photographing x-ray fluorographic image intensifying tubes at frame rates of 60, 30, 15, and 7.5 pictures per second / price on request / C3

Photomechanisms, Inc., \*a / Model 360 cinefluorographic camera / DESCR: phase-synchronized 16 mm motion picture camera for photographing x-ray fluorographic image intensifying tubes at frame rates of 60, 30, 14, and 7.5 pictures per second / price on request / C3

Photomechanisms, Inc., \*a / Model 385 camera / DESCR: cathode ray tube recording camera utilizing 9 inch wide film and producing a 9 x 9 inch negative of the CRT display / price on request / C3

Photomechanisms, Inc., \*a / Model 443 cine x-ray camera / DESCR: phase-synchronized 16 mm motion picture camera for photographing x-ray fluorographic image intensifying tubes at frame rates of 60, 30, 15, and 7.5 pictures per second / price on request / C3

Photomechanisms, Inc., \*a / Model 482 cinefluorographic camera / DESCR: phase-synchronized 35 mm motion picture camera for photography of x-ray fluorographic image intensifying tubes at frame rates of 60, 30, 15, and 7.5 pictures per second / price on request / C3

Traid Corp., 17136 Ventura Blvd., Encino, Calif. (P. O. Box 648) / photographic instrumentation equipment / DESCR: high-speed and data recording motion picture cameras and systems, including related accessories. Available for sale or lease / USE: for instrumentation, testing, evaluating, etc. / \$25 to \$2840 / C3

Varityper Corp., 720 Frelinghuysen Ave., Newark 12, N.J. / Fotolist System / DESCR: automatically composes lists or sequential data from retrievable information file cards / USE: for listings of all kinds, directories, catalogs, indexes, etc. / C3

Westgate Laboratory, Inc.

## C3A. CAMERAS, DATA RECORDING

Canadian Applied Research Ltd., 750 Lawrence Ave. W., Toronto 19, Ont., Canada / MK 7 camera / DESCR: electrical recording camera, using 35 mm film; remotely controllable, variable format, quick-change magazines, accepts wide range of lenses; designed for all types of instrumentation and radar recording / USE: to record information from instrument and radar panels, airborne or ground / \$1600 to \$2200 / C3A

Century Electronics & Instruments, Inc.

Chadwick-Helmuth Co., 472 E. Duarte Rd., Monrovia, Calif. / pulse camera / DESCR: true stop-start operation to fast speed of 30 fps, loads with 100 feet (4000 frames) 16 mm roll film / USE: interlock photo data with CRO sweeps, with CCTV rasters, or with computer readouts / \$1850 / C3A

Cook Electric Co.  
The Electro Nuclear Systems Corp.

Fairchild Camera and Instrument Corp., Defense Products Division

The Perkin-Elmer Corp., Main Ave., Norwalk, Conn. / Roti Mark II (recording optical tracking instrument) / DESCR: highly automatic optical missile tracking system employing a 24 inch aperture Newtonian telescope with focal lengths from 100 to 500 inches in 100 inch steps / USE: provides information on missile altitude at great distances, missile stage separation and exhaust patterns / price on request / C3A

The Perkin-Elmer Corp., \*a / panoramic tracking camera / DESCR: lightweight, fully automatic, the camera uses a rotating prism to "wipe" an image on film. Each exposure covers 180° perpendicular to the plane's flight path / USE: obtains horizon-to-horizon aerial photographs / price on request / C3A

Photomechanisms, Inc., 15 Stepar Place, L.I., N.Y. / Model 414 camera-processor / DESCR: self-contained 70 mm camera with rapid access photo-processor and illuminated viewing window. Automatic or manual operation / price on request / C3A

Traid Corp. -- see C3

## C4. CAPACITORS (COMPUTER TYPES)

Astron Corp., 255 Grant Ave., E. Newark, N.J. / fixed capacitors & R. F. interference noise suppression filter / DESCR: manufacture following capacitors: electrolytic, metallized mylar, metallized paper, mylar, paper, solid tantalum, R. R. interference filters, and ceramic (manufactured by subsidiary Skottie Electronics) / USE: electronic circuits / wide price range / C4

Beckman Instruments, Inc., Berkeley Div.

Cornell-Dubilier Electronics Div., Federal Pacific Electric Co., 50 Paris St., Newark 1, N.J. / capacitors / DESCR: all types of fixed capacitors -- high reliability paper, film, and electrolytic capacitors, mica capacitors, ceramic capacitors, metallized paper capacitors, tantalum capacitors, energy storage capacitors and systems / price range very wide / C4

Corning Glass Works, Corning Electronic Components

Efcon, Inc., (subsidiary of General Instrument Corp.), Patterson Place, Roosevelt Field, Garden City, L.I., N.Y. / capacitors / DESCR: mylar, polystyrene, teflon, high voltage glass, plastic film dielectric capacitors to close tolerances and to non-standard capacitance values / 30¢ and up / C4

The Electro-Motive Mfg. Co., Inc., South Park & John St., Willimantic, Conn. / capacitors / DESCR: high reliability dipped mica capacitors and high reliability mylar-paper dipped capacitors. Also molded mica capacitors, silvered mica films, mica trimmers and ceramic capacitors / 10¢ to \$10 / C4

General Electric Co., Capacitor Dept., John St., Hudson Falls, N.Y. / capacitors / DESCR: oil paper, molded composition, electrolytic, plastic film, etc. for computer circuits and associated electronic equipment / USE: filter, by pass, energy storage, power factor correction / C4

Gulton Industries, Inc.

Mallory Capacitor Co., a division of P. R. Mallory & Co. Inc., 3029 E. Washington St., Indianapolis, Ind. / capacitors (computer types) / DESCR: aluminum electrolytic capacitors for power supplies of military and commercial computers / USE: as a component / C4

Plastic Capacitors Inc., 2620 No. Clybourn Ave., Chicago 14, Ill. / capacitors / DESCR: polystyrene and mylar dielectric types -- close tolerances, wide range of values of capacitance / USE: memory banks, integrating circuits / \$1.25 to \$125 / C4

Sangamo Electric Co., 11th & Converse Sts., Springfield, Ill. / energy storage capacitors / DESCR: electrolytic capacitors in seamless aluminum container providing maximum energy per unit volume; designed for low equivalent series resistance and high ripple current without overheating / USE: energy storage for computer power supplies / \$7.50 list to \$46.50 list / C4

Southern Electronics Corp., 150 West Cypress Ave., Burbank, Calif. / precision film capacitor / DESCR: the adjustable polystyrene capacitor can achieve a tolerance of  $\pm 0.1\%$ . Its stability is 0.1% and range of adjustment is  $\pm 1\%$  / USE: in the integrator / \$6.82 to \$27 / C4

Sprague Electric Co.

Texas Instruments Inc., 13500 No. Central Expressway, Dallas 22, Tex. / capacitors / DESCR: tantalum capacitors and silicon oxide capacitors / 50¢ to \$2 / C4

Texas Instruments Inc., Semiconductor Components Div. -- see C26

Transitron Electronic Corp.

Vitramon, Inc., P. O. Box 544, Bridgeport 1, Conn. / capacitors / DESCR: "VK" microminiature ceramic capacitor, 10 PF through 10,000 PF, and "VY" solid state porcelain capacitor, 0.5 PF through 6800 PF / USE: any application requiring extreme reliability / 19¢ to \$8.06 (1000 qty.) / C4

#### C5. CARDS (SEE ALSO PUNCH CARDS)

Jonker Business Machines, Inc.

#### C6. CARDS, PUNCH

N. V. Electrologica

E-Z Sort Systems, Ltd.

Philco Corp., Computer Div., 3900 Welsh Rd., Willow Grove, Pa. / Philco 2000 card punch, Model #265 / DESCR: standard card punching machine will punch 100 cards per

minute / USE: as part of Philco 2000 System for scientific and EDPS systems / \$350 per month / C6  
Philco Corp., Computer Div., \*a / Philco 2000 card punch, Model #266 / DESCR: standard card punching machine will punch 250 cards per minute / USE: as part of Philco 2000 System for scientific and EDPS systems / \$800 per month / C6  
Remington Rand UNIVAC -- see D1

#### C7. CARDS, MAGNETIC

#### C8. CHASSIS, METAL

Alden Products Co.

#### C9. CIRCUITS, ARITHMETICAL (FOR DIGITAL COMPUTERS)

Cambridge Thermionic Corp.

Clary Corporation -- see C43

Delco Radio Division, General Motors Corp.

The Electro Nuclear Systems Corp. Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Wang Laboratories Inc. -- see C14

Wright Engineering Co., Inc.

#### C10. CIRCUITS, COMPUTER, PACKAGED

Alden Products Co.

American Bosch Arma Corp., 320 Fulton Ave., Hempstead, N.Y. / logic module Type 6000A / DESCR: the Tele-Dynamics logic module is a high-speed, solid-state unit / USE: suitable for the widest range of general purpose digital systems and test equipment / price dependent on specifications / C10

Cambridge Thermionic Corp.

Clary Corporation -- see C43

CBS Electronics, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. / circuits -- computer, packaged / DESCR: capabilities for research, development and custom production of thin-film computer microcircuits / USE: computers, digital and analog / C10

Computer Control Company, Inc., 903 Concord St., Framingham, Mass. / S-PACs / DESCR: S-PACs, NAND (not-and) logic, 1 megacycle, glass epoxy cards, etched circuits, dip soldered, -20°C to +55°C, approximately 21 packages in series plus hardware / USE: system building block / \$39 to \$122 / C10

Computer Control Company, Inc., \*a / H-PACs / DESCR: H-PACs, high density, synchronous logic, 10 and 16 megacycle, glass epoxy cards, etched circuits, dip soldered, 0°C to 50°C, 10 packages in series plus hardware / USE: system building block / \$66 to \$385 / C10

Delco Radio Division, General Motors Corp.

Delco Radio Division, General Motors Corp.

Delco Radio Division, General Motors Corp.

Digital Equipment Corp.

Navigation Computer Corp., Valley

Forge Industrial Park, Norristown, Pa. / 300 Series / DESCR: transistorized digital system modules; complete system functions on a single card; binary counters, decade counters, shift registers, gates, clocks, amplifiers, and delays / USE: for special purpose digital systems / \$39 to \$199 / C10

Raytheon Co., Industrial Components Div., 55 Chapel St., Newton 58, Mass. / Weld-Pak digital circuit modules / DESCR: a line of nine digital modules. Completely welded assemblies, miniature size NORGate, AND, NORGate Emitter Follower, OR, Binary, Clock Variable, Emitter Follower, Inverter Flip-Flop / USE: packaged computer circuits / \$25 to \$50 / C10

Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / circuit-paks / DESCR: plug-in, wire-in, solder-in, compact, encapsulated semiconductor circuit modules / USE: in applications where compact, shock-proof, encapsulated components are required / C10  
Sperry Farragut Co., Division of Sperry Rand Corp.

Sperry Gyroscope Co., Division of Sperry Rand Corp.

Sprague Electric Co.

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Wright Engineering Co., Inc.

#### C11. CIRCUITS, LOGICAL (FOR DIGITAL COMPUTERS)

Bendix Corp., Bendix-Pacific Division Burroughs Corp., Electronic Components Div., P. O. Box 1226, Plainfield, N.J. / BEAM-X<sup>®</sup> Modules / DESCR: plug-in electronic circuit modules which utilize the BEAM-X switch to perform the digital functions of counting, distributing, scanning, and decoding / USE: as logic blocks in digital systems / \$35 to \$100 / C11

Cambridge Thermionic Corp.

Clary Corporation -- see C43

Dale Electronics, Inc., Box 488, Columbus, Neb. / logic circuits / DESCR: custom made logic circuits of all types in various packages / USE: in computer circuits / prices on request / C11

Delco Radio Division, General Motors Corp.

The Electro Nuclear Systems Corp. General Mills, Inc., 1620 Central Ave., Minneapolis 13, Minn. / logic unit board / DESCR: transistorized digital component containing 24 logic units which can be used singly or in pairs to form almost any circuit required in a digital computer / USE: construction of digital computer / C11

Navigation Computer Corp., -- see C10 and C25

Raytheon Co., Industrial Components Div. -- see C10

Raytheon Company, Semiconductor Div. -- see C10

Rese Engineering, Inc.  
Servomechanisms/Inc.  
Sprague Electric Co.  
Wang Laboratories Inc. -- see C14  
Wright Engineering Co., Inc.

#### C12. CIRCUITS, PLUG-IN

Burroughs Corp., Electronic Components Div., -- see C11  
Cambridge Thermionic Corp.  
Dale Electronics, Inc. -- see C11  
The Daven Co.  
Delco Radio Division, General Motors Corp.  
Engineered Electronics Co.  
General Dynamics/Electronics, Information Technology Division  
Johnson Electronics Inc.  
Navigation Computer Corp., -- see C10  
Raytheon Co., Industrial Components Div. -- see C10  
Raytheon Co., Semiconductor Div. -- see C10  
Sperry Farragut Co., Division of Sperry Rand Corp.  
Sperry Gyroscope Co., Division of Sperry Rand Corp.  
Superex Electronics Corp.  
Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.  
The Walkirt Co.  
Wang Laboratories Inc. -- see C14  
Wright Engineering Co., Inc.

#### C13. CIRCUITS, POTTED

Cambridge Thermionic Corp.  
Dale Electronics, Inc. -- see C11  
The Daven Co.  
Delco Radio Division, General Motors Corp.  
General Dynamics/Electronics, Information Technology Division  
Johnson Electronics Inc.  
Sperry Gyroscope Co., Division of Sperry Rand Corp.  
Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.  
Wright Engineering Co., Inc.

#### C14. CIRCUITS, PRINTED

Aeronutronic, a Division of Ford Motor Co.  
Corning Glass Works, Corning Electronic Components  
Dale Electronics, Inc., Box 488, Columbus, Neb. / printed circuits / DESCR: complete service manufacturing custom printed circuit boards and assemblies. Etched circuits using all types of laminates / USE: applicable to any electronic circuit / prices on request / C14  
Delco Radio Division, General Motors Corp.  
Elco Corp., "M" St. below Erie Ave., Philadelphia 24, Pa. / Varipak card cage / DESCR: printed circuit board enclosure adaptable to any packaging technique using printed circuitry. Provides maximum density from shelf stocked

items / USE: mounted in standard size racks / \$15 to \$25 / C14  
Electralab Printed Electronics Corp.  
The Electro Nuclear Systems Corp.  
Johnson Electronics Inc.  
Sperry Farragut Co., Division of Sperry Rand Corp.  
Sprague Electric Co.  
Superex Electronics Corp.  
Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.  
Techniques Inc., 40 Jay St., Englewood, N.J. / printed circuits / DESCR: facilities to produce all types of etched circuits from drafting of original pattern, complete fabrication and assembly of components to circuit boards / C14  
Wang Laboratories Inc., 12 Huron Dr., Natick, Mass. / LOGIBLOC transistorized digital modules / DESCR: reliable, versatile, compact, printed circuit cards for 200 KC, 5 mc, and wide temperature spans in DC transistor logic applications / USE: laboratory instruction, patch boarding, test equipment, final assembly / \$14 and \$45 per card for 200 KC line; \$27 and \$75 per card for SMC line / C14  
Wright Engineering Co., Inc.

#### C15. CLUTCHES

Sterling Instrument division of Designatronics

#### C16. CLUTCHES, MAGNETIC

FAE INSTRUMENT CORP., Norden Lane, Huntington Station, L.I., N.Y. / MAGNETIC CLUTCHES & BRAKES, MECHANICAL DIFFERENTIALS, GEAR HEADS, SPEED REDUCERS, BELLOWS COUPLING / DESCR: miniature precision electro-mechanical rotating components featuring economical cost, sound basic servo component design, rugged construction, and capable of latest environmental specifications / USE: in all types of computing, servo automation, control and data processing equipment / \$10 to \$125 / C16

Servomechanisms/Inc.  
Sterling Instrument division of Designatronics  
Wright Engineering Co., Inc.

#### C17. COATINGS

American Systems Inc., 1625 East 126th St., Hawthorne, Calif. / catalyzed magnetic alloy deposition service / DESCR: surfacing of drums, disks, rods of various sizes, shapes; for substrates such as aluminum, magnesium, copper, mylar, glass, other metallic and nonmetallic materials / USE: wide range of magnetic memory device applications / C17  
COLUMBIA TECHNICAL CORP. -- see D3  
Gulton Industries, Inc.

#### C18. COATINGS, CONDUCTIVE

Acheson Colloids Co., a div. of Acheson Industries, Inc.

#### C19. COATINGS, PROTECTIVE

Acheson Colloids Co., a div. of Acheson Industries, Inc.  
COLUMBIA TECHNICAL CORP. -- see D3  
Consolidated Electrodynamics Corp., 360 Sierra Madre Villa, Pasadena, Calif. / ceramicite / DESCR: ceramicite is a trademark that identifies glass-to-metal, hermetically sealed headers, terminals, and feed throughs. 1000°F, boron free glass, or high pressure seals / USE: for electrical insulation / C19  
Monroe Industries, Inc. -- see V1

#### C20. COATINGS, SALT SPRAY RESISTANT

COLUMBIA TECHNICAL CORP. -- see D3

#### C21. COILS (COMPUTER TYPES)

Aladdin Electronics, A Division of Aladdin Industries, Inc. -- see T12

EL-RAD MANUFACTURING CO., 4300 N. California Ave., Chicago 18, Ill. / COILS / DESCR: conventional core and toroid core transformers and coils for computer coupling and isolation applications. Low capacity or high flux units designed for unusual applications / USE: inductance element in computers / 50¢ to \$35 / C21

Johnson Electronics Inc.  
Polyphase Instrument Co. -- see A4  
Sperry Farragut Co., Division of Sperry Rand Corp.  
Sterling Instrument division of Designatronics  
Superex Electronics Corp., 4-6 Radford Pl., Yonkers, N.Y. / Coils / DESCR: fixed and variable inductors, stock sizes, or manufactured to your requirements / C21  
Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.  
Whitewater Electronics Inc.

#### C22. COMMUNICATIONS SYSTEMS (COMPUTER TYPES)

Bendix Corp., Bendix-Pacific Division, 7250 Laurel Canyon, No. Hollywood, Calif. / communications systems (computer types) / DESCR: custom equipment based upon standard components and circuits / C22  
Collins Radio Co., Information & Science Center and Communication & Data Processing Div., 19700 San Joaquin Rd., Newport Beach, Calif. / Communication and Data Processing Service / DESCR: a service which links all the subscriber's facilities into high-speed data communications network; data processing

accomplished at Collins' computer center, Cedar Rapids, Iowa / C22  
Collins Radio Co., Information & Science Center and Communication & Data Processing Div., \*a / Kineplex data communication systems and equipment / DESCR: includes Kine-tape for transmitting magnetic tape over telephone lines at 300 characters per second and Kinecard for sending punched cards over telephone line at 100 cards per minute / USE: transmitting digital data from computer to computer or from data processing center to subscriber, etc. / \$40,000 and up, depending on system / C22

Daystrom, Inc., Control Systems Division, 4455 Miramar Rd., La Jolla, Calif. / telecontrol system / DESCR: up to 32 satellite stations under central control by leased or toll line digital communications. Will accept analog or digital inputs / USE: remote supervisory control and/or data collection / \$5000 to \$250,000 / C22

Digitronics Corporation, Albertson Ave., Albertson, N.Y. / Dial-O-Verter system / DESCR: functions with Bell System Data-Phone 200 for low-cost, high-speed data transmission over regular telephone dial network or over private lines / USE: in any medium to and from any number of remote stations / \$11,530 to \$56,400 / C22

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / Teledata / DESCR: automatic tape transmitter-receiver. Used at both ends of communications circuits to send and receive data in 5-, 6-, 7-, or 8-channel tape, Parity systems checks accuracy of transmission / USE: communications / C22

General Electric Communication Products Dept., P. O. Box 4197, Lynchburg, Va. / microwave / DESCR: radio relay used to link computers, intra-city, inter-city / USE: transmits information / C22

General Electric Co., Defense Systems Dept. -- see C24A

General Electric Co., Light Military Electronics Dept., French Rd., Utica, N.Y. / CVI-27 Variable Increment Computer / DESCR: first operational computer using our variable increment method of computation. Replaces hybrid general-purpose/fixed-increment combinations for many applications / USE: missile launch and guidance / C22

The Geotechnical Corp. -- see T10

International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / IBM 1009 Data Transmission Unit / DESCR: used with an IBM 1401 for transmission and for reception of data via communications lines with another 1009/1401 or with an IBM 7701, at 150 cps. / USE: allows computer to serve as data receiving, sending terminal / Price: 1009 adapter feature for 1401: \$100 monthly rental; \$3750 purchase price. 1009: \$500 monthly rental;

\$22,000 purchase price. All prices exclusive of tax / C22

International Business Machines Corp., Data Processing Div., \*a / Digital Subset Feature for IBM Data Transceiver / DESCR: allows IBM Data Transceiver to send punched card data over dial telephone or high-speed telegraph lines to another similarly-equipped transceiver that automatically reproduces information / USE: transmission of data from remote locations / Monthly rental: \$20; purchase price, \$725. All prices exclusive of tax / C22

International Business Machines Corp., Data Processing Div., \*a / IBM 65 Data Transceiver (non-printing) and IBM 66 Data Transceiver (printing) / DESCR: permits the transmission and reception of data from punched cards over leased telephone lines or telegraph lines / USE: to transmit and receive data at remote locations / Prices: 65 Data Transceiver: monthly rental \$175; selling price \$8100. IBM 66 Data Transceiver (printing): monthly rental \$195; selling price \$9500. All prices exclusive of tax / C22

International Business Machines Corp., Data Processing Div., \*a / IBM 1001 Data Transmission System / DESCR: transmits information from punched cards and/or keyboard via telephone lines to a central location where it is reproduced in punched card form / USE: for low cost data transmission from remote locations / Prices: Terminal; \$15 monthly rental, \$575 purchase price. Receiving Station; \$95 to \$115 monthly rental, \$4050 to \$5100 purchase price. All prices exclusive of tax / C22

International Business Machines Corp., Data Processing Div., \*a / IBM 357 Data Collection System / DESCR: an in-plant network of electronic reporting stations cable linked to a data recording station where information is automatically reproduced as punched cards / USE: to produce machine-processable information for management reports / Prices -- Input Stations (up to 20 per output station): 357 Card/Badge Reader monthly rental \$29 to \$47, selling price \$1075 to \$1900. 372 Manual Entry monthly rental \$14 to \$20, selling price \$600 to \$800. Output Station: 358 Input Control monthly rental \$79, selling price \$2915. 24/26 Card Punch monthly rental \$62 to \$87, selling price \$2800 to \$4250. All prices exclusive of tax / C22

International Business Machines Corp., Data Processing Div., \*a / IBM 7701 Magnetic Tape Transmission Terminal / DESCR: transmits information from magnetic tape to magnetic tape or to a 1009/1401 over telephone or high-speed telegraph lines at rate of 150 characters per second / USE: rapid transmission of data from remote locations / Monthly rental \$1175; selling price \$55,000. All prices exclusive of tax / C22

International Business Machines Corp., Federal Systems Division, 326 E. Montgomery Ave., Rockville, Md. / information handling and control systems for space, defense, and civil programs in U.S. government / DESCR: electronic ground-based, sea, air, and space information handling and control systems -- data acquisition, digital data communications, data processing and display, control and guidance / USE: systems management, systems development, research, engineering, production, installation, and field support / 'for federal government only' / C22

Omnitronics, Inc., Subsidiary of Borg-Warner Corp. -- see R7

Smith-Corona Marchant Inc.

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

The Teleregister Corp. -- see D1  
Teletype Corp., 5555 Touhy Ave., Skokie, Ill. / message and data communications equipment / DESCR: complete line of teletypewriter equipment: page printers, tape punches, tape readers and switching equipment.

High-speed tape punches and tape readers, (5, 6, 7, or 8 level codes) / USE: message and data communications. Input/output for computers, business machines and other data handling systems / C22

Vought Electronics -- see C24A

Wang Laboratories, Inc., 12 Huron Drive, Natick, Mass. / semi-automatic telecode transmitter, Model AN/TMT-1 / DESCR: a composer for making messages up to 72 characters long with alphanumeric and special type D teletype code. Speeds available from 75 to 2400 baud / USE: weather and flight plan transmission / \$6000 to \$7000 / C22

Westgate Laboratory, Inc.

## C22A. COMPUTERS

American Bosch Arma Corp., 320 Fulton Ave., Hempstead, N.Y. / digital and analog computers / DESCR: digital and analog, transistorized and miniaturized computers / USE: application in ships, manned aircraft, missiles and ground environment / C22A

Applied Dynamics, Inc. -- see C23

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio / Bailey 710 and 755 Systems / DESCR: analog and digital, special purpose. Standard building block modules combined to tailor computer to needs of process / USE: performance calculations for optimization of operation / C22A  
Birkbeck College, Dept. of Numerical Automation, University of London  
Clary Corporation -- see C43

Embrex Electronics Corp. -- see C23

The Foxboro Co.

General Automatics, Inc.

International Business Machines Corp., Federal Systems Division -- see C22  
Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia 44, Pa. / computers and data loggers / DESCR: ana-

log and digital computers for industrial process and power plant applications including economic dispatch and plant performance studies; also, data loggers, recorders, indicators and transducers / \$59,000 to \$500,000 / C22A

Link Division, General Precision, Inc., Binghamton, N.Y. / analog, digital and hybrid computers / DESCR: special purpose computers and components for simulation and process control / prices on request / C22A

Maxson Electronics Corp.

John Oster Mfg. Co., Avionic Div. Servomechanisms/Inc.

Sperry Gyroscope Co., Division of Sperry Rand Corp., Great Neck, N.Y. / computers / DESCR: specializing in high precision systems for all branches of the military / C22A

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Vought Electronics -- see C24A

### C23. COMPUTERS, ANALOG

#### A R & D A

American Bosch Arma Corp. -- see C22A

American Bosch Arma Corp., Arma Div.

American Hydromath Corp., 24-20 Jackson Ave., Long Island City 1, N.Y. / Mechalog Computer / DESCR: a self-contained, portable, mechanical analog computer which computes averages and moments / USE: solving problems of ship's stability, draft, and stress / \$800 to \$2000 / C23

Applied Dynamics, Inc., Box 612, Ann Arbor, Mich. / electronic analog computers / DESCR: general purpose and special purpose analog computers, table top and console units, electronic multipliers, diode function generators, operational amplifiers, computer power supplies and controls / USE: computation for engineering and simulation, process control / \$2000 to \$100,000 / C23

Atlas Precision Products Company Division of Prudential Industries, Inc., 3801 Castor Ave., Philadelphia 24, Pa. / DESCR: operate as two divisions. One division manufactures electro-mechanical assemblies, to customer specifications or blueprint. The other division manufactures precision stock gears, differentials and components under the trade name of "APPCO" / C23

Automation Management Inc., 25 Brigham St., Westboro 95, Mass. / Perk / DESCR: industrial computer and recorder that indicates level of efficiency of an operation, system that reports efficiency at one location of all machines in factory / USE: connect to any machine and a record of efficiency is produced / \$490 / C23

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio / Bailey 710 / DESCR: performance calculations providing continuous current indication of performance in terms of deviation from normal operation / USE: heat rate computations in power plants / C23

Beckman Instruments, Inc., Berkeley Div.

Bendix Corp., Research Laboratories Div., Southfield (Detroit), Mich. / analog computers / DESCR: three-dimensional flight simulators; general and special purpose analog computers; servo resolvers, multipliers, function generators; correlation computers; transistorized analog components / C23

Birkbeck College, Dept. of Numerical Automation, University of London

Burlingame Associates, Ltd.

Computer Systems, Inc., Culver Rd., Monmouth Junction, N.J. / general purpose analog computer / DESCR: 5800 dycast analog computer -- analog computer with a memory. High-speed precision repetitive operations, to 500 cycles per second, operational amplifier with band pass of 100 KC / USE: research and development work, on-line control / \$19,000 and up / C23

Computronics, Inc. -- see C26, P7, and G1

Cornell Computing Center

Dian Laboratories, Inc., 611 Broadway, New York 12, N.Y. / Dian 60 analog computer / DESCR: high precision analog computer containing 60 d-c summing and integrating amplifiers, 8 servo multipliers, 120 potentiometers plus diodes, relay amplifiers / USE: solution of scientific and engineering problems / \$50,000 to \$55,000 / C23

Dorsett Electronics, Inc.

Dresser Electronics, SIE Division, P. O. Box 22187, Houston, Texas / CM-3 analog computer-controller / DESCR: solid state analog computer-controller for fractionating towers, butadiene processing and other multi-variable chemical, petrochemical processes. Modular for customizing and 60 day delivery / USE: process control, operator guidance or equation solution / \$5000 to \$10,000 / C23

Electronic Associates Inc., Long Branch Ave., Long Branch, N.J. / analog computers / DESCR: a complete line of precision, general purpose analog computers / USE: simulate physical systems / C23

Electronic Contractors, Inc., 2101 SE 6th St., Portland 14, Ore. / special purpose analog computers / DESCR: designed for the engineering analysis of power system transmission and distribution networks / \$34,250 and up depending on type and size / C23

ELECTRO SCIENTIFIC INDUSTRIES, 7524 S. W. Macadam Ave., Portland 19, Ore. / ESIAAC, A POLE-ZERO PROGRAMMED COMPUTER / DESCR: the ESIAAC algebraic computer employs a potential analog to solve functions of a complex variable on the Log s plane. This design makes the ESIAAC applicable for root-locus design problems, Bode plots (gain-phase), residue evaluation of closed loop poles and factoring of higher order polynomials / \$9800 / C23

Embre Electronics Corp., 993 Farmington Ave., West Hartford 7, Conn. / electronic analog computers, components / DESCR: operational and stabilizing amplifiers, DC power supplies. Operational six-packs; installations can be expanded from six to 96 amplifiers / USE: as an electronic differential analyzer, as plug-in amplifiers / \$25 to \$975 per component / C23

Feedback Controls, Inc.

General Automatics, Inc.

General Electric Co., Defense Systems Dept. -- see C24A

GPS Instrument Co., Inc., 180 Needham St., Newton 64, Mass. / GPS compressed time scale analog computer / DESCR: very wide bandwidth, high accuracy computing elements; integrators, summing amplifiers, multipliers, diode function generators, limiters, statistical analyzers, dynamic storage elements, comparators, and noise generators / USE: general purpose problem simulation and data analysis / \$15,000 to \$250,000 / C23

Heath Co. (HEATHKIT), subsidiary of Daystrom Inc., Benton Harbor, Mich. / modular analog computer kit / DESCR: plotting board cabinet kit, repetitive oscillator, operational amplifiers, coefficient potentiometer kit, patch cord kits and power supply kits for amplifier, reference, initial condition and relay / USE: operational manual included / \$199.95 to \$945 / C23

Leeds & Northrup Co. -- see C22A

Link Division, General Precision, Inc. -- see C22A

Lockheed Electronics Co.

Loral Electronics Corp.

F. B. MacLaren & Co., Inc.

Maxson Electronics Corp.

Northrop Corp., 9744 Wilshire Blvd., Beverly Hills, Calif. / LINC computer / DESCR: performs in-flight navigational problems and automatic sequencing and control of system operation / USE: navigation and guidance computer systems / C23

Otis Elevator Co.

George A. Philbrick Researches, Inc., 127 Clarendon St., Boston, Mass. / analog computers, components, and services / DESCR: complete line

modular analog computer components, solid-state operational amplifiers, multi-channel display systems, function generators, integrators, multipliers, regulated power supplies, analog computers, computation services / USE: analog computers / C23

Reeves Instrument Corp.

Servomechanisms/Inc.

Sperry Farragut Co., Division of Sperry Rand Corp.

Sperry Gyroscope Co., Division of Sperry Rand Corp.

Western Electronic Co.

Westinghouse Electric Corp.

Westinghouse Electric Corp., Air Arm Division

C24. COMPUTERS, DIGITAL

A R & D A

Aeronutronic, a Division of Ford Motor Co.

Alvac Computer Div., El-Tronics, Inc. American Bosch Arma Corp. -- see C22A Arma Div., American Bosch Arma Corp. Autonetics Industrial Products, Operating Division of Autonetics, a Division of North American Aviation, Inc., 3400 E. 70 St., Long Beach 5, Calif. / RECOMP II solid-state, digital, engineering computer / DESCR: low-cost, medium-size, compact computer offering complete system as standard equipment: built-in floating point arithmetic, control console with visual decimal display, large memory handling over 8000 instructions, automatic decimal-to-binary hardware, high-speed photoelectric tape reader, simple command structure / USE: engineering and scientific computing / Sale, \$95,000; Lease, \$2495 / C24

Autonetics Industrial Products, Operating Division of Autonetics, a Division of North American Aviation, Inc., \*a / RECOMP III, the "More Computations Per Dollar" low-price, small size, digital computer / DESCR: solid-state, general purpose, with simplified command list, large word size (40 bit), 4096-word memory, 2 instructions per word. Allows user to purchase only the computing capabilities needed, adding optional accessories when required, including compacted floating point hardware, 150 ch/sec tape punch, 600 ch/sec tape reader / USE: engineering and scientific computing / complete system sale price, \$65,000; monthly rental, \$1495 / C24 Bendix Corp., Bendix Computer Div. -- see D6

The Bendix Corp., Eclipse-Pioneer Div. Birkbeck College, Dept. of Numerical Automation, University of London

Burroughs Corporation, 6071 Second Ave., Detroit, Mich. / Burroughs 205 automatic digital computer and auxiliary electronic data processing machines / DESCR: 4000 words magnetic drum storage, 80 additional words quick-access drum storage; 10 decimal digits and sign; paper tape, CARDATRON complete alphanumeric punch card operation, Single or DATAFILE multiple magnetic tape units; range 400,000 to 2,000,000 words auxiliary storage per unit / USE: business applications, mathematical, scientific, engineering computation / \$140,000 to \$250,000 approx. or lease with option to buy / C24

Burroughs Corporation, \*a / Burroughs 220 automatic digital computer and auxiliary electronic data processing machines / DESCR: expandable magnetic core storage of 2000 to 10,000 computer words (10 decimal digits and sign); Paper Tape subsystem; CARDATRON full alphabetic, alphanumeric and special-character punched card subsystem; single and multiple DATAFILE magnetic tape

subsystem (50,000,000 words auxiliary storage); high-speed printer, on line or off line operation, up to 1500 lines per minute; 93-command programming structure / USE: commercial applications, mathematical, scientific, engineering computation / \$375,000 to \$600,000 approx. or lease with option to buy / C24

Burroughs Corporation, \*a / E-103 desk-sized digital computer / DESCR: a semi-automatic decimal digital computer with keyboard printer, optional paper tape and card adjuncts; program storage capacity, 128 instruction steps; internal memory, 220 12-digit-plus-sign words / USE: for business usage / \$29,750 / C24

Burroughs Corporation, \*a / B5000 Information Processing System / DESCR: incorporates compilers for problem-oriented languages ALGOL and COBOL into its master control program; may add second central processor without reprogramming. True multi-program processing and control / USE: for scientific and business application / \$250,000 to \$1 million, depending on size of system required / C24

Burroughs Corporation, \*a / Burroughs E101 desk-size electronic digital computer / DESCR: 220-word magnetic drum memory; 11-column full keyboard; optional punched card and paper tape input unit; output on roll-documents, ledger forms, paper tape / USE: commercial applications, scientific, engineering computation / \$26,750 or lease with option to buy / C24

Clary Corporation, 408 Junipero St., San Gabriel, Calif. / DE-60 computer / DESCR: solid state, general purpose digital computer for engineering, scientific and business applications / \$20,000 and up / C24

Clary Corporation -- see C43 Cornell Computing Center Cubic Corp.

Delco Radio Division, General Motors Corp.

Digital Equipment Corp., Main St., Maynard, Mass. / PDP-1 (Programmed Data Processor-1) / DESCR: general purpose hi-speed digital computer / USE: suitable for business and/or scientific computation / \$85,000 to \$200,000 / C24

Dresser Electronics, SIE Division, a division of Dresser Industries, Inc. The Electro Nuclear Systems Corp. N. V. Electrologica

The English Electric Company Ltd., English Electric House, Strand, London, W.C.2, England / KDN2 / DESCR: modestly priced small computer designed for process control and industrial applications. Single address instruction code. Can be used as slave to large data processing system / C24

Ferranti-Packard Electric Ltd. (Electronics Div.), 16 Industry St., Toronto 15, Canada / GEMINI / DESCR: solid-state, general purpose computer; built-in peripheral

control; 18,000 additions per sec.; core storage, 4096 words; paper tape, card or typewriter input and output / USE: dual system for airline reservation, business data processing, scientific and general engineering / C24

General Automatics, Inc.

General Electric Co., Defense Systems Dept. -- see C24A

General Mills, Inc., 1620 Central Ave., Minneapolis 13, Minn. / digital computer system / DESCR: a solid-state, parallel digital computer offering a 4096-word magnetic core memory with random access, and two 64-word magnetic core buffer memories for external communication / USE: scientific and engineering calculations, control / C24

Harvey-Wells Electronics, Inc.

General Electric Co., Computer Dept., 13430 North Black Canyon Highway, Phoenix, Ariz. / GE 225 information processing system / DESCR: small-to-medium size alpha-numeric or binary solid-state computer. Peripherals have direct access to core memory through a priority-assignment selector, permitting simultaneity of all operations / USE: business, industry, scientific work, engineering and finance / monthly rental: \$ 4000 to \$25,000 / C24

General Electric Co., Computer Dept., \*a / GE 210 data processing system / DESCR: medium-sized general purpose solid-state data processing system capable of handling wide variety of input/output devices. Simultaneous read, write and compute operations / USE: general purpose computer / monthly rental: \$10,000 to \$20,000 / C24

Honeywell Electronic Data Processing Div., 60 Walnut St., Wellesley Hills 81, Mass. / Honeywell 400 / DESCR: fully-transistorized general-purpose magnetic tape data processing system. Basic system includes central processor, 4 magnetic tape units, card reader, printer and operator console with printer and keyboard / USE: business data processing applications / \$8660 per month to \$20,000 / C24

International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / IBM 609 Calculator / DESCR: small punched card calculator using solid-state and magnetic core storage to perform rapidly addition, subtraction, multiplication and division / USE: business and engineering problems / Monthly rental, (basic system), \$1175. Selling price \$55,500. All prices exclusive of tax / C24

International Business Machines Corp., Data Processing Div., \*a / IBM 609 B-1 Calculator / DESCR: small calculator identical to larger counterpart, the 609, in size, speed and general applications. Differs in storage capacity and number of program steps incorporated / USE: business and engineering problems / Monthly rental, \$735 to \$1089. Selling price, \$36,000 to \$50,390. All prices exclusive of tax / C24

- International Business Machines Corp., Data Processing Div., \*a / IBM 1710 Control System / DESCR: 1711 data converter connected to a 1620 data processing system simplifies collection and analysis of analog data by using direct entry into the computer / USE: quality control applications, process studies and process optimization / Monthly rental, \$2600 to \$3300. Selling price, \$111,000 to \$135,000. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 650 Data Processing System / DESCR: medium size system which is available in configurations using punched card, magnetic tape, paper tape, and with RAMAC / USE: business and scientific computing / Monthly rental, \$3750 and up. Selling price, \$182,400 and up. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 704 Data Processing System / DESCR: large-scale system made up of interconnected units. High-speed magnetic core storage allows any word to be located and put into use in twelve microseconds / USE: primarily for scientific computation / Monthly rental (typical system) \$35,000 and up; selling price (minimum system) approximately \$400,000 and up. Orders accepted on availability basis. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 705 Data Processing System / DESCR: a large-scale data processing system with 20,000 positions of magnetic core storage. IBM 705 II has 40,000 positions / USE: business problems / Minimum system: monthly rental, \$21,150 and up. Selling price \$886,400 and up. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 705 III Data Processing System / DESCR: similar to 705 I and 705 II with up to 80,000 positions of magnetic core storage and an input/output rate of 62,500 characters per second / USE: business problems / Minimum system: monthly rental \$24,900 and up. Selling price \$1,218,000 and up. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 709 Data Processing System / DESCR: large-scale system of inter-connected units. 709 incorporates a Data Synchronizer which permits system to read, write and calculate simultaneously / USE: commercial, scientific and engineering problems / Monthly rental \$55,200 and up. Selling price \$2,630,000 and up. Orders accepted on availability basis. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 1401 Data Processing System / DESCR: a small to medium-size solid-state computer available in a wide variety of configurations, including punched card, magnetic tape and disk storage systems / USE: as independent processor or auxiliary system, for business problems / Basic system: monthly rental, \$2475 and up. Selling price \$125,600 and up. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 1410 Data Processing System / DESCR: an advanced intermediate data processing system with two and one-half times the speed and capacity of the 1401. Configurations available: card, tape, and with RAMAC / USE: business problems / Basic system: monthly rental, \$5365 and up. Selling price, \$244,550 and up. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 1620 Data Processing System / DESCR: a solid-state computer with up to 60,000 positions of core storage and paper tape and typewriter input/output; punched card I/O also available / USE: scientific, engineering and management science computations / Basic system: monthly rental, \$1600 and up. Selling price \$74,500 and up. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 7070 Data Processing System / DESCR: transistorized system ranging in size between medium and large scale systems, depending on number and types of units included. Card, card/tape, tape, and tape-RAMAC systems available / USE: business and scientific problems / Typical system: monthly rental \$24,000; selling price, \$1,077,400. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 7072 Data Processing System / DESCR: a scientifically-oriented intermediate data processing system for applications which do not require the high input-output speeds of the 7074 / USE: scientific applications / Typical system, including 1401: monthly rental \$19,825; selling price \$860,550. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Division, \*a / IBM 7074 Data Processing System / DESCR: similar in design to 7070, while twice as fast processing business data and up to twenty times as fast in scientific computation / USE: business and scientific problems / Typical system: monthly rental \$29,300; selling price \$1,284,350. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 7080 Data Processing System / DESCR: transistorized system, completely compatible with 705 I, 705 II, 705 III, permits high-speed transfer of information between tape units and main data storage. Processes business problems up to ten times faster than 705 / USE: business problems / Minimum system: monthly rental \$45,575 and up; selling price \$2,085,750 and up. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 7090 Data Processing System / DESCR: large-scale transistorized computer with improved synchronization of data to and from input/output devices. Offers extremely fast computing, with 32,768 word, 2.18 microsecond memory / USE: business and scientific problems / Typical system: monthly rental \$63,500; selling price \$2,898,000. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM 604 Electronic Calculating Punch / DESCR: general purpose calculator consisting of 604 electronic calculating unit and 521 punching unit. Model 1 operates at 100 cpm; Model 2 at 50 cpm. / USE: business and scientific problems / Monthly rental, Model 1 - \$550; Model 2 - \$330. Selling price, Model 1 - \$25,900; Model 2 - \$20,200. All prices exclusive of tax / C24
- International Business Machines Corp., Data Processing Div., \*a / IBM RAMAC 305 (Random Access Method of Accounting and Control) / DESCR: electronic data processing system offering access, within less than a second, to any one of up to 20-million characters stored in its magnetic memory / USE: continuous, or "in-line" accounting for all types of businesses / Monthly rental with punched card output \$2875 and up; with printed output, \$3200 and up. Selling price with punched card output, \$167,850 and up; with printed output, \$189,950 and up. All prices exclusive of tax / C24
- International Business Machines Corp., Federal Systems Division -- see C22
- International Computers and Tabulators, Ltd., Gloucester House, 149 Park Lane, London W. 1, England / ICT Type 1202 electronic digital computer / DESCR: small general purpose computer, 4096 word drum, card input, card and print output / USE: mostly commercial but also scientific use / \$126,000 / C24
- International Computers and Tabulators, Ltd., \*a / ICT Type 1301 transistorized electronic data processing system / DESCR: PRF one megacycle, core and drum store, 600 cpm input, 600 lpm printer, 2 tape systems up to 90,000 kcs / USE: commercial and scientific / £6500 to £300,000 / C24
- Leeds & Northrup Co. -- see C22A
- Link Division, General Precision, Inc. -- see C22A
- Lockheed Electronics Co.
- Loral Electronics Corp.
- Maxson Electronics Corp.
- Minneapolis-Honeywell Regulator Co., Aeronautical Div., Florida Facility, 13350 U.S. Highway 19, St. Peters-

- burg, Fla / computer and test equipment / DESCR: digital, light weight, high speed, high capacity for airborne applications. General purpose and differential analyzers / USE: aircraft and missiles / \$75,000 to \$150,000 / C24
- Minneapolis-Honeywell Regulator Co., Industrial Products Group, Wayne & Windrim Aves., Philadelphia 44, Pa. / Honeywell 290 Digital Computer / DESCR: typical operation rates: 8000 additions, 1250 multiplications or 400 square root extractions per second. Operations as complex and extensive as entire plants and systems can be controlled fully automatically / USE: for automatic control of complex industrial processes -- developed especially for industrial applications / \$100,000 / C24
- Minneapolis-Honeywell Regulator Co., Special Systems Division, Queen & So. Bailey Sts., Pottstown, Pa. / Honeywell 290 computer / DESCR: transistorized, internally stored program, microsecond speed. Core memory, 4096 words; drum memory, 32,768; word length, 18 bit / C24
- Monroe Calculating Machine Co., Inc., 555 Mitchell St., Orange, N.J. / Monrobot XI / DESCR: small, general-purpose, solid-state stored program digital computer; processes both alphabetic and numeric data; 9000 digit storage capacity; sufficient storage for 2000 instructions; ordinary 110 volt current / USE: for business, science and education / \$25,000 / C24
- Northrop Corp. -- see C23
- Packard Bell Computer Corp., 1905 Armacost Ave., Los Angeles 25, Calif. / digital computers and equipment / DESCR: general purpose digital computer; digital instrumentation components such as analog-to-digital converters, digital-to-analog converters, multiplexers, digital circuit modules, d-c amplifiers, and systems design and development / USE: engineering and scientific applications and computer control systems / C24
- Philco Corp., Computer Div., 3900 Welsh Rd., Willow Grove, Pa. / central processor, Model 210 / DESCR: contains an arithmetic and program section, utilizes 225 single address instructions, performs 66,700 additions per second and 10,000 multiplications per second / USE: as part of Philco 2000 System for scientific and EDPS systems / \$7100 to \$8550 per month / C24
- Philco Corp., Computer Div., \*a / central processor, Model 211 / DESCR: has an arithmetic and program section; utilizes 225 instructions, performs 213,000 additions and 23,000 multiplications per second / USE: as part of Philco 2000 System for scientific and EDPS systems / \$11,000 to \$13,200 per month / C24
- Philco Corp., Computer Div., \*a / central processor, Model 212 / DESCR: consists of an instruction indexing electromagnetic and store units with four-way processing, can perform 639,000 additions or 92,000 multiplications per second, utilizes 248 single address instructions / USE: as part of Philco 2000 System for scientific and EDPS systems / \$21,000 per month / C24
- Ramo-Wooldridge, a Division of Thompson Ramo Wooldridge Inc., 8433 Fallbrook Ave., Canoga Park, Calif. / AN/UYK-1 stored logic computer / DESCR: ruggedized multiple-purpose computer for BuShips; NTDS compatible; 8,192 15-bit word element random access core memory, expandable to 32,768. Full paper tape capability / USE: general shipboard use / \$75,000 and up / C24
- Ramo-Wooldridge, a Division of Thompson Ramo Wooldridge Inc., \*a / RW-400 "Polymorphic" data processing system / DESCR: a decentralized arrangement of coordinated system modules, designed for the simultaneous execution of many varied tasks, with frequently varying problem types and problem loads / USE: may be configured for many applications / \$300,000 and up / C24
- Remington Rand UNIVAC -- see D1
- Remington Rand Univac, 315 4th Ave., New York 10, N.Y. / UNIVAC LARC, a general purpose computing system / DESCR: designed to solve a wide variety of problems that are beyond the range of current large-scale systems. Core memory 97,500 words. Access time 4 microseconds plus 100 words core memory with one microsecond access time. Basic add time 4 microseconds. Maximum of 60 magnetic tape units can be used. Maximum drum memory 6,000,000 words. System can include a wide variety of input/output devices / USE: scientific and business applications / \$135,000 and up / C24
- Remington Rand Univac, \*a / UNIVAC 1107, Thin-Film Memory Computer / DESCR: a multi-purpose system operating at high computing speeds, solid-state, core memory 16,384-65,536 words. Access time 1.8 microseconds. Thin-film 128 word memory, access time 300 billionths of a second. Basic add time 4 microseconds. Includes 16 bi-directional input/output channels. Peripheral equipment; magnetic tape, punched-card, high-speed printer, mass storage, real-time devices / USE: business, scientific, and real-time applications / \$40,000 to \$60,000 / C24
- Remington Rand Univac, \*a / UNIVAC 490 Real Time System / DESCR: a stored program computer designed to process large quantities of data in real-time. Solid-state system, 16,384-32,768 words core memory. Access time 1.9 microseconds, add time 7.2-12 microseconds. System includes 12 input/output channels available for handling magnetic tape, punched-card, paper tape, and on-line printer as well as communication equipment for remote devices / USE: real-time, business and scientific applications / \$18,000 and up / C24
- Remington Rand Univac, \*a / UNIVAC 1105, a completely buffered version of Univac 1103A with increased storage facilities and faster tape drives / DESCR: transistorized buffering system. Addressable drum for programming versatility. A visual display can be attached for on-line output. A program interrupt feature enables processing of data from other on-line units on a priority basis. Core memory 8192-12,288 words. Access time 8 microseconds. Basic add time 6 microseconds, maximum 20 magnetic tape units. Drum storage 16,384-32,768 words. Average access time 17 milliseconds / USE: scientific and commercial applications / \$40,000 to \$55,000 / C24
- Remington Rand Univac, \*a / UNIVAC 1103A, large scale scientific digital computer / DESCR: utilizes magnetic tapes with forward and reverse read and a lattice arrangement to reduce drum access time. Program interrupt feature permits switch to another program in microseconds. Core memory 4096-12,288 words. 8 microseconds access time. Basic add time 6 microseconds. Maximum 10 magnetic tape units. Also included on-line are 80 column card reader and punch, paper tape reader and punch and typewriter / USE: scientific applications / \$25,000 to \$45,000 / C24
- Remington Rand Univac, \*a / UNIVAC File-Computer -- Model I / DESCR: a medium-size, general purpose, random access, digital, electronic computing system. (2,000 words core storage; core cycle time is 4.5 microseconds -- optional. When option is exercised, it is in lieu of the 1070 words, main drum storage.) Average access time 2.5 milliseconds; basic add time 1.2 milliseconds. Input/output includes U.F-C console, Inquiry typewriter, 80 or 90-column punched-card system, high-speed paper tape units, 1 to 10 magnetic tape units, high-speed printer. Special real-time equipment used in airline reservation systems. Large capacity random access storage consists of 1 to 10 general storage drums, each capable of storing 180,000 seven-bit alphanumeric characters / USE: business and scientific applications / \$8000 to \$21,000 / C24
- Remington Rand Univac, \*a / UNIVAC II, a large scale electronic digital computing system / DESCR: core memory 2000-10,000 words, access time 20 microseconds. Basic add time 120 microseconds. Input/output includes supervisory console, Unityper, Uniprinter, high-speed printer, 1 to 16 magnetic tape units -- Uniservo II. Peripheral equipment, card-to-tape and tape-to-card converters, tape verifier / USE: business and scientific applications / \$25,000 to \$30,000 exclusive of tax / C24

REPUBLIC AVIATION CORP., MISSILE SYSTEMS DIVISION, 223 Jericho Turnpike, Mineola, L.I., N.Y. / COMPUTERS / DESCR: research and development of all semiconductor general purpose and special digital computers and digital devices for ground, air, and space applications. Analog-to-digital and digital-to-analog converters for space applications. Facilities include 32,000-square-foot laboratory / C24

Saab Aircraft Co., Bureau for Engineering Data Processing, Linköping, Sweden / Saab D21 data processing system / DESCR: a solid-state, high-speed, flexible digital computer system expandable to large scale. Arithmetic 24/47 bits. Priority processing, automatic interrupt system. Core memory 4096-32,768 words. Peripheral equipment includes Saab magnetic tape system, up to eight decks / USE: business and scientific applications / typical system \$175,000 and up / C24

The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / digital computers / DESCR: data processing, programming, systems analysis, and machine services on a contractual basis for business and scientific problems using IBM 650, 1401, 7070, 704, 709, 7090, and unit record equipment / C24

Servomechanisms/Inc.

Sperry Gyroscope Co., Division of Sperry Rand Corp.

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

TRW Computers Co., a division of Thompson Ramo Wooldridge Inc., 8433 Fallbrook Ave., Canoga Park, Calif. / digital control computers and systems engineering / DESCR: RW-300 digital computer for automatic process control. RW-300 magnetic tape unit for high-speed data gathering and reduction. TASCAN for program switching in television broadcasting stations / RW-300: \$100,000 to \$300,000; TASCAN: \$70,000 to \$100,000 / C24

U.S. Army, Ballistic Research Laboratories

Vought Electronics -- see C24A

Westinghouse Electric Corp., Buffalo, N.Y. -- see A6

Westinghouse Electric Corp., E. Pittsburgh, Pa.

Westinghouse Electric Corp., Air Arm Division

#### C24A. COMPUTERS, SPECIAL PURPOSE

##### A R & D A

Aircraft Armaments, Inc., Industry Lane, Cockeysville, Md. / test and checkout equipment / DESCR: missile telemetering pre-flight (TITAN), component checkout (POLARIS), factory test (TERRIER), shipboard radar monitors (TERRIER, TALOS) / USE: for test and checkout of missile components and systems / price

based on custom specifications / C24A

American Hydromath Corp. -- see C23  
Applied Dynamics, Inc. -- see C23  
Arma Div., American Bosch Arma Corp.  
Auerbach Electronics Corp., 1634 Arch St., Philadelphia 3, Pa. / special purpose computers / DESCR: problem formulation system analysis, design and prototype development of special commercial, ground station or airborne computing systems, analog and digital, for real-time and off-line applications / C24A

Automation Management, Inc. -- see C23

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio / Bailey 710 and 755 / DESCR: analog and digital; standard building block modules combined to perform arithmetic calculations / USE: monitoring performance of processes / C24A

Bendix Corp., Bendix-Pacific Division, 7250 Laurel Canyon, No. Hollywood, Calif. / computers, special purpose / DESCR: custom equipment based upon standard components and circuits / C24A

The Bendix Corp., Eclipse-Pioneer Div.

Bendix Corp., Research Laboratories Div., Southfield (Detroit), Mich. / special purpose computers / DESCR: special purpose data-processing equipment; hybrid analog-digital control computers; flight simulators; correlation computers; reactor simulators; digital differential analyzers; special purpose data processing equipment; real-time control computers / C24A

Burroughs Corporation, 6071 Second Ave., Detroit 32, Mich. / B251 Visible Record Computer / DESCR: a fully-transistorized four-unit electronic data processing system automates the keeping and updating of customer accounts, working directly from checks and other documents encoded in magnetic ink / USE: for business and financial usage / \$217,500 / C24A

Delco Radio Division, General Motors Corp.

Electronic Associates Inc. -- see C23

Electronic Associates Inc., Long Branch Ave., Long Branch, N.J. / special purpose control computers / C24A

Electronic Contractors, Inc. -- see C23

The Electro Nuclear Systems Corp.  
Embree Electronics Corp. -- see C23  
Epsco, Inc.

Ferranti-Packard Electric Ltd. (Electronics Div.), 16 Industry St., Toronto 15, Canada / cheque sorting computer / DESCR: fully transistorized, M.I.C.R., stored reference computer to control 3-18 pocket sorters and listers. Sort rate 135,000 cheques/hour to 4000 end point with arithmetic capabilities / USE: cheque and other document sorting / C24A

Ford Instrument Co., Div. of Sperry Rand Corp. -- see F3

Ford Instrument Co., Div. of Sperry Rand Corp., 31-10 Thomson Ave., Long Island City 1, N.Y. / AN/ASN-7 Navigation Computer / DESCR: the ASN-7 is a dead-reckoning course and distance computer which provides extremely accurate aero navigation / USE: in airborne navigation / C24A

General Automatics, Inc.

General Dynamics/Electronics, Information Technology Division.

General Electric Co., Defense Systems Dept., 300 South Geddes St., Syracuse, N.Y. / General Electric Electronic System Evaluator (GESE) / DESCR: computer evaluation and synthesis of radar, communication, ECM, ECCM, radio guidance, tracking, detection and related electronic systems. Computer modeling and evaluation of complete weapon and support systems / USE: study contracts and complete facilities / price open to negotiations / C24A

General Electric Co., Light Military Electronics Dept., French Rd., Utica, N.Y. / sidewinder missile launch computer / DESCR: tells pilot when he is within successful launch zone off target's tail. Display: sight reticle / USE: launching sidewinder from F-104, F-105 aircraft / C24A

General Electric Co., Light Military Electronics Dept., \*a / toss bomb computer / DESCR: continuously calculates aircraft present position to provide location information for bombing / USE: ensures accurate weapon delivery by F-105 fighter-bomber / C24A

General Electric Co., Light Military Electronics Dept., \*a / digital subsystem for Polaris fire control system / DESCR: inputs from punched cards and shaft analog-digital converters; outputs digital and analog; transistor-diode logic throughout digital equipment / USE: tests guidance computer, inserts launch data / C24A

General Electric Co., Light Military Electronics Dept., \*a / contact analog display / DESCR: oscilloscope display simulates forward view; all-weather navigation and landing aid / USE: provides pilot with a visual analog of flight aspects / C24A

General Electric Co., Light Military Electronics Dept., \*a / W2F-1 Computer-Detector / DESCR: quantizes real-time radar data for target location and height. Output: digital word showing target location in rectangular co-ordinates / USE: part of W2F-1 Avionics System / C24A

Gulton Industries, Inc.

Hughes Fullerton -- see C39

International Business Machines Corp. Federal Systems Division -- see C22  
Link Division, General Precision, Inc. -- see C22A

Lockheed Electronics Co.

Loral Electronics Corp.

Loyola Laboratories, P. O. Box 90074 Airport Station, Los Angeles 45, Calif. / VANNUS I computer / DESCR:

medical electronic computer for measuring evoked responses, at the scalp, of aural "clicks" supplied to the ear. Automatic operation. Automatic print-out and STOP / USE: examination of deafness in infants / \$7000 to \$12,000 / C24A

Navigation Computer Corp., Valley Forge Industrial Park, Norristown, Pa. / special purpose digital computers / DESCR: special purpose digital systems for timing, data reduction, machine control, and format conversion, composed of standard transistorized digital system modules / custom / C24A

Omnitronics, Inc., Subsidiary of Borg-Warner Corp. -- see R7

Rese Engineering, Inc., "A" and Courtland Sts., Philadelphia 20, Pa. / FINDAFACT, data retrieval system / DESCR: performs file generation (card to magnetic tape), data retrieval, and file maintenance. Especially useful for low density activity on large files / USE: as an adjunct to tab systems for business data processing / \$50,000 to \$85,000 / C24A

Servomechanisms/Inc.

Sperry Gyroscope Co., Division of Sperry Rand Corp.

Strand Engineering Co. -- see D1

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Vought Electronics, P. O. Box 1500, Arlington, Texas / computers and computing services / DESCR: custom-designed, solid-state digital and digital-analog hybrid computers for use in various information processing and real-time control applications / USE: primarily in military systems work / price varies / C24A

Wang Laboratories Inc., 12 Huron Drive, Natick, Mass. / angular position encoder systems / DESCR: shaft position readout with translation and output to indicate, print, punch, and/or compute results; 1000 parts/turn standard; up to 10,000 turns specially engineered / USE: strip chart recorders, antennae, gyro, lead screws, etc. / \$350 to \$2000 / C24A

Wang Laboratories Inc. -- see C14  
Westinghouse Electric Corp. -- see A6  
Wright Engineering Co., Inc.

## C25. COMPUTERS, TEST EQUIPMENT

Aircraft Armaments, Inc. -- see C24A  
Airpax Electronics Inc. -- see C35  
American Bosch Arma Corp. -- see C22A  
Auerbach Electronics Corp., 1634 Arch St., Philadelphia 3, Pa. / computers, test equipment / DESCR: custom designed, automatic and semi-automatic simulation devices, package testers, continuity checkers, memory testers, tape transport testers, programmed pulse generators, transistor classifiers, complete system checkout equipment / C25

Autonetics Industrial Products, Operating Division of Autonetics, a Division of North American Aviation,

Inc., 3400 E. 70 St., Long Beach 5, Calif. / NIFTE Neon Indicating Flashing Test Equipment / DESCR: cost-saving continuity tester for manufacturers of computers and other complex wiring systems and electronic equipment. Simple, complete, accurate, operates without programming. Unit capacity up to 18,000 wires. Modular construction permits post installation expansion / USE: automatic check-out equipment / \$7000 to \$87,900 / C25

Clary Corporation -- see C43

Computer Control Company, Inc., 983 Concord St., Framingham, Mass. / diode recovery tester / DESCR: for measurement of fast and ultra-fast diode reverse recovery characteristics using stored charge (to 5 picocoulombs) technique. Provides rapid, accurate answers for evaluation of diode switching / USE: as a quality control, production and test bench tool / \$285 / C25

DIT-MCO, Inc., Electronics Div., 911 Broadway, Kansas City 5, Mo. / automatic electrical and electronic test equipment / DESCR: automatic circuit analyzers, electro-mechanical systems analyzers, logic circuit testers / USE: to test electrical circuitry and plug-in modules / \$3000 to \$80,000 / C25

Feedback Controls, Inc.

General Kinetics Inc., 2611 Shirlington Rd., Arlington 6, Va. / computers, test equipment / DESCR: automatic testers for magnetic tape, tape tensiometers, ultrasonic tape cleaners, preventive maintenance equipment for magnetic tape / \$595 to \$35,000 / C25

Minneapolis-Honeywell Regulator Co., Aeronautical Div., Florida Facility -- see C24

Navigation Computer Corp., Valley Forge Industrial Park, Norristown, Pa. / 100 Series pulse programming equipment / DESCR: complete line of digital system blocks / USE: for pulse programming, laboratory test equipment, and prototype system development / \$99 to \$398 / C25

Owen Laboratories, Inc., 55 Beacon Place, Pasadena, Calif. / semiconductor test equipment / DESCR: semiconductor instruments line tests small, medium and high power transistors, rectifier diodes, zener diodes, SCRs, from 0 to 30 amps, 0 to 600 volts / USE: designing, quality control and incoming inspection / \$289 to \$980 / C25

Servomechanisms/Inc.

Sperry Gyroscope Co., Division of Sperry Rand Corp.

Statistical Instrument Co.

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Wang Laboratories Inc. -- see C14

## C26. COMPUTER COMPONENTS

Airflyte Electronics Co.

Alden Products Co.

Alwac Computer Div., El-Tronics, Inc.  
American Lava Corp., Manufacturers Rd., Chattanooga 5, Tenn. / custom manufacturers of AlSiMag / DESCR: technical ceramic and metal-ceramic combinations components including high temperature terminals, hermetic seals, ceramic bobbins, etc., and other insulators for electron tubes, and precision ceramics for mechanical and wear applications / USE: furnished to manufacturers upon their specifications / C26

Ampex Magnetic Tape Products, a Division of Ampex Corp. -- see T3

Applied Dynamics, Inc. -- see C23

Bendix Corp., Research Laboratories Div., Southfield (Detroit), Mich. / computer components / DESCR: transistorized analog, digital, and phase-analog computing components; tunnel-diode memories and logic circuits; servo resolvers, multipliers, and function generators / C26

Bowmar Instrument Corp.

Burroughs Corporation

Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass. / 10 mc digital modules / DESCR: 10 mc encapsulated modules; flip-flops, transistor and diode logic, buffer amplifiers; 0.35 cubic inch. Fits seven-pin socket or dip soldered to printed circuit board / USE: to build up digital systems / \$70 to \$130 each / C26

Clary Corporation -- see C43

CBS Electronics, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. / computer components / DESCR: transistors, diodes, electron tubes, microcircuits, computer memories / USE: computers, analog and digital / C26

Computer Systems, Inc. -- see C23

Computronics, Inc., 5310 E. Pacific Place, Denver 22, Colo. / Model CI-30, analog computer control system / DESCR: advanced automatic features to upgrade existing equipment, with sufficient flexibility to be readily adapted to many special computer control applications / USE: analog computer component / C26

Computronics, Inc., \*a / Universal non-linear element (UNE) / DESCR: produces simultaneous fixed and arbitrary functions, independent and dependent products and trigonometric functions. Compatible with all types of analog equipment; readily adapted for card or tape programming / USE: analog computer component / C26

Corning Glass Works, Corning Electronic Components

The Daven Co.

Dialight Corp., 60 Stewart Ave., Brooklyn 37, N.Y. / computer components / C26

Diamonite Products Mfg. Co  
Electric Specialty Co.

Elgenco, Inc., 1555 14th St., Santa Monica, Calif. / electronic noise generator / DESCR: provides statistical input to analog computers / USE: as an analog computer input device / \$250 to \$2500 / C26

Embree Electronics Corp. -- see C23

Epsco, Inc.

Harvey-Wells Electronics, Inc.

Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23

The Hoover Company, Electronics Div. Hydro Molding Company Inc.

International Rectifier Corp., 233 Kansas St., El Segundo, Calif. / silicon diodes and rectifiers / DESCR: wide range of silicon diodes and rectifiers; zener voltage regulator diodes in a broad range of voltage values; high stability, high reliability, high temperature / USE: computer power supplies, voltage regulation / 50¢ to \$8 / C26

International Rectifier Corp., \*a / silicon readout photocells / DESCR: capable of reading 10,000 characters/second in perforated tape and punched card data reading systems. Very fast response time (5.-20 usecs); available with 5, 6, 8, 9, 10 readout positions / USE: high-speed data readout / \$14 to \$27 each (1 - 99 quantities) / C26

MINNEAPOLIS-HONEYWELL REGULATOR CO., AERONAUTICAL CO., FLORIDA FACILITY -- see D12

Norden Division of United Aircraft Corp.

Norton Associates, Inc. -- see H1

George A. Philbrick Researches, Inc. see C23

Rank Precision Industries Ltd., Electronics Dept. -- see P10

Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / computer components / DESCR: Transistors: silicon and germanium for switching, computers and general purpose use; AF-RF-VHF; NPN-PNP, single and double-ended Submins. Diodes: germanium and silicon; point contact, gold-bonded, diffused junction, for switching, computer and general purpose use. Silicon Rectifiers: plug-in, wire-in, solder-in, compact, encapsulated semiconductor circuit modules / C26

Servomechanisms/Inc.

Sperry Farragut Co., Division of Sperry Rand Corp.

Sterling Instrument division of Designatronics, 17 Matinecock Ave., Port Washington, N.Y. / electromechanical components / DESCR: these precision parts include gearing speed reducers, magnetic clutches and differentials teflon terminals and electronic hardware / USE: mostly on ground support equipment / C26

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Teletype Corp. -- see C22

Texas Instruments Inc., Semiconductor Components Div., Box 5012, Dallas 22, Texas / computer components / DESCR: wide line of high-performance computer components including

germanium and silicon transistors; solid circuit semiconductor networks; silicon diodes; silicon rectifiers; capacitors; resistors / USE: all areas of computer manufacturing / 12¢ (in qty.) to \$450 / C26

Trio Laboratories, Inc.

Vernistat Division of the Perkin-Elmer Corp.

Wang Laboratories Inc. -- see C14

Wright Engineering Co., Inc.

C27. COMPUTING SERVICES (see also "Survey of Computing Services")

The Brown University Computing Laboratory, Division of Applied Mathematics

C-E-I-R, Inc.

Compumatrix, Inc. -- see C30

Computer Sciences Corp. -- see C30

Computer Systems, Inc. -- see C23

Cook Electric Co.

Cornell Computing Center

Dian Laboratories, Inc., 611 Broadway, New York 12, N.Y. / analogue computing service / DESCR: Dian 120 computers; 440 summing and integrating amplifiers, 70 multipliers, associated function-generating equipment, recorders and plotting boards / USE: solution of scientific and engineering problems / C27

Digital Equipment Corp. -- see C24

Dynatech Corp. -- see C30

Electronic Data Processing Center, Inc.

General Kinetics Inc., 2611 Shirlington Rd., Arlington 6, Va. / computing services / DESCR: complete programming services; problem solving; programming research / hourly and contract rates / C27

KCS Ltd.

Land-Air, Inc., Subsidiary of California Eastern Aviation, Inc.

Machine Computing Services; 138 South Second East, Salt Lake City 11, Utah / machine computing services / DESCR: broker of idle time on a broad line of computer and punched card equipment, including peripheral, some security cleared. Rates quoted by job or hour. Consulting programmers, engineers, mathematicians, etc., available to help with any business or science problem / C27

McDonnell Aircraft, Automation Center, Box 516, St. Louis 66, Mo. / data processing service / DESCR: consultant service; analog and digital facilities rental includes IBM 7090 and 705, PACE and Network Analyzer Analog, Burroughs Datatron 204, peripheral equipment / USE: rented by project or by hour / C27

Midwest Research Institute

Quantum, Inc., Computer Center

Reeves Instrument Corp.

Remington Rand UNIVAC

REPUBLIC AVIATION CORP., MISSILE SYSTEMS DIVISION, 223 Jericho Turnpike, Mineola, L.I., N.Y. / COMPUTER SERVICES / DESCR: extensive

200 amplifier analog computer facility with associated nonlinear equipment available for rental. Facility suitably interconnected for independent small problem solutions or a large simulation. Peripheral equipment for hardware tie-in available. Engineering specialists experienced in large scale guidance and control simulations and other dynamic studies can be retained / C27

THE SERVICE BUREAU CORP., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / COMPUTING SERVICES / DESCR: data processing, programming, systems analysis, and machine services on a contractual basis for business and scientific problems using IBM 650, 1401, 7070, 709, 7090, data plotting, MICR sorter-reader and unit record equipment. Computer facilities include seventeen IBM 650's, six 1401's, three 704's, one 7070; two IBM 7090's scheduled for installation in 1962. Unit record equipment in all offices / USE: business, engineering, industry, science, military / Equipment available on an hourly basis / C27

Soroban Engineering, Inc.

Southwestern Computing Service, Inc.

Space Technology Laboratories, Inc., 2400 E. El Segundo Blvd., El Segundo, Calif. / computer user / DESCR: two IBM 7090's and related peripheral equipment plus a special purpose Data Reduction Center and Analog Computation Center / USE: in systems engineering and technical direction of the U.S.A.F. Ballistic Missile Program and related space probe projects / C27

System Development Corp.

U.S. Army, Ballistic Research Laboratories

U.S. Naval Weapons Laboratory, Computation and Analysis Lab

C28. COMPUTING SERVICES, DIGITAL (see also "Survey of Computing Services")

ADB Institutet (Scandinavian Automatic Data Processing Institute), Chalmers University of Technology, Gibraltargatan 5, Gothenburg S, Sweden / Alwac III E (Wegematic 1000) / DESCR: for punched paper tape and punched cards. Peripheral equipment. Specialists in application of automatic data processing techniques to government, business and technical problems. Services in computing, programming, consulting, education / hourly rates / C28

Burroughs Corporation

Collins Radio Co., Information & Science Center and Communication & Data Processing Div. -- see C22

Compumatrix, Inc. -- see C30

Computer Sciences Corp. -- see C30

Cook Electric Co., 2700 Southport Ave., Chicago 14, Ill. / digital computing services / DESCR: com-

- plete data processing service, includes collection and reduction of data and production of reports. Programming and solution of mathematical equations of all types / C28
- Cornell Computing Center  
Dynamech Corp. -- see C30  
Electronic Business Services -- see C30
- Ferranti-Packard Electric Ltd. (Electronics Div.), 16 Industry St., Toronto 15, Canada / computing services / DESCR: computer center (at Toronto) is built around a Ferranti Limited Pegasus Digital Computer; large program library available for this medium-size, digital, general purpose computer / USE: applications in industry, science and engineering / C28
- General Kinetics Inc., 2611 Shirlington Rd., Arlington 6, Va. / computing services, digital / DESCR: problem formulation, numerical analysis; programming; problem solving; programming systems development / hourly and contract rates / C28
- The I.D.R. Co. (Industrial Data Reduction), 4740 Spruce St., Philadelphia 39, Pa. / data processing / DESCR: full line data processing. Primarily utilize large scale digital computing equipment. Service from analysis through execution. Publishing industry services a specialty / C28
- Land-Air, Inc., Subsidiary of California Eastern Aviation, Inc.  
Maxson Electronics Corp.  
Midwestern Instruments, Inc., 41st & Sheridan Rd., P. O. Box 7509, Tulsa 18, Okla. / M3000 digital tape system / DESCR: dependable performance in strict accordance with quoted specifications. Compatible with on-line equipment / USE: in or with digital computer systems / \$12,000 to \$25,000 / C28
- Midwest Research Institute  
Saab Aircraft Co., Bureau for Numerical Analysis and Engineering Data Processing, Linköping, Sweden / programming and computing services / DESCR: analysis, programming and machine time services in the fields of science, engineering and data processing on our digital computer SARA / C28
- Scientific Computing Service  
The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / digital computing services / DESCR: data processing, programming, systems analysis, and machine services on a contractual basis for business and scientific problems using IBM 650, 704, 709, 7070, 7090, and unit record equipment / C28
- Technical Advisors, Inc.  
Vought Electronics -- see C24A  
Westgate Laboratory, Inc.  
Wolf Research and Development Corp., 462 Boylston St., Boston 16, Mass. / digital computing services / DESCR: equipment and personnel available for processing, reduction and analysis of data and for scientific studies using digital techniques / C28
- #### C29. CONNECTORS
- Accurate Electronics Corp.  
Alden Products Co.  
American Research & Manufacturing Corp. -- see P13  
Amphenol Connector Div., Amphenol-Borg Electronics Corp.  
Burdry Corp., Norwalk, Conn. / connectors / DESCR: complete line of electrical/electronic connectors -- solderless crimp type and solder types. Also full line of installation tooling (hand, pneumatic, electric) / C29
- Consolidated Electrodynamics Corp., 360 Sierra Madre Villa, Pasadena, Calif. / connectors / DESCR: CEC connector line includes rack-and-panel, rectangular, and circular-MS-type models. Each type is offered in various mounting configurations and number of contacts / USE: provides low-voltage-drop connection between system components / C29
- DeJur-Amsco Corp., Electronics Div.  
Elco Corp., "M" St. below Erie Ave., Philadelphia 24, Pa. / connectors / DESCR: rack and panel, cable, printed circuit types. Miniature, subminiature, ultra-miniature sizes / USE: equipment or module interconnection / 10¢ to \$15 / C29
- Galton Industries, Inc.  
RF Products, a Division of Amphenol-Borg Electronics Corp., 33 E. Franklin St., Danbury, Conn. / coaxial connectors / DESCR: UG and non-UG connectors, components and fixtures in thousands of shapes, sizes and designs for every RF application / USE: interconnection of RF transmission lines / 9¢ to \$19.50 / C29
- Winchester Electronics Inc., 19 Willard Rd., Norwalk, Conn. / connectors / DESCR: precision electrical connectors and accessories: lightweight, heavy duty, hermetic, miniature, sub-miniature, rectangular, round, removable contacts, terminals, sockets / USE: industrial and military equipment / C29
- #### C30. CONSULTING SERVICES (see also "Survey of Consulting Services")
- ADB Institutet (Scandinavian Automatic Data Processing Institute) -- see C28
- Advanced Information Systems Co. (AIS), 3002 Midvale Ave., Los Angeles 34, Calif. / system design, program management and execution, research / DESCR: service covers all aspects of data processing with special emphasis on business-type applications, information retrieval, and pioneer computer-based control systems for a wide range of clients / USE: service to client on use of products and procedures / \$500 up / C30
- Allied Research Associates, Inc., 43 Leon St., Boston 15, Mass. / research and development / DESCR: research and development in all phases of the physical sciences including applied mathematics, geophysics, biophysics, materials, physics, electronics, systems engineering, and weapons systems analysis / USE: to solve technical problems in government and industry / price according to assignment / C30
- A R & D A  
Auerbach Electronics Corp., 1634 Arch St., Philadelphia 3, Pa. / consulting services / DESCR: pure mathematics, system analysis, automatic programming, custom equipment design and development, analog and digital on-line and off-line systems. Computer evaluations, product and market planning / C30
- Auerbach Electronics Corp., \*a / inventory systems / DESCR: consulting services in the formulation, mathematical analysis, procedure and program design of inventory systems including recommendation and integration of data collection, communication and translation equipment / C30
- Booz, Allen Applied Research, Inc. -- see O2  
Booz, Allen & Hamilton, 135 So. La Salle St., Chicago 3, Ill. / management consulting and technical services / DESCR: management consultants; technical services in electronic and automatic data processing for totally integrated management controls systems for industry, commerce, government and institutions / USE: by top management in evaluating, planning, designing and implementing data processing systems for business and scientific purposes / price varies with problem and magnitude of assignment / C30
- Broadview Research Corp.  
The Brown University Computing Laboratory, Division of Applied Mathematics  
Chrono-log Corp., Box 4587, Philadelphia 31, Pa. / consulting services / DESCR: consultants in process control applications and systems; real-time computer control for both industrial and military applications; technical writing services / per diem or fixed price / C30
- Compumatix, Inc., 440 So. Brentwood Blvd., St. Louis 5, Mo. / management consulting and data processing / DESCR: management consultants specializing in automatic data processing, systems studies and operations research studies; computing equipment and programming staff available / USE: on a contract or hourly basis / Equipment; \$30/hour to \$400/hour; Personnel; \$75/day to \$200/day / C30
- Computer Sciences Corp., Palos Verdes, Calif. and New York City 22, N.Y. / computing consulting, analysis and programming, and machine computation services / DESCR: provides contracted analysis, programming and/or machine computation of engineering,

scientific and business data processing problems; also feasibility studies for computer choice, staffing, and other installation problems / C30

Computer Systems, Inc. -- see C23  
Cook Electric Co.

Data Processing, Inc., 1334 Main St., Waltham 54, Mass. / computer applications consulting / DESCR: consulting on business and scientific applications of digital computers. Systems design, analysis, operations-research work, compiler design, logical applications / C30

Data Sciences Inc.

The Daven Co.

Designers for Industry, Inc., 4241 Fulton Parkway, Cleveland 9, Ohio / research and development services including prototype production / DESCR: semiconductor test equipment, manual and automatic. Go/No-Go instrumentation and process control systems / USE: manufacturing engineering of automated systems and equipment / C30

Arnold I. Dumey

Dynatech Corp., 639 Massachusetts Ave., Cambridge 39, Mass. / consulting services / DESCR: problem formulation, programming, and solution on any type of analog or digital computer / hourly rates / C30

Ebasco Services Inc.

Electronic Business Services, 3266 Hunts Point Rd., Bellevue, Wash. / consultation in automation and data processing service / DESCR: consultation services, particularly for operators of small and moderate size businesses having problems in data processing, automation, etc. / USE: services vary to fit needs of clientele / charges vary depending on amount of work involved and results produced / C30

Electronic Data Processing Center, Inc. Fair, Isaac and Co., Inc.

Fischbach, McCoach & Associates, Inc.

H. S. GELLMAN & COMPANY LIMITED, 481 University Ave., Toronto 2, Ontario, Canada / SYSTEMS CONSULTANTS / DESCR: consulting services, specializing in automatic data processing and operations research / C30

General Kinetics Inc., 2611 Shirlington Rd., Arlington 6, Va. / consulting services / DESCR: mathematical studies; automatic programming; computer evaluation and selection; data handling methods; selection of peripheral equipment / hourly and contract rates / C30

Herbert Halbrecht Associates, Inc. Edward Bernard Healy, Jr., Management Consultant

S. Himmelstein & Co., 3300 W. Peterson Ave., Chicago 45, Ill. / consulting engineering / DESCR: consulting/engineering services concerning magnetic storage systems, punched tape systems, photoelectric readers, high-speed printers, computer peripheral equipments; data acquisition, storage and processing systems engineering / C30

Ingenjorsfirma Nordisk ADB AB  
Jonker Business Machines, Inc.  
KCS Ltd.

A. T. Kearney & Co.

Edwin A. Lipps Engineering

Loyola Laboratories

Mathematischer Beratungs- und

Programmierungsdienst GmbH.

H. B. Maynard & Co., Inc.

Minute Maid Co., Data Processing Div.

Simon M. Newman, 2027 Que St., N.W.,

Washington 9, D.C. / consultation /

DESCR: documentation, specializing in information retrieval / C30

James Addison Potter, Consulting Engineer

Remington Rand UNIVAC

Scientific Computing Service

The Service Bureau Corp., a subsidiary

of IBM, 425 Park Ave., New

York 22, N.Y. (Offices in 70

cities) / consulting services /

DESCR: analytical and engineering

services to aid in the formulation

and design of the solution to data

processing problems in business,

science, and engineering / C30

Marc Shiwowitz & Associates, Inc.,

12838 Weber Way, Hawthorne, Calif. /

engineering consulting / DESCR:

professional engineering services

in electronic systems engineering,

logical design, circuit design,

mathematical analysis, computer

programming for airborne or ground

based computers and automatic test

equipment / \$125/day to \$200/day /

C30

Soroban Engineering, Inc.

U.S. Air Force, Analytical Systems

Branch, Data Processing Div.

Westgate Laboratory, Inc.

Wolf Research and Development Corp.,

462 Boylston St., Boston 16, Mass. /

consulting services / DESCR: feasibility

studies, system design,

selection of equipment and problem

analysis for scientific, engineering,

business, industrial and military

applications of digital computers /

C30

Woods, Gordon & Co.

### C31. CONTROLS

Applied Dynamics, Inc. -- see C23

Assembly Producers, Inc.

Baird-Atomic, Inc.

Beckman Instruments, Inc., Berkeley

Div.

The Bendix Corp., Industrial Controls

Section, 21820 Wyoming Ave., Detroit

37, Mich. / numerical control systems

/ DESCR: DynaPath contouring

systems. DynaPoint positioning

systems. Ferranti positioning

systems / USE: control of machine tool

operation / \$12,500 to \$50,000 / C31

Bendix Corp., Research Laboratories

Div., Southfield (Detroit), Mich. /

controls / DESCR: numerical

machine-tool controls; adaptive

controls; sampled-data systems;

hybrid analog-digital control systems

/ C31

Consolidated Controls Corp. -- see

D12 and M2

Daystrom, Inc., Control Systems Division, 4455 Miramar Rd., La Jolla, Calif. / Magsense® control relay / DESCR: solid-state ultra sensitive control relay. Adjustable set point input range 0-100 DC microamperes. Set point adjustment, repeatability and resolution ±1 microampere. 1 ampere output / USE: control relay, comparator, monitor / \$200 to \$250 / C31

Daystrom, Inc., Weston Instruments Div. E-Z Sort Systems, Ltd.

The Foxboro Co.

General Controls Co.

General Dynamics/Electronics, Information Technology Division

Instrument Control Co.

The Walter S. Kraus Co.

Miles Reproducer Co., Inc.

Philco Corp., Computer Division, 3900

Welsh Rd., Willow Grove, Pa. /

Philco 2000 Universal Buffer Controller, Model #252 / DESCR: buffer

device between any two input-output

units. Permits off-line conversion

between any two media / USE: as

part of Philco 2000 System for scientific

and EDPS systems / \$2200

per month / C31

Philco Corp., Computer Div., \*a /

Philco 2000 Universal Buffer Controller, Model #280 / DESCR: between

any two input-output unit or

between input-output unit and central

computer. Permits on-line or off-line

use of equipment / USE: as part of

Philco 2000 System for scientific

and EDPS systems / \$2400 per

month / C31

Union Switch & Signal, Div. of West-

inghouse Air Brake Co.

Veeder-Root Inc.

Westgate Laboratory, Inc.

### C32. CONTROLS, AUTOMATIC

Airpax Electronics Inc.

Bailey Meter Co., 1050 Ivanhoe Rd.,

Cleveland 10, Ohio / Bailey 720

Systems / DESCR: pneumatic or

electric, analog or digital; provides

stable, accurate control over

wide ranges of operation / USE:

power and process control / C32

Clary Corporation -- see C43

Computer-Measurements Co., Division

of Pacific Industries, Inc. -- see

C54

Consolidated Controls Corp. -- see

D12 and M2

The Electro Nuclear Systems Corp.

Electro Products Laboratories, Inc.

-- see A6 and S6

General Automatics, Inc.

Industrial Nucleonics Corp. -- see A6

Instrument Development Laboratories,

Ind., 67 Mechanic St., Attleboro,

Mass. / automatic pyrometers /

DESCR: new, fully automatic optical

pyrometers; completely automatic

optical detecting system / USE:

continuous high temperature measurement,

recording, and control in plant

and laboratory applications /

\$2920 to \$3685 / C32

Miles Reproducer Co., Inc.

Servomechanisms/Inc.

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Union Switch & Signal, Div. of Westinghouse Air Brake Co.

Wang Laboratories Inc. -- see A6

### C33. CONTROLS, SIGNALING

American Hydromath Corp., 24-20 Jackson Ave., Long Island City 1, N.Y. / Qualitrol; Qualicount / DESCR: a device for automatically computing results in Industrial Quality Control by attributes (good or bad) / USE: in quality control / \$99.50 to \$1000 / C33

Babcock Electronics Corp., 1640 Monrovia Ave., Costa Mesa, Calif. / AN/URW-14A transmitter, radio control / DESCR: radio transmitter which produces FM signals in the 406-550 MC range. Includes 20 channel audio decoder. Operates on 115 VAC, 60 cps. Output 100 watts / USE: remote command control / prices on request / C33

Babcock Electronics Corp., \*a / BCR-50 receiver, radio control / DESCR: BCR-50 is a 20 channel, FM receiver-decoder, operating in the 406-550 MC range. An all transistor unit, it requires only 7.5 watts at 27.5 VDC / USE: remote command control / prices on request / C33

Babcock Electronics Corp., \*a / BSG-9 signal generator / DESCR: a test generator producing CW or FM signals in the 406-550 MC range. Accuracy is  $\pm 0.005\%$ . Output power 1.0 to 100,000 microvolts. Electronic 5-digit readout / USE: test and calibration of receivers and control systems / prices on request / C33

Consolidated Controls Corp. -- see A5  
Electro Products Laboratories, Inc. -- see A6 and S6

Intercontinental Dynamics Corp., 170 Coolidge Ave., Englewood, N.J. / Edgetron® / DESCR: photoelectric edge guidance systems for continuous web processes / USE: on continuous webs / \$750 to \$5000 / C33

Miles Reproducer Co., Inc.  
Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Union Switch & Signal, Div. of Westinghouse Air Brake Co.

Wright Engineering Co., Inc.

### C34. CONTROLS, SORTING AND COUNTING

Automation Management, Inc. -- see C23 and S9

Baird-Atomic, Inc.

Clary Corporation -- see C43

Consolidated Controls Corp. -- see A5

Electro Products Laboratories, Inc. -- see A6 and S6

Servomechanisms/Inc.

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

### C35. CONVERTERS, ELECTRICAL

Airpax Electronics Inc., 6601 N. W. 19th St., Fort Lauderdale, Fla. / Model 36 chopper / DESCR: this micromidget chopper employs a center-tapped drive coil to facilitate transistor drive in totally transistorized circuits. Electrical noise is brought to an irreducible minimum / USE: DC amplifiers, analog computers / \$40 to \$50 / C35  
The Bristol Company, P. O. Box 1790 CAG, Waterbury 20, Conn. / miniature SPDT electro-mechanical choppers / DESCR: D-C to A-C non-resonant; hermetically sealed / C35  
Cook Electric Co.  
Johnson Electronics Inc.  
Walter Kidde & Co., Inc., Kidde Electronics Laboratories  
Polyphase Instrument Co. -- see A4

### C36. CONVERTERS, ELECTRICAL, HIGH FREQUENCY

### C37. CONVERTERS, ELECTRICAL, LOW FREQUENCY

Airpax Electronics Inc. -- see C35  
Polyphase Instrument Co. -- see A4

### C38. CONVERTERS, ELECTRICAL, POWER FREQUENCY

Airpax Electronics Inc. -- see C35  
Delco Radio Division, General Motors Corp.  
Hathaway Denver  
Johnson Electronics Inc.  
Polyphase Instrument Co. -- see A4

### C39. CONVERTERS, INFORMATION

Alvac Computer Div., El-Tronics, Inc. Audio Instrument Co., Inc., 135 West 14 St., New York 11, N.Y. / logarithmic converters / DESCR: newly refined varistor plus tube circuit provides instant logarithmic conversion accuracy 5% range input 1000:1 to 10,000:1 / USE: analog data conversion or recording system / \$500 to \$5000 / C39  
Automation Management, Inc. -- see C23

Bendix Corp., Research Laboratories Div., Southfield (Detroit), Mich. / converters / DESCR: special purpose conversion equipment involving punched tape, punched card, and magnetic tape input and output; precision analog-digital conversion equipment / C39

Chadwick-Helmuth Co., 472 E. Duarte Rd., Monrovia, Calif. / "VMS" (Vibration Measuring System) / DESCR: slow-motion sampling system, creating fixed 1 cps replica of sweeping 10-10,000 cps multi-channel data, for convenient oscillograph recording of distortion, phase, and amplitude / USE: as "electronic gear box" to reduce frequency for monitoring or recording in computation, and servo, acoustic, and

vibration testing / about \$500 per channel / C39

Computer Control Company, Inc., 983 Concord St., Framingham, Mass. / Universal tape to tape converter / DESCR: translates radar, telemetering and other magnetic tapes into input for analysis by IBM 650 and 704, Univac 1103A. Also converts output of 1103A as input for 704 and vice-versa / C39

Cook Electric Co.

Epsco, Inc.

Hermes Electronics Co., 75 Cambridge Parkway, Cambridge 42, Mass. / Model 2060: display assembly / DESCR: used in any computer or data display system requiring a decimal presentation of up to 24 parallel bits of binary coded decimal information / \$1440 each / C39

HUGHES-FULLERTON, 1401 Malvern Ave., Fullerton, Calif. / AIR SURVEILLANCE EQUIPMENT / DESCR: a family of automatic track-while-scan equipments ranging from the simplest manual systems to satisfy modest air traffic requirements up to sophisticated fully automatic tracking equipment for high density traffic areas. Advanced systems where a computer steers a pencil beam radar into a search and track pattern are also available / \$100,000 and up / C39

International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / IBM 63 Card Controlled Tape Punch / DESCR: the 63, consisting of card reading and tape punching units, reads alphabetic information in IBM punched cards and perforates 5-channel telegraphic paper tape with that data / USE: to convert data from punched cards to telegraphic tape that can be transmitted by commercial wire services / Monthly rental \$75; selling price \$3600. All prices exclusive of tax / C39

International Business Machines Corp., Data Processing Div. -- see C22  
Invac Corp., 14 Huron Drive, E. Natick Industrial Pk., Natick, Mass. / translator / DESCR: photo-electric binary-to-decimal unit / C39

Lloyd Industries, 40 Grove St., So. Hackensack, N.J. / code discs, incremental pickoffs / DESCR: ultimate in angular accuracy on code discs, odd or even numbered disc (vernier type). Digital incremental pickoffs in size 11 to 25 synchro housings / USE: gyro platforms, feedback systems, scanning, digital systems / C39

F. L. Moseley Co.

The Newton Co.

Union Switch & Signal, Div. of Westinghouse Air Brake Co.

### C40. CONVERTERS, INFORMATION, ANALOG TO DIGITAL

Adage, Inc., 292 Main St., Cambridge 42, Mass. / A-D and D-A converters / DESCR: high speed, all semiconductor

or analog voltage input to digital output converters. Capability of providing a variety of input/output functions / USE: data reduction and analysis; production line test; computer linkage / \$4000 and up / C40

Airflyte Electronics Co.

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio / Bailey 750 / DESCR: all electronic, no moving parts; compares unknown analog to sequentially sampled known digital signals in null detector / USE: industrial digital information systems / C40

Bendix Corp., Bendix-Pacific Division, 7250 Laurel Canyon, No. Hollywood, Calif. / analog-to-digital converters / DESCR: custom equipment based upon standard components and circuits / C40

The Bendix Corp., Eclipse-Pioneer Div. Bendix Corp., Research Laboratories Div., Southfield (Detroit), Mich. / converters / DESCR: precision analog-to-digital and digital-to-analog conversion equipment / C40

Burlingame Associates, Ltd.

Computer Systems, Inc. -- see C23

Consolidated Systems Corp., 1500 Shamrock, Monrovia, Calif. / MicroSADIC system / DESCR: MicroSADIC is an analog-to-digital converter that accepts information from hundreds of channels connected to the commutator, converts up to 15,000 samples per second / USE: as part of a system / C40

Cubic Corp.

Data Tech, 238 Main St., Cambridge 42, Mass. / digital shaft position encoders / DESCR: high precision, compact, direct-reading (2<sup>14</sup> to 2<sup>24</sup>), and incremental types, variable reluctance and magnetic. Miniature series provides 2<sup>16</sup> in 1/2" diameter / C40

Dresser Electronics, SIE Division, a division of Dresser Industries, Inc.

Electro-Mec Division of Waltham Precision Instrument Co., Inc., 47-51 33rd St., Long Island City 1, N.Y. / DIGITOMETERS (R) (digital converter) / DESCR: provides an accurate means of transposing rotary mechanical motion into an equivalent binary numerical notation. Output is unambiguous and code is reflected binary or Gray code / USE: converts shaft position directly into a digital value / prices on quotation / C40

The Electro Nuclear Systems Corp.

Elgin Micronics Division, Elgin National Watch Co.

Ford Instrument Co., Div. of Sperry Rand Corp., 31-10 Thomson Ave., Long Island City 1, N.Y. / analog-to-digital converter / DESCR: Ford Instrument's multiplexing, all-solid-state analog-to-digital converter reduces A-C, D-C, and synchro signals to digital form / USE: for multiple input data analog-to-digital conversion / C40

General Mills, Inc., 1620 Central Ave., Minneapolis 13, Minn. / multi-channel analog-to-digital data encoder

(the MADE system) / DESCR: a solid-state system which converts analog voltage values into digital values for entry into a digital computer / USE: facilitates application of general purpose computer to process control, automatic system checkout, direct systems analysis / C40

Gilmore Industries, Inc.

Hammarlund Automation Div., of Telechrome Mfg. Corp.

The Hoover Co., Electronics Div. Instrument Development Laboratories, Inc., 67 Mechanic St., Attleboro, Mass. / A-D converters / DESCR: represents shaft position through a designated number of electrically open or closed circuits / USE: four models with more than 100 possible variations available for such diversified applications as process coding, machine tool control, inventory control, process control, and automation / \$1000 to \$2500 (depending on model and quantity) / C40

Link Division, General Precision, Inc.

Lloyd Industries -- see C39

Maxson Electronics Corp.

Navigation Computer Corp., Valley Forge Industrial Park, Norristown, Pa. / Model 1150R analog-to-digital converter / DESCR: complete two decimal digit analog-to-digital converter and serial recording system; contains all timing and amplifiers necessary to record directly on tape / USE: data recording systems / \$995 / C40

The Newton Co.

Non-Linear Systems Inc., Del Mar Airport, Del-Mar, Calif. / analog to digital converters and data logging systems / DESCR: convert electrical parameters into digital visual and electrical form. Complete systems permit automatic recording of up to 1000 input channels / USE: computer set-up and solution recording / converters, \$985 to \$6150; systems, \$7000 to \$80,000 / C40

Packard Bell Computer Corp. -- see C24

Raytheon Co., Communications and Data Processing Operation, 1415 Boston-Providence Turnpike, Norwood, Mass. / A/D converter, Model AD-50A / DESCR: provides up to 5.0 million independent 8-bit words per second with 25 nanosecond aperture time. Also available, 1.0 megasample 10-bit machines and sub-miniature models / USE: data conversion for automatic processing / \$10,000 to \$15,000 / C40

Reeves Instrument Corp.

Saab Aircraft Co., Bureau for Engineering Data Processing, Linköping, Sweden / Saab OMV-2 reversible analog-digital converter / DESCR: solid-state, high-speed, portable converter with high accuracy / USE: data logging, fast data conversion / C40

Saab Aircraft Co., Bureau for Engineering Data Processing, \*a / Saab OMV-3 converter system /

DESCR: solid-state, high-speed stationary system including analog channel selector, analog-digital and digital-analog converters / USE: advanced data logging and process control / typical system \$45,000 / C40

Saab Aircraft Co., Bureau for Engineering Data Processing, \*a / Saab OMV-4

analog-digital converter / DESCR: solid-state, medium speed analog-digital converter / USE: suitable as subunit in a medium-speed data logging system / \$2000 / C40

Sperry Gyroscope Co., Division of Sperry Rand Corp.

Statistical Instrument Co.

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Systems Division of Beckman Instruments, Inc. -- see D2A

Systron-Donner Corp. -- see S9

Union Switch & Signal, Div. of Westinghouse Air Brake Co.

Veeder-Root Inc.

Wang Laboratories Inc. -- see C24A

Westinghouse Electric Corp., Air Arm Division

Wright Engineering Co., Inc.

#### C41. CONVERTERS, INFORMATION, CARD TO MAGNETIC TAPE

Remington Rand UNIVAC -- see C24

The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / card to magnetic tape converters / DESCR: contractual data processing. Conversion equipment available at hourly rates / C41

#### C42. CONVERTERS, INFORMATION, CARD TO PAPER TAPE

Burroughs Corporation

International Computers and Tabulators, Ltd.

Remington Rand UNIVAC

The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / card to paper tape converters / DESCR: contractual data processing. Conversion equipment available at hourly rates / C42

#### C42A CONVERTERS, INFORMATION, CODE

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / code converter / DESCR: automatic tape-to-tape converter which makes various punched tape code systems compatible. Reads one code (5-, 6-, 7-, or 8-channel) and simultaneously converts to another / USE: data processing, Graphotype addressing, teletypesetter, numerical control / C42A

#### C43. CONVERTERS, INFORMATION, COMPUTING

Adage, Inc. -- see C40

Bendix Corp., Bendix-Pacific Division, 7250 Laurel Canyon, No. Hollywood, Calif. / converters, computing / DESCR: custom equipment based upon standard components and circuits / C43

Clary Corporation, 408 Junipero St., San Gabriel, Calif. / DAC-2500 digital arithmetic center / DESCR: solid state digital arithmetic center featuring flexible input-output facilities. Suitable for a wide range of applications / USE: arithmetic and memory units for instrumentation, process control and checkout systems / \$10,000 to \$18,000 / C43

Fairchild Controls Corp.

#### C44. CONVERTERS, INFORMATION, DIGITAL TO ANALOG

Adage, Inc. -- see C40

Automation Management, Inc. -- see C23

Bendix Corp., Bendix-Pacific Division, 7250 Laurel Canyon, No. Hollywood, Calif. / digital-to-analog converters / DESCR: custom equipment based upon standard components and circuits / C44

Bendix Corp., Research Laboratories Div., Southfield (Detroit), Mich. / converters / DESCR: precision analog-to-digital and digital-to-analog conversion equipment / C44

Computer Equipment Corp., 11612 W. Olympic Blvd., Los Angeles 64, Calif. / digital subtractor / DESCR: accepts two separate, continuous, aperiodic pulse trains, divides each train into words, subtracts the value of one word from the other, and converts difference to an analog control voltage / USE: to digitally synchronize independently-operating radar tracking systems / \$18,000 / C44

Computer Systems, Inc. -- see C23

Dresser Electronics, SIE Division, a division of Dresser Industries, Inc.

The Electro Nuclear Systems Corp. Packard Bell Computer Corp. -- see C24

Reeves Instrument Corp.

Sperry Gyroscope Co., Division of Sperry Rand Corp.

Statistical Instrument Co.

Systems Division of Beckman Instruments, Inc. -- see D2A

Westinghouse Electric Corp., Air Arm Division

Wright Engineering Co., Inc.

#### C45. CONVERTERS, INFORMATION, MAGNETIC TAPE TO CARD

Remington Rand UNIVAC -- see C24

The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / magnetic tape to card converters / DESCR: contractual data processing. Conversion equipment available at hourly rates / C45

#### C46. CONVERTERS, INFORMATION, MAGNETIC TAPE TO PAPER TAPE

Daystrom, Inc., Control Systems Division, 4455 Miramar Rd., La Jolla, Calif. / tape-to-tape converters / DESCR: solid-state uni- or bi-directional tape-to-tape converters for paper or magnetic tapes, capable of rearranging information or changing the code to any other code / USE: information storage, code changing and format revision / \$20,000 to \$80,000 / C46

Digitronics Corporation -- see C48

Omnitronics, Inc., Subsidiary of Borg-Warner Corp. -- see R7

Smith-Corona Marchant Inc.

#### C46A. CONVERTERS, INFORMATION, MAGNETIC TAPE TO MAGNETIC TAPE

Auerbach Electronics Corp., 1634 Arch St., Philadelphia 3, Pa. / magnetic tape to magnetic tape / DESCR: custom designed, special purpose, intercomputer magnetic tape conversion units for both on-line and off-line applications serving a variety of standard and special tape transports / C46A

Daystrom, Inc., Control Systems Div. -- see C46

#### C47. CONVERTERS, INFORMATION, PAPER TAPE TO CARD

Data Instruments Division Telecomputing Corp., 12838 Saticoy St., N. Hollywood, Calif. / paper tape to card / DESCR: reads a block of 40 digits to decoder with control circuits to control tape advance and interlock circuitry of summary punch / \$10,000 to \$15,000 / C47

International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / IBM 46 Tape-to-Card Punch / DESCR: reads alphanumeric information from a punched paper tape (Model 1: 5 and 8 channel) (Model 2: 8 channel), and converts it into IBM punched cards / USE: for reading of paper tape and conversion to punched cards / Model 1: monthly rental \$140; selling price \$6300. Model 2: monthly rental \$135; selling price \$6050. All prices exclusive of tax / C47

International Business Machines Corp., Data Processing Div., \*a / IBM 47 Tape-to-Card Printing Punch / DESCR: similar to 46, but data punched may be printed along top of cards with characters in same column as punches / USE: for converting paper tape data into punched cards / Model 1: monthly rental \$160, selling price \$7200. Model 2: monthly rental \$155, selling price \$6950. All prices exclusive of tax / C47

International Computers and Tabulators, Ltd.

Remington Rand UNIVAC

The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York

22, N.Y. (Offices in 70 cities) / magnetic tape to paper tape converters / DESCR: contractual data processing. Conversion equipment available at hourly rates / C47

#### C48. CONVERTERS, INFORMATION, PAPER TAPE TO MAGNETIC TAPE

Digitronics Corporation, Albertson Ave., Albertson, N.Y. / digital converters / DESCR: conversion between paper tape and magnetic tape at high speeds, eliminate punched cards; bi-directional; printed circuit plug-in modules / \$40,000 to \$100,000 / C48

International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / IBM 7765 Paper Tape to Magnetic Tape Converter / DESCR: solid-state 7765 transfers data from punched paper tape (chad or chadless) to magnetic tape (200 character per inch Mylar) at 150 characters a second / USE: conversion of punched paper tape to magnetic tape for direct computer input / Monthly rental \$1475; selling price \$69,500. All prices exclusive of tax / C48

Omnitronics, Inc., Subsidiary of Borg-Warner Corp. -- see R7

Smith-Corona Marchant Inc.

#### C49. CORDS

Engineered Electronics Co.  
Royal Electric Corp. -- see C1

#### C50. CORES

#### C51. CORES, FERRITE

Ampex Computer Products Co.  
Ferroxcube Corp. of America, 2900 E. Bridge St., Saugerties, N.Y. / ferrite products / DESCR: core memory planes and stacks, recording head cores, memory and switch cores, pulse transformer cores / 1¢ to \$5000 / C51

Lockheed Electronics Co., Avionics and Industrial Products Div., 6201 E. Randolph St., Los Angeles 44, Calif. / ferrite cores / DESCR: ferrite cores ranging in size from 0.050 to .325 inch are currently in production. Capability is available for larger as well as smaller sizes / USE: in computers and other electronic equipment using ferrite cores / C51

Stackpole Carbon Co.  
D. M. Steward Mfg. Co., P. O. Box 510, Chattanooga, Tenn. / ferrites (and other technical ceramics) / DESCR: high resistivity properties. High coercive force. Low energy losses, good physical strength, uniform magnetic properties / USE: transformers, cores, antenna rods, deflection yokes, computers / C51

Superelex Electronics Corp.

**C52. CORES, MAGNETIC**

Alden Products Co.  
 Ampex Computer Products Co.  
 The Arnold Engineering Co. -- see M1  
 Dynacor, Inc.  
 N. V. Electrologica  
 Ferroxcube Corp. of America -- see C51  
 Magnetics Inc., Butler, Pa. / bobbin cores / DESCR: miniature tape wound cores (high permeability) on stainless steel or ceramic bobbins, for shift registers, buffers / USE: to detect correct signals or impulses / 50¢ to \$1.50 in M quantities / C52  
 Wright Engineering Co., Inc.

**C53. COUNTERS**

Bowmar Instrument Corp.  
 The Bristol Company  
 Burroughs Corp., Electronic Components Div. -- see C11  
 Computer-Measurements Co., Division of Pacific Industries, Inc. -- see C54  
 Data Instruments Division Telecomputing Corp., 12838 Saticoy St., N. Hollywood, Calif. / counters / DESCR: high-speed electro-mechanical counters, bidirectional, 6 digits; life in excess of 300 million counts. Visual and/or electrical readout. Electrical or mechanical reset / \$100 to \$200 / C53  
 Electronic Counters, Inc.  
 Engineered Electronics Co.  
 General Controls Co.  
 Jonker Business Machines, Inc. -- see I2  
 Landis & Gyr, Inc.  
 Union Switch & Signal, Div. of Westinghouse Air Brake Co.  
 The Walkirt Co.

**C54. COUNTERS, ELECTRONIC**

Baird-Atomic, Inc.  
 Computer-Measurements Co., Division of Pacific Industries, Inc., 12970 Bradley Ave., Sylmar, Calif. / electronic counters and timers / DESCR: electronic digital counters, timers, printers, and controllers, decade counting units / USE: to measure and record frequency, time interval, period, etc. / \$35 to \$4000 / C54  
 Data Instruments Division Telecomputing Corp., 12838 Saticoy St., N. Hollywood, Calif. / electronic counter / DESCR: the Telepak is a 6 decade pulse accumulator, solid state, with direction sensing and bidirectional counting. Nixie Visual Readout with memory storage for readout function / USE: data reduction -- digitize shaft rotation / \$4000 to \$5000 / C54  
 Ferroxcube Corp. of America -- see C51  
 Jonker Business Machines, Inc. -- see I2  
 Richardson Camera Co., Inc.  
 Sterling Instrument division of Designatronics  
 Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Systron-Donner Corp. -- see S9  
 Union Switch & Signal, Div. of Westinghouse Air Brake Co.  
 Veeder-Root Inc.  
 Wang Laboratories Inc. -- see C14

**C55. COUNTERS, FREQUENCY**

Automation Management, Inc. -- see C23  
 Computer-Measurements Co., Division of Pacific Industries, Inc. -- see C54  
 Systron-Donner Corp. -- see S9

**C56. COUNTERS, MECHANICAL**

Jonker Business Machines, Inc. -- see I2  
 Monroe Industries, Inc. -- see V1  
 Sterling Instrument division of Designatronics  
 Veeder-Root Inc.

**C57. COUNTERS, PROPORTIONAL**

Baird-Atomic, Inc.

**C58. COURSES BY MAIL (COMPUTER FIELD)**

Edmund C. Berkeley & Associates, 815 Washington St., Newtonville 60, Mass. / Courses by Mail / DESCR: over 30 courses by mail in automatic computers, mathematics, construction of small electric brain machines, construction of small robots, symbolic logic, and other scientific subjects / USE: instruction / \$25 to \$60 / C58  
 Business Electronics Inc., 420 Market St., San Francisco 11, Calif. / home study programming training / DESCR: one course covering Programming Theory using composite computer as instructional device; course covering IBM 1401 System. Previous experience or mathematics not required / USE: training of programming staffs, background, train persons effected by computer installation / \$135 to \$175 / C58  
 Philco Technological Center

**D1. DATA PROCESSING MACHINERY**

Adage, Inc.  
 Automated Accounting Center of Conn., 7 Field St., Waterbury, Conn. / commercial data processing / DESCR: Services: inventory/production control; payroll; timekeeping; general ledger accounting; P&L balance sheets; cost distributions; accounts receivable/payroll; statistical summaries; engineering rental time / USE: to service small and medium-size business / \$25/hr. (G-15 alone); \$42/hr. including peripheral equipment / D1  
 Automation Management, Inc. -- see C23  
 Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio / Bailey 750 Systems / DESCR: converts analog

signals from sensing devices to digital form, compares against set point, performs arithmetic manipulation, and logs data on typewriter or punched tape / USE: fault monitoring and data logging / D1  
 Beckman Instruments, Inc., Scientific and Process Instruments Div.  
 Bell Aerosystems Company  
 The Brown University Computing Laboratory, Division of Applied Mathematics  
 Clary Corporation -- see C43  
 Convair, Nuclear Research & Development Section, Fort Worth, Texas / programmed test controller, Model NDP-1 / DESCR: a portable, complex switching circuit to automatically select, control and readout the variations of parameters of large numbers of electronic components under environmental evaluation / USE: to control and collect data during component evaluation tests / \$20,000 to \$30,000 / D1  
 Cook Electric Co. -- see C28  
 Cubic Corp.  
 Electronic Engineering Company of California, 1601 E. Chestnut Ave., Santa Ana, Calif. / EECO TP-401 and TP-402 / DESCR: punched tape reader -- reads 80 bits of data per 1" frame; uses standard 8-level perforated tape advanced one frame at a time on command signal. 12-ips drive mode; sequences tests at 6 ips. (TP-401) -- (TP-402) same as TP-401 but without verifier panel / USE: off-line equipment / TP-402, \$1490; TP-401, \$1620 / D1  
 Electronic Engineering Company of California, \*a / EECO TS-400 / DESCR: tape spooler -- takes standard NARTB 8" reels; size 8 3/4" x 19" x 8" deep / USE: off-line equipment / \$495 / D1  
 Electronic Engineering Company of California, \*a / EECO 100 T -- all transistor computer language translator / DESCR: converts inputs from cards, paper tape, and magnetic tape to any output on magnetic tape, cards, paper tape, or for printer / USE: off-line equipment / \$75,000 / D1  
 Electronic Engineering Company of California, \*a / EECO 751 format control buffer / DESCR: accepts digital inputs on 6 parallel lines. Output is magnetic tape in IBM 704 IBM 705 formats. With 256-character memory.....With 1024-character memory..... / USE: off-line equipment / \$38,500 to \$45,000 / D1  
 Electronic Engineering Company of California, \*a / EECO 752 data converter / DESCR: converts 5-level teletype paper tape input to output magnetic tape in IBM 704 or IBM 705 formats; includes 128-character memory; conversion speed is 60 characters/second / USE: off-line equipment / \$36,500 / D1  
 Electronic Engineering Company of California, \*a / EECO ZA-753 -- data converter / DESCR: three-way conversions: all-level paper tape input to output magnetic tape in IBM 704 or IBM 705 formats; magnetic tape to paper tape; and paper

tape to paper / USE: off-line equipment / \$62,500 / D1  
The English Electric Company Ltd., English Electric House, Strand, London, W.C.2, England / KDF9 / DESCR: high speed data processing system; new modular instruction code for simple programming and economic storage space; solid-state devices and printed circuits throughout / USE: general commercial data processing and fast scientific computations / D1

The English Electric Company Ltd., \*a / KDP10 / DESCR: flexible, expandable data processing system handling data in natural form. Solid state devices and printed circuits for operational reliability / USE: for all medium to large commercial undertakings / D1

Fairchild Camera and Instrument Corp., Defense Products Division

Fischer and Porter Co.

The Foxboro Co.

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / Add-Punch / DESCR: automatic punched tape adding-listing machine, ten key input keyboard. Performs all regular adding machine functions and simultaneously prepares punched tape for subsequent processing / USE: accounting, statistical, and other data processing / D1

Friden, Inc., \*a / Selectadata / DESCR: automatic tape reader-selector-sorter. Searches punched tape for pre-selected data which is then read out on Flexowriters or Computypers. Also used for program control / USE: general data processing / D1

Friden, Inc., \*a / Collectadata / DESCR: automatic data collection system. Transmitters spotted through plant send data over common cable to central receiver, which prepares punched tape with time-code entry / USE: production control, inventory control, production time recording, other data processing / D1

Honeywell Electronic Data Processing Div. -- see C24

Industrial Nucleonics Corp. -- see A6

ITT FEDERAL LABORATORIES, a Division of International Tel & Tel Corp., 500 Washington Ave., Nutley 10, N.J. / ITT 025 / DESCR: general purpose, stored program data processor which is fast and efficient in the processing of data having a large number of inputs and outputs. Notable characteristics: solid state logic; high internal speed; multi-sequence feature permitting interleaved operation of as many as 256 distinct operations. The 025 normally operates with magnetic core, drum and tape storage / USE: automatic store and forward communications data processing systems, automatic check-out systems, large simulator systems, complex process control systems, airline reservation networks and information retrieval systems / D1

Jonker Business Machines, Inc. -- see I2

A. Kimball Co., 8 Rewe St., Brooklyn 11, N.Y. / automatic reader, inventory control systems / DESCR: using Kimball PM75 machine, imprint and punch data on tags; attach to item to be identified; stub removed and sent to tabulating department where processed through Kimball Reader creating punch card / USE: department stores, warehouses, etc. / D1

MANAGEMENT ASSISTANCE, INC., 40 Exchange Place, New York 5, N.Y. / 1) WROC 452; 2) WROC 330; 3) IBM EQUIPMENT / DESCR: 1) expand capacity and capability of IBM data processing equipment (IBM 402-3-7-8, 514, 519); 2) calculate and verify self-check numbers for any number system; 3) buy used IBM equipment, sell and lease reconditioned IBM equipment, also service IBM equipment / D1

The National Cash Register Co., Main & K Sts., Dayton 9, Ohio / 304 data processing system / NCR's 304 data processing system is a solid-state, medium-cost computer designed specifically for business and comparable large-volume applications / USE: business applications (special system for scientific applications) / \$12,500 per month for minimum system / D1

The National Cash Register Co., \*a / 315 data processing system / DESCR: NCR's 315 is a solid-state, random access processor expandable from a basic system of limited capacity to a powerful full-scales system / USE: business applications / \$4400 to \$8500 monthly rental / D1

The National Cash Register Co., \*a / 390 data processing system / DESCR: a solid-state, magnetic-core processor that may be used to handle all basic accounting functions / USE: on business applications / \$75,000 / D1

National Data Processing Corp., 4703 Ross Ave., Dallas 21, Texas / NDP Bank Document Processing System / DESCR: a fully integrated system of bank document handling, reading, listing, balancing and processing for both on-us and transit operations / USE: inproofing, programmed sort, sequential sort, outproofing, preparing magnetic tape, and preparing cash letter / \$89,000 to \$230,000 / D1

The Newton Co.

The Nissho Company, Ltd., 30, Imabashi-3, Higashiku, Osaka, Japan / sales and service for data processing systems / DESCR: cooperate with prospects for system survey and data processing planning / USE: for office standardization and modernization / \$30,000 to \$3,000,000 / D1

Norden Division, United Aircraft Corp., Data Systems Dept., 3501 Harbor Blvd., Costa Mesa, Calif. / automatic inspection and test equipment / DESCR: equipment

provides automatic inspection and/or testing of fabricated parts, electrical components, etc., to programmed specifications -- output in visual, punched tape or typewritten format / USE: research, production test, incoming inspection / D1

Norden Division, United Aircraft Corp., Data Systems Dept., \*a / high-speed mark sensing and paper handling equipment / DESCR: equipment allows high-speed scanning of hand-marked documents and transfer of data to punched cards, magnetic tape, etc. / USE: inventory control, material ordering, vote tallying / D1  
Photomechanisms, Inc., 15 Stepar Place, Huntington Station, L.I., N.Y. / Model 669 photo processor / DESCR: self-contained four solution processor for 35 mm film with recording and projecting capability and a variable speed film drive / price on request / D1

Remington Rand UNIVAC -- see C24

Remington Rand UNIVAC, 315 4th Ave., New York 10, N.Y. / UNIVAC solid-state 80 and 90-Column Tape Systems / DESCR: medium-scale data processing system. Magnetic drum storage capacity 5000 or 9200 words. Average access time from .425 to 1.7 milliseconds. Add time: 85 microseconds. Up to ten magnetic tape handling units (UNISERVO II). Transfer rate: 25,000 characters per second. Randex Storage is optional / USE: general purpose system for business and scientific applications / \$9000 to \$13,000 / D1

Remington Rand UNIVAC, \*a / UNIVAC STEP 80 and 90-Column Tape Systems / DESCR: expandable medium-scale data processing system. Magnetic drum storage of 2400 to 5000 or 9200 words. Average access time from .425 to 1.7 milliseconds. Add time: 85 microseconds. Three index registers. Up to ten magnetic tape handling units can be incorporated (UNISERVO II). Randex Storage optional / USE: general purpose data processing system for business and scientific applications / \$5550 to \$9800 / D1

Remington Rand UNIVAC, \*a / UNIVAC STEP 80 and 90-Column Card Systems / DESCR: a medium-scale data processing system. Basic configuration contains a high-speed reader, a central processor, a high-speed printer and a punch unit. Magnetic drum storage of from 2400 to 5000 or 9200 words. System expandable by addition of many options such as index registers and Randex Storage. Average access time from .425 to 1.7 milliseconds. Add time: 85 microseconds / USE: general purpose data processing system for business and scientific applications / \$3500 to \$7500 exclusive of tax / D1

Remington Rand UNIVAC, \*a / UNIVAC Solid-State 80 and 90-Column Card Systems / DESCR: medium-scale data processing systems compatible with 80 or 90-column cards. Consists of high-speed reader, central processor, high-speed printer and read-punch unit. Reads 450 cards per

- minute, punches 150 cards per minute, prints 600 lines per minute. Many optional features available such as index registers and Randex Storage. Magnetic drum storage of 5000 or 9200 words. Average access time from .425 to 1.7 milliseconds. Add time: 85 microseconds / USE: general purpose computer for business and scientific applications / \$6950 to \$8100 / D1
- Remington Rand UNIVAC, \*a / UNIVAC III -- a medium cost, solid-state digital, electronic data processing system, designed to meet the broadest possible needs of science and industry / DESCR: 8192-32,768 words core storage. Access time 4 microseconds. Basic add time 8 microseconds, maximum of 32 Uniservo III plus 6 Uniservos II, transfer rate 133,300 alphanumeric characters or 200,000 digits per second. Simultaneous read, write, compute. Also available are 80-90 tabulating card reader and punch units, card printing punch, paper tape reader and punch and high-speed printer / USE: business and scientific applications / \$15,000 to \$30,000 exclusive of tax / D1
- Rese Engineering, Inc.
- Smith-Corona Marchant Inc., 410 Park Ave., New York 22, N.Y. / Typetronic 2215 & 6615 / DESCR: Typetronic 2215 -- business document writing system with electronic components which automatically process forms. Typetronic 6615 -- electronic computer which speeds and simplifies preparation of business forms requiring calculation / \$4000 to \$9000 / D1
- Strand Engineering Co., 7300 Huron River Dr., Dexter, Mich. / special purpose data systems / DESCR: design and fabrication of data handling systems, including missile-borne digital telemetry and instrumentation systems, special purpose computers and industrial control systems / D1
- Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.
- Systems Division of Beckman Instruments, Inc. -- see D2A
- Tally Register Corp., 1310 Mercer St., Seattle 9, Wash. / tape verifier and duplicator / DESCR: panel mounted, rack-mounting control package for duplicating, verifying or verifying and duplication any perforated tape up to 8 channels; character insertion privileges / USE: make duplicate tapes and verify same / \$900 / D1
- The Teleregister Corp., 445 Fairfield Ave., Stamford, Conn. / Telefile<sup>®</sup> data processing systems / DESCR: on-line systems based on solid state Telefile data processors. Capability for adding wide variety of sub-systems makes each system highly versatile / USE: for savings bank accounting and travel reservations, etc. / price depends on requirements / D1
- Vought Electronics -- see C24A
- Westinghouse Electric Corp., Buffalo, N.Y. -- see A6
- ## D2. DATA RECORDING EQUIPMENT
- Adage, Inc.
- Automation Management, Inc. -- see C23
- Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio / Bailey 700 systems / DESCR: analog or digital / USE: for pressures, temperatures, flows, levels / D2
- The Bristol Company, P. O. Box 1790 CAG, Waterbury 20, Conn. / automatic data logger / DESCR: economical, versatile, portable, reliable -- will log any variable that can be recorded or indicated. Many optional features available to fill logging needs / D2
- Century Electronics & Instruments, Inc.
- Chadwick-Helmuth Co. -- see C39
- Clary Corporation -- see P9
- Consolidated Electrodynamics Corp., 360 Sierra Madre Villa, Pasadena, Calif. / multichannel recording oscillographs / DESCR: galvanometer-type recorders provide up to 50 individual input channels. Records produced by print-out, rapid-access DATARITE process, or conventional photographic / USE: to record a wide range of dynamic phenomena in the frequency range of d-c to 5000 cps. / D2
- Consolidated Electrodynamics Corp. -- see T2
- Cook Electric Co.
- Cubic Corp.
- Dennison Mfg. Co., Machines Systems Div. -- see I7
- The Electrada Corp., 11244 Playa St., Culver City, Calif. / Datacom / DESCR: an electronic unit which provides a display and control link between a human operator and high speed data processing or communication systems / USE: as interface manipulating equipment / \$18,000 to \$35,000 / D2
- Electronic Associates Inc., Long Branch Ave., Long Branch, N.J. / X-Y plotter / DESCR: x-y recording equipment presents graphic description of digital information given on magnetic tape, punched paper tape, punched cards or manual input / D2
- The Electro Nuclear Systems Corp.
- The English Electric Company Ltd., English Electric House, Strand, London, W.C.2, England / DATAPAC / DESCR: standard light-weight plug-in logical elements essential to any system of control or instrumentation; easily modified or augmented as conditions change / USE: for telemetry, data-logging, multi-point temperature scanning, etc. / D2
- The Geotechnical Corp., 3401 Shiloh Rd., Garland, Texas / developocorder / DESCR: automatic-processing 16-mm film recorder uses CRT, galvanometers or miniature lamp bank. Displays data magnified 10 times.
- Records 32-120 hours on conventional film spool / USE: to record and view analog or digital data / \$7250 to \$10,000 / D2
- Gulton Industries, Inc.
- International Computers and Tabulators, Ltd.
- Mincom Division, Minnesota Mining and Manufacturing Co., 2049 S. Barrington, Los Angeles 25, Calif. / instrumentation recorder-reproducers / DESCR: series C-100 general instrumentation recorder-reproducer, bandwidth to 125 kc; 6 speeds, no belt changes; to 14 tracks / USE: telemetering / price on request / D2
- Mincom Division, Minnesota Mining and Manufacturing Co., \*a / instrumentation recorder-reproducers / DESCR: series CM-100 video band recorder-reproducers, bandpass of 400 cps to 1.2 mc at 120 ips; six speeds; 7 or 14 tracks / USE: predetection recording / price on request / D2
- Mincom Division, Minnesota Mining and Manufacturing Co., \*a / instrumentation recorder-reproducers / DESCR: series G-100 general instrumentation recorder-reproducer, bandwidth to 300 kc with analog modules, dc to 20 kc with FM modules; six speeds; wide dynamic range; to 14 tracks / USE: telemetering / price on request / D2
- Minneapolis-Honeywell Regulator Co., Industrial Products Group, Wayne & Windrim Aves., Philadelphia 44, Pa. / analog data recorder-transcriber (ADRT) Series 3000 / DESCR: provides any or all of three basic data handling functions: data logging; alarm scanning; integral computing. Accepts millivolt input signals directly from thermocouples and other transducers / USE: for industrial process data handling / \$25,000 to \$60,000 / D2
- F. L. Moseley Co.
- The National Cash Register Co., Main & K Sts., Dayton 9, Ohio / punched paper tape recorder / DESCR: selects information entered in a parent machine and punches it in paper tape / USE: with adding machine, accounting machine or cash register to capture data / \$1200 to \$1800 / D2
- The National Cash Register Co., \*a / card punch coupler / DESCR: selects information from parent machine and feeds it to slave IBM machine; one operator controls two office machines / USE: with adding machine or accounting machine to capture data in cards / \$800 to \$1600 / D2
- Photomechanisms, Inc., 15 Stepar Place, Huntington Station, L.I., N.Y. / Model 529 photo processor / DESCR: a self-contained variable-speed device with recording, processing, and projecting capability utilizing 35 mm film and featuring two solution processing / price on request / D2
- Potter Instrument Co., Sunnyside Blvd., Plainview, L.I., N.Y. / digital magnetic tape transports / DESCR: include associated read-write heads and record-playback amplifiers.

Available speeds: .1"/second to 300"/second / USE: as input and output devices for high speed computer data handling systems and custom designed information equipment / \$2500 to \$10,000 / D2  
Potter Instrument Co., \*a / high-speed photoelectric perforated tape readers / DESCR: can be supplied to read either strips, loops or complete reels of tape. Reading rates: up to 1000 characters/second using standard 5 to 8 level tapes / USE: as inputs to computers, business data systems and custom data handling units / \$3000 per complete unit to \$7000 / D2

Potter Instrument Co., \*a / magnetic tape testers / DESCR: used to test magnetic tape in any standard computer format. Defects may be examined and repaired on examination table attached to front panel of transport / \$21,000 to \$27,000 / D2

Recordak Corp., (a subsidiary of Eastman Kodak Corp.), 415 Madison Ave., New York 17, N.Y. / Recordak DACOM System / DESCR: DACOM (Data-scope Computer Output Microfilmer) records information produced by digital computers in plain language on 16 mm microfilm at speeds up to 20,000 characters per second. Random location of data fields, high resolution, point plotting, variable character selection from job to job plus optically combined formats are among the many capabilities of DACOM / USE: computer output / D2

Reeves Instrument Corp.

Remington Rand UNIVAC

Sanborn Company, 175 Wyman St., Waltham 54, Mass. / instrumentation / DESCR: oscillographic recording instruments and systems; X-Y recorders, multi-trace oscilloscopes, transducers and related instruments / USE: to provide permanent measurements of physical variables / \$700 for single channel portable to \$7000 for eight-channel system / D2

Sangamo Electric Co., 11th & Converse Sts., Springfield, Ill. / recorder/reproducer / DESCR: magnetic tape instrumentation -- reel to reel and loop operation with same machine; vacuum tensioning; dc reel servos; completely transistorized electronic circuitry / USE: data recording and reproducing / \$18,000 to \$30,000 / D2

The Standard Register Co., 626 Albany St., Dayton 1, Ohio / Stanrecorder / DESCR: modular constructed electromechanical unit records data at source in man and machine language through time clock, embossed plastic cards, punched tabulating cards, keyboard and optional production counter / USE: to collect and record data at source on one form at one place preparatory to entry into machine and computer accounting systems / \$1750 to \$2900 for basic models / D2

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Systems Division of Beckman Instruments, Inc. -- see D2A

Systron-Donner Corp. -- see S9

Teletype Corp. -- see C22

Westronics, Inc., 3605 McCart St., Ft. Worth 10, Texas / strip chart recorders / DESCR: single, dual and multiple record strip chart, null balance potentiometric type recorders, operating from temperature, millivolt, pressure, strain, humidity, tachometer and weight transducers / USE: in research, manufacture and processes by government agencies, industry, universities, etc. / \$690 to \$1450 / D2

#### D2A. DATA REDUCTION EQUIPMENT

Alvac Computer Div., El-Tronics, Inc. Automation Management, Inc. -- see C23

Bendix Corp., Research Laboratories Div., Southfield (Detroit), Mich. / data reduction / DESCR: custom-engineered analog, digital, and combined-analog-digital data-reduction systems / D2A

Chadwick-Helmuth Co. -- see C39

Clary Corporation -- see C43

Data Instruments Division Telecomputing Corp., 12838 Saticoy St., N. Hollywood, Calif. / data reduction systems / DESCR: complete line film and oscillogram record data reduction systems. Read-out to perforated tape, punched cards, typed record, etc. / USE: missile track -- oscilloscope trace and film reading / \$5000 to \$40,000 / D2A

The Electro Nuclear Systems Corp.

The English Electric Company Ltd. -- see D2

Fairchild Camera and Instrument Corp., Defense Products Division

Ferranti-Packard Electric Ltd. (Electronics Div.), 16 Industry St., Toronto 15, Canada / Data Rate Changer / DESCR: magnetic tape unit, using loop of magnetic tape. High-speed input, slow-speed output, and vice versa. Synchronous or asynchronous operation. Transistorized read, write and control circuitry / USE: digital data transmission system / D2A

Hogan Faximile Corp., a subsidiary of TELautograph Corp., 635 Greenwich St., New York 14, N.Y. / HPP-112 printer-plotter / DESCR: accepts low level output signals from a buffer logic converter and produces immediately visible permanent record. It can display over 8000 characters per second / USE: output device for computer / \$80,000 to \$90,000 / D2A

Jonker Business Machines, Inc. -- see I2

Philco Corp., Computer Div., 3900 Welsh Rd., Willow Grove, Pa. / Philco 2000 Data Link Coupler, #291 / DESCR: couples universal buffer controller with transceiver for transmission or receiving via telephone lines or other communi-

cation systems. Transmission rate up to almost 1,000,000 bits per second / USE: as part of Philco 2000 System for scientific and EDPS systems / \$350 per month / D2A

Potter Instrument Co. -- see D2

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Systems Division of Beckman Instruments, Inc., 2400 Harbor Blvd., Fullerton, Calif. / data acquisition and data reduction systems / DESCR: design and manufacture of data acquisition and data reduction systems including systems components. Complete planning and systems management services / USE: used in testing and control applications, such as wind tunnels (tests) and petroleum industries (control) / price subject to specifications / D2A  
Systron-Donner Corp. -- see S9

#### D3. DELAY LINES (COMPUTER TYPES)

Arenberg Ultrasonic Lab., Inc., 94 Green St., Jamaica Plain 30, Mass. / ultrasonic delay lines / DESCR: wide band width delay lines in the range of 2 microseconds to 1 millisecond long, with low spurious responses / USE: memory device in computers / \$200 to \$5000 / D3

Audio Instrument Co., Inc., 135 West 14 St., New York 11, N.Y. / analog time delay devices / DESCR: uses magnetic tape loop, micrometer adjustment of head spacing, adjustment of tape speed, to adjust delay time / USE: auto and cross-correlation analysis / \$1420 to \$20,000 / D3

Richard D. Brew and Co., Inc.

COLUMBIA TECHNICAL CORP., 24-30 Brooklyn-Queens Expressway, West, Woodside 77, N.Y. / (a) DELAY LINES  
(b) WIDE-BAND RF TRANSFORMERS  
(c) PROTECTIVE COATINGS / DESCR: lumped-constant and distributed-constant delay lines, fixed and variable types from nanoseconds to 10,000 microseconds, printed circuit board or stud mounting, with delay to rise time ratios of 100:1; specialty: audio delay lines with extreme phase linearity; also, magnetic-core delay cable -- delay-by-the-foot. New: magnetostrictive delay lines. RF transformers -- many types, e.g., 1-120 mc 75 unbal/650 bal. HumiSeal Coatings to protect electronic components / USE: computers, radar, sonar, guidance and fire control systems / \$1 to \$1000 / D3

Computer Control Company, Inc., 983 Concord St., Framingham, Mass. / sonic wire delay lines / DESCR: both off the shelf and custom built items offered. Magnetostrictive lines with 5 to 10,000 microsecond delays, also associated circuitry supplied on custom basis / USE: digital systems -- memories / D3

Control Electronics Co. Inc., 10 Stepar Place, Huntington Station, L.I., N.Y. / delay lines (computer types) / DESCR: electromagnetic delay lines; fixed and variable, lumped constant and distributed constant. Magnetostrictive delay lines; fixed and variable, tapped, associated amplifiers, NRZ circuitry / D3

Cornell-Dubilier Electronics Div., Federal Pacific Electric Co., 50 Paris St., Newark 1, N.J. / delay lines / DESCR: lumped-constant delay lines, featuring very fast rise time / D3

Corning Glass Works, Corning Electronic Components

Delttime, Inc.

EL-RAD MANUFACTURING CO., 4300 N. California Ave., Chicago 18, Ill. / DELAY LINES / DESCR: delay lines of lumped constant and distributed constant type. High stability and high precision types produced or designed to suit unusual requirements / USE: pulse delay applications / 75¢ to \$500 / D3

ESC Electronics Corp.

Gulton Industries, Inc.

Helipot Div. of Beckman Instruments, Inc.

P C A Electronics Inc., 16799 Schoenborn St., Sepulveda, Calif. / custom designed magnetic components / DESCR: miniature pulse transformers, delay lines, tele-metering filters, toroids / \$3 to \$350 / D3

Polyphase Instrument Co. -- see A4

Technitrol, Inc., 1952 East Allegheny Ave., Philadelphia 34, Pa. / delay lines / DESCR: electro-magnetic, standard distributed constant custom-built lumped delay lines / \$1.35 to \$50 / D3

Technology Instrument Corp., 531 Main St., Acton, Mass. / delay lines / DESCR: lumped constant delay lines, phase and frequency compensated, excellent pulse response, low attenuation / D3

Valor Instruments, Inc., 13214 Crenshaw Blvd., Gardena, Calif. / delay lines / DESCR: high density, sub-miniature lumped constant and distributed constant delay lines with fixed and variable delays / USE: temporary storage devices / \$1 to \$3000 / D3

Whitewater Electronics Inc., 136 W. Main St., Whitewater, Wisc. / delay lines / DESCR: specialize in long time delay storage type delay lines (500/1000µs); also make nanosecond lines / D3

#### D4. DESK CALCULATORS

Smith-Corona Marchant Inc.

#### D5. DIALS

Monroe Industries, Inc. -- see V1

Sterling Instrument division of Designatronics

#### D6. DIFFERENTIAL ANALYZERS

Bendix Corp., Bendix Computer Div., 5630 Arbor Vitae St., Los Angeles 45, Calif. / DA-1 digital differential analyzer / DESCR: 104 integrators, 104 constant multipliers. Accessory to Bendix G-15. Uses all G-15 input-output devices. Used as DDA alone when connected to G-15 / USE: easy solution to differential equations / \$13,700, sale; \$550 a month, lease (G-15 general purpose computer also required) / D6

Bendix Corp., Research Laboratories Div., Southfield (Detroit), Mich. / differential analyzers / DESCR: digital differential analyzers for special applications, including real-time control / D6

Embree Electronics Corp. -- see C23

General Electric Co., Light Military Electronics Dept., French Rd., Utica, N.Y. / Polaris Missile Guidance computer / DESCR: transistorized digital differential analyzer; inputs: digital prelaunched and accelerometer data; outputs: pitch, yaw, discrete commands. Memory: magnetic-core shift registers / USE: guides Polaris in flight / D6

General Electric Co., Light Military Electronics Dept., \*a / Skybolt missile guidance computer / DESCR: digital differential analyzer; solves ballistic guidance equations, performs additional navigation functions / USE: guides Skybolt missile in flight / D6

Reeves Instrument Corp.

Vought Electronics -- see C24A

#### D7. DIODES (COMPUTER TYPES)

Amperex Electronic Corp.

Calvert Electronics Inc.

CBS Electronics, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. / diodes (computer types) / DESCR: glass diodes, germanium bonded and diffused silicon, in the following classifications: high-voltage, high reverse resistance, high conductance, fast reverse recovery, high temperature, and general purpose / USE: switching and computer gates, demodulators, modulators, rectifiers, etc. / D7

Clevite Transistor

General Instrument Corp., Semiconductor Division

Hughes Semiconductor Div. -- see S2

Hughes Aircraft Co., Semiconductor Division -- see S2

Nucleonic Products Company Inc.

Princeton Electronics Corp. -- see D10

Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / diodes (computer types) / DESCR: complete line of germanium and silicon units. Point contact, gold-bonded, diffused junction types for switching, computers and general purpose use / D7

Sylvania Electric Products Inc.

Texas Instruments Inc. -- see D10

Transitron Electronic Corp.

#### D8. DIODES (COMPUTER TYPES), GERMANIUM

CBS Electronics, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. / diodes -- germanium / DESCR: glass point-contact and bonded diodes in the following classifications: high voltage, high reverse resistance, high conductance, fast reverse recovery, high temperature, and general purpose / USE: switching and computer gates, demodulators, modulators, rectifiers, etc. / D8

Clevite Transistor

General Instrument Corp., Semiconductor Division

Hughes Aircraft Co., Semiconductor Division -- see S2

International Diode Corp., 90 Forrest St., Jersey City, N.J. / computer diodes / DESCR: high-speed switching diodes, from .1 to .5 nanoseconds / USE: for computers and automatic controls / 85¢ to \$12.50 per unit / D8

Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / germanium diodes / DESCR: glass gold-bonded -- metal case, gold-bonded -- glass point contact for magnetic computers -- complete line for use in computers, switching and general purpose / D8

Sylvania Electric Products Inc.

#### D9. DIODES (COMPUTER TYPES), POWER

Delco Radio Division, General Motors Corp.

Hughes Aircraft Co., Semiconductor Division -- see S2

Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / power diodes / DESCR: complete line of low, medium and high power units. Diffused junction units available in a variety of packages; ceramic insulated stud, reverse polarity (anode to stud), and cathode to stud / USE: power supplies, magnetic amplifiers, low-frequency switching circuits / D9

Sylvania Electric Products Inc.

#### D10. DIODES (COMPUTER TYPES), SILICON

CBS Electronics, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. / diodes -- silicon / DESCR: glass diffused-silicon diodes in the following classifications: high voltage, high reverse resistance, high conductance, fast reverse recovery, high temperature, and general purpose / USE: switching and computer gates, demodulators, modulators, rectifiers, etc. / D10

Cornell-Dubilier Electronics Div., Federal Pacific Electric Co., 50 Paris St., Newark, N.J. / silicon rectifiers / DESCR: 2 to 30 amp. / D10

Clevite Transistor  
Fairchild Semiconductor Corp.  
General Instrument Corp., Semiconductor Division  
Hughes Aircraft Co., Semiconductor Division -- see S2  
International Rectifier Corp. -- see C26  
Motorola Semiconductor Products Inc. -- see T14  
Pacific Semiconductors, Inc.  
Princeton Electronics Corp., 178 Alexander St., Princeton, N.J. / silicon diodes / DESCR: fast switching computer diodes, sub-miniature power rectifiers, general purpose glass diodes / 60¢ to \$26 / D10  
Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / silicon diodes / DESCR: general purpose, high reliability bonded junction types -- glass diffused junction types for miniature circuit design requirements / USE: complete line for switching, computer and general purpose use / D10  
Sylvania Electric Products Inc.  
Texas Instruments Inc., 13500 No. Central Expressway, Dallas 22, Texas / silicon diodes / DESCR: diodes for computer and reference applications / 55¢ to \$3 / D10  
Texas Instruments Inc., Semiconductor Components Div. -- see C26

#### D11. DISCS, MAGNETIC

American Systems Inc. -- see C17 and M2  
Bryant Computer Products, Div. of Ex-Cello-Corp.  
MINNEAPOLIS-HONEYWELL REGULATOR CO., AERONAUTICAL DIV., FLORIDA FACILITY -- see D12  
Stackpole Carbon Co.  
Telex/Data Systems Division, 1633 Eustis Street, St. Paul 8, Minn. / mass disc memory modules / DESCR: magnetic surface data storage, utilizing oxide coated rotating discs, each with its own associated set of read-write heads and independent head positioners. A linear head-positioning device plus flying heads provide fast random access and high capacity / USE: as a component part of EDP Systems and as an integral part of special information processing and military systems / \$10,000 to \$185,000 / D11  
Whitton Mfg. Co. -- see D12

#### D12. DRUMS, MAGNETIC

Alvac Computer Div., El-Tronics, Inc.  
American Systems Inc. -- see C17 and M2  
Bryant Computer Products, Div. of Ex-Cello-Corp.  
Clary Corporation -- see C43  
Consolidated Controls Corp., 16 Durrant Ave., Bethel, Conn. / magnetic memory drum / DESCR: DYNASTAT can be read while stopped / USE: for controlling sorting conveyors, ma-

chine tools, and as component of CCC's teachable robot / \$1000 to \$6000 / see M2 and R18 / D12  
Digital Development Corp., 7541 Eads Ave., La Jolla, Calif. / memory drums and systems / DESCR: standard (5, 7 1/2, 10, 12 inch diameters) and custom-designed. Capacities to 3,000,000 bits / USE: commercial and military application / \$1000 to \$40,000 / D12  
Ferranti-Packard Electric Ltd. (Electronics Div.), Industry St., Toronto 15, Canada / Magnetic Memory Drum Type 162 / DESCR: twelve inch diameter. 1800 or 3600 RPM. Storage capacity approximately 1,200,000 bits on 224 tracks. Air bearing / USE: computer memory / D12  
Ferranti-Packard Electric Ltd. (Electronics Div.), \*a / Magnetic Memory Drum Type 200 B / DESCR: two inch diameter 22,500 RPM. Storage capacity 18,000 bits on 20 tracks / USE: buffer or program memory. Main memory desk-type computers / D12  
Ferranti-Packard Electric Ltd. (Electronics Div.), \*a / Magnetic Memory Drum Type 217A / DESCR: three inch diameter, 11,250 RPM. Storage capacity 60,000 bits on 44 tracks / USE: buffer or program store; airborne computers / D12  
Ferranti-Packard Electric Ltd. (Electronics Div.), \*a / Magnetic Memory Drum Type 266 / DESCR: ten inch diameter, 3600 RPM. Phaselock capability. Storage capacity 500,000 bits on 224 tracks / USE: computer memory / D12  
Ferranti-Packard Electric Ltd. (Electronics Div.), \*a / Magnetic Memory Drum Type 347 / DESCR: 18.5 inch diameter. Up to 1800 RPM. Storage capacity 5,000,000 bits on 576 tracks / USE: computer memory store / D12  
Ferranti-Packard Electric Ltd. (Electronics Div.), \*a / Magnetic Memory Drum Type 359 / DESCR: ten inch diameter. Recording length three inches. 1800 RPM. Storage capacity approximately 180,000 bits on 40 tracks / USE: computer memory / D12  
International Computers and Tabulators, Ltd.

MINNEAPOLIS-HONEYWELL REGULATOR CO., AERONAUTICAL DIV., FLORIDA FACILITY, 13350 U.S. Highway 19, St. Petersburg, Fla. / COMPUTER MEMORY DRUMS / DESCR: 2 1/2", 5", and 8" high packing density, internal stator, rugged / USE: as memory device in aircraft missiles, shipboard, and land-based message distribution systems / D12

Norton Associates, Inc. -- H1  
Philco Corp., Computer Div., 3900 Welsh Rd., Willow Grove, Pa. / Philco 2000, Drum Model #272 / DESCR: 32,768 word magnetic drum storage device having a data transmission rate of 62,500 words per second / USE: as part of Philco 2000 System for scientific and EDPS systems / \$1600 per month / D12  
Redmond-Fairchild Inc., 610 So. Arroyo Pkway., Pasadena, Calif. / magnetic

data storage drums / DESCR: commercial and mic-spec drums. Heads, motors, engraved or recorded clock tracks, read/write amplifiers; to 200 bits per inch NRZ; .00005" run-out / D12  
Remington Rand UNIVAC -- see C24  
Sperry Gyroscope Co., Division of Sperry Rand Corp.  
Wharf Engineering Laboratories  
Whitton Mfg. Co., Rte. 6 and New Britain Ave., Farmington, Conn. / design and manufacture of magnetic storage drums / DESCR: magnetic storage drums and discs; all speed and sizes delivered with T.I.R. of less than .00005"; coated or uncoated. Design furnished to fit customers requirements / USE: in electronic computers for storage / \$250 to \$6000 / D12

#### EO. ECONOMIC RESEARCH

Auerbach Electronics Corp., 1634 Arch St., Philadelphia 3, Pa. / market analysis / DESCR: technically-oriented consulting services specializing in domestic and foreign industry analyses, state of art evaluations, market identification, competitive comparisons, sales and delivery predictions / EO  
Dynatech Corp., 639 Massachusetts Ave., Cambridge 39, Mass. / economic research / DESCR: demand prediction and inventory management -- problem formulation, programming and solution on any type of computer / hourly rates / EO  
Midwest Research Institute  
The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / economic research / DESCR: analytical services to aid in the formulation and design of the solution to data processing problems. Economic forecasting. Survey analysis / EO

#### E1. EDUCATION

ADB Institutet (Scandinavian Automatic Data Processing Institute) -- see C26  
Auerbach Electronics Corp., 1634 Arch St., Philadelphia 3, Pa. / education / DESCR: consulting services in programmed teaching: design and production of self-instructional teaching programs, evaluation of training hardware and techniques, development of advanced training methods / E1  
Business Electronics Inc.  
Cornell Computing Center  
Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / Friden Educational Center / DESCR: variety of courses in data processing (including specific applications and programming) and related fields. No fee. Write Director, Friden Educational Center, 31 Prince St., Rochester, N.Y. or consult local Friden office / USE: training in data processing / D1

## E2. EMBEDDED ASSEMBLIES AND COMPONENTS

Cambridge Thermionic Corp.  
The Daven Co.  
Johnson Electronics Inc.  
Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

## F1. FACSIMILE EQUIPMENT

Eastman Kodak Co.  
General Dynamics/Electronics, Information Technology Division  
Hogan Faximile Corp., a subsidiary of TELautograph Corp., 635 Greenwich St., New York 14, N.Y. / facsimile equipment / DESCR: fully transistorized equipment capable of transmitting copy at three speeds -- a page in six minutes, three minutes and one minute. Flat bed scanner / USE: transmission of copy between remote points / \$4000 to \$5000 / F1  
Hogan Faximile Corp., a subsidiary of TELautograph Corp. -- see I2  
Institute for Scientific Information, 33 South 17th St., Philadelphia 3, Pa. / copywriter / DESCR: facsimile device / USE: for selectively copying written or printed matter / not commercially available yet / F1  
Photomechanisms, Inc., 15 Stepar Place, L.I., N.Y. / Model 587 facsimile processor / DESCR: exposes the superimposed images of a slide and CRT display on photo sensitive paper and processes hard copy at a rate of 24 inches per minute / price on request / F1

## F1A. FANS AND BLOWERS

IMC Magnetics Corp., Eastern Division  
Rotron Manufacturing Company, Inc., Hasbrouck Lane, Woodstock, N.Y. / muffin fan / DESCR: think, compact, light weight fan delivery 100 cfm at free delivery. Four models: skeleton, venturi, grided, and filtered. 1.2 lbs; 4-11/16" square, 1-1/2" deep / USE: for flushing computer cabinets / \$8 to \$15 / F1A  
Servomechanisms/Inc.

## F2. FASTENERS AND FASTENING DEVICES

Alden Products Co.  
The Bristol Company, P. O. Box 1790 CAG, Waterbury 20, Conn. / fasteners and fastening devices / DESCR: Hex Socket and Multiple Spline socket screws, self-locking, cap screws, flat head screws, button head screws, miniature screws; precision ground dowel pins / F2

## F3. FIRE CONTROL EQUIPMENT

American Bosch Arma Corp. -- see C22A  
Fenwal, Inc.  
Ford Instrument Co., Div. of Sperry Rand Corp., 31-10 Thomson Ave.,

Long Island City 1, N.Y. / TARTAR fire control computer / DESCR: provides TARTAR missile launching and control orders. Ford Instrument Co. also builds the TERRIER fire control computer / USE: a special purpose fire control computer / F3  
International Business Machines Corp., Federal Systems Division -- see C22  
Maxson Electronics Corp.  
Servomechanisms/Inc.  
Sperry Farragut Co., Division of Sperry Rand Corp.  
Sperry Gyroscope Co., Division of Sperry Rand Corp.  
Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

## F4. FIRE DETECTING & EXTINGUISHING EQUIPMENT

Walter Kidde & Co., Inc., Industrial & Marine Division  
Kidde Ultrasonic & Detection Alarms, Division Walter Kidde & Co., Inc.

## F5. FLOORS

Michael Flynn Mfg. Co., 700 E. Godfrey Ave., Philadelphia 24, Pa. / Lupton raised floors / DESCR: floor designed to support data processing equipment. Light-weight, aluminum panels, tiled or carpeted, 2 feet square, set on steel pedestals 6" to 16" high, forming covered space in which air ducts and electrical cables may be placed. Looks and feels like solid floor. Panels accurately made, all interchangeable / USE: installed over existing floor / estimate given without obligation / F5

## F6. FUSES

Littlefuse, Inc.

## G1. GENERATORS, FUNCTION

Applied Dynamics, Inc. -- see C23  
Beckman Instruments, Inc., Berkeley Div.  
The Bendix Corp., Eclipse-Pioneer Div.  
Computer Systems, Inc. -- see C23  
Computronics, Inc., 5310 E. Pacific Place, Denver 22, Colo. / Model CI-212, diode function generator / DESCR: makes available twenty connected line segments with independently adjustable length and slope for fitting arbitrary functions in all four quadrants using standard biased diode techniques / USE: analog computer component / G1  
Thomas A. Edison Industries, Instrument Div. of McGraw-Edison Co.  
General Computers, Inc., 9000 W. Pico Blvd., Los Angeles 35, Calif. / Model 100 diode function generator / DESCR: punched card memory provides function programming in seconds. Week to week stability

of .02%. Frequency response 10 KC. Slopes to 10 v/v at each breakpoint / \$2750 / G1

GPS Instrument Co., Inc. -- see C23  
Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23  
Hermes Electronics Co., 75 Cambridge Parkway, Cambridge 42, Mass. / Model 270 - digital timing generator / DESCR: used in data acquisition systems requiring a serial time code signal giving time of day in hours, minutes and seconds. Output signals available for: magnetic tape, oscillographs, data recording cameras / \$7450 each / G1  
Intercontinental Dynamics Corp., 170 Coolidge Ave., Englewood, N.J. / Sigmatron® / DESCR: low frequency random noise generator / USE: random input for computers / \$2700 to \$4000 / G1  
Kay Electric Co., Maple Ave., Pine Brook, N.J. / electronic test instruments / DESCR: sweeping oscillators, frequency markers, random noise generators, precision attenuators, audio spectrum analyzers, pulse carrier generators / \$75 to \$2950 / G1  
Link Division, General Precision, Inc.  
George A. Philbrick Researches, Inc. -- see C23  
Statistical Instrument Co.  
Wang Laboratories, Inc., 12 Huron Drive, Natick, Mass. / programmed pulse generator / DESCR: generates pulse train of up to 24 independent pulses of continuously variable period from 8 to 10<sup>9</sup> microseconds; word length variable up to 64 digits / USE: test equipment / \$945 to \$1500 / G1  
Wang Laboratories Inc. -- see C14

## G2. GENERATORS, FUNCTION, ELECTRONIC

Borg-Warner Controls, Div. of Borg-Warner Corp., 3300 Newport Blvd., Santa Ana, Calif. / radio frequency test instrumentation / DESCR: comprehensive line of high-power, multi-purpose signal generators, slotted lines, and other r-f instruments and accessories; frequency ranges from 85 kilocycles up to the microwave region / USE: 1) generation of r-f signals, 2) measurement of power available in pregenerated signals, 3) measurement of both AC & DC measurement / \$250 to \$8000 / G2  
Computer Systems, Inc. -- see C23  
Dian Laboratories, Inc., 611 Broadway, New York 12, N.Y. / photoelectric function generator / DESCR: a photographed mask f(x) is inserted between cathode-ray and photomultiplier tubes. Circuitry constrains c.r. spot to trace the desired function / USE: generation of arbitrary functions / price on request / G2  
Dian Laboratories, Inc., \*a / diode function generator / DESCR: a four-quadrant unit employing diode cards with no permanently-committed amplifiers / USE: switches set

breakpoint and slope polarity for each segment. Calibrated potentiometers set desired breakpoint and slope / price available on request / G2

Fairchild Controls Corp.

Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23

Hermes Electronics Co., 75 Cambridge Parkway, Cambridge 42, Mass. / 101C - ultra stable oscillator / DESCR: a precision controlled crystal oscillator with an output of 1 Mc per second at a guaranteed stability of 5 parts in 10<sup>10</sup> per day / \$2350 / G2

Intercontinental Dynamics Corp. -- see G1

Link Division, General Precision, Inc. Vernistat Division of the Perkin-Elmer Corp., 771 Main Ave., Norwalk, Conn. / Vernistat adjustable function generator / DESCR: 101 position voltage divider, any point which connects to 34 points. Voltages transmitted to interpolator and with shaft rotation, smooth nonlinear output obtained. Adjustable / USE: generate nonlinear functions -- an adjustable nonlinear potentiometer / \$725 to \$790 / G2

Wang Laboratories Inc. -- see C14 and G1

### G3. GENERATORS, FUNCTION, MECHANICAL

### G4. GEOPHYSICAL APPARATUS

Cook Electric Co.

Dresser Electronics, SIE Division, a division of Dresser Industries, Inc. The Geotechnical Corp., 3401 Shiloh Rd., Garland, Texas / seismological instruments / DESCR: very sensitive seismometers, amplifiers, five types of recorders, data transmission instruments, data processing instruments (tape, film), field surveys, blast monitoring equipment / USE: low-level vibration monitoring / G4

Photomechanisms, Inc., 15 Stepar Place, Huntington Station, L.I., N.Y. / Model 182 all sky camera / DESCR: automatically programmed recording of radiation effects and cloud cover from horizon to horizon on 16 mm film / price on request / G4

### H1. HEADS, MAGNETIC

Bryant Computer Products, Div. of Ex-Cell-O Corp.

Cook Electric Co.

The Electro Nuclear Systems Corp. Ferroxcube Corp. of America -- see C51

Edwin A. Lipps Engineering Norton Associates, Inc., 240 Old Country Rd., Hicksville, N.Y. / magnetic heads / DESCR: standard and special magnetic record, playback, and erase heads in single and multi-track arrangements /

USE: for magnetic tape, film, drum and magnetic ink character recognition / wide price range / H1  
Potter Instrument Co., Sunnyside Blvd., Plainview, L.I., N.Y. / magnetic heads / DESCR: digital magnetic heads / USE: to read and write information on magnetic tape, when used with amplifiers and a tape transport / \$150 to \$1500 / H1  
Redmond-Fairchild Inc. -- see D12

### H2. HEADS, MAGNETIC, READING

Bryant Computer Products, Div. of Ex-Cell-O Corp.

Dresser Electronics, SIE Division, a division of Dresser Industries, Inc.

Ferroxcube Corp. of America -- see C51

Edwin A. Lipps Engineering

Norton Associates, Inc. -- see H1  
Potter Instrument Co. -- see H1

### H3. HEADS, MAGNETIC, RECORDING

Bryant Computer Products, Div. of Ex-Cell-O Corp.

Cook Electric Co.

Dresser Electronics, SIE Division, a division of Dresser Industries, Inc.

Ferroxcube Corp. of America -- see C51

Edwin A. Lipps Engineering

Lockheed Electronics Co., Avionics and Industrial Products Div., 6201 E. Randolph St., Los Angeles 44, Calif. / recording heads / DESCR: many different configurations available for use in recorders and memory drums / USE: computer and video-type magnetic tape recorders and memory drums / H3

Norton Associates, Inc. -- see H1  
Potter Instrument Co. -- see H1

D. M. Steward Mfg. Co. -- see C51

### I1. INDICATORS (COMPUTER TYPES)

Bowmar Instrument Corp.

Burroughs Corp., Electronic Components Div. -- see V1

Daystrom, Inc., Weston Instruments Div.

Dialight Corp. -- see L1

Engineered Electronics Co.

General Electric Co., Defense Systems Dept. -- see C24A

Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23

National Union Electric Corp., Electronic Div. -- see T19

Navigation Computer Corp., Valley Forge Industrial Park, Norristown, Pa. / 1120 and 1130 Series indicators / DESCR: all semiconductor indicators available in counting and non-counting versions; the giant 1120 Series indicators are 5 inches high; the 1130 Series, 3½ inches high / USE: readout from computer system / \$97 to \$209 / I1

Non-Linear Systems, Inc., Del Mar Airport, Del Mar, Calif. / digital readouts / DESCR: displays up to 12 symbols or messages per window. Standard units have up to 6 windows in 3 window sizes. Display is actuated by energizing the one proper lamp out of the 12 lamps per window. No moving parts. Only ½" deep. Message display plates are easily changed by user / USE: for displaying alphanumeric or other symbolic data available in contact closure or voltage form from computers, analog-to-digital converters, etc. / \$25 to \$150 / I1  
John Oster Mfg. Co., Avionic Div. Pendar, Inc. -- see S6  
Servomechanisms/Inc.  
Union Switch & Signal, Div. of Westinghouse Air Brake Co.

### I2. INFORMATION RETRIEVAL DEVICES

Automation Management, Inc. -- see C23  
Dennison Mfg. Co., Machines Systems Div. -- see I7

Fairchild Camera and Instrument Corp., Defense Products Division

Ferranti-Packard Electric Ltd. (Electronics Div.), 16 Industry St., Toronto 15, Canada / rapid access look-up system (RALUS) / DESCR: locates coded microfilmed text pages automatically from keyboard input; typical look-up time for a loop of 500 microfilm frames is ½ seconds / USE: consulting of catalogues; telephone order handling / I2  
FMA, Inc.

Hogan Faximile Corp., a subsidiary of TELautograph Corp., 635 Greenwich St., New York 14, N.Y. / document retriever / DESCR: microfilmed engineering drawings and microfilmed records transmitted via facsimile into permanent hard copy / USE: information retrieval / \$125,000 to \$150,000 / I2

Jonker Business Machines, Inc., 404 No. Frederick Ave., Gaithersburg, Md. / Termatex systems / DESCR: information and data retrieval systems consisting of input equipment and output devices which can instantaneously search thousands of items by using super-imposable term cards / USE: to retrieve information and to retrieve and correlate data / \$500 to \$5000 / I2  
Potter Instrument Co. -- see P9  
The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / information retrieval devices / DESCR: contractual data processing. Word generation. Abstracting. Key word in context system (KWIC). Custom programming and processing / I2  
Vought Electronics -- see C24A

### I2A. INFORMATION ENGINEERING

Institute for Scientific Information, 33 South 17th St., Philadelphia 3, Pa. / information systems / DESCR: design of systems for handling large

volumes of scientific information especially large scientific compendia, printed indexes, etc. / I2A

### 13. INPUT/OUTPUT DEVICES

Alvac Computer Div., El-Tronics, Inc.  
Bendix Corp., Bendix Computer Div.  
Bendix Corp., Bendix-Pacific Div.  
Burroughs Corp.

CBS Laboratories, a division of Columbia Broadcasting System, Inc., 227 High Ridge Rd., Stamford, Conn. / VIDIA Model 3SG-10 / DESCR: solid-state character generator and display system / USE: to display alpha-numeric characters in connection with data processing systems / \$15,000 to \$35,000 / I3

Century Electronics & Instruments, Inc.

Chadwick-Helmuth Co., 472 E. Duarte Rd., Monrovia, Calif. / SWEEP-SYNC / DESCR: tracking sweep control for any oscilloscope -- holds exactly one cycle for full width display while frequency sweeps from 5 to 20,000 cps / USE: "quick look" distortion analyzer with single beam CRO, "quick look" transfer function analyzer with dual beam CRO / \$385 / I3

Chadwick-Helmuth Co. -- see C39

Chrono-log Corp., Box 4587, Philadelphia 31, Pa. / digital calendars / DESCR: digital calendars for real-time date information in digital computers and digital systems. Automatic length of month and Leap Year correction / USE: to print out date on computer results and to provide date information for computer accounting functions / \$410 to \$500 / I3

Chrono-log Corp., \*a / digital clocks / DESCR: digital clocks for real-time references in computers and digital systems. Time resolutions of minutes, 0.1 minutes or seconds. Multiple decimal or BCD outputs / USE: to provide real-time data to digital systems under program control of the digital system, i.e. by strobing the clock. Monitor systems / \$325 to \$700 / I3

Clary Corporation -- see K1, P4, P9  
Daystrom, Inc., Weston Instruments Div.

The Electro Nuclear Systems Corp.  
Elgenco, Inc. -- see C26  
The Foxboro Co.

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / input-output machines / DESCR: solenoid or keyboard operated instruments which provide data for, or accept data from, other machines. Functions include accumulating and printing. Variety of models available / USE: general data processing / I3

General Dynamics/Electronics, Information Technology Division

General Electric Co., Computer Dept., 13430 No. Black Canyon Highway, Phoenix, Ariz. / General Electric full field proof encoder / DESCR: fully prepares printing of E 13 B MICR documents in any or all positions of documents within A.B.A.

specifications for entry into document handler systems / USE: proofing and encoding checks / I3

The Geotechnical Corp. -- see D2  
GPL Division, General Precision, Inc., 63 Bedford Rd., Pleasantville, N.Y. / TABTROL / DESCR: used to find and update posted data. Communicates via binary input and may be used as binary output device. No sequence required for posted data / USE: is flight progress strip updater in Air Traffic Control Modernization Program / prices on request / I3

Industrial Development Engineering Associates, Inc. (I.D.E.A., Inc.), 7900 Pendleton Pike, Indianapolis 26, Ind. / digital and alpha-numeric readouts / DESCR: in line, in plane display devices. Four digital models (character size 1/2" to 3") one alpha-numeric model requires only one input per character / USE: data display / \$5 to \$95 / I3

International Computers and Tabulators, Ltd.

Jonker Business Machines, Inc. -- see I2

Philco Corp., Computer Div., 3900 Welsh Rd., Willow Grove, Pa. / Philco 2000 high-speed printer, Model #256-1 / DESCR: hard-copy printed at the rate of 900 lines per minute. Vertical and horizontal format control are standard features / USE: as part of Philco 2000 System for scientific and EDPS systems / \$3600 per month / I3

Philco Corp., Computer Div., \*a / Philco 2000 high-speed punched-card reader, Model #258-1 / DESCR: photoelectric readings of 2000 punched cards per minute. Second-read station is provided for checking purposes / USE: as part of Philco 2000 System for scientific and EDPS systems / \$800 per month / I3

Philco Corp., Computer Div., \*a / Philco 2000 input-output processor / DESCR: interconnecting and control link between the central computer and 16 input-output channels. Permits simultaneous read-write computer operations / USE: as part of Philco 2000 System for scientific and EDPS systems / \$3300 to \$8400 per month / I3

Philco Corp., Computer Div., \*a / Philco 2000 magnetic tape unit / DESCR: uses 1 mil mylar base tape one-inch wide. Reads forward and backwards 90,000 characters per second. Significant in sorting. Standard block is 128 words recorded in 512 frames / USE: as part of Philco 2000 System for scientific and EDPS systems / \$850 per month / I3

Philco Corp., Computer Div., \*a / Philco 2000 paper tape system, Model #240 / DESCR: photoelectric reader operates 1000 characters per second. Punch operates 60 characters per second. Information enters central processor directly or through input-output processor / USE: as part of Philco 2000 System for scientific and EDPS systems / \$1800 per month / I3

Philco Corp., Computer Div., \*a / Philco 2000 paper tape system, Model #241 / DESCR: photoelectric reader operates 1000 characters per second. Punch operates 60 characters per second. This model operates off-line through Universal Buffer Controller / USE: as part of Philco 2000 System for scientific and EDPS systems / \$1800 per month / I3

Recordak Corp., a subsidiary of Eastman Kodak Corp. -- see D2

Remington Rand UNIVAC -- see D1

Smith-Corona Marchant Inc.

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Tally Register Corp. -- see D1

The Teleregister Corp. -- see D1

Teletype Corp. -- see C22

Union Switch & Signal, Div. of Westinghouse Air Brake Co.

### 14. INTEGRATORS

Airpax Electronics Inc.

Automation Management, Inc. -- see C23

The Bendix Corp., Eclipse-Pioneer Div.  
The Daven Co.

Dresser Electronics, SIE Division, a division of Dresser Industries, Inc.

GPS Instrument Co., Inc. -- see C23

George A. Philbrick Researches, Inc. -- see C23

### 15. INTEGRATORS, ELECTRONIC

Airpax Electronics Inc.

Automation Management, Inc. -- see C23

The Bendix Corp., Eclipse-Pioneer Div.

Computer Systems, Inc. -- see C23

Embree Electronics Corp. -- see C23

International Business Machines Corp., Federal Systems Division -- see C22

Reeves Instrument Corp.

### 16. INTEGRATORS, MECHANICAL

The Bendix Corp., Eclipse-Pioneer Div.

### 17. INVENTORY SYSTEMS

Booz, Allen & Hamilton -- see C30

Dennison Mfg. Co., Machines Systems

Div., Howard St., Framingham, Mass. / print-punch systems / DESCR: imprinted and punch coded single or multiple stub tickets / USE: as basic input media in automatic merchandise control and manufacturing control systems / I7

Remington Rand UNIVAC

The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / inventory systems / DESCR: contractual data processing for business, science, and industry / I7

## 18. INVESTMENT ASSISTANCE

### J1. JACKS

Accurate Electronics Corp.  
Alden Products Co.  
Cambridge Thermionic Corp.  
Superex Electronics Corp.

### K1. KEYBOARDS

Burroughs Corporation  
Clary Corporation, 408 Junipero St.,  
San Gabriel, Calif. / input key-  
boards / DESCR: small, low-cost  
input devices with 10 numerical  
keys and up to 35 control bars and  
indicator lights / USE: input for  
any numerical system / \$200 and  
up / K1  
Invac Corp., 14 Huron Drive, E. Natick  
Industrial Park, E. Natick, Mass. /  
keyboards / DESCR: for INVAC photo-  
electric encoder / K1  
Pendar, Inc. -- see S6  
Soroban Engineering, Inc.

### L1. LIGHTS, INDICATOR

Alden Products Co.  
Alexandria Division, American Machine  
& Foundry Co.  
Dialight Corp., 60 Stewart Ave.,  
Brooklyn 37, N.Y. / indicator  
lights (Dialco) / DESCR: complete  
line of indicator lights and pilot  
lights for every application. For  
the computer-automation fields:  
ultra-miniature (3/8" mounting)  
indicator lights, tradenamed "Data-  
lites", and made in 2 basic styles:  
lamp holders with Dialco replace-  
able lamp cartridges; also inte-  
grated "Datalites" with built-in  
neon lamps that are not replaceable.  
Also Data-Strip and Data-Matrix for  
computers, etc.; telephone light  
strips and indicator lights /  
L1  
Monroe Industries, Inc. -- see V1  
Raytheon Co., Industrial Components  
Div., 55 Chapel St., Newton 58,  
Mass. / transistorized and thyrat-  
ron light indicators / DESCR:  
eight neon and incandescent light  
indicator assemblies including  
two thyratron models / USE: visual  
display of various signal levels or  
state of storage information / L1  
Sylvania Electric Products Inc.  
Sylvania Electronic Systems, a Divi-  
sion of Sylvania Electric Products  
Inc.  
Telex, Inc., 1633 Eustis Street, St.  
Paul 1, Minn. / LVI 22400 neon in-  
dicator light / DESCR: transistor  
driven with low current drain, long  
life, and low voltage operation.  
Generates own firing voltage from  
applied 24 VDC and signal as low  
as minus 6 V / USE: indicates  
logic conditions of high-speed com-  
puter "flip-flop" modules / \$5 to  
\$8.50 / L1

## M1. MAGNETS

The Arnold Engineering Co., Railroad  
Ave. & West St., Marengo, Ill. /  
magnetic materials / DESCR: perma-  
nent magnets -- alnico, ceramic;  
cores -- silectron transformer,  
high permeability tape wound delta-  
max, permalloy, supermalloy, super-  
mendur, bobbin, molybdenum permal-  
loy, carbonyl iron, sendust powder;  
special magnetic materials / M1  
Johnson Electronics Inc.  
Stackpole Carbon Co.  
D.M. Steward Mfg. Co., P. O. Box 510,  
Chattanooga, Tenn. / magnets /  
DESCR: both oriented and non-  
oriented magnetic materials. Parts  
made to customer specification /  
USE: for catches, TV and radio  
sets, TWT's, other electronics and  
electrical appliances / price de-  
pends upon size and configuration /  
M1

## M2. MEMORY SYSTEMS

Aeronutronic, Division of Ford Motor  
Co., Ford Road, Newport Beach,  
Calif. / BIAX memories / DESCR:  
high-speed, non-destructive read-  
out memories available in many size  
configurations. Low power require-  
ments allow inexpensive transistor  
drives and very close packing.  
Ideal for instruction memories /  
USE: high-speed storage / write  
for quotation on specific applica-  
tion / M2  
American Systems Inc., 1625 East 126th  
St., Hawthorne, Calif. / magnetic  
drum & disk memory systems / DESCR:  
stock or custom drums and disks in  
wide range of diameters, sizes,  
tracks, packing densities, speeds /  
M2  
Ampex Computer Products Co.  
The Bendix Corp., Eclipse-Pioneer  
Div.  
Bendix Corp., Research Laboratories  
Div., Southfield (Detroit), Mich. /  
memory systems / DESCR: high-speed  
random-access tunnel-diode memories:  
small to medium capacity, wide en-  
vironmental tolerances / M2  
Bryant Computer Products, Div. of Ex-  
Cell-O Corp., 850 Ladd Rd., Walled  
Lake, Mich. / magnetic memory sys-  
tems / DESCR: amplifiers, record-  
ing; code discs; discs, magnetic;  
drums magnetic; heads, read/record/  
erase magnetic record/playback  
units; memories, magnetic drum;  
power supplies, regulated; pre-  
amplifiers; recorders, drum, mag-  
netic; registers, shift-/ up to  
\$200,000 each / M2  
CBS Electronics, A Div. of Columbia  
Broadcasting System, Inc., 100 En-  
dicott St., Danvers, Mass. / mem-  
ory systems / DESCR: development  
and custom production of encapsu-  
lated ferrite-memories including  
peripheral circuitry; capabilities  
for research and development of  
thin-film memories / USE: comput-  
ers, digital and analog / M2  
Computer Systems, Inc. -- see C23

Consolidated Controls Corp., 16 Durant  
Ave., Bethel, Conn. / memory sys-  
tems / DESCR: DYNASTAT magnetic  
drum remembers a sequence of com-  
mands, positions, or results / USE:  
for machine control, sorting con-  
veyors and as component of CCC's  
teachable robot / \$1000 to \$6000 /  
see D12 and R18 / M2

Delco Radio Division, General Motors  
Corp.  
Digital Development Corp. -- see D12  
Gulton Industries, Inc.  
Indiana Steel Products, Div. of Indi-  
ana General Corp., 405 Elm St.,  
Valparaiso, Ind. / permanent mag-  
nets / DESCR: complete line of  
alnico, indox (ceramic) and cunife  
permanent magnets. Magnetizers and  
magnet testers / USE: controls -  
instrumentation and hundreds of  
applications / prices on quotation  
(depends upon type and quantity) /  
M2

Edwin A. Lipps Engineering  
Lockheed Electronics Co., Avionics  
and Industrial Products Div., 6201  
E. Randolph St., Los Angeles 44,  
Calif. / memory systems / DESCR:  
memory systems designed to the cus-  
tomers' specification and memory  
planes assembled to customers'  
prints are some of the services  
available to the customer / USE:  
in computers and other electronic  
equipment / M2

Miles Reproducer Co., Inc.  
MINNEAPOLIS-HONEYWELL REGULATOR CO.,  
AERONAUTICAL CO., FLORIDA FACILITY  
-- see D12

Saab Aircraft Co., Bureau for Engi-  
neering Data Processing, Linköping,  
Sweden / Saab magnetic tape system /  
DESCR: variable record length.  
1-bit error-correcting. Read/write  
speed 90,000 characters/sec.  
(360,000 bits/sec) / USE: primarily  
for Saab D21 digital computer /  
\$40,000 and up, excluding tape  
decks / M2

Sperry Gyroscope Co., Division of  
Sperry Rand Corp.  
Systems Division of Beckman Instru-  
ments, Inc. -- see D2A  
Wang Laboratories Inc. -- see C14

## M2A. MOTORS

Land-Air, Inc., Stepper Motors Divi-  
sion, 16226 S. Broadway, Gardena,  
Calif. / incremental motors / DESCR:  
one model provides ten 36-degree  
steps per shaft revolution. Basic  
model uses 2 rotary solenoids to  
produce incremental motion of its  
output shaft in either direction /  
USE: remote command positioning  
devices, heading controllers, etc. /  
approximately \$150 / M2A

## M3. MULTIPLIERS

Clary Corporation -- see C43  
Daystrom, Inc., Weston Instruments  
Div.  
GPS Instrument Co., Inc. -- see C23  
Moran Instrument Corp.

George A. Philbrick Researches, Inc.  
-- see C23  
Wang Laboratories Inc. -- see C14

#### M4. MULTIPLIERS, DIODE

Dian Laboratories, Inc., 611 Broadway, New York 12, N.Y. / electronic multiplier (diode) / DESCR: product formed by quarter-square principle with diode-shaping cards and high-precision d-c amplifiers / USE: multiplier is precalibrated with inputs and outputs available on patchbay / price available on request / M4

Sylvania Electric Products Inc.

#### M5. MULTIPLIERS, ELECTRONIC

Applied Dynamics, Inc. -- see C23  
Beckman Instruments, Inc., Berkeley Div.

Chadwick-Helmuth Co., 472 E. Duarte Rd., Monrovia, Calif. / electronic multiplier / DESCR: hold 0.35% total error from DC to 500 cps, with 1° phase shift and 1% error at 1000 cps. Computer and instrumentation models available / USE: determine instantaneous product of two time varying inputs / \$1550 to \$1750 / M5

Clary Corporation -- see C43  
Computer Systems, Inc. -- see C23  
Electro-Mechanical Research, Inc., P. O. Box 3041, Sarasota, Fla. / photomultipliers / DESCR: Cs-Te or Cs-Sb photocathode; 14, 15, or 18 dynodes; 0.5", 1", or 1.7" aperture diameter; Kovar ring construction; supplied with voltage divider / \$650 to \$850 / M5

Wang Laboratories Inc. -- see C14

#### M6. MULTIPLIERS, FREQUENCY

#### M7. MULTIPLIERS, SERVO

Computer Systems, Inc. -- see C23  
Dian Laboratories, Inc., 611 Broadway, New York 12, N.Y. / servo multiplier / DESCR: product of any variable with any of four others obtained on each servo. .05% 10 turn potentiometers. Readout dial indicates polarity and voltage to .02 volts / USE: all inputs and outputs available on patchbay / \$1500 / M7  
Feedback Controls, Inc.  
Servomechanisms/Inc.

#### O1. OFFICE MACHINES

Automation Management, Inc. -- see C23

Burroughs Corporation  
Comptometer Corp.

Ferranti-Packard Electric Ltd. (Electronics Div.) -- see I2

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / office equipment / DESCR: complete line of adding, calculating, data processing

machines and related equipment / USE: general office use / O1  
Jonker Business Machines, Inc. -- see I2

The National Cash Register Co., Main & K Sts., Dayton 9, Ohio / Post-Tronic / DESCR: electronic posting machine which reads and stores information in magnetic strips on back of a conventional ledger card, prints information on the front of the card / USE: posting in banks, credit unions, savings and loans etc. / about \$12,000 / O1

The National Cash Register Co., \*a / Compu-Tronic / DESCR: an accounting machine capable of making electronic calculations / USE: all basic accounting operations / \$11,000 to \$18,000 / O1  
Smith-Corona Marchant Inc.

#### O2. OPERATIONS RESEARCH (see also "Survey of Consulting Services")

American Systems Inc., 1625 East 126th St., Hawthorne, Calif. / information, processing, research and service / DESCR: development of executive, utility, applied computer programs; logical design for advanced military systems; statistical analyses, operations research / O2  
Automation Management Inc. -- see S9  
Booz, Allen & Hamilton -- see C30

Booz, Allen Applied Research, Inc., 135 So. La Salle St., Chicago 3, Ill. (also Glenview, Ill. and Washington, D.C.) / consulting services in technical operations research problems and in research and development areas / DESCR: technical consulting in operations research and research and development in reliability, applied statistics, electro-mechanisms, instrumentation, systems analysis, electronics, communications and physics / USE: by top management and research and development management in government and industry / specific price proposals made for each assignment / O2

Broadview Research Corp.  
Compumatix, Inc. -- see C30  
Computer Sciences Corp. -- see C30  
Fair, Isaac and Co., Inc.  
H. S. GELLMAN & COMPANY LTD. -- see C30  
International Business Machines Corp., Federal Systems Division -- see C22  
KCS Ltd.  
Laboratory for Electronics, Inc. -- see P12A  
Mathematischer Beratungs- und Programmierungsdienst GmbH.  
H. B. Maynard & Co., Inc.  
Midwest Research Institute

THE SERVICE BUREAU CORP., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / OPERATIONS RESEARCH / DESCR: computing and analytical services in: linear programming; transportation problem; statistical analysis; pert/pep processing; economic analysis; scientific and engineering analysis; statistics; market re-

search; simulation studies of consumer behavioral patterns; data reduction; design of questionnaires; forecasting / O2

#### P1. PANELS

Clarkson Press Inc., 189 Van Rensselaer St., Buffalo 10, N.Y. / GC panelLOGIC / DESCR: all-new method of wiring control panels for data processing equipment. Reduces wiring costs; offers color-coding, easy tracing and circuitry checking, compactness / P1

Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23

Monroe Industries, Inc. -- see V1

#### P2. PANELS, JACK

Accurate Electronics Corp.  
Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23

#### P3. PANELS, RELAY RACK

Wright Engineering Co., Inc.

#### P4. PAPER TAPE

Clary Corporation, 408 Junipero St., San Gabriel, Calif. / adding-punch / DESCR: adding machine, either 10-key or full keyboard that creates a perforated paper tape / USE: data processing / \$2095 to \$2475 / P4

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / paper tape / DESCR: used with Friden tape punching-reading machines (such as Flexowriters, Computypers) or allied equipment / USE: general data processing / P4

International Computers and Tabulators, Ltd.

Teletype Corp. -- see C22

#### P5. PATCH CORDS

Alden Products Co.  
Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23

#### P6. PLOTTERS

Bendix Corp., Bendix Computer Div.  
California Computer Products, Inc., 8714 Cleeta St., Downey, Calif. / digital incremental X-Y recorder / DESCR: graphical output from small and medium scale digital computers; requires no D to A conversion; accuracy .01 inch; plots up to 11" x 120' charts in different colors / USE: as graphical output for digital computers / \$3300 to \$4500 / P6  
California Computer Products, Inc., \*a / magnetic tape plotting system / DESCR: off-line plotter for use with high-speed digital computers having magnetic tape output capability

ity. Curve identification, scale factor, axis generation, etc. controlled entirely by programmer / USE: plots calculated data or reduced test data / \$24,500 and up / P6

Computer Systems, Inc. -- see C23

Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23

Hogan Faximile Corp., a subsidiary of TELautograph Corp., 635 Greenwich St., New York 14, N.Y. / Rx-51 graphic recorder / DESCR: can be programmed so that it can produce 100,000 points a second in the form of data curves, alpha-numerics and grid system / USE: plotter / \$12,000 / P6

The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / plotters / DESCR: contractual data processing. Dataplotter available on an hourly basis / P6

Tele-Dynamics Division of American Bosch Arma

Westgate Laboratory, Inc.

#### P6A. PLUGBOARDS

AMP Inc., Harrisburg, Pa. / patchcord programming systems / DESCR: switching units for electronic application from 240 to 4896 circuits. Standard or shielded systems for digital or analog applications. Features AMP exclusive wiping action / \$350 per unit to \$5200 per unit / P6A

Cambridge Thermionic Corp.

#### P7. POTENTIOMETERS (COMPUTER TYPES)

Ace Electronics Associates, Inc.

Analogue Controls, Inc., 200 Frank Rd., Hicksville, L.I., N.Y. / precision potentiometers / DESCR: precision potentiometers -- single and multiple turn with .05% linearity in a ten-turn 1/2" diameter potentiometer to  $\pm .002\%$  in a 20 turn 5" diameter potentiometer / USE: a component in a control system or a computer / \$30 to \$1000 / P7

Bourns, Inc., 6135 Magnolia Ave., Riverside, Calif. / Model 802 multi-channel computer potentiometer / DESCR: compact multi-channel, rotary input potentiometer; up to seven output channels available, all capable of producing an independent linear or complex function / USE: designed for direct servo motor drive; direct couple to servo motor / P7

Bourns, Inc., \*a / Trimpot  lead-screw actuated potentiometer / DESCR: miniature adjustment potentiometer used for matching, balancing and adjusting circuit variables in computers, telemetering equipment and other critical applications / \$1 to \$15 / P7

Century Electronics & Instruments, Inc.

Clarostat Mfg., Co., Inc., Dover, N.H. / potentiometers, switches &

resistors / DESCR: precision wire-wound potentiometers (single or multiple turn), switches, power resistors, and precision composition element potentiometers in all ratings and combinations. Selection of shafts, mountings, encapsulations / USE: as a precision component in all circuitry / 60¢ to \$135 / P7

Computronics, Inc., 5310 E. Pacific Place, Denver 22, Colo. / Model CI-70, precision potentiometer positioning system / DESCR: uses the CI-75 servo set potentiometer module (5 potentiometers, each set by individual motor in plug-in module) for fast and accurate potentiometer positioning / USE: analog computer component / P7

DeJur-Amsco Corp., Electronics Div. Electro-Mec Division of Waltham Precision Instrument Co., Inc., 47-51 33rd St., Long Island City 1, N.Y. / potentiometers / DESCR: instruments of extreme precision and ultra low torque. Non-linear instruments can also be supplied. Size ranges from .875" diameter to 3". Ganged assemblies are available / prices on quotation / P7

Fairchild Controls Corp.

The Gamewell Co., 1238 Chestnut St., Newton Upper Falls 64, Mass. / potentiometers / DESCR: precision potentiometers and rotary switches / USE: control, guidance component, etc. / P7

General Controls Co.

Helipot Div. of Beckman Instruments, Inc.

Ketay Dept., Norden Division, United Aircraft Corp.

Markite Corp.

Maurey Instrument Corp.

Norden Division of United Aircraft Corp.

Servomechanisms/Inc.

Sterling Instrument division of Designatronics

Technology Instrument Corp., 531 Main St., Acton, Mass. / precision potentiometers / DESCR: a complete range of sizes from 1/2" to 3" in linear and non-linear functions, single or multiturn wide resistance range / P7

Vernistat Division of the Perkin-Elmer Corp., 771 Main Ave., Norwalk, Conn. / Vernistate AC potentiometers / DESCR: potentiometer with autotransformer to give high input/low output impedance; high linearity; low phase shift; accuracy for analog computation / USE: analog computers / \$240 to \$260 / P7

Wright Engineering Co., Inc.

#### P8. POWER SUPPLIES -- REGULATED

American Research & Manufacturing Corp. -- see P13

Amplifier Corp. of America, 390 Broadway, New York 13, N.Y. / power supplies / DESCR: transistorized power supplies to special requirements / P8

Applied Dynamics, Inc. -- see C23

Bryant Computer Products, Div. of Excell-O Corp.

Burlingame Associates, Ltd.

Consolidated Avionics Corp., 800 Shames Drive, Westbury, N.Y. / transistorized AC to DC power supplies / DESCR: precision regulated laboratory supplies and modular supplies for incorporation into other equipment. Design and manufacture custom supplies to order / USE: in manufacturer's equipment and in laboratory / \$95 to \$990 / P8

Consolidated Electrodynamics Corp., 360 Sierra Madre Villa, Pasadena, Calif. / regulated power supplies / DESCR: for converting a-c to d-c or d-c to a-c, supplying reference voltage or providing highly regulated low voltage. Models operate from 50/60/400- cycle power source / USE: power source for all types of laboratory work, excitation voltage source for transducers, for operation of CEC oscillographs / P8

Delco Radio Division, General Motors Corp.

Electric Specialty Co.

Embree Electronics Corp. -- see C23

Engineered Electronics Co.

Harrison Laboratories, Inc., 45 Industrial Rd., Berkeley Heights, N.J. / highly regulated DC power supplies / DESCR: transistorized regulated power supplies for converting AC into stable DC voltage output / \$100 to \$1000 / P8

Hathaway Denver

Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23

Johnson Electronics Inc.

Keppo, Inc., 131-38 Sanford Ave., Flushing 52, N.Y. / regulated power supplies / DESCR: constant voltage source; vacuum-tube, magnetic, semiconductor and hybrid regulator designs / \$97 to \$1950 / P8

Walter Kidde & Co., Inc., Kidde Electronics Laboratories

Maxson Electronics Corp.

Moran Instrument Corp.

George A. Philbrick Researches, Inc. -- see C23

Sorensen & Co., Inc., a subsidiary of Raytheon Co., Richards Ave., So. Norwalk, Conn. / power supplies / DESCR: complete line of regulated DC power supplies for semiconductor circuitry. Also electronic and magnetic voltage regulators, inverters, converters, etc. / P8

Sterling Instrument division of Designatronics

Valor Instruments, Inc., 13214 Crenshaw Blvd., Gardena, Calif. / power supplies / DESCR: highly miniaturized, high efficiency transistorized power supplies / USE: drive circuitry / \$95 to \$8000 / P8

#### P9. PRINTERS

American Bosch Arma Corp., 320 Fulton Ave., Hempstead, N.Y. / multistylus plotter / DESCR: electrostatic process multistylus plotter produces quasi-analog charts from digital inputs at rates to 30,000 data points per second on 12" paper width / price depends on specifications / P9

ANElex Corp. -- see P10  
 Clary Corporation, 408 Junipero St., San Gabriel, Calif. / data printers / DESCR: parallel and serial entry data printers or readout devices; operate from logical levels of both decimal and coded information / USE: any system needing digital readout / \$425 to \$2500 depending upon modifications / P9  
 Computer-Measurements Co., Division of Pacific Industries, Inc. -- see C54  
 Epsco, Inc.  
 General Dynamics/Electronics, Information Technology Division  
 National Data Processing Corp., 4703 Ross Ave., Dallas 21, Texas / NDP encoders / DESCR: complete line of table-encased encoders which automatically position, encode, and stack documents in view of operator. Also a proof attachment encoder for encoding during normal proofing operation / USE: various models print magnetic ink characters in the transit, account, and amount fields / \$2000 to \$3500 / P9  
 Potter Instrument Co., Sunnyside Blvd., Plainview, L.I., N.Y. / high-speed digital printer / DESCR: "line at a time" printers can operate at rates up to 20 lines per second in 10 to 120 column format / USE: as output devices on computers, information systems and general business data handling systems / \$10,000 to \$80,000 / P9  
 Tele-Dynamics Division of American Bosch Arma

**P10. PRINTERS, HIGH SPEED**

American Bosch Arma Corp., 320 Fulton Ave., Hempstead, N.Y. / printer-reader / DESCR: produces printed paper tape (electrostatic process) at 2000 characters per second and photoelectrically reads tape to provide self-contained slack-loop or torn tape communications buffer / price depends on specifications / P10  
 ANElex Corp., 150 Causeway St., Boston 14, Mass. / ANElex print station / DESCR: a complete high speed printing system for off-line operation from large scale computers prepared high density magnetic tapes / USE: EDP applications on industrial, scientific, and military installations / P10  
 ANElex Corp., \*a / Series 4-1000 high speed printer / DESCR: new, improved, simplified and reduced in price 1000 lpm printers for heavy duty readout from data processing systems / USE: wherever high speed readout required / P10  
 ANElex Corp., \*a / Series 4-6624 and 72 high speed printers / DESCR: newly redesigned 24 and 72 column, alpha numeric printers for commercial and specialized data computing systems / USE: bank automation, missile and space programs, and communication systems / P10  
 ANElex Corp., \*a / 56-160 high speed printer / DESCR: new ruggedly con-

structed, 56 character 160 column high speed printer for heavy duty readout / USE: standard printer supplied major computer and systems builders / P10

Bendix Corp., Bendix Computer Div.  
 Clary Corporation, 408 Junipero St., San Gabriel, Calif. / high-speed line printers / DESCR: versatile, reliable, commercial and militarized line printers that print up to 24 characters per column, 300 lines per minute. Fully militarized models available to specifications / USE: with computers and check-out systems / \$7000 to \$15,000 / P10

General Dynamics/Electronics, Information Technology Division  
 General Electric Co., Computer Dept., 13430 No. Black Canyon Highway, Phoenix, Ariz. / General Electric magnetic ink re-entry printer / DESCR: prints in both Gothic type and in E 13 B magnetic ink type font, 667 lines per minute. Output of computer generated printing can be entered into the computer as input / USE: printing bills, checks, and any other data requiring re-entry / P10

Hogan Faximile Corp., a subsidiary of TELautograph Corp. -- see D2A  
 Hogan Faximile Corp., a subsidiary of TELautograph Corp., 635 Greenwich St., New York 14, N.Y. / HPP-110 printer-plotter / DESCR: when used with buffer logic converter produces a plurality of graph traces, grid scale, plot-points and alphanumerics / USE: output device for computer / \$80,000 to \$90,000 / P10  
 International Computers and Tabulators, Ltd.

Potter Instrument Co. -- see P9  
 Rank Precision Industries Ltd., Electronics Dept., Sulgrave Rd., Hamersmith, London, W.6., England / Xeronic high-speed computer printer / DESCR: characters generated on cathode ray tubes. Up to 32 forms may be selected by the computer. 3000 lines per minute / \$60,000 to \$80,000 / P10  
 Remington Rand UNIVAC -- see C24 and D1  
 Shepard Laboratories, Inc., 480 Morris Ave., Summit, N.J. / Shepard electronic typers / DESCR: maximum 190 columns, any 64 characters, up to 6 simultaneous copies, 15 lines per second, transistorized, no hammer readjustment for paper thickness, miniaturized model also available / USE: commercial and military applications, EDPS hi-speed output / \$15,000 to \$50,000 / P10  
 Smith-Corona Marchant Inc.

**P11. PRINTERS, KEYBOARD**

National Data Processing Corp. -- see P9  
 Smith-Corona Marchant Inc.  
 Teletype Corp. -- see C22

**P12. PRINTERS, LINE-A-TIME**

Clary Corporation -- see P10  
 Computer-Measurements Co., Division of Pacific Industries, Inc. -- see C54  
 Shepard Laboratories, Inc. -- see P10

**P12A. PROGRAMMING SERVICES (see also "Survey of Consulting Services")**

ADB Institutet (Scandinavian Automatic Data Processing Institute) -- see C28  
 Alexandria Division, American Machine & Foundry Co.  
 American Systems Inc. -- see O2  
 Auerbach Electronics Corp., 1634 Arch St., Philadelphia 3, Pa. / programming services / DESCR: problem formulation, mathematical analysis, program design in commercial, scientific and military applications. Senior consultants for development of automatic programs and complex real-time system design / P12A  
 Booz, Allen & Hamilton -- see C30  
 Bowmar Instrument Corp.  
 Broadview Research Corp.  
 C-E-I-R, Inc.  
 Compumatix, Inc. -- see C30

**COMPUTER OPERATIONS, INC., 600 Old Country Rd., Garden City, L.I., N.Y. / PROGRAMMING SERVICES AND SYSTEMS ENGINEERING / DESCR: computer programming, systems analysis, system design, logical design, mathematical analysis, commercial and engineering computation and data processing (equipment available IBM 650, 7090) / P12A**

Computer Sciences Corp. -- see C30  
 Cook Electric Co. -- see C28  
 Dynatech Corp. -- see C30  
 General Kinetics Inc., 2611 Shirlington Rd., Arlington 6, Va. / programming services / DESCR: programming; recommendation, design, and construction of automatic programming systems; mathematical studies; numerical analysis / hourly and contract rates / P12A  
 The I.D.R. Co. (Industrial Data Reduction) -- see C28  
 Laboratory for Electronics, Inc., 305 Webster St., Monterey, Calif. / programming services and operations research / DESCR: systems and scientific programming. Mathematical studies. Operations research and systems analysis studies / P12A  
 Mathematischer Beratungs- und Programmierungsdienst GmbH.  
 H. B. Maynard & Co., Inc.  
 Remington Rand UNIVAC

**THE SERVICE BUREAU CORP., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / PROGRAMMING SERVICES / DESCR: programming, systems analysis, data processing, and machine services on a contractual basis for business and scientific problems using IBM 650, 1401, 7070, 704, 709, 7090, dataplotting, MICR sorter-reader, and unit record equipment. Exten-**

sive experience in programming and replanned programs in many fields. Equipment available on an hourly basis / USE: business, engineering, industry, science, military / P12A

Technical Operations, Inc., South Ave., Burlington, Mass. / programming / DESCR: contract programming for government and industry specializing in digital simulation, scientific programming, and automatic programming systems / P12A

U.S. Naval Weapons Laboratory, Computation and Analysis Lab.

Wolf Research and Development Corp., 462 Boylston St., Boston 16, Mass. / programming services / DESCR: analysis, programming, coding, operating and scheduling services for digital computer installations / P12A

### P13. PUBLICATIONS

American Research and Manufacturing Corp., 920 Halpine Ave., Rockville, Md. / electronic components and technical publications / DESCR: technical publication services including manuals, graphic arts, training aids and test reports. Components include power supplies and miniature high voltage fittings / P13

Association of Data Processing Service Organizations

Automation Consultants, Inc., 155 Fifth Ave., New York 10, N.Y. / Business Automation News Report / DESCR: bi-weekly newsletter for executives involved in business automation and data processing providing late news affecting EDP users and suppliers / USE: major source of up-to-minute EDP news / \$30 a year (26 issues) / P13

Automation Consultants, Inc., \*a / Office Automation / DESCR: loose-leaf handbook of over 700 pages, with monthly updating service, devoted to EDP hardware and equipment. Written in non-technical language for management personnel / USE: basic reference of equipment characteristics / \$37.50 for book plus \$37.50 annually for updating service / P13

Automation Consultants, Inc., \*a / Office Automation Applications / DESCR: loose-leaf handbook of over 900 pages, with monthly updating service, containing case studies of actual automated systems with hundreds of photos, forms, flow charts and diagrams / USE: reference by systems management / \$37.50 for book plus \$37.50 a year for updating service / P13

Institute for Scientific Information, Inc., 33 South 17th St., Philadelphia 3, Pa. / current contents of space and physical sciences / DESCR: content pages of computer, automation, math and other journals including "Computers and Automation" / USE: up-to-date information / \$25 to \$100 per year / P13

The Institute of Management Sciences Instrument Society of America Management and Business Automation Reinhold Book Div., Reinhold Publishing Corp.

John Wiley and Sons, Inc., 440 Park Ave. So., New York 16, N.Y. / technical books / DESCR: publishers of three volume work, "Handbook of Automation, Computation, and Control" by Grabbe-Ramo-Wooldridge and "Giant Brains: Or Machines that Think" by Edmund C. Berkeley / P13

### P15. PUBLICATIONS, MAGAZINES

Canning, Sisson & Assoc., Inc. Computers and Automation, 815 Washington St., Newtonville 60, Mass. / Computers and Automation / DESCR: monthly magazine, articles, reference information (20 kinds), papers, forum, news, etc., dealing with automatic computing machinery and its applications and implications / USE: for keeping up to date with the computer field; finding out reference information quickly / U.S. \$12 a year; foreign, \$13 a year / P15

Data Processing Digest Gille Associates, Inc., 22nd Floor Book Tower, Detroit 26, Mich. / The Data Processing Annual / DESCR: a publication dedicated to the advancement and enlightenment of the science of punched card accounting and electronic and integrated data processing / P15

Technical Information Company Ltd., Chancery House, Chancery Lane, London W.C.2., England / publication (monthly) "Computer Abstracts" and "Computer News" / DESCR: international coverage of technical literature, patents, commercial news, etc. / USE: supplied to computer manufacturers and users, libraries, documentation centers, etc. / \$96 per annum / P15

### P16. PUNCH CARD MACHINES

International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / a complete line of punched card machines including the low-cost Series 50 equipment / DESCR: card punches, verifiers, sorters, accounting machines, interpreters, collators, verifiers, proof machines, ticket converter, Cardatype accounting machine, etc. Details available upon request / Basic installations from \$300 monthly rental. All prices exclusive of tax / P16

International Business Machines Corp., Data Processing Div. -- see T18

International Computers and Tabulators, Ltd. Remington Rand UNIVAC -- see D1

### R1. READERS

Baird-Atomic, Inc. General Electric Co., Computer Dept., 13430 No. Black Canyon Highway, Phoenix, Ariz. / MICR document handler system / DESCR: a synchronous 1200 magnetic document per

minute handler. MICR documents utilized as direct input to data processor and distributed, selectively, to one of 12 pockets / USE: business applications where source documents can be utilized as direct input media / R1

Omnitronics, Inc., Subsidiary of Borg-Warner Corp. -- see R7

The Standard Register Co. -- see T17

Tele-Dynamics Division of American Bosch Arma

Union Switch & Signal, Div. of Westinghouse Air Brake Co.

### R2. READERS, CHARACTER

American Systems Inc., 1625 East 126th St., Hawthorne, Calif. / thin magnetic film shift registers / DESCR: low power, all magnetic, thin film registers capable of shifting information in either direction at bit rates up to 1 mc. / R2

International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / IBM 1418 Optical Character Reader / DESCR: solid-state 1418 reads typed, printed or imprinted information from paper or card documents for direct input to an IBM 1401 / USE: for conversion of numerical data into machine language, which it feeds to IBM 1401 for processing / Monthly rental \$2600 to \$2900; selling price \$120,300 to \$133,800. All prices exclusive of tax / R2

National Data Processing Corp., 4703 Ross Ave., Dallas 21, Texas / NDP Optical Character Reader / DESCR: an all electronic reader used in connection with high speed card punch or new document sorting equipment / USE: to automatically process charge account sales slips / \$20,000 to \$50,000 / R2

Union Switch & Signal, Div. of Westinghouse Air Brake Co.

Vought Electronics -- see C24A

### R2.5. READERS, FILM

Richardson Camera Co., Inc.

### R3. READERS, MAGNETIC CARD

The Electro Nuclear Systems Corp. International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / IBM Magnetic Character Sensing Equipment / DESCR: includes utility, proof and unit inscribers and reader-sorters. Can be used with RAMAC 305, 650, 705, 1401, 1410, and 7070 data processing systems / USE: automating demand deposit accounting and other banking operations / Prices: 1201 Proof Inscrubber -- monthly rental \$252 and up, selling price \$12,950 and up; 1202 Utility Inscrubber -- monthly rental \$75, selling price \$1850; 1203 Unit Inscrubber -- monthly rental \$145 and up, selling price \$5900 and up; 1210 Reader-sorter --

monthly rental \$1750, selling price \$71,000; 1412 Reader-sorter -- (used with 1401, 1410) monthly rental \$2000, selling price \$83,100. All prices exclusive of tax / R3 International Computers and Tabulators, Ltd.

#### R4. READERS, MAGNETIC TAPE

Bendix Corp., Bendix Computer Div.  
Cook Electric Co.  
N. V. Electrologica  
Edwin A. Lipps Engineering  
Potter Instrument Co. -- see D2  
Smith-Corona Marchant, Inc.

#### R5. READERS, MECHANICAL

Jonker Business Machines, Inc. -- see I2  
Miles Reproducer Co., Inc.  
Smith-Corona Marchant, Inc.

#### R6. READERS, PAPER TAPE

Crestmont Electronics, A Division of Crestmont Consolidated Corp. -- see A6  
Ferranti-Packard Electric Ltd. (Electronics Div.), 16 Industry St., Toronto 15, Canada / paper tape reader, Type 196 / DESCR: synchro-nized start-stop speed up to 200 char/sec.; free run speed of 270 char/sec.; centre unwind facility; bi-directional operation; solid-state electronics throughout / USE: computer input; check-out and control systems / R6  
Ferranti-Packard Electric Ltd. (Electronics Div.), \*a / paper tape reader, Type 260 / DESCR: designed and constructed to MIL-E-16400. Cassette storage of 50 feet; endless logs of paper tape; cassettes readily removable to allow interchange of pre-programmed tapes / USE: data processing, check-out or control requiring repetitive input / R6  
Ferranti-Packard Electric Ltd. (Electronics Div.), \*a / paper tape reader, Type 271 / DESCR: designed and constructed to MIL-E-4970. Free run speed 300 characters per second; fast 1000 characters per second; synchronized stop-start speed; card file mountings of logic circuitry; transistorized / USE: high-speed data processing; programming and control / R6  
Ferranti-Packard Electric Ltd. (Electronics Div.), \*a / paper tape block reader, Type 290 / DESCR: capable of reading up to twelve characters simultaneously; free run speed 260 characters per second; synchronized start-stop speed up to 180 characters per second; transistorized modular construction / USE: computer input; check-out and control systems / R6  
Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / paper tape

readers / DESCR: operate in conjunction with Friden Flexowriters, Computypers, or other tape-controlled machines (such as numerical control devices). Electro-mechanical operation / USE: general data processing, numerical control / R6 International Computers and Tabulators, Ltd.

Omnitronics, Inc., Subsidiary of Borg-Warner Corp. -- see R7  
Potter Instrument Co. -- see D2  
Remington Rand UNIVAC -- see C24  
Smith-Corona Marchant, Inc.  
Soroban Engineering, Inc., Box 1717, Melbourne, Fla. / paper tape readers / DESCR: single and dual mechanical sensing paper tape reading devices capable of eight level reading up to speeds of 60 characters per second / Anemometer Reading Head capable of 8 level readings up to speeds of 1000 characters per second / \$450 to \$1150 / R6

Tally Register Corp., 1310 Mercer St., Seattle 9, Wash. / paper tape reader / DESCR: fully bi-directional, asynchronous perforated tape reader for 5, 6, 7 or 8 channel perforated tape. Assert and negate indication of code configuration. Console or panel mounted / USE: read paper tape, search for data / \$595 to \$750 / R6

Teletype Corp. -- see C22  
Wang Laboratories Inc., 12 Huron Dr., Natick, Mass. / block tape reader / DESCR: for standard EIA tape, block sizes 6 to 32 lines; readout in parallel form enables faster input, eliminates complicated and expensive electronic buffering / USE: program automation systems, test equipment, and numerical controls / \$1200 for 6 to 12 lines; \$2200 for 32 lines / R6  
Wright Engineering Co., Inc.

#### R7. READERS, PHOTOELECTRIC

American Bosch Arma Corp. -- see P10  
The Electro Nuclear Systems Corp.  
Invac Corp., 14 Huron Drive, E. Natick Industrial Pk., Natick, Mass. / photo-electric reader / DESCR: motorless, solid-state / R7  
Omnitronics, Inc., Subsidiary of Borg-Warner Corp., 511 No. Broad St., Philadelphia 23, Pa. / photoelectric tape reader / DESCR: offers greater reliability and stability employing chopped reflected light in the reading process. Reads all tapes punched or printed, colored or transparent / USE: as input to digital computers, communication systems, tape converters, machine tool control / R7  
Potter Instrument Co. -- see A4 and D2  
Smith-Corona Marchant, Inc.

#### R8. READERS, PUNCH CARD

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / tab card

reader / DESCR: used as a second input source to Friden Flexowriters and Computypers; interprets data from 80-column tab cards which is then read out on the master machine / USE: general data processing / R8  
General Electric Co., Computer Dept., 13430 No. Black Canyon Highway, Phoenix, Ariz. / GE card reader / DESCR: reads 80, 90, or 51-column cards with any type of card code. Reads asynchronous at any rate up to 1500 cards per minute under computer control / USE: as input to computer / R8  
International Computers and Tabulators, Ltd.  
Remington Rand UNIVAC -- see D1  
Taurus Corp., Washington St., Lambertville, N.J. / card reader / DESCR: sensing device for reading punched IBM cards, Rem Rand cards, or custom made cards / USE: testing and automation / \$285 to \$10,000 / R8

#### R9. RECORDING PAPERS

The Bristol Company  
Consolidated Electrodynamics Corp., 360 Sierra Madre Villa, Pasadena, Calif. / recording papers / DESCR: CEC markets two oscillogram recording papers for use with Consolidated DATARITE magazines. One has greater photographic sensitivity than the other / USE: to record data in CEC oscillographs and DATARITE magazines / R9  
Eastman Kodak Co.  
Edin, a Div. of Epsco, Inc.

#### R10. RECTIFIERS

Cornell-Dubilier Electronics Div., Federal Pacific Electric Co. -- see D10  
Delco Radio Division, General Motors Corp.  
Fairchild Camera and Instrument Corp., Defense Products Division  
General Instrument Corp., Semiconductor Division  
Hughes Aircraft Co., Semiconductor Division -- see S2  
International Rectifier Corp. -- see C26  
Motorola Semiconductor Products Inc. -- see T14  
Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / rectifiers / DESCR: high, medium and low current silicon diffused junction types; coaxial-lead types; cathode-to-stud types; reverse polarity (anode-to-stud) types; ceramic insulated stud types. Stud mounted power units / USE: computers, controls, and general purpose applications / R10  
Sylvania Electric Products Inc.  
Texas Instruments Inc., Semiconductor Components Div. -- see C26  
Transitron Electronic Corp.  
Westinghouse Electric Corp. -- see S2

## R11. REGISTERS, SHIFT

Bryant Computer Products, Div. of Ex-Cell-0 Corp.  
Electronic Counters, Inc.  
Epsco, Inc.  
ESC Electronics Corp.  
Sprague Electric Co.  
Wang Laboratories, Inc. -- see C14  
Wright Engineering Co., Inc.

## R12. RELAYS (COMPUTER TYPES)

Aemco, Div. of Telex, Mankato, Minn. / relays, timers, time switches / DESCR: general purpose relays, timers and time switches / USE: in communications equipment and computers / \$1 to \$15 / R12  
Allied Control Company, Inc., 2 East End Ave., New York 21, N.Y. / relays / R12  
Assembly Producers, Inc.

**AUTOMATIC ELECTRIC COMPANY, Northlake, Ill. / SERIES V51 MERCURY-WETTED CONTACT RELAY / DESCR: speed up to 100 operations per second for over billion operations with no contact bounce. Contacts and armature assembly sealed in glass capsule with mercury pool. Make-before-break (Form D) contacts switch 250 volt-ampere loads, max. 5 amps., 500 volts. Capable of high power or low level operation / USE: for high-speed circuit switching in computers / R12**

The Bristol Company, P. O. Box 1790 CAG, Waterbury 20, Conn. / relays / DESCR: high-speed polarized, hermetically sealed, for long life and reliable switching in low level circuits / R12  
C. P. Clare & Co., 3101 W. Pratt Blvd., Chicago 45, Ill. / CLAREED -- sealed contact reed relay / DESCR: simple construction; sealed from environmental conditions; provides high-speed operation and reliability over exceedingly long life. Basic element -- pair of magnetically operated switch contacts hermetically sealed in atmosphere of inert gas. Contact and coil arrangements flexible. Relays may be packaged and mounted to meet application requirements. Capable of carrying loads from 15 va down to microamperes / \$5 to \$25 / R12  
Cook Electric Co.  
Daystrom, Inc., Weston Instruments Div.  
Thomas A. Edison Industries, Instrument Div. of McGraw-Edison Co.  
General Controls Co.  
Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23  
Walter Kidde & Co., Inc., Kidde Electronics Laboratories  
Potter & Brumfield, Princeton, Ind. / P&B relays / DESCR: broad line of relays including micro-miniature, power, sensitive, general and special purpose and telephone types / \$2 to \$20 / R12  
Raytheon Co., Industrial Components Div., 55 Chapel St., Newton 58,

Mass. / Raytheon Raysistor<sup>®</sup> relays / DESCR: electro-optical control device / USE: as a relay, potentiometer, chopper, high voltage control, commutating / price variable / R12  
Soroban Engineering, Inc.  
Telex, Inc.  
Union Switch & Signal, Div. of Westinghouse Air Brake Co.  
Wheelock Signals, Inc., 273 Branchport Ave., Long Branch, N.J. / relays (computer types) / DESCR: 4, 6 and 12 pole plug-in wire contact relay 3 ampere DPDT contacts, 400,000,000 life, 6 ms operate time, removable contacts / USE: for programming computer circuits / \$4.55 to \$16 / R12

## R13. RESISTORS

Allies' Products Corp., P. O. Box 188, Kendall 56, Fla. / resistors / DESCR: precision carbon-deposited resistors with very low noise under high voltage application / USE: in electronic circuits / R13  
Beckman Instruments, Inc., Berkeley Div.  
Clarostat Mfg. Co., Inc. -- see P7  
Corning Glass Works, Corning Electronic Components  
Dale Electronics, Inc., Box 488, Columbus, Neb. / resistors / DESCR: full line of precision and power, wirewound, metal film and carbon film resistors / USE: a component in all circuits / prices on request / R13  
The Daven Co.  
Daystrom, Inc., Weston Instruments Div.  
Reon Resistor Corp., 155 Saw Mill River Rd., Yonkers, N.Y. / resistors / DESCR: composition variable resistors per MIL-R-94; precision wirewound resistors per MIL-R-93 / USE: OEM equipment / 50¢ to \$6 / R13  
Resistance Products Co., 914 S. 13th St., Harrisburg, Pa. / electronic components precision resistors / DESCR: singular or complex with wire wound coils, carbon films, metal films. Complex units in groups of singular resistors or singular envelope with multiple resistor element / USE: in electronic equipment / \$1.35 to \$450 / R13  
Sage Electronics Corp., One Country Club Rd., East Rochester, N.Y. / miniature wirewound power resistors / DESCR: resistors conventionally or non-inductively wound with Sage IMPERVOHM silicone coating specially designed for computer circuit cards .1 to 50 watts 5% to .05% tolerances / R13  
Sprague Electric Co.  
Stackpole Carbon Co.  
Technology Instrument Corp., 531 Main St., Acton, Mass. / fixed resistors / DESCR: precision carbon film resistors 1/10 watt to 2 watt standard, moulded or hermetically sealed -- reliable -- also wirewound axial or radial leads / R13

Texas Instruments Inc., 13500 No. Central Expressway, Dallas 22, Texas / resistors / DESCR: precision film resistors / 10¢ to 20¢ / R13  
Texas Instruments Inc., Semiconductor Components Div. -- see C26

## R14. RESOLVERS

Beckman Instruments, Inc., Berkeley Div.  
The Bendix Corp., Eclipse-Pioneer Div.  
Clifton Precision Products Co., Inc.  
Ford Instrument Co., Div. of Sperry Rand Corp., 31-10 Thomson Ave., Long Island 1, N.Y. / Telesyn resolvers / DESCR: available with transformation ratios of 1:1, 4:1 and 8:1, for use in computers, angle data, data transmission, and automatic control systems / USE: performs trigonometric operations involving resolution of input voltages into sine and cosine components / R14  
Ketay Dept., Norden Division, United Aircraft Corp.  
IMC Magnetics Corp., Western Division  
John Oster Mfg. Co., Avionic Div.  
Reeves Instrument Corp.

## R15. RESOLVERS, COORDINATE TRANSFORM

Clifton Precision Products Co., Inc.

## R16. RESOLVERS, PRODUCT

Daystrom, Inc., Weston Instruments Div.

## R17. RESOLVERS, SINE-COSINE

Clifton Precision Products Co., Inc.

## R18. ROBOTS

Berkeley Enterprises, Inc., 815 Washington St., Newtonville 60, Mass. / small robots / DESCR: small robots such as Simon, a miniature mechanical brain; Squee, an electronic robot squirrel; Relay Moe, Tit-Tat-Toe game-playing machine; Nim machine; Brainiac, Geniac, Tyniac, electric brain construction kits, etc. / USE: in shows, lecturing, teaching, exhibits, displays, explaining / \$10 to \$4000, or rental / R18  
Consolidated Controls Corp., 16 Durant Ave., Bethel, Conn. / robot / DESCR: UNIMATE (Universal Automation) is a powerful and versatile industrial robot which can be taught a new job by semi-skilled operator, whenever it completes a project. Non-obsolescing / \$25,000 and up / R18

## S1. SCANNERS

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio / Bailey 750

System / DESCR: process variables scanned at rapid rate for alarming, fault monitoring, logging, sequencing, arithmetic manipulating, and/or controlling / USE: fault monitoring / S1

The Electro Nuclear Systems Corp. The Geotechnical Corp., 3401 Shiloh Rd., Garland, Texas / motorized data film viewer / DESCR: viewer has 27.5" x 11.5" viewscreen; high-speed 2-directional traverse for locating data of interest; low-speed traverse for data study / USE: for scanning hours of data quickly / \$1950 / S1

Hagan Chemicals & Controls, Inc., Rte. 60 & Campbell's Run Rd., Pittsburgh 30 Pa. / alarm indicating monitor / DESCR: electronic monitoring and warning instrument; can monitor any input which can be represented by DC voltages as low as 10 millivolts full scale / USE: monitors temperatures, pressures, flows, levels, contact closures; can be used in iron and steel plants, oil refineries, petro chemical processes, electric generating stations and cold storage plants / S1

Hathaway Denver, 5800 East Jewell Ave., Denver 22, Colo. / DRIREED, electronic commutator / DESCR: a solid state device utilizing an electronic drive to magnetically actuate DRIREED contacts arranged in matrix systems / USE: scanning, conversion systems, and telemetry / price depends on configuration and number of channels / S1

Non-Linear Systems, Inc. -- see I1

## S2. SEMICONDUCTORS

Amperex Electronic Corp.

CBS Electronics, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. / semiconductors / DESCR: transistors and diodes / USE: switching and computer gates, demodulators, modulators, rectifiers, power converters, amplifiers, voltage regulators, etc. / S2

Delco Radio Division, General Motors Corp.

Hoffman Electronics Corp., Semiconductor Div., 1001 N. Arden Drive, El Monte, Calif. / semiconductors, silicon / DESCR: diodes, transistors, zener diodes, tunnel diodes, solar cells, photo voltaic cells and capsules (readout) / USE: circuit components and dc power / 33¢ to \$100 / S2

Hughes Aircraft Co., Semiconductor Div., 500 Superior Ave., Newport Beach, Calif / diodes, transistors and rectifiers / DESCR: many, many types of diodes, transistors and rectifiers for computer applications / S2

Hughes Aircraft Co., Semiconductor Div., \*a / semiconductor devices / DESCR: tiny, reliable electron tubes / USE: electronic systems / 10¢ to \$2 each / S2

Motorola Semiconductor Products Inc. -- see T14

Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / semiconductor devices / DESCR: complete line of germanium and silicon transistors and diodes for switching, computer and general purpose use. Silicon rectifiers. Plug-in, wire-in, solder-in, compact semiconductor circuit modules / S2

Sanders Associates, Inc., 95 Canal St., Nashua, N.H. / TRI-PLATE module mounts / DESCR: TRI-PLATE module mounts for semiconductors including series double-ended cartridges, pigtail diodes, TO-18 and TO-5 transistors / USE: may be used with other standard TRI-PLATE modules or separately in microwave and high-speed switching circuits / \$40 to \$130 / S2

Sylvania Electric Products Inc.

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Texas Instruments Inc., Semiconductor Components Div. -- see C26

Transitron Electronic Corp., 168 Albion St., Wakefield, Mass. / semiconductors / DESCR: silicon transistors, diodes, rectifiers, controlled rectifiers, references and regulators, switches, micro-components, capacitors and encapsulations / USE: commercial and military electronic applications / S2

Westinghouse Electric Corp., Semiconductor Dept., Youngwood, Pa. / semiconductor products / DESCR: silicon rectifiers, silicon transistors, Tristor<sup>®</sup> controlled rectifiers, thermoelectric coolers, thermoelectric generators, hall generators, molecular functional electronic blocks / S2

## S2A. SERVOMECHANISMS

GAP Instrument Corp.

Helipot Div. of Beckman Instruments, Inc.

IMC Magnetics Corp., Western Div. F. B. MacLaren & Co., Inc. -- see A3  
Maxson Electronics Corp.  
Moran Instrument Corp.

## S3. SIMULATORS

Aircraft Armaments, Inc., Industry Lane, Cockeysville, Md. / simulators / DESCR: air traffic control, missile training (REDSTONE, SERGEANT, ATLAS, POLARIS, NIKE), radar target, 3-axis flight / USE: training, text, and evaluation of components and systems / price based on custom specifications / S3

Alexandria Division, American Machine & Foundry Co.

Bendix Corp., Bendix Computer Div. Data Instruments Division Telecomputing Corp. -- see T10

Dian Laboratories, Inc., 611 Broadway, New York 12, N.Y. / reactor simulator / DESCR: simulator for the study of reactor kinetic, control, and start-up problems / USE: model of reactor is mechanized on comput-

er for dynamic and accident studies / \$15,000 and up / S3

Elgenco, Inc. -- see C26

Embee Electronics Corp. -- see C23

Fairchild Camera and Instrument Corp., Defense Products Division

General Electric Co., Defense Systems Dept. -- see C24A

Link Division, General Precision, Inc. -- see C22A

Minneapolis-Honeywell Regulator Co., Industrial Products Group, Wayne & Windrim Aves., Philadelphia 44, Pa. / nuclear power plant simulator / DESCR: produces essential analogs of simple nuclear power plant from flux source through single-phase non-boiling reactor coolant and single heat exchanger, to adjustable load demand to vary power output (steam) / USE: educational tool for teaching the dynamic and static characteristics of thermal plants -- to simulate nuclear power plant operation / approximately \$27,000 / S3

Minneapolis-Honeywell Regulator Co., Industrial Products Group, \*a / nuclear reactor simulator / DESCR: electronically simulates neutron reactivity, solves characteristic simultaneous equations of nuclear reactor, indicates and records various dynamic data on full-size instruments, operates control rod mechanism, uses feedback to keep "reactivity" source within selected limits / USE: to simulate nuclear reactor operations / approximately \$17,000 / S3

The Newton Co.

Photomechanisms, Inc., 15 Stepar Place, L.I., N.Y. / Model 444, forward observer trainer / DESCR: simulates artillery gunfire by projecting bursts on a projected color-slide of a terrain scene. Servo operated and computer controlled / price on request / S3

The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (Offices in 70 cities) / simulators / DESCR: contractual data processing. Application of simulation techniques to problems of business, science, and industry using general purpose digital computers / S3

Westgate Laboratory, Inc.

## S3A. SOCKETS

Elco Corp., "M" St. below Erie Ave., Philadelphia 24, Pa. / tube and transistor sockets and shields / DESCR: 7 and 9 pin miniature, octal, transistor sockets, relay sockets, 7 and 9 pin miniature tube shields / 3¢ to 35¢ / S3A

## S4. STORAGE SYSTEMS

American Systems Inc. -- see M2

The Bendix Corp., Eclipse-Pioneer Div. Bendix Corp., Research Laboratories Div., Southfield (Detroit), Mich. /

Every 24 hours enough technical papers are turned out around the globe to fill seven sets of the twenty-four volume *Encyclopaedia Britannica*. And the output is rising every year. This year's crop: some 60 million papers . . . the laboratory scientist, busy with work of his own, no longer can find enough hours in the day to keep up with all that is published in his field. Even staying on top of the indexes and abstracts of these papers has become an insurmountable task for the lab men. One result is that company after company has found itself duplicating research work that others have done and fully chronicled."

From the *Wall Street Journal*  
Tuesday, December 20, 1960

# COMPUTER ABSTRACTS ON CARDS

## A quick cumulative reference to the Technical Literature on Electronic Computers

C 2.25/1.249

1539 COMPUTER DESIGN OF MULTIPLE-OUTPUT LOGICAL NETWORKS by T. C. Bartee (Lincoln Lab., M.I.T.); IRE Trans. on Electronic Computers, Vol. EC-10, pp. 21-30, March 1961

An important step in the design of digital machines lies in the derivation of the Boolean expressions which describe the combinational logical networks in the system. Emphasis is generally placed upon deriving expressions which are minimal according to some criteria. A computer program which automatically derives a set of minimal Boolean expressions describing a given logical network with multiple-output lines is discussed. The program accepts punched cards listing the in-out relations for the network, and then prints a list of expressions which are minimal according to a selected one of three criteria. The basic design procedure and the criteria for minimality are described.

COMPUTER ABSTRACTS ON CARDS is designed to provide the engineer or scientist with a cumulative reference file to the technical literature on electronic computers, *organized by subject matter*. As a subscriber you would receive, every other month, several hundred 3" x 5" cards containing abstracts of recently published papers in the computer field. These abstracts summarize the contents of the papers, enabling you to determine what work has been reported on a given subject and showing you where you can find more detailed information on that subject. In addition to the abstract and the journal reference, each card has a classification number which makes it easy for you to file the card in a *logical sequence* with all previously issued cards. In this way you can continuously group together abstracts of related references, just as the Dewey Decimal System enables a librarian to group together books on related subjects.

This abstract card file corresponds in some ways to the card file which enables the librarian to locate any book or periodical in the library. However, it has additional advantages which result from the information provided by the abstracts themselves and from the logical (as opposed to alphabetical) organization which permits one to browse through references on related topics as one might browse through the books on a library shelf. An alphabetical Pre-Index is provided with this service to direct the user to the part of the file which is devoted to a given topic. In addition, the same abstracts are supplied in a non-cumulative form with subject and author indexes. Taken together the card file, the Pre-Index, and

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- Logic and Waveforming Circuits
- Storage and Input-Output
- Programming and Coding (Programming Languages, Automatic Programming, Algorithms)
- Languages (Natural and Formal Languages, Mechanical Translation)
- Information Retrieval
- Pattern Recognition and Artificial Intelligence
- Mathematics (Number Theory, Numerical Analysis, Probability and Statistics)
- Operations Research and Game Theory
- Information Theory and Noise; Communications Systems
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by H. F. COMPTON, Ph.D.  
and G. W. HUGHES, Jr., Ph.D.  
Published by  
CAMBRIDGE COMMUNICATIONS CORPORATION  
May 1961



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STATE \_\_\_\_\_

Bendix Corp., Research Laboratories Div., Southfield (Detroit), Mich. / storage systems / DESCR: high-speed random-access tunnel-diode memories: small to medium capacity, wide environmental tolerances / S4

Clary Corporation -- see C43  
Epsco, Inc.  
FMA, Inc.  
Jonker Business Machines, Inc. -- see I2

Philco Corp., Computer Div., 3900 Welsh Rd., Willow Grove, Pa. / Philco 2000 - core storage, Model #2100 / DESCR: linear-selection core storage device having a 2 microsecond cycle time. Available in 8192, 13,384, or 32,768 word sizes / USE: as part of Philco 2000 System for scientific and EDPS systems / \$9350 to \$30,000 per month / S4

Philco Corp., Computer Div., \*a / Philco 2000 - core storage, Model #2200 / DESCR: coincident current core storage device having a 10 microsecond cycle time. Available in 4096, 8192, 16,384, or 32,768 word sizes / USE: as part of Philco 2000 System for scientific and EDPS systems / \$3100 to \$20,500 per month / S4

Rese Engineering, Inc.  
Soroban Engineering, Inc.  
Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.  
Wang Laboratories Inc. -- see C24A

## S5. STORAGE SYSTEMS, MAGNETIC

Alden Products Co.  
American Systems Inc. -- see C17 and M2  
Burroughs Corporation  
Clary Corporation -- see C43  
Delco Radio Division, General Motors Corp.  
Redmond-Fairchild Inc. -- see D12  
Smith-Corona Marchant Inc.  
Sperry Gyroscope Co., Division of Sperry Rand Corp.  
Wright Engineering Co., Inc.

## S6. SWITCHES

Aemco, Div. of Telex -- see R12  
Allied Control Company, Inc., 2 East End Ave., New York 21, N.Y. / switches / S6  
The Bristol Company, P. O. Box 1790 CAG, Waterbury 20, Conn. / switches / DESCR: switches -- pressure - miniature and sub-miniature for switching circuits in response to pressure changes in gases and liquids / S6  
Corning Glass Works, Corning Electronic Components  
Electro-Minatures Corp.  
Electro Products Laboratories, Inc., 4501 N. Ravenswood Ave., Chicago 40, Ill. / proximity switches / DESCR: proximity switches detect ferrous or non-ferrous metals without contact / USE: for positioning or counting parts and controlling machinery / \$84. and up / S6

The Gamewell Co. -- see P7  
General Controls Co.  
Hathaway Denver -- see S1  
Instrument Development Laboratories, Inc., 67 Mechanic St., Attleboro, Mass. / rotary switches / DESCR: a "family" of rotary switches comprised of more than 40 models, meeting IRIG specifications for telemetering, radar, ASW, USW, test equipment and computer systems applications / USE: telemetering, scanning, programming, monitoring, and sampling / \$500 to \$2500 (depending on model and quantity) / S6  
Micro Switch, a division of Minneapolis-Honeywell Regulator Co., 11 W. Spring St., Freeport, Ill. / precision switches / DESCR: complete line of precision snap-action and mercury switches, from modular lighted display and pushbutton devices to synchronized "one-shot" switch-circuit devices / USE: control, indication and minute operation / \$3 to \$25 / S6  
Pendar, Inc., 14744 Armita St., Van Nuys, Calif. / switchlight combinations / DESCR: illuminated push-button console switches and indicators; complete locking and interlocking gang switch assemblies; keyboard, key-operated, solenoid-release, and solenoid holding switches / \$1 to \$500 / S6

RF Products, a Division of Amphenol-Borg Electronics Corp., 33 E. Franklin St., Danbury, Conn. / coaxial switches / DESCR: electromagnetically and manually actuated devices for switching RF energy. Miniature, rotary, hermetically sealed, high-power types for simple or complex functions / USE: transfer RF energy from one circuit to another / \$7.50 to \$60 / S6  
Servomechanisms/Inc.  
Stackpole Carbon Co.  
Transitron Electronic Corp.  
Union Switch & Signal, Div. of Westinghouse Air Brake Co.

## S7. SWITCHES, STEPPING

AUTOMATIC ELECTRIC COMPANY, Northlake, Ill. / ROTARY STEPPING SWITCHES / DESCR: type 44-small-10, 22 or 33-point selection -- up to six ten-point bank levels; type 45 -- two to twelve 25-point bank levels -- capacities -- 25 points, 12 levels -- 50 points, 8 levels. Available with solderless terminals, hermetic sealing, and other special features / S7

Clarostat Mfg. Co., Inc. -- see P7  
Cook Electric Co.  
The Daven Co.  
Hathaway Denver -- see S1

## S8. SYNCHROS

The Bendix Corp., Eclipse-Pioneer Div.  
Clifton Precision Products Co., Inc.  
Farrand Controls Inc. -- see A6

Ford Instrument Co., Div. of Sperry Rand Corp., 31-10 Thomson Ave., Long Island City 1, N.Y. / Telesyn synchros / DESCR: extremely accurate, available in four types: transmitters, receivers, control transformers, differential transmitters / USE: electrical transmission of shaft data, torque amplification / S8  
IMC Magnetics Corp., Western Division  
Ketay Dept., Norden Division, United Aircraft Corp.  
Norden Division of United Aircraft Corp.  
John Oster Mfg. Co., Avionic Div.  
Vickers Inc., Electric Products Division (Division of Sperry Rand Corp.)

## S9. SYSTEMS ENGINEERING

Aircrafts Armaments, Inc. -- see C24A and S3  
Airpax Electronics Inc.  
Auerbach Electronics Corp., 1634 Arch St., Philadelphia 3, Pa. / systems engineering / DESCR: custom design, development and fabrication of equipment for integration in special applications / S9  
Auerbach Electronics Corp., \*a / systems engineering / DESCR: senior consultants in problem analysis, impartial comparisons, specification and recommendation of information processing equipment. System synthesis, program development for both real-time and off-line applications / S9  
Automation Management Inc., 25 Brigham St., Westboro 95, Mass. / special machines / DESCR: for processing, assembling, testing, and packaging / \$2500 to \$500,000 / S9  
Battelle Memorial Institute, 505 King Ave., Columbus 1, Ohio / research and development / DESCR: scientific research in all the physical sciences; computer and systems research, mathematical modeling, man-machine relationships (human factors research) / S9  
Booz, Allen & Hamilton -- see C30  
COMPUTER OPERATIONS, INC. -- see P12A  
Consolidated Avionics Corp., 800 Shames Drive, Westbury, N.Y. / design & build digital data systems / DESCR: digital computing and data processing systems. Design and manufacture of logic packages / USE: telemetry, data recording and reduction / \$10,000 to \$500,000 / S9  
Daystrom, Inc., Control Systems Division, 4455 Miramar Rd., La Jolla, Calif. / solid-state digital computer systems / DESCR: complete responsibility for control systems or data reduction in process industries, including engineering studies, research and development, manufacturing, training, installation and service / USE: process control / \$10,000 to \$2,000,000 / S9  
Daystrom-Wiancko Engineering Co., 255 No. Halstead Ave., Pasadena, Calif. / FM "building-block" systems / DESCR: compatible FM system components can be assembled for numerous applications; e.g., direct readout multi-

lication, summation and ratios of temperature, pressure, etc. Handbook available / USE: "do-it-yourself" systems / \$1200 and up / S9

Dynatech Corp., 639 Massachusetts Ave., Cambridge 39, Mass. / systems engineering / DESCR: dynamic analysis and control of systems and system components -- problem formulation, programming and solution on any type of analog or digital computer / hourly rates / S9

Electronic Business Services -- see C30

Fairchild Camera and Instrument Corp., Defense Products Division

Gilmore Industries, Inc., 13015 Woodland Ave., Cleveland 20, Ohio / transducer instrumentation systems / DESCR: high accuracy, calibrated transducer systems; have necessary standards and calibration test equipment required for thrust, force, and weight systems plus appropriate dead weights and presses / USE: force measurement (load cells) and strain gauge instrumentation / \$2000 to \$100,000 / S9

Jonker Business Machines, Inc. -- see I2

Midwest Research Institute

Sperry Farragut Co., Division of Sperry Rand Corp.

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Systron-Donner Corp., 950 Galindo St., Concord, Calif. / electronic test instrumentation / DESCR: standard and custom electronic test instrumentation -- counters, converters, timers, clocks, oscillators, analog recorders, digital recorders. Complete data handling and automatic checkout systems / prices on request / S9

The Teleregister Corp. -- see D1

Union Switch & Signal, Div. of Westinghouse Air Brake Co.

Wang Laboratories, Inc. -- see C14 and R6

#### T1. TACHOMETERS

The Bristol Company, P. O. Box 1790 CAG, Waterbury 20, Conn. / tachometers / DESCR: tachometers for measuring speed of rotation, speed of travel, time in process, ratio, sum, average or difference between speeds, recording, indicating and controlling / T1

Electro Products Laboratories, Inc. -- see A6 and S6

Ketay Dept., Norden Division, United Aircraft Corp.

Norden Division of United Aircraft Corp.

John Oster Mfg. Co., Avionic Div. Servomechanisms/Inc.

#### T2. TAPE HANDLERS

Ampex Computer Products Co.

Autonetics Industrial Products, Operating Division of Autonetics, A Division of North American Avia-

tion, Inc., 3400 E. 70 St., Long Beach 5, Calif. / magnetic tape units / DESCR: each unit provides supplemental memory storage of up to 600,000 words. High-speed advance and rewind at a rate of 55 inches/second; reading and writing 1850 ch/sec. / USE: auxiliary storage for computers / sale price, \$20,000; rental, \$525 monthly / T2

Burroughs Corporation

Consolidated Electrodynamics Corp., 360 Sierra Madre Villa, Pasadena, Calif. / magnetic tape recorders & accessories / DESCR: ground station, airborne, and portable instrumentation recorder/reproducers, which handle analog, digital, FM, and PCM data / USE: in military and industrial applications in the acquisition and storage of dynamic data / T2

Digitronics Corporation, Albertson Ave., Albertson, N.Y. / perforated tape handling equipment / DESCR: high-speed, photoelectric, perforated tape readers and handlers; uni-directional and bi-directional; all solid state / USE: with data communications systems, product control systems, etc. / \$495 to \$5280 / T2

General Kinetics Inc., 2611 Shirlington Rd., Arlington 6, Va. / tape handlers, tape testers, ultrasonic tape cleaners / DESCR: special purpose and custom made transports with speeds up to 240 i.p.s. / \$2445 to \$35,000 / T2

Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Teletype Corp. -- see C22

Wright Line

#### T3. TAPE, MAGNETIC

Alwac Computer Div., El-Tronics, Inc.

Ampex Magnetic Tape Products, a Division of Ampex Corp., Opelika, Ala. / Ampex computer tape and accessories / DESCR: magnetic tape for digital recording -- checked on system similar to customers, guaranteed error free at 200 bits/inch or 556 bits/inch according to requirements / USE: compatible with all digital recording systems / \$15 to \$123 / T3

The Arnold Engineering Co. -- see M1

Audio Devices, Inc., 444 Madison Ave., New York 22, N.Y. / type EP audio-tape / DESCR: extra precision magnetic recording tape for computers, telemetry, seismography, automation / USE: for recording and reproduction of electronic impulses / T3

Borg-Warner Controls, Div. of Borg-Warner Corp. -- see T5

Cook Electric Co.

Memorex Corp.

Minnesota Mining and Manufacturing Co.

Potter Instrument Co. -- see D2

Remington Rand UNIVAC -- see C24 and D1

#### T3A. TAPE, MAGNETIC, FILING SYSTEMS

Burroughs Corporation

International Computers and Tabulators, Ltd.

#### T4. TAPE, MAGNETIC, READERS

Bendix Corp., Bendix Computer Div.

Cook Electric Co.

N. V. Electrologica

International Computers and Tabulators, Ltd.

Midwestern Instruments, Inc. -- see C28

Potter Instrument Co. -- see A4

Tally Register Corp. -- see R6

#### T5. TAPE, MAGNETIC, RECORDERS

Amplifier Corp. of America, 398 Broadway, New York 13, N.Y. / tape recorders / DESCR: transistorized magnetic tape recorders and tape decks; continuous loop tape recorders. Associated equipment such as flutter meters and demagnetizers / T5

Bendix Corp., Bendix Computer Div.

Borg-Warner Controls, Div. of Borg-Warner Corp., 3300 Newport Blvd., Santa Ana, Calif. / miniature magnetic tape recorders / DESCR: record data acquired during airborne missile, rocket and other vehicular testing; design simplicity and rugged construction insure recovery of test data following ground impact / USE: to record data as per above / \$2500 to \$5000 / T5

Burroughs Corporation

Elgin Micronics Division, Elgin National Watch Co.

General Kinetics Inc. -- see T2

Gulton Industries, Inc.

Heath Co. (HEATHKIT), subsidiary of Daystrom Inc.

International Computers and Tabulators, Ltd.

Midwestern Instruments, Inc. -- see C28

Potter Instrument Co. -- see D2

Smith-Corona Marchant Inc.

#### T5A. TAPE, MAGNETIC, REELS

Ampex Magnetic Tape Products, a Division of Ampex Corp. -- see T3

General Kinetics Inc., 2611 Shirlington Rd., Arlington 6, Va. / reels / DESCR: special tape reels and packaging designed for maximum protection of tapes during handling and long term storage / 50¢ to \$50 / T5A

#### T6. TAPE, PAPER

Autonetics Industrial Products, Operating Division of Autonetics, a Division of North American Aviation, Inc., 3400 E. 70 St., Long Beach 5, Calif. / FACITAPE Tape Console / DESCR: complete paper tape system including 600 ch/sec

# CIRCUIT ENGINEERS

## SALARY: TO \$20,000

Several immediate openings exist in Hughes-Fullerton's new Computer Laboratory for Circuit Engineers qualified in transistor circuitry design and semiconductor power supply design in connection with the design and development of large scale digital computers and digital systems.

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# HUGHES

HUGHES AIRCRAFT COMPANY

capacitance reader, and 150 ch/sec heavy-duty precision punch. Available in 3 basic models: Model AFTR Tape Reproducer, Model AFTT Tape Translator, and Model AFPC Computer Peripheral Equipment. Pushbutton handling of all colors and types of tape, 5 through 8 channels, on-line or off-line. Adaptable to virtually any type of computer or data processing equipment / USE: on-line computer use, and with data loggers, plotters, typewriters, punches, tape reproduction equipment, numerical control machines / sale price: \$16,950; lease \$500 monthly / T6

Friden, Inc. -- see P4

McDonnell Aircraft, Electronic Equipment Division, Box 516, St. Louis 66, Mo. / tape automatic preparation equipment / DESCR: directly converts English/Numerical programs to punched tape for specific automatic checkout and Machine Control requirements / USE: where tape is used, no computer equipment necessary / \$22,000 and up / T6

Potter Instrument Co. -- see D2

### T7. TAPE, PAPER, FILING SYSTEMS

### T8. TAPE, PAPER, PUNCHES

Autonetics Industrial Products, Operating Division of Autonetics, a Division of North American Aviation, Inc., 3400 E. 70 St., Long Beach 5, Calif. / FACITAPE high-speed paper tape punch, Model AETP-150 / DESCR: punches 150 ch/sec, 5 through 8 channels, all types of tape. Adapts readily to associated equipment. Transistorized. Heavy duty reliability proven through 4 years of application / USE: with data loggers, plotters, typewriters, computers, teletypes, readers, tape reproduction equipment, numerical control machines / T8

Clary Corporation -- see P4

Data Instruments Division Telecomputing Corp., 12838 Saticoy St., N. Hollywood, Calif. / paper tape perforator / DESCR: high-speed, moderate cost, reliable tape perforator for all paper or mylar needs, 8 code channels / \$795 to \$2000 / T8

N. V. Electrologica

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / tape punches / DESCR: used in conjunction with Friden Flexowriters, Friden Computypers, and allied equipment to prepare a second paper tape as a by-product of producing an original document / USE: general data processing / T8

Imtra Corp.

International Business Machines Corp., Data Processing Div. -- see T18

Invac Corp. -- see T18

Invac Corp., 14 Huron Drive, E. Natick Industrial Pk., Natick, Mass. / paper tape punch / DESCR: motorless, direct-drive / T8

Invac Corp., \*a / paper tape punch-printer / DESCR: electro-mechani-

cal, prints as well as punches data on paper tape / T8

Remington Rand UNIVAC -- see C24

Smith-Corona Marchant Inc.

Soroban Engineering, Inc.

Tally Register Corp., 1310 Mercer St., Seattle 9, Wash. / paper tape perforator / DESCR: for 5, 6, 7, or 8 channels. 0 to 60 characters/second, asynchronously. Remote back space, panel mounted, reel or fanfold tape handling / USE: punch paper tape, record data / \$1000 to \$1060 / T8

Teletype Corp. -- see C22

Wharf Engineering Laboratories

### T9. TAPE, PAPER, READERS

Autonetics Industrial Products, Operating Division of Autonetics, a Division of North American Aviation, Inc., 3400 E. 70 St., Long Beach 5, Calif. / FACITAPE high-speed paper tape reader, Model AETR-500 / DESCR: reads 600 ch/sec, all colors, 5 - 8 channels, stops within a character. Capacitance reader, not affected by dust, dirt, light, or aging of components. Transistorized / USE: adapts readily to data loggers, plotters, typewriters, computers, teletypes, punches, tape reproduction equipment, numerical control machines / T9

Bendix Corp., Bendix Computer Div.

Crestmont Electronics, A Division of Crestmont Consolidated Corp. -- see A6

Data Instruments Division Telecomputing Corp., 12838 Saticoy St., N. Hollywood, Calif. / paper tape reader / DESCR: companion unit to paper tape perforator / \$500 to \$700 / T9

Digitronics Corporation -- see T2

Electronic Engineering Company of California, 1601 E. Chestnut Ave., Santa Ana, Calif. / EECO TP-480 and TP-482 / DESCR: these tape readers are devices for sensing information recorded in eight levels across a standard perforated 1-inch mylar or paper tape / USE: automatic search and programming / TP-480, \$1970; TP-482, \$1820 / T9

Friden, Inc. -- see R6

Imtra Corp.

Invac Corp. -- see T18

Miles Reproducer Co., Inc.

Remington Rand UNIVAC -- see C24

Soroban Engineering, Inc. -- see R6

Teletype Corp. -- see C22

Wang Laboratories Inc. -- see R6

Wharf Engineering Laboratories

Wright Engineering Co., Inc.

### T10. TELEMETERING SYSTEMS

A R & D A

Aircraft Armaments, Inc. -- see C24A

Airpax Electronics Inc.

Automation Management, Inc. -- see C23

Bendix Corp., Bendix-Pacific Division, 7250 Laurel Canyon, No. Hollywood, Calif. / telemetering systems /

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DESCR: custom equipment based upon standard components and circuits / T10

The Bristol Company, P. O. Box 1790 CAG, Waterbury 20, Conn. / tele-metering systems / DESCR: tele-metering systems for remote measurement, recording and automatic control of pressure, liquid level, flow, temperature voltage power, totalized power load, etc. / T10 Cook Electric Co.

Crestmont Electronics, A Division of Crestmont Consolidated Corp. -- see A6

Data Instruments Division Telecomputing Corp., 12838 Saticoy St., N. Hollywood, Calif. / telemetry PAM/PDM / DESCR: simulator -- to provide PAM/PDM wave trains to check decommutator systems / \$2000 to \$3000 / T10

Data Instruments Division Telecomputing Corp., \*a / telemetry decommutator / DESCR: highly accurate and stable up to 90 channels at any standard telemetry rate. System error less than 0.3% / \$25,000 to \$35,000 / T10

Dresser Electronics, SIE Division, a division of Dresser Industries, Inc.

Electro-Mechanical Research, Inc., P. O. Box 3041, Sarasota, Fla. / telemetry systems and components / DESCR: PCM, PAM, PDM, and FM; ground and airborne; military and industrial; radio and land-line; standard or made-to-order. Instrumentation from pickup to readout / price varies with complexity / T10 Epsco, Inc.

The Geotechnical Corp., 3401 Shiloh Rd., Garland, Texas / FM telemetry equipment / DESCR: transmits 1-7 channels of analog data over one radio or leased telephone circuit, 24-hour-day dependability. Consist of: mixer, voltage-controlled oscillators, sub-carrier discriminator / USE: with a radio, microwave, or leased telephone circuit / \$3000 to \$20,000 / T10

Hallamore Electronics, Division of the Siegler Corp.

Hammarlund Automation Div. of Telechrome Mfg. Corp. -- see A6 Hathaway Denver -- see S1

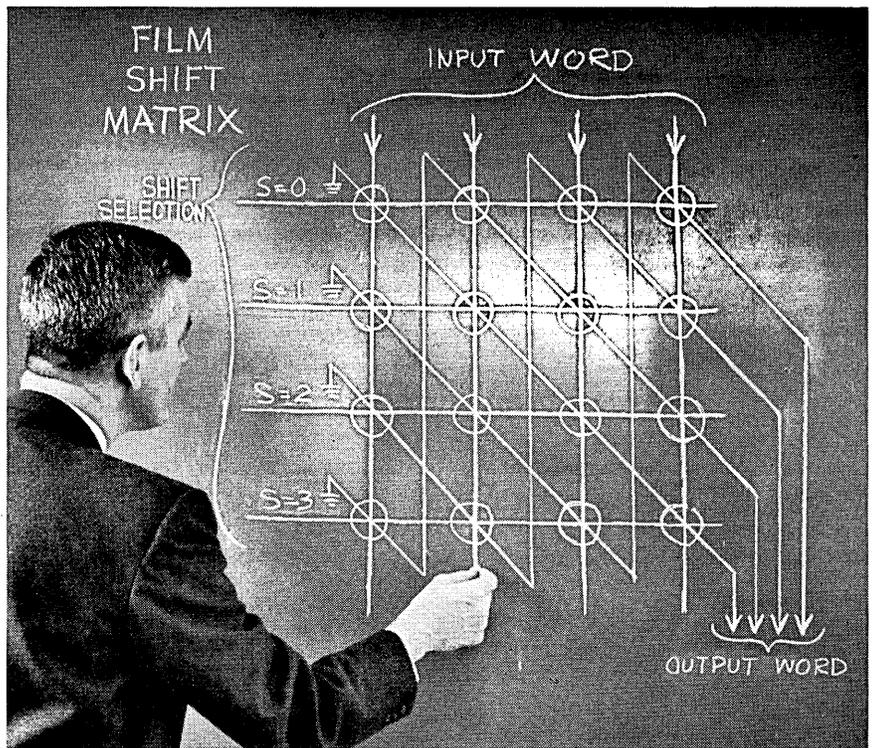
The Hoover Company, Electronics Div. Maxson Electronics Corp. Servomechanisms/Inc. Shand and Jurs Co.

Strand Engineering Co. -- see D1 Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.

Systems Division of Beckman Instruments, Inc. -- see D2A

Union Switch & Signal, Div. of Westinghouse Air Brake Co.

Winsco Instruments & Controls Co., 11789 W. Pico Blvd., Los Angeles 64, Calif. / industrial telemetry systems / DESCR: systems made up of modular elements such as transducers, oscillators, transmitter, power supply, receiver, tone relay, discriminator / USE: in process industries, pipeline systems, oil production fields, public utility systems, railroad communications



This logic array has been developed in the Remington Rand Univac Mathematics and Logic Research Department. In simplified form, each circle represents a film element that AND's the bits from the horizontal and vertical lines to produce an output on the diagonal line. The input word is therefore left-circularly shifted S places in passing to the output. Such matrices can produce arbitrary right or left shifts, either circular or open-ended, in a single clock period for full length computer words. Film logic arrays open a new field of high speed, high density logic devices.

No where in the computer industry will qualified applicants find greater opportunity for both personal and professional reward than they will today at Univac. Highly significant positions involving work such as that outlined above are now available. You are invited to investigate them immediately.

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- COMPUTER PROGRAMMERS
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- COMPUTER APPLICATIONS ANALYSTS

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- COMPUTER PROGRAMMERS
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  - SYSTEMS TEST & EVALUATION ENGINEERS
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DIVISION OF SPERRY RAND CORPORATION

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Remington Rand Univac  
1900 West Allegheny  
Philadelphia 29, Pennsylvania

**J. R. STAHL**  
Remington Rand Univac  
315 Fourth Avenue  
New York 10, New York

systems, and microwave systems / prices vary / T10

T11. TERMINALS

Accurate Electronics Corp. Cambridge Thermionic Corp.

T11.1. TEST EQUIPMENT

Electro-Mec Division of Waltham Precision Instrument Co., Inc., 47-51 33rd St., Long Island City 1, N.Y. / goniometer / DESCR: instrument accommodates seven different diameters of locating boss in the range .750" to 2.875." Adaptors for non-standard diameters. Shaft lengths .2" up to 1 3/4" fit without alteration / USE: for precise measuring and testing of potentiometers, synchros and similar rotary electronic components / prices on quotation / T11.1

T11.2. THIN-FILMS, MAGNETIC

Burroughs Corp., Electronic Components Division, P. O. Box 1226, Plainfield, N.J. / BIPCO (R) Modules / DESCR: built-in-place components in modular form. Microelectronic multi-element solid state packages and thin film memory planes / USE: as building blocks in advanced digital systems / \$45 to \$175 / T11.2

T11.3. TIMING DEVICES

Computer Equipment Corp., 11612 W. Olympic Blvd., Los Angeles 64, Calif. / time code reader / DESCR: a programmable system used to read a 17 to 30 bit continuously generated time code and to output appropriate action command upon recognition of preprogrammed time codes. Contains error checking features / USE: to time-sequence complex data gathering systems / \$24,000 / T11.3

Computer Equipment Corp., \*a / Radar Quantizer (R) / DESCR: a time-to-digital converter providing 0.010 microsec resolution of sampling rates up to 250 kc. Input -- series of pulses defining interval or intervals of interest; output -- code word (up to 28 bit) representing value of measurement / USE: to digitize radar return information for real-time computer data reduction / \$5000 to \$30,000 / T11.3

The A. W. Haydon Co., 274 No. Elm St., Waterbury 20, Conn. / timing devices and test equipment / DESCR: AC & DC timing motors; automation and portable test equipment; deicing computers; timers: electronic, interval, repeat cycle; elapsed time indicators; encoders; intervalometers; programmers; sensors; steppers; stop clocks; system analyzers; systems; time delay relays; aircraft, military and commercial products / USE: military and industrial timing devices and automated test equipment / T11.3

T11A. TRANSDUCERS

Bendix Corp., Bendix Pacific Division Borg-Warner Controls, Div. of Borg-Warner Corp., 3300 Newport Blvd., Santa Ana, Calif. / variable reluctance transducers and accelerometers / DESCR: precise instruments for a variety of military and commercial applications; adaptable to laboratory and general usages where accuracy and reliability are prime requirements / USE: measuring instrument / \$285 to \$765 / T11A

The Bristol Company, P. O. Box 1790 CAG, Waterbury 20, Conn. / transducer / DESCR: high torque electronic transducer for translating variables such as pressure, temperature, etc., into shaft position / T11A

Consolidated Controls Corp., 16 Durant Ave., Bethel, Conn / transducers / DESCR: ULTRADYNE variable reluctance pressure transducers. Nuclear pressure, temperature, flow and level transducers / \$375 to \$3000 / T11A

Consolidated Electrodynamics Corp., 360 Sierra Madre Villa, Pasadena, Calif. / accelerometers / DESCR: strain gage accelerometers measure accelerations parallel and perpendicular to the mounting surface. Range is from ±5 to ±500 g, temperature range -70°F to +300°F / USE: to measure acceleration / T11A

Consolidated Electrodynamics Corp., \*a / pressure transducers / DESCR: CEC pressure transducers measure pressures from 1 to 10,000 psi. The strain gage instruments are available in gage, absolute, and differential models / USE: to measure pressure / T11A

Consolidated Electrodynamics Corp., \*a / vibration transducers / DESCR: CEC vibration transducers can be vertical, horizontal, or omnidirectional mounted. Frequency range extends from 15 to 4500 cps, temperature range from -65°F to +500°F / USE: to detect and monitor vibration / T11A

Control Electronics Co., Inc., 10 Stepar Place, Huntington Station, L.I., N.Y. / transducers / DESCR: magnetostrictive transducers to convert electrical energy to sonic energy and vice versa / T11A

DeJur-Amsco Corp., Electronics Div. Electro-Mechanical Research, Inc., P. O. Box 3041, Sarasota, Fla. / pressure transducers / DESCR: full-scale ranges: 0-500, 0-1000, and 0-2000 psi, gage or absolute. Absolute-pressure versions are hermetically sealed. Withstand 100g shock and +600°F / USE: to convert pressure phenomena to voltage / \$400 to \$500 / T11A

Electro-Mechanical Research, Inc., \*a / shaft-position encoders / DESCR: all-magnetic readout; no contact between readout heads and code disk. Digital or incremental encoding; binary or Gray code. Resolution of up to 2<sup>15</sup> / USE: to

WHO'S WHO IN THE COMPUTER FIELD

From time to time we bring up to date our "Who's Who in the Computer Field." We are currently asking all computer people to fill in the following Who's Who Entry Form, and send it to us for their free listing in the Who's Who that we publish from time to time in Computers and Automation. We are often asked questions about computer people—and if we have up to date information in our file, we can answer those questions.

If you are interested in the computer field, please fill in and send us the following Who's Who Entry Form (to avoid tearing the magazine, the form may be copied on any piece of paper).

Name? (please print).....
Your Address? .....
Your Organization? .....
Its Address? .....
Your Title? .....

- Your Main Computer Interests?
( ) Applications
( ) Business
( ) Construction
( ) Design
( ) Electronics
( ) Logic
( ) Mathematics
( ) Programming
( ) Sales
( ) Other (specify):

Year of birth? .....
College or last school? .....
Year entered the computer field?....
Occupation? .....
Anything else? (publications, distinctions, etc.) .....

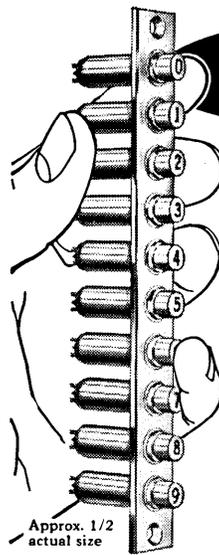
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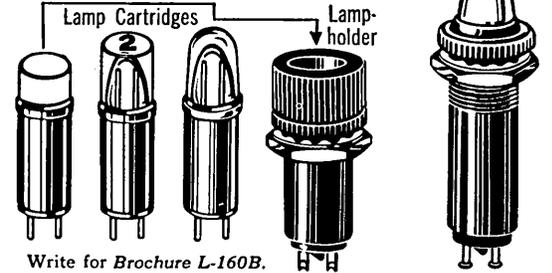
convert shaft rotation to "machine language" / \$380 to \$1150 / T11A  
 Electro Products Laboratories, Inc.  
 -- see A6 and S6  
 Fairchild Controls Corp.  
 Industrial Nucleonics Corp. -- see A6  
 Polyphase Instrument Co. -- see A4  
 Raytheon Co., Industrial Components Div., 55 Chapel St., Newton 58, Mass. / piezoelectric accelerometer / DESCR: general purpose type, capable of operating at highly elevated temperatures. Wide frequency range / USE: shock and vibration measurement / \$145 / T11A  
 Sanborn Company -- see D2  
 Servomechanisms/Inc.  
 Winsco Instruments & Controls Co., 11789 W. Pico Blvd., Los Angeles 64, Calif. / resistance temperature transducers / DESCR: devices used to measure temperatures in missiles, aircraft, test facilities, industrial process control, nuclear energy reactors, etc. / \$50 to \$175 in lots of one / T11A.

#### T12. TRANSFORMERS

Airpax Electronics Inc.  
 Aladdin Electronics, a Div. of Aladdin Industries, Inc., 703 Murfreesboro Rd., Nashville 10, Tenn. / general / DESCR: high frequency transformers: pulse, wide-band, duraclad, ferrite cored inductors, I.F. transformers, microminiature magnetic core components / T12  
 Amplifier Corp. of America, 398 Broadway, New York 13, N.Y. / transformers / DESCR: miniature and special for audio and other applications / T12  
 Ballastran, Division of Telex, Ft. Wayne, Ind. / transformers and wave filters / DESCR: from subminiature to several hundred pounds. Cast coil construction to rigorous performance specifications / USE: for industrial and military applications and in computers / \$2 to \$200 / T12  
 COLUMBIA TECHNICAL CORP. -- see D3  
 Jefferson Electric Co.  
 Johnson Electronics Inc.  
 Microtran Co., Inc., 145 E. Mineola Ave., Valley Stream, N.Y. / transformer / DESCR: miniaturized military and industrial transformers -- encapsulated, ultra miniature, molded, sub-miniature; transistorized; custom designed transformers and toroids; MIL-T-27A in molded or hermetic construction / T12  
 P C A Electronics Inc. -- see D3  
 Polyphase Instrument Co. -- see A4  
 Servomechanisms/Inc.  
 Superex Electronics Corp.  
 Telex, Inc.  
 Valor Instruments, Inc., 13214 Crenshaw Blvd., Gardena, Calif. / pulse transformers / DESCR: miniature pulse transformers and other electromagnetic components / USE: increase or decrease the amplitude of the pulses in the circuit / \$1 to \$40 / T12



**DATA STRIP** No. DSV-7538-10  
 Vertical... complete with ten No. 39-28-1475 Lamp Cartridges. Other configurations to order.  
 Shown actual size, left to right:  
 Lamp Cartridges—Nos. 39-6-1471, 38-1531, 38-931... Lampholder No. 7538... Datalite No. 249-7841-931 with built-in Neon Lamp and resistor.\*



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**For COMPUTERS, DATA PROCESSING, AUTOMATION, INSTRUMENTATION and MINIATURIZATION**

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FOR USE AS SINGLE INDICATOR LIGHTS, OR GROUPED AS A **DATA STRIP®** OR **DATA MATRIX®**

DATALITES by DIALCO are ultra-miniature Indicator Lights, made in 2 basic styles: *Lampholders* with DIALCO's own replaceable *Lamp Cartridges*; or integrated DATALITES with *Built-in Neon Lamps*\*... Mount in 3/8" clearance hole... LAMPS USED: T-1 3/4 Incandescent; also Neon NE-2E or NE-2H.

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"The Eyes of Your Equipment"

Foremost Manufacturer of Pilot Lights

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Wharf Engineering Laboratories

Wright Engineering Co., Inc.

#### T13. TRANSFORMERS, PULSE

Airpax Electronics Inc.  
 Aladdin Electronics, A Division of Aladdin Industries, Inc. -- see T12  
 Ballastran, Div. of Telex, Inc.

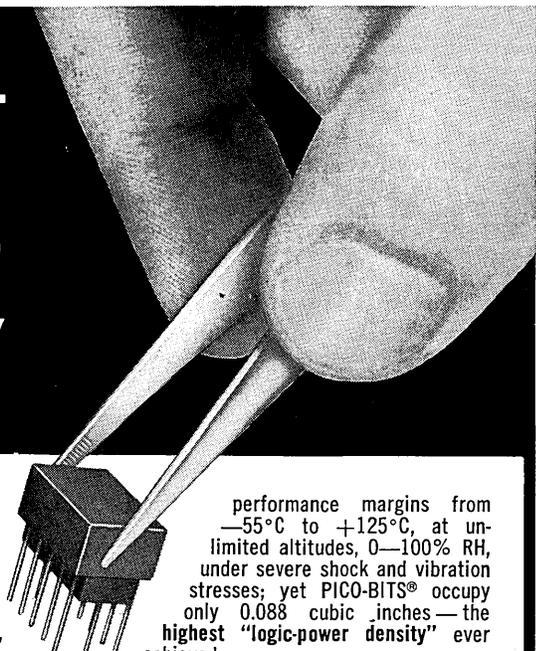
**EL-RAD MANUFACTURING CO.**, 4300 N. California Ave., Chicago 18, Ill. / PULSE TRANSFORMERS / DESCR: 2, 3, and 4 winding transformers for use in computers, RADAR equipment, and instruments. Units available for current drive, coupling, blocking oscillator, and high power applications / USE: in computers, radar equipment and instruments / \$1.50 to \$50 / T13

ESC Electronics Corp.  
 Johnson Electronics Inc.  
 P C A Electronics Inc. -- see D3  
 Polyphase Instrument Co. -- see A4  
 Servomechanisms/Inc.  
 Sperry Gyroscope Co., Division of Sperry Rand Corp.  
 Sprague Electric Co.  
 D. M. Steward Mfg. Co. -- see C51  
 Technitrol, Inc., 1952 East Allegheny Ave., Philadelphia 34, Pa. / pulse transformers / DESCR: miniature and subminiature, completely encapsulated, Genie units may be used for conventional, printed circuit or wire wrap mounting / 85¢ to \$4 / T13

#### T14. TRANSISTORS

Amperex Electronic Corp.  
 Baird-Atomic, Inc.  
 CBS Electronics, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. / transistors / DESCR: germanium switching and power transistors / USE: switching and computer gates, demodulators, modulators, rectifiers, power convertors, amplifiers, voltage regulators, etc. / T14  
 Calvert Electronics Inc.  
 Clevite Transistor  
 Hughes Aircraft Co., Semiconductor Division -- see S2  
 Motorola Semiconductor Products Inc., 5005 East McDowell Rd., Phoenix 10, Ariz. / semiconductor diodes and transistors / DESCR: silicon and germanium mesa transistors, germanium milliwatt transistors, germanium power transistors, silicon zener diodes, reference diodes, and rectifiers / USE: in military, industrial, communications and entertainment equipment / 58¢ to \$41 / T14  
 Philco Corp., Lansdale Div., Church Rd., Lansdale, Pa. / transistors / DESCR: a complete line of switching transistors with a rep. rate from 0-10 KC to 300 MC and a line of transistors made to military specifications / T14

# HIGHEST "LOGIC- POWER" DENSITY



PICO-BITS® are micro-micro packages of our time-and-space-proven magnetic logic circuitry. A single PICO-BIT® can perform any basic logical function: AND, OR, INHIBIT, (AND NOT), BRANCH, STORE, TRANSFER, DRIVE, BINARY COUNT, or COMPLEMENT—greatly simplifying circuitry, minimizing semiconductors. Magnetic logic provides the lowest power dissipation per bit manipulated. PICO-BITS® maintain full

performance margins from -55°C to +125°C, at unlimited altitudes, 0-100% RH, under severe shock and vibration stresses; yet PICO-BITS® occupy only 0.088 cubic inches—the highest "logic-power density" ever achieved.

Literature on the DI-AN logic-element family is detailed, educational, stimulating, free. Write. Better still, telephone—we solve digital problems with elegance and dispatch.



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magnetic digital/analog systems and components

Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / transistors / DESCR: complete line of PNP-NPN germanium and silicon, single and double-ended sub-miniatures. Line of AF-RF-VHF germanium and silicon for switching, computers and general purpose use / T14

Sprague Electric Co.  
Sylvania Electric Products Inc.

### T15. TRANSISTORS, GERMANIUM

CBS Electronics, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. / transistors -- germanium / DESCR: switching and power transistors / USE: switching and computer gates, demodulators, modulators, rectifiers, power converters, amplifiers, voltage regulators, etc. / T15

Clevite Transistor  
Delco Radio Division, General Motors Corp.

General Instrument Corp., Semiconductor Division  
Motorola Semiconductor Products Inc. -- see T14

Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / germanium transistors / DESCR: NPN-PNP germanium transistors. Mesa high-speed computer types. Industrial switching. AF-RF-VHF types. NPN-PNP subminiatures. Complete line for computers, switching

and general purpose / USE: high frequency amplifier applications; audio preamplifier applications; audio circuits, entertainment; computers; switching; and general purpose / T15

Sylvania Electric Products Inc.  
Texas Instruments Inc., 13500 No. Central Expressway, Dallas 22, Texas / germanium transistors / DESCR: diffused (mesa) and alloy germanium transistors for logic and small-signal circuits. Power transistors for power supplies, amplifier and driver applications / 50¢ to \$10 / T15  
Texas Instruments Inc., Semiconductor Components Div. -- see C26

### T16. TRANSISTORS, SILICON

Delco Radio Division, General Motors Corp.  
Fairchild Semiconductor Corp.  
General Instrument Corp., Semiconductor Division  
Hughes Aircraft Co., Semiconductor Division -- see S2  
Motorola Semiconductor Products Inc. -- see T14  
Pacific Semiconductors, Inc.  
Raytheon Company, Semiconductor Div., 215 First Ave., Needham Heights 94, Mass. / silicon transistors / DESCR: NPN-PNP silicon transistors for switching, computer and general purpose use. NPN single and double-ended submins (0.130" x 0.160") for wide range of mounting possibilities.

High power and avalanche switching units / USE: hi-temp audio and d-c amplifier circuits; VHF and video amplifier; computers; switching; general purpose / T16  
Sylvania Electric Products Inc.  
Texas Instruments Inc., 13500 No. Central Expressway, Dallas 22, Texas / silicon transistors / DESCR: diffused (mesa) and grown-junction silicon transistors and (2) power transistors / USE: for logic and small-signal applications and (2) for memory, power supply and driver applications / \$2 to \$20 / T16  
Texas Instruments Inc., Semiconductor Components Div. -- see C26  
Transitron Electronic Corp.  
Westinghouse Electric Corp. -- see S2

### T17. TRANSLATING EQUIPMENT

Cubic Corp.  
Jonker Business Machines, Inc. -- see I2  
Smith-Corona Marchant Inc.  
Soroban Engineering, Inc.  
The Standard Register Co., 626 Albany St., Dayton 1, Ohio / reader-translator / DESCR: Stanomatic solid-state electronic unit; high-speed reading-translating of data, printed on continuous forms by Stanrecorder or similar encoding devices, into EDP and computer languages -- punched tape, punched cards, magnetic tape / price dependant upon requirements / T17

### T18. TYPEWRITERS, ELECTRIC, CONTROLLED

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. / Flexowriter / DESCR: automatic writing machine. Reads and produces punched tapes, edge-punched cards, or tab cards from one or more sources; prepares documents / USE: general data processing / T18  
Friden, Inc., \*a / Computyper / DESCR: automatic writing-computing machine. Reads and produces punched tapes, edge-punched cards, or tab cards from one or more input-output sources, prepares documents / USE: billing and other data processing / T18  
International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / IBM 824 Typewriter Card Punch (with non-printing card punch) and IBM 826 Typewriter Card Punch (with printing card punch) / DESCR: each machine has two units: IBM electric typewriter and printing (826) or non-printing (824) card punch / USE: prepares punched cards for accounting use as an automatic by-product of typewriting operations / Monthly rental \$95 to \$145; selling price \$3700 to \$7400. All prices exclusive of tax / T18  
International Business Machines Corp., Data Processing Div., \*a / IBM 870 Document Writing System / DESCR: system allows operator to produce

business information simultaneously in three forms: typewritten copy, punched cards and paper tape / USE: for creating documents in three forms for accounting and computing use / Monthly rental \$145 to \$450; selling price \$6300 and up. All prices exclusive of tax / T18  
 Invac Corp., 14 Huron Drive, E. Natick Industrial Pk., Natick, Mass. / monitor-printer / DESCR: decoder, typewriter, punch (optional) / T18  
 Invac Corp., \*a / programmatic / DESCR: Same as "tapemaker-writer" (T18) with the addition of programming features / T18  
 Invac Corp., \*a / tapemaker / DESCR: typewriter (manual or electric), photoelectric encoder, paper tape punch / T18  
 Invac Corp., \*a / tapemaker-verifier / DESCR: typewriter (manual or electric), photoelectric encoder, paper tape punch, tape reader, comparator circuit / T18  
 Invac Corp., \*a / tapemaker-writer / DESCR: typewriter, photo-electric encoder, paper tape punch, paper tape reader, decoder / T18  
 Smith-Corona Marchant Inc.  
 Soroban Engineering, Inc.

#### T19. TUBES, ELECTRONIC

Baird-Atomic, Inc.  
 Burroughs Corp., Electronic Components Div., P. O. Box 1226, Plainfield, N.J. / BEAM-X<sup>®</sup> switches / DESCR: high-speed 10-position electronic switching tubes which provide 10 constant current outputs. Perform digital functions of counting, distributing, multiplexing, scanning, and decoding / USE: as basic components in decimal systems and instruments / \$25 to \$30 / T19  
 Calvert Electronics Inc.  
 National Union Electric Corp., Electronics Div., 1201 E. Bell St., Bloomington, Ill. / special purpose electron tubes / DESCR: voltage regulator tubes from 300 to 10,000 volt operation, miniature cathode ray tubes, number glow tubes and specialized version of vacuum tubes / USE: electronic equipment / \$7 to \$850 / T19  
 Radio Corp. of America, Electron Tube Division  
 Raytheon Co., Industrial Components Div.  
 Sperry Gyroscope Co., Division of Sperry Rand Corp.  
 Sylvania Electric Products Inc.  
 Westinghouse Electronic Tube Division, Box 284, Elmira, N.Y. / electronic tubes / DESCR: receiving tubes; image, storage, multiplier phototubes; neutron detectors; special purpose tubes; military and industrial cathode ray tubes; microwave tubes and devices / USE: system component / \$1 to \$10,000 / T19

#### V1. VISUAL OUTPUT DEVICES

Burroughs Corp., Electronic Components Div., P. O. Box 1226, Plainfield, N.J. / NIXIE<sup>®</sup> tubes / DESCR: decimal electronic in-line readout devices which display up to 10 characters or digits in a common viewing area. Outstanding qualities of life (200,000 hours) and size / USE: as a computer output display device / \$11 to \$30 / V1  
 The Electrada Corp. -- see D2  
 The Electro Nuclear Systems Corp.  
 Fairchild Camera and Instrument Corp., Defense Products Division  
 General Dynamics/Electronics, Information Technology Division  
 Heath Co. (HEATHKIT), subsidiary of Daystrom Inc. -- see C23  
 International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N.Y. / IBM 740/780 Cathode Ray Tube Recorder / DESCR: electronic output device for 704, 709, provides an output for recording data points on the faces of two television-like tubes at 7,000 a second / USE: scientific, engineering and design problems / Monthly rental \$2850; selling price \$112,000. All prices exclusive of tax / V1  
 Monroe Industries, Inc., 930 - 36th St. S.E., Grand Rapids 8, Mich. / lighted, marked plastic and metal parts / DESCR: counter wheels; read-out displays; printed circuit boards; coated miniature lamps; precision engraving; silk screening; injection molding, surface treatment, painting of acrylic and Lexan, edgelighted panels / USE: read-out displays, instrument and panel lighting / V1  
 Non-Linear Systems, Inc. -- see I1  
 Photomechanisms, Inc., 15 Stepar Place, Huntington Station, L.I., N.Y. / Model 729 visual output camera-processor / DESCR: a self-contained camera-processor-projector utilizing 1000 ft. roll of 35mm film. RAPIDATA process produces resolution of 125 lines/mm with an 8 sec. delay between exposure and projection / price on request / V1  
 Sylvania Electric Products Inc.  
 Sylvania Electronic Systems, a Division of Sylvania Electric Products Inc.  
 Union Switch & Signal, Div. of Westinghouse Air Brake Co.  
 Wang Laboratories, Inc. -- see C14 and C24A  
 Westinghouse Electronic Tube Division

The following entry was inadvertently omitted from C 24: Computers, Digital:

Honeywell Electronic Data Processing Div., 60 Walnut St., Wellesley Hills 81, Mass. / Honeywell 800 / DESCR: fully-transistorized, general-purpose

for placement ●  
 or ■ personnel

data processing • mathematical sciences • operations research all levels • coast to coast contact us in confidence

**HERBERT HALBRECHT**  
 332 south michigan ave •  
 chicago four, illinois •  
 suite 540 harrison 7-2876  
**MANAGEMENT COUNSEL**  
**EXECUTIVE RECRUITMENT**

electronic data processing system. Internal speed; 40,000 3-address operations per second. Features parallel processing, the ability to run up to 8 independent programs simultaneously / USE: both business and scientific applications / \$20,000 per month and up / C24

- END -

# SURVEY OF COMPUTING SERVICES

Following is a survey of computing services.

Many of the entrants in this survey kindly provided information for us in response to a special survey inquiry in April. This reply form asked for:

1. Brief description of the quantity and types of computing machines and equipment which you have? \_\_\_\_\_
2. Brief description of the types of computing problems which you specialize in? \_\_\_\_\_
3. Number of employees? \_\_\_\_\_
4. Year established? \_\_\_\_\_
5. Any remarks? \_\_\_\_\_

Filled in by \_\_\_\_\_ Title \_\_\_\_\_  
 Organization \_\_\_\_\_  
 Address \_\_\_\_\_

A number of other entries in this survey are entries from the heading C27, Computing Services, in the "Roster of Products and Services". Those entries are placed here so as to make a single combined list of computing services.

Each full entry from an organization that replied to the survey is in the form of: Name and address of computing service / Equipment / Problems specialized in / Size(number of employees) Established(year of establishment). Other entries should be self-explanatory.

The abbreviations used include the following:

- Ss — Small size, up to 50 employees;
- Ms — Medium size, 50 to 500 employees;
- Ls — Large size, over 500 employees;
- Se — established a short time ago, 1951 or later;
- Me — established a "medium" time ago, 1931 to 1950;
- Le — long established organization, 1930 or earlier;
- \*C — "Checked" by the organization; "61" means "in 1961", etc.

All additions, corrections, and comments will be welcome. In particular, it is hoped that in the next edition of this survey, it will be possible to publish the addresses of all branches of computing services.

Actuarial Computing Service, Inc., 1389 Peachtree St., N. E., Atlanta 9, Ga. / EQPM: — / PROB: special-izing in computing applications for the insurance industry / Ss(7) Se(1956)

ADB Institutet (Scandinavian Automatic Data Processing Institute), Chalmers University of Technology, Gibraltargatan 5, Gothenburg S., Sweden / EQPM: Alwac IIIE (Wegematic 1000) / PROB: university training in automatic data processing. Consulting, programming, coding and running problems on computers for industries in Scandinavia / Ss(25) Se (1957) / \*C 61

AEC Computing and Applied Mathematics Center, Institute of Mathematical Sciences, 4 Washington Pl., New York 3, N. Y. / EQPM: IBM 704 and peripheral equipment / PROB: research and computing service for the Atomic Energy Commission / Ms(100) Se (1952)

Aeronutronic, a Div. of Ford Motor Co., Mathematics and Computing, Research Operations, Ford Rd., Newport Beach, Calif. / EQPM: IBM 709 (IBM 7090 on order for delivery in 1961) / PROB: missile trajectories, rocket motor performance, aerothermodynamic heating, ordinary and partial differential equations, business data processing / Ms(60, mathematical services personnel) Se(1956)

ALWAC Computer Div., El-Tronics, Inc., 13040 S. Cerise Ave., Hawthorne, Calif. / EQPM: ALWAC III-E general purpose electronic digital computer, a drum storage serial binary machine with 8192 words main memory, 128 words fast access, completely alpha-numeric; decimal input-output equipment with 80-column card in and out; high speed paper tape in and out; and two magnetic tape units / PROB: general service bureau applications including accounting, numerical research, engineering, cataloging / Ms(60) Se(1952) / \*C 61

American Data Services, Inc., 2221 S. W. 5th Ave., Portland 1, Ore. / EQPM: Burroughs 205 EDP machine system, 4 magnetic tapes, paper tape, card in and out, on-line printer, typewriter out.

Also, complement of IBM punch card equipment /  
PROB: engineering, commercial and scientific /  
Ss(20) Se(1959) / \*C 61

American Machine & Foundry Co., Digital Computer  
Facility, 140 Greenwich Ave., Greenwich, Conn. /  
EQPM: IBM 650 magnetic drum machine with alpha-  
betic and special character device; IBM 653 floating  
decimal arithmetic unit and 3 index registers; digital  
plotter (10-1/2" x 17"), plus standard peripheral  
equipment / PROB: general engineering calculations;  
shock and vibration; nuclear reactor, electrical, and  
petroleum engineering; data processing / Ss(6) Se  
(1956)

The American University, Electronic Data Processing  
Laboratory, 1901 F St., N.W., Washington 6, D. C.  
/ EQPM: LGP-30 with Model 342 High Speed Read-  
er/Punch and Model 322 Automatic Switching Con-  
trol Unit, RPC-9000, RPC-9010 Processing Unit,  
two RPC-9500 Tape Typewriter Systems, RPC-9100  
Magnetic Tape Storage Unit, RPC-9460 Photo-Elec-  
tric Reader, RPC-1450 Line Printer, RPC-9440  
High Speed Punch, RPC-9460 Punched Card Reader,  
RPC-4000 / PROB: use of computers as a manage-  
ment tool, budget preparation and execution, infor-  
mation storage and retrieval, student classroom  
work, training courses for the Royal McBee Corp.  
/ Ss(10) Se(1960) / \*C 61

Armour Research Foundation, 10 West 35 St., Chicago  
16, Ill. / EQPM: UNIVAC 1105 computer and off-  
line high-speed printer: 8,192 words core storage,  
32,768 words magnetic drum storage, 17 magnetic  
tape units buffered from central computer / PROB:  
engineering and scientific problem-solving, pro-  
gramming-system development, management-  
science calculations / Ls(1250) Me(1936)

Automated Accounting Center of Conn., 7 Field St.,  
Waterbury 20, Conn. / EQPM: Bendix G-15D  
general purpose computer, National Cash Register  
Electronic Magnetic Ink Reader-Sorter coupled to  
and under control of G-15D, 2 magnetic tape units  
with search and erase/rewrite feature, AN-1 paper  
tape reader and punch (5, 6, 7 or 8 channel tape),  
off-line Flexowriters, Automated Postronics for  
ledger posting, magnetic ink printing equipment and  
paper tape to magnetic ink conversion equipment /  
PROB: commercial data processing including ac-  
counting functions, inventory and production control,  
payroll, demand deposit accounting, engineering,  
and miscellaneous applications / Ss(7) Se(1959) /  
\*C 61

Bendix Computer Div. of the Bendix Corp., 5630 Arbor  
Vita, Los Angeles 45, Calif. / EQPM: not gener-  
ally considered a service bureau, but do market  
time on Bendix G-15's at factory-marketing head-  
quarters / PROB: no specialty, programming ser-  
vices available / Ls(700) Se(1952; computer div.)  
/ \*C 61

Berkeley Division, Beckman Instruments, Research  
Department, 2200 Wright Ave., Richmond, Calif.  
/ EQPM: 50-amplifier general analog computer /  
PROB: research and computation techniques, gen-  
eral purpose problem solving / Ss(5) Se(1960)

Broadview Research Corp., 1811 Trousdale Dr., Bur-  
lingame, Calif. / EQPM: arranged for / PROB:  
design and implementation of automatic programming  
systems, including the construction of scientific and  
business-oriented compilers; symbolic assembly  
programs; design and implementation of special-  
purpose, problem-oriented compilers; analysis and  
programming of scientific problems, including ap-  
plications in celestial mechanics, photogrammetry,  
geodesy, civil engineering, and statistical analysis  
of data from experiments / Ms(80) Se(1951)

Brown University Computing Laboratory, 180 George  
St., Providence 12, R. I. / EQPM: IBM 7070 data  
processing system / PROB: scientific research,  
scientific and commercial data processing / Ss(10)  
Se(1956)

Burroughs Corp., Computer Facility, Marketing, 460  
Sierra Madre Villa, Pasadena, Calif. / EQPM:  
Burroughs 220 (10,000 words core, complete  
punched card and paper tape input-output, 7 mag-  
netic tape units, 25 lines per second high speed  
printer with 2 magnetic tape units) / PROB: all  
types, scientific, data processing, etc. Used by  
the Marketing Div. for program checkout, demon-  
strations, and rentals to outside customers / Ss  
(5, plus engineers) Se(1954) / \*C 61

Case Institute of Technology, Computing Center, Cleve-  
land 6, Ohio / EQPM: Univac I, card-to-tape, high-  
speed printer, unityper; Burroughs 220, 4 tape  
drives, Cardatron input-output; auxiliary IBM  
punched card equipment / PROB: scientific and  
engineering calculation, business data processing,  
student classroom work / Ss(30) Se(1956) / \*C 61

C-E-I-R, Inc., Arlington Research Center, 1200 Jef-  
ferson Davis Highway, Arlington, Va.; New York  
Research Center, 270 Park Ave., New York, N. Y.;  
Los Angeles Center, 11753 Wilshire Blvd., Los  
Angeles 25, Calif.; Houston Center, 6422 Fannin  
St., Houston 25, Tex.; Hartford Center, 621 Farm-  
ington Ave., Hartford 5, Conn.; San Francisco  
Center, 345 Howard St., San Francisco, Calif.;  
Boston Office, 330 Stuart St., Suite 605, Boston 16,  
Mass. / EQPM: Arlington: IBM 704, IBM 7090  
and peripheral equipment. New York: IBM 7090  
and peripheral equipment. Los Angeles: IBM  
1620. Houston: IBM 1401. Hartford: RCA 501 and  
peripheral equipment. San Francisco: IBM 7070.  
Boston: IBM 7090 and peripheral equipment / PROB:  
linear programming, mathematical model building,  
operations research, military command and control  
systems, war gaming, information storage and re-  
trieval, weapons systems analysis, space vehicle  
trajectories, transportation optimization, produc-  
tion scheduling, management decision-making sys-  
tems, business strategy games, sampling and  
statistical design, site selection studies, financial  
analysis, marketing research, process-analysis  
and inter-industry analysis, application of Monte  
Carlo methods, matrix calculations, engineering  
problems, reliability and quality-control programs,  
design of experiments and field tests, engineering  
and industrial research, electronics and communica-

- tions, radio-spectrum utilization, value engineering, etc. / Ms(300) Se(1954) / \*C 61
- Clary Corp., Computer Div., 408 Junipero St., San Gabriel, Calif. / EQPM: Clary DE-60 digital computer, operator oriented console, subroutine cartridges and automatic program control unit / PROB: numerical problems whose programming time on a large scale computer is at least five times greater than the computation time; preliminary and check-case computations that become tedious on a rotary calculator / Ss(10) Se(1958) / \*C 61
- Collins Radio Co., Information & Science Center and Communication & Data Processing Div., 19700 San Joaquin Rd., Newport Beach, Calif. / EQPM: — / PROB: computing services / Ls(1200) Me(1933)
- Compumatrix, Inc., 440 So. Brentwood Blvd., St. Louis 5, Mo. / EQPM: LGP-30, IBM 702, IBM 705 / PROB: automatic data processing, systems studies and operations research studies; computing equipment and programming staff available / Ss (10) Se(1956)
- Comutech, Inc., 477 Madison Ave., New York 22, N.Y. / EQPM: tape IBM 1401 with ancillary equipment / PROB: scientific and commercial data processing, computer programming and computer processing services as well as methods system design, market research / Ss(32) Se(1957) / \*C 61
- Computer Data Processing Company, Detroit, Mich. / EQPM: IBM 650 and peripheral equipment / PROB: all types; staffed with mathematicians, engineers and accountants / Ss(7) Se(1957) / \*C 61
- Computer Engineering Associates, Inc., 350 N. Halstead, Pasadena, Calif. / EQPM: Direct Analog Computer, built by Computer Engineering Associates, Inc., using electronic amplifiers and passive elements (resistors, capacitors, inductors, and transformers) / PROB: dynamic mechanical and aeroelastic vibration problems; static stress analysis; heat transfer and heat flow problems / Ms(50) Se(1952) / \*C 61
- Computer Sciences Corp., Palos Verdes, Calif., and New York 22, N.Y. / EQPM: small to large scale computers available / PROB: computing, consulting, analysis and programming, and machine computation services; provides contracted analysis, programming and/or machine computation of engineering, scientific and business data processing problems; also feasibility studies for computer choice, staffing, and other installation problems / Ss(42) Se(1959) / \*C 61
- Computer Systems, Inc., Culver Rd., Monmouth Junction, N. J. / EQPM: 5800 Dystac Analog Computer / PROB: rental / Ms(150) Se(1950)
- ComputerMat, Inc., 1828 Wilshire Blvd., Los Angeles 57, Calif. / EQPM: IBM 1620 Data Processing System, leased for "self-serve" use / PROB: civil, structural, petroleum and chemical engineering, numerical control, process and systems analysis, operations research, economic analysis, feasibility studies / Ss(7) Se(1960)
- Control Data Corp., 501 Park Ave., Minneapolis 15, Minn. / EQPM: Control Data Model 1604 digital computer, advanced, large scale, solid state; Model 160 digital computer, desk-size, solid state; Model 180 data collector / PROB: business and accounting, engineering, scientific, data processing / Ms(460, computer div.) Se(1957)
- Cook Research Laboratories, subdivision of Cook Electric Co., Morton Grove, Ill. / EQPM: Univac Solid State 90 Computer, card input-output and high speed printer / PROB: trajectory calculations; data reduction; many varied scientific problems; inventory control; payroll / Ls(4700) Le(1897)
- Cornell University, Computing Center, Rand Hall, Ithaca, N. Y. / EQPM: Burroughs 220 Datatron, 4 IBM keypunch machines, card sorter, IBM 101 statistical machine, card reproducing and comparing machine, tabulator, IBM 407 on-line printer / PROB: research computation and teaching / Ss (10 full time, 13 part time) Se(1953)
- Data Computing Corporation, 229 Baldwin Rd., Hempstead, N. Y. / EQPM: IBM 1401's and peripheral equipment / PROB: business, accounting, engineering and statistical projects / Ms(80) Se(1954) / \*C 61
- Dian Laboratories, Inc., 611 Broadway, New York 12, N. Y. / EQPM: Dian 120 computers, 444 summing and integrating amplifiers, 70 multipliers, associated function-generating equipment, recorders and plotting boards / PROB: ordinary and partial differential equations: heat transfer, aircraft guidance and control, nuclear reactor kinetics, process control, simulator design / Ss(12) Se(1955) / \*C 61
- Douglas Computing Service, Department A52-G318, Douglas Aircraft Company, Inc., 3000 Ocean Park Blvd., Santa Monica, Calif. / EQPM: IBM 650, 704, 1401, and 7090 Computing Systems and peripheral equipment. Remington-Rand Univac File and Solid State Computers, and Univac Electronic Tabulators / PROB: all scientific, engineering, manufacturing, and business problems, handled by rental of machine time / Ls(1000) Se(1959) / \*C 61
- EAI Computation Center at Los Angeles, Inc. (a subsidiary of Electronic Associates, Inc., Long Branch, N. J.), 1500 E. Imperial Highway, El Segundo, Calif. / EQPM: 4 Pace 231R analog computers (total of 300 amplifiers) and associated non-linear equipment. High-speed repetitive operation available on one console, i. e., one 100 amp. (rep-op), two 80 amp., one 40 amp. computers / PROB: pneumatic and hydraulic control systems, aircraft and missile simulations, microwave electronics, petro-chemical process control, nuclear reactor simulation, physiological applications, water conservation studies, statistical correlation studies. Programming and consulting in these fields / Ss(10) Se (1956) / \*C 61
- Electronic Associates, Inc., Princeton Computation Center, Box 582, Princeton, N. J. / EQPM: general purpose analog computers / PROB: complex engineering and scientific problems; simulation of complex systems to minimize extensive trial and error methods / Ss(20) Se(1954) / \*C 61
- Electronic Data Processing Center, Inc., 2221 S. W. 5th Ave., Portland 1, Ore. — name changed to American Data Services, Inc., which see

Facts & Figures, Inc., 25 Ann St., New York, N. Y.  
 / EQPM: IBM 1401 / PROB: inventory, unit control, all accounting / Ss(30) Me(1947) / \*C 61

Ferranti-Packard Electric Ltd. (Electronics Div.),  
 16 Industry St., Toronto 15, Canada / EQPM:  
 Ferranti Limited Pegasus Digital Computer; large  
 program library available for this medium-size,  
 digital, general purpose computer / PROB: appli-  
 cations in industry, science and engineering / Ms  
 (400) Le(1913)

The Franklin Institute Computing Center, 20th and  
 Parkway, Philadelphia 3, Pa. / EQPM: modified  
 Univac I data processing system with associated  
 ancillary equipment including card-to-tape, tape-  
 to-card, low-speed and high-speed printers and  
 unitypers / PROB: business data processing; scien-  
 tific and engineering computations; large-scale in-  
 ventory control problems; man-machine simulations;  
 photogrammetric problems / Ss(26) Se(1957) / \*C 61

The I. D. R. Co. (Industrial Data Reduction), 4740  
 Spruce St., Philadelphia 39, Pa. / EQPM: large  
 scale digital computing equipment / PROB: full line  
 of data processing. Service from analysis through  
 execution. Publishing industry services a specialty  
 / ?s Se(1961) / \*C 61

KCS Ltd., 20 Spadina Rd., Toronto 4, Canada, and  
 KCS (Quebec) Ltd., Suite 104, 640 Cathcard St.,  
 Montreal, Canada / EQPM: IBM 650, 4 tapes and  
 ancillary equipment / PROB: traffic research; data  
 processing; scientific calculations; linear program-  
 ming; simulation; etc.; for business, industry and  
 government / Ms(65) Se(1954) / \*C 61

Laboratoire de Calcul Numérique du Centre National  
 de la Recherche Scientifique (CNRS), 11, Rue  
 Pierre Curie, Paris, V, France / EQPM: Elliot  
 403E; Gamma AET Bull, large capacity magnetic  
 drum storage and small rapid access memory;  
 IBM 650, built-in floating point, index registers  
 and magnetic storage; soon to have IBM 704 /  
 PROB: data processing / Ms(55) Se(1957) / \*C 61

Land-Air, Inc., Mattern X-Ray Division, 7444 Wil-  
 son Ave., Chicago 31, Ill. / EQPM: Bendix G-15D,  
 digital, standard unit. Electronic Associates Model  
 1631R, analog, 168 amplifier. EAI Model 1100A  
 x-y plotter; 28 servo multipliers; 16 function gen-  
 erators / PROB: complete design of power distribu-  
 tion transformers in range from 1-1/2 to 2000 KVA,  
 120 volt to 13,200 volt; lens ray-trace program;  
 antenna impedance characteristics; transmission  
 line impedance characteristics. Engineering, re-  
 search, manufacturing or production problems /  
 Ls(over 500) Me(1949) / \*C 61

Lehigh University, Packard Laboratory, Bethlehem,  
 Pa. / EQPM: LGP-30 / PROB: education, train-  
 ing, research, data processing / Ss(6 part time)  
 Se(1957) / \*C 61

Maxson Electronics Corp., 475 Tenth Ave., New York  
 17, N. Y. / EQPM: - / PROB: digital computing  
 services / Ls(996) Me(1935)

McDonnell Automation Center, a division of McDonnell  
 Aircraft, Box 516, St. Louis 66, Mo. / EQPM:  
 IBM 705 II, 7090, and two 1401's; 4 additional  
 1401's will be installed by Sept., 1961, and the

first commercially installed IBM 7080 will be then  
 available; also PACE and CEAC analog computer  
 facilities / PROB: management services including  
 consulting, systems analysis, programming, and  
 data processing / Ms(400) Se(1960) / \*C 61

Midwest Research Institute, 425 Volker Blvd., Kansas  
 City 10, Mo. / EQPM: IBM 1620 / PROB: studies  
 in application of digital and analog computers to  
 business and scientific problems; mathematical  
 analysis and computation; computing service; con-  
 tract research; economics research; operations  
 research; systems engineering / Ms(300) Me(1944)

Minneapolis-Honeywell Regulator Co., Electronic Data  
 Processing Div., 60 Walnut St., Wellesley 81, Mass.  
 / EQPM: Honeywell 800 in operation at Wellesley,  
 Mass., and Datamatic 1000's in operation at Brighton  
 and Boston, Mass., on Honeywell Service Bureau  
 assignments. A second Honeywell 800 Service Bur-  
 eau will be established in August at the Univ. of  
 Southern Calif., Los Angeles. A Honeywell 400  
 system will be installed at the Wellesley Bureau  
 early in 1962 / PROB: business data processing  
 and scientific computation. Honeywell Service  
 Bureaus at present are not accepting outside work,  
 but are principally engaged in pre-delivery check-  
 out of customer programs and check-out of Honey-  
 well automatic programming aids / Ms(90) Se  
 (1956) / \*C 61

National Bureau of Standards, Computation Laboratory,  
 415 South Bldg., Washington 25, D. C., successor  
 of the Mathematical Tables Project, New York,  
 1938, which pioneered in using punched-card equip-  
 ment for solving scientific problems and preparing  
 mathematical tables / EQPM: IBM 704 with 32,000-  
 word core, 8000-word drum storage, half-word  
 logic. Royal-McBee RPC-4010 central processing  
 unit. RPC-4500 tape-typewriter. Off-line printer.  
 Punched-card peripheral equipment / PROB: prob-  
 lems arising in the physical sciences, engineering,  
 and operations research; numerical experimentation;  
 statistical analysis; preparation of mathematical  
 tables; etc. / Ss(45) Me(1947) / \*C 61

The National Cash Register Co., Hawthorne NCR 304  
 Data Processing Center, 1401 E. El Segundo Blvd.,  
 Hawthorne, Calif. / EQPM: National Cash Register  
 Type 304 Data Processing System, 4800 word mem-  
 ory with 2000 card per min. input, 1800 char. per  
 sec. paper tape input and 600 lines per min. printed  
 output. (Both on and off-line systems available)  
 / PROB: data processing for large and small  
 businesses; wiring lists; contract programming for  
 scientific and business applications / Ss(21) Se  
 (1960) / \*C 61

Northrop Corp., Norair Div., Computing and Datama-  
 tion Center, 1001 E. Broadway, Hawthorne, Calif.  
 / EQPM: Digital: IBM 7090 with IBM 1401 as "off-  
 line" equipment; one IBM 607 with 407 and tally  
 high-speed plotter attached; auxiliary punchcard  
 equipment. Analog: (as calculators) 336 d-c opera-  
 tional amplifiers; 20 servo multipliers; 4 resolvers;  
 25 function generators; 7 recorders; 4 special co-  
 efficient racks. Analog: (as simulators and model  
 testers) 142 d-c operational amplifiers; 5 recorders.

Data Handling Equipment: (for reducing test data) 3 telereaders with telecoders; 1 telereadex with telecoder; 2 Richardson readers; assorted miscellaneous equipment for editing / PROB: all types of digital and analog engineering calculations; simulation; model testing; manufacturing control; numerical control milling machine tapes and pre-processors; war gaming; operations research studies; reconnaissance data handling; engineering and scientific research and development / Ss(46) Me(1949)

Nuclear Development Corp. of America, 5 New St., White Plains, N.Y. / EQPM: Burroughs 205 data processing machine, 2 magnetic tape units, paper tape input / PROB: nuclear reactor and shielding calculations. Several large scale Monte Carlo codes for neutron simulation studies in various geometrical shields. A code for the numerical solution of the Boltzmann equation in spherically symmetric geometries was conceived, analyzed and coded at NDA. Complete performance of problem analysis, coding, and running of production problems / Ms(276) Me(1948) / \*C 61

George A. Philbrick Researches, Inc., 127 Clarendon St., Boston, Mass. / EQPM: Philbrick K5 Analog Computer System composed of all-speed linear and non-linear computing modules and associated output display equipment / PROB: dynamic analysis of engineering systems / ?s Me(1946)

Philco Corp., Computer Div., Service Bureau, 3900 Welsh Rd., Willow Grove, Pa.; also Western Computing Center, 3875 Fabian Way, Palo Alto, Calif. / EQPM: Philco 2000: asynchronous operation, parallel logic, transistorized circuit design, fixed word of 48 bits in units of 4, 096 to 32, 768 words with 10 microsecond access time or 32, 768 words with 2 microsecond access time / PROB: all scientific and commercial applications / Ss(48, in Service Bureau) Se(1958) / \*C 61

Quantum, Inc., Lufbury Ave., Wallingford, Conn. / EQPM: IBM 1620 tape with peripheral equipment / PROB: engineering and scientific, management operational reporting and analysis, consulting / Ss(30) Me(1948); computing center, 1960) / \*C 61

Rand Corporation, Santa Monica, Calif. / EQPM: Johnniac, IBM 7090 / PROB: linear programming, modelling, scientific computing generally / Ls (900; 100 in Computer Sciences Dept.) Me(1947) / \*C 61

RCA Electronic Data Processing Center, 45 Wall St., New York, N.Y.; Cherry Hill, Delaware Township, Camden 8, N.J.; 1725 K St., N.W., Washington 6, D.C.; 110 N. Wacker Dr., Chicago 6, Ill.; 343 Sansome St., San Francisco, Calif. / EQPM: maximum complement RCA 501 and peripheral equipment / PROB: specific services available for any commercial or government applications, as follows: systems analysis, systems design, programming, machine coding, electronic data processing from source documents to completed results, computer facility design and construction supervision, services of operating personnel, package programs for market forecasting, site selection, attitudinal surveys, economic forecasting / Ms(200) Se(1959)

Recording & Statistical Corp., 100 Sixth Ave., New York 13, N.Y. / EQPM: Univac No. 1 with peripheral equipment / PROB: fire and casualty insurance; commercial / Ms(214) Le(1910)  
Reeves Instrument Corp., Roosevelt Field, Garden City, N.Y. / - / - / Ls(1600) Me(1942)

REPUBLIC AVIATION CORP., MISSILE SYSTEMS DIVISION, 223 Jericho Turnpike, Mineola, L. I., N.Y. / EQPM: extensive, 200 amplifier analog computer facility with associated nonlinear equipment available for rental / PROB: facility suitably interconnected for independent small problem solutions or a large simulation. Engineering specialists experienced in large scale guidance and control simulations and other dynamic studies can be retained / Ms(250) Se(1952) / \*C 61

Rich Electronic Computer Center, Georgia Institute of Technology, Atlanta 13, Ga. / EQPM: Burroughs 220 (5, 000 words core and 4 tape units), IBM 650 Univac Scientific (ERA 1101) with a 4096 word 1103A core memory added / PROB: research work in science and engineering; also educational work in these areas / Ms(50) Se(1955) / \*C 61

Saab Aircraft Co., Bureau for Numerical Analysis and Engineering Data Processing, Linköping, Sweden / EQPM: SARA digital computer / PROB: analysis, programming and machine time services in the fields of science, engineering and data processing / Ls (550) Me(1949) / \*C 61

THE SERVICE BUREAU CORP., a subsidiary of IBM, 425 Park Ave., New York 22, N.Y. (and offices in 70 cities) / EQPM: IBM 650, 1401, 7070, 709, 7090, data plotting, MICR sorter-reader and unit record equipment / PROB: data processing, programming, systems analysis, and machine services on a contractual basis for business and scientific problems. Equipment available on an hourly basis / Ls(1600) Me(1932) / \*C 61

Southwestern Computing Service, Inc., 910 So. Boston, Tulsa 19, Okla. / EQPM: one Alvac III and one IBM 604 / PROB: process design, heat exchange, inventory control, etc. / Ss(10) Se(1953) / \*C 61

Space Technology Laboratories, Inc., 2400 E. El Segundo Blvd., El Segundo, Calif. / EQPM: two IBM 7090's and related peripheral equipment plus a special purpose Data Reduction Center and Analog Computation Center / PROB: systems engineering and technical direction of the U. S. A. F. Ballistic Missile Program and related space probe projects / Ls(4400) Se(1954) / \*C 61

System Development Corp., 2500 Colorado Ave., Santa Monica, Calif. / EQPM: IBM 7090; AN/FSQ-7 (SAGE Military Computer); Philco S-2000 / PROB: information processing and command control systems such as SAGE and SACCS / Ls(3700) Se (1957) / \*C 61

Technical Advisors, Inc., Municipal Court Bldg., Ann Arbor, Mich. / EQPM: one Royal-McBee

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- LGP 30, one RPC 4000; photoelectric reader, high-speed punch and off-line Flexowriter / PROB: surveying and civil engineering computations / Ss(13) Se(1958, computations) / \*C 61
- Telecomputing Services, Inc., 8949 Reseda Blvd., Northridge, Calif. / EQPM: IBM 650, IBM 1401, and IBM 704 computing systems, and peripheral equipment / PROB: data reduction; engineering problems; business data processing; accounts receivable and payable; labor distribution; payroll; inventory control; production scheduling; etc. / Ms(230) Me(1947) / \*C 61
- Thompson Ramo Wooldridge, Inc., 8433 Fallbrook Ave., Canoga Park, Calif. / EQPM: RW-300 digital control computer, a transistorized computer specifically designed for industrial process control. Television Automatic Sequence Control (TASCON), a digital device for control of television programming and switching. RW-400 "Polymorphic" data processing system. AN/UYK-1, "stored-logic" multiple purpose computer / PROB: all problems requiring a high degree of man-machine interaction; industrial process control; television switching control; traffic control; inventory control, etc., and problems requiring the capabilities of a multiple-purpose computer / Ls(27,000) Le(1901) / \*C 61
- U. S. Air Force, Analytical Systems Branch, Data Processing Div., AFASC6F, Hq. USAF, Washington 25, D. C. / EQPM: IBM 7090 / PROB: development of USAF planning and programming documents; analytical computations for management; and requirements computations / Ss(25) Me(1949, under the name: Planning Research Div., Hq. USAF) / \*C 61
- U. S. Air Force, Digital Computation Branch, Systems Dynamic Analysis Div., Wright-Patterson AFB, Ohio / EQPM: Univac Scientific 1103A, Datatron 204, IBM 7090 / PROB: solution of scientific and engineering problems and related data reduction for USAF research and development programs / Ms(70) Me(1950)
- U. S. Army, Computing Laboratory, Ballistic Research Laboratories, Aberdeen Proving Ground, Md. / EQPM: large-scale, high-speed digital computers: EDVAC (Electronic Discrete Variable Automatic Computer), ORDVAC (Ordnance Variable Automatic Computer), BRLESC (BRL Electronic Scientific Computer), and data reduction equipment / PROB: U. S. Army Ordnance Corps' problems in ballistics, scientific computations / Ms(100) Me(1940) / \*C 61
- U. S. Dept. of Commerce, Bureau of the Census, Washington 25, D. C. / EQPM: Univac I (2); Univac 1105 (2); Unitypers (2); Remington Rand Buffered High-Speed Printers (2); Card-To-Tape Converter (Remington Rand); FOSDIC (5) / PROB: statistical data processing: monthly, quarterly, annual surveys; periodic population, industry and trade censuses; service activities for other government agencies / Ms(130) Se(1951)
- U. S. Navy, Aviation Supply Office, Data Processing Division, 700 Robbins Ave., Philadelphia, Pa. / EQPM: two 705's, Model III; three 1401's, plus three on order; 100 punch card machines including 31 IBM transceiver machines / PROB: inventory control of 500,000 stock numbers of aviation material, navy-wide / Ms(300, this division) Se(1951) / \*C 61
- U. S. Navy, Computation & Analysis Lab., Naval Weapons Lab., Dahlgren, Va. / EQPM: NORC (Naval Ordnance Research Calculator); IBM 7090 system; Universal data transcriber; IBM 1401 system; plus auxiliary equipment / PROB: orbits of earth satellites and space vehicles; trajectories of all types of weapons; computer war-gaming; general scientific and engineering problems / Ms(350) Me(1946) / \*C 61
- U. S. Navy, David Taylor Model Basin, Applied Mathematics Laboratory, Washington 7, D. C. / EQPM: UNIVAC I (a second UNIVAC I to be installed approximately July 1, 1961), LARC with 3,000,000 word drum storage and 30,000 word core storage, IBM 7090 with 32,000 word core storage / PROB: principal computing facility for Navy's Bureau of Ships, with problems ranging from mathematical types arising in structural mechanics, hydromechanics, operations research, and nuclear reactor design, to logistics and inventory control / Ms Se(1952) / \*C 61
- Univac Service Centers, Remington Rand Univac Div., Sperry Rand Corp., 315 Park Ave. So., New York 10, N. Y., and 40 Univac Service Centers in large cities / EQPM: whole range of Remington Rand equipment; punched cards, Univac 60, Univac 120, Univac File Computer, solid state 80/90 with tapes, Univac I, II, Univac Scientific / PROB: all punched card data processing applications; all paper tape and magnetic tape data processing applications; all scientific applications / ?s ?e / \*C 61
- University of California, Numerical Analysis Research, Los Angeles 24, Calif. (formerly administered by the National Bureau of Standards until 1954 and now a part of the Dept. of Mathematics of the Univ. of Calif.) / EQPM: The National Bureau of Standards Western Automatic Computer (originally the "Zephyr," known as SWAC), a medium-sized, high-speed computer with 256 word electrostatic (Williams type) memory, and an 8192 word drum storage. Peripheral punch card equipment / PROB: study of discrete variable problems; use of diffuse surface optical model of the nucleus in the analysis of elastic scattering of charged particles by complex nuclei; analysis of the crystalline structure of vitamin B12; determination of many of the larger prime numbers; semi-groups; traffic simulation, growth of cloud drops, counter gradient methods; queueing theory; correlation and factor analysis in psychology / Ss(34) Me(1948)
- Univ. of Durham Computing Laboratory, 1 Kensington Terr., Newcastle upon Tyne 2, England / EQPM: Ferranti Pegasus Computer; a Decca Twin Magnetic Tape Unit with Ferranti Controlled System / PROB: research problems arising in the University; scientific and commercial problems / Ss(5) Se(1957)
- University of Mainz, Institute for Applied Mathematics, Jacob Welder Weg 7, Mainz, Germany / EQPM: Siemens 2002, 12,000 word core, 10,000 word drum, 3 magnetic tape / PROB: education, scientific computing for other university institutes, research in numerical analysis and in symbol manipulation / Ss(15) Se(1958)

The University of Manchester, Computing Machine Laboratory, Manchester 13, England / EQPM: Ferranti Mercury; Ferranti Atlas to be installed 1961-62, should be available spring 1962 / PROB: scientific; punching and running programs, but not programming, although advice is given on customers' problems; customers may also buy machine time and run their own problems / Ss(20) Se(1949, laboratory; 1955, computing service) / \*C 61

University of Michigan, Institute of Science and Technology, P. O. Box 618, Ann Arbor, Mich. / EQPM: LGP 30, IBM 709, a large scale analog computer with over 300 amplifiers / PROB: research and computing / Ls(600) Me(1946)

University of Rochester, Computing Center, Rochester 20, N. Y. / EQPM: IBM 650 augmented with 4 tape drives; IBM 7070, 10K memory, floating point, 6 tape drives due Sept. 1961 to replace 650 / PROB: scientific computing in general, statistics, symbol manipulation - principally for University of Rochester and for other educational institutions / Ss(10) Se(1956) / \*C 61

University of Southwestern Louisiana, Lafayette, La. / EQPM: IBM 1620 processing unit with punched card input-output; 402 accounting machine; 548 interpreter / PROB: problems resulting from scientific research; business research problems and business application; industrial problems in the petroleum field. Primarily for University research and instruction, yet some time will be available for industry / Ss(3) Se(1961) / \*C 61

Vought Aeronautics, a division of Chance Vought Corp., Box 5907, Dallas 22, Tex. / EQPM: IBM 704 digital computer and 560 amplifier analog facility, with auxiliary equipment; Packard-Bell 250 digital computer soon to be installed to tie in to analog facility / PROB: aerodynamics, controls, numerical control for machine tools, electrical load flow, flutter analysis, weight accounting, heat transfer, navigational computations, celestial mechanics, manufacturing control, personnel time accounting, and other scientific and accounting applications / Ms(52) Me(1949) / \*C 61

Vought Electronics, P. O. Box 1500, Arlington, Tex. / EQPM: IBM 650, 704 / PROB: any / Ls(600) Se(1959)

George Washington University, Logistics Research Project, 707 22nd St., N. W., Washington 7, D. C. / EQPM: ERA Logistics Computer, special drum 400,000 decimal digits, drum 180,000 decimal digits, serial card-in-out, paper tape in-out / PROB: simulation of operations (logistic) characteristic of naval planning / Ss(40) Me(1949)

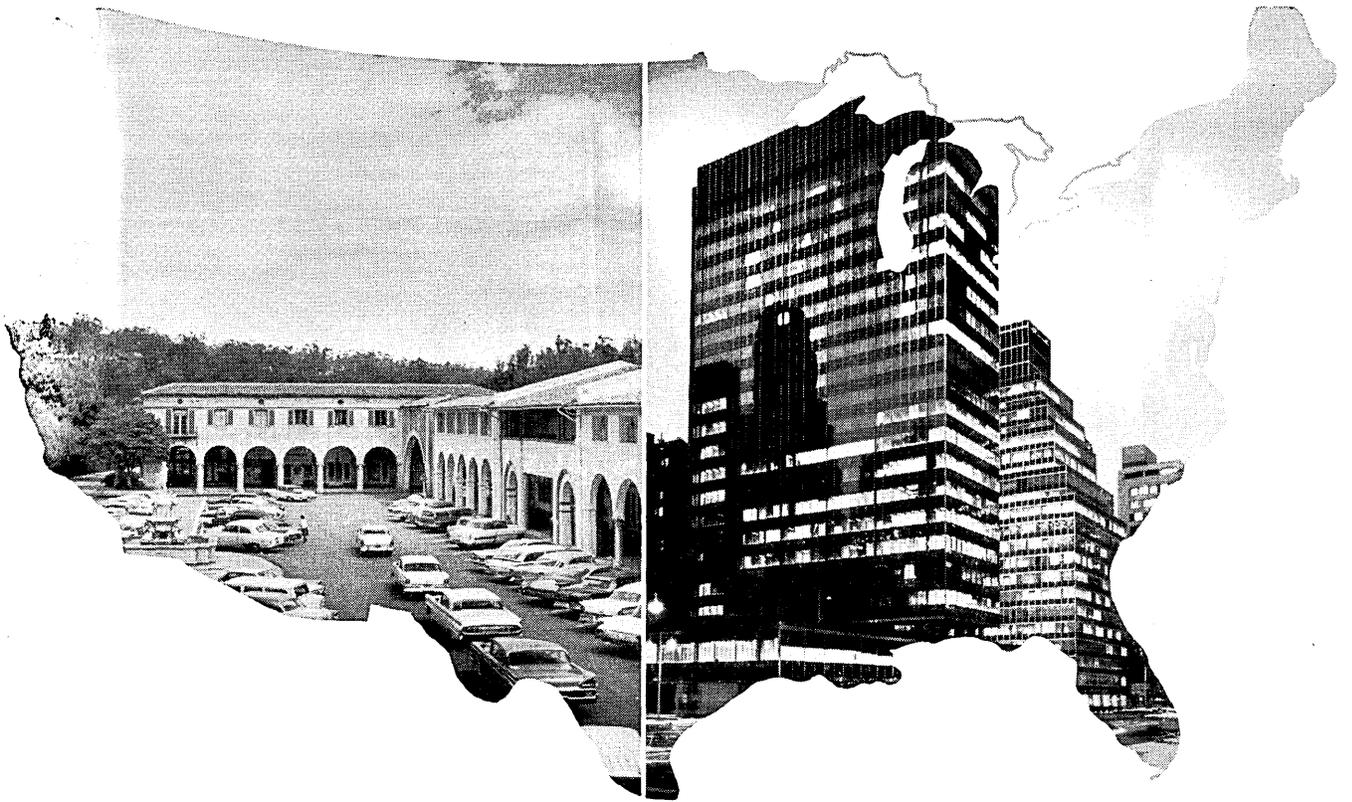
Westgate Laboratory, Inc., P. O. Box 63, Yellow Springs, Ohio / EQPM: Remington Rand Univac special purpose digital computer, Flexowriter, NCR 2300 bookkeeping machine, miscellaneous office calculating machines / PROB: cross-correlations; use of computer logic in circuit designs; research and development work in electronics, electro-mechanical and optical equipments / Ss(30) Se(1956) / \*C 61

Westinghouse Electric Corp., Advanced Systems Engineering & Analytical Dept., E. Pittsburgh, Pa. / EQPM: digital: IBM 7090 with 32K core, 2 channels, 12 tapes; 1401 Peripheral; Collins Kineplex Tape-to-Tape; transceivers. Analog: Anacom (passive element transient analyzer), electronic differential analyzer, D. C. network calculator / PROB: engineering and scientific: electric utility planning, control systems, electrical and mechanical design and application, nuclear design, management sciences / Ms(80) Me(1948) / \*C 61

White Sands Missile Range, Flight Simulation Laboratory, Electro-Mechanical Laboratories, White Sands Missile Range, N. M. / EQPM: digital: IBM 704 with 32,000 word core memory, IBM 1401, LGP-30, and a digital plotter. Analog: 7 consoles with 700 amplifiers, 90 dual electronic multipliers, 6 Euler angle transformation computers, 70 servomultipliers, 26 quarter square multipliers, 72 diode function generators, 3 Gaussian noise generators, and associated peripheral equipment / PROB: analog and digital simulation of rockets and guided missiles, real-time simulation, data analysis, missile evaluation, and numerical analysis. Analysis and programming of scientific problems together with related computer services / Ms(100) Se(1955)

Wolf Research & Development Corp., 462 Boylston St., Boston 16, Mass. / EQPM: Whirlwind I computer system; Bendix G-15D computer system, with two magnetic tape units, special curve tracing input device, card input equipment, off-line flexowriter and IBM 026 key punch unit / PROB: scientific, engineering, business, industrial, and military applications. Service routines. Data processing / Ms(150) Se(1959) / \*C 61

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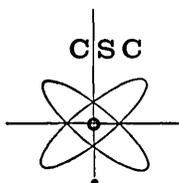
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# SURVEY OF CONSULTING SERVICES

Following is a survey of services which provide consulting in the computer field. Many of them also provide computing, and if so, additional description may be found in the "Survey of Computing Services".

Many of the entrants in this survey kindly provided information for us in response to a special survey inquiry in April. This reply form asked for:

1. Brief description of the facilities, personnel, and capabilities which you have for assistance in the area of computers and data processors?  
\_\_\_\_\_
2. Brief description of the types of problems which you specialize in? \_\_\_\_\_
3. Number of employees? \_\_\_\_\_
4. Year established? \_\_\_\_\_
5. Any remarks? \_\_\_\_\_

A number of other entries in this survey are entries from two headings in the "Roster of Products and Services": C 30, Consulting Services; and P 12A, Programming Services. Those entries are placed here so as to make a single combined list of consulting services.

Each full entry from an organization that replied to the survey is in the form of: Name and address of consulting service / Facilities / Problems / Size and year of establishment. Other entries should be self-explanatory.

The abbreviations used include the following:

- Ss — Small size, up to 50 employees;
- Ms — Medium size, 50 to 500 employees;
- Ls — Large size, over 500 employees (number in parentheses is number of employees);
- Se — established a short time ago, 1951 or later;
- Me — established a medium time ago, 1931 to 1950;
- Le — established for a long time, 1930 or earlier (number in parentheses is year establishment);
- k 1 — See the "Survey of Computing Services";
- k 2 — See the "Roster of Organizations";

\*C — "Checked" by the organization; "61" means "in 1961", etc.

All additions, corrections, and comments will be welcome.

Charles W. Adams Associates, Inc., 142 The Great Road, Bedford, Mass. / Personnel with varied backgrounds and experience in business data processing, technical programming, man-machine communications, and development of large-scale utility systems / Feasibility studies; applications of computers to business problems; technical data handling; design of computer systems to process information from multiple locations / Ss(10) Se (1950)

ADB Institutet (Scandinavian Automatic Data Processing Institute) — k 2

Advanced Information Systems Co. (AIS), 3002 Midvale Ave., Los Angeles 34, Calif. / System design, program management and execution, research covering all aspects of data processing with special emphasis on business-type applications, information retrieval, and pioneer computer-based control systems for a wide range of clients / Service to client on use of products and procedures / — k 2

Allied Research Associates, Inc., 43 Leon St., Boston 15, Mass. / Research and development services in all phases of the physical sciences including applied mathematics, geophysics, biophysics, materials, physics, electronics, systems engineering, and weapons systems analysis / Technical problems in government and industry / — k 2

A R & D A, 135 Main St., Belleville 9, N. J. — k 2

Armour Research Foundation — k 1

Auerbach Electronics Corporation, 1634 Arch St., Philadelphia 3, Pa. / Six-story air-conditioned building at Philadelphia Headquarters housing Systems Engineering, Custom Equipment Development Laboratory, Information Technology Library, and lecture facilities. Product and Market Planning Group in New York offices. Senior scientists, physicists, mathematicians, engineers, psychologists, market research specialists. Capabilities in: pure and applied mathematics; computer system design,

analysis, automatic programming; custom equipment design and development, logic and solid state circuit design, analog and digital on-line and off-line systems; computer evaluations; product and market planning; programmed teaching / Systems engineering: synthesis, design, and evaluation of complex information processing systems, both on-line and off-line; design, preparation and integration of real-time programs for large digital communication and control systems; mathematical analysis. Equipment development; design, development and fabrication of custom equipment for solving complex information, market, and automatic control problems. Product and market planning: market definitions, product analysis, computer comparison studies. Programmed teaching: evaluation and development of training programs, techniques and hardware / Ms(93) Se(1957)

Automation Management, Inc., 25 Brigham St., Westboro, Mass. / Office and factory facilities and engineering personnel available to carry a project from the original idea through to installation and training of personnel in integrated office systems / Management control problems of all types involving the use of industrial engineering, operations research, as well as data processing and computer skills / Ss(3) Se(1955)

Bendix Computer Div. of the Bendix Corp. — k 1

Berkeley Division, Beckman Instruments, Research Department — k 1

Bonner & Moore Engineering Associates, 6910 Fannin, Houston 25, Tex. / Staff divided into: operations research including management consultation; programming systems; and dynamic analysis of processes and computer process control. Senior professional people with experience in: econometrics, mathematics, control theory, chemical, mechanical, nuclear and industrial engineering, and digital/analog computer technology / Simulation of physical and corporate systems; economic optimization techniques and applications; mathematical methods research; design of data processing systems; translators, compilers, and problem-oriented computer languages; and development of process control models and the design of computer control installations / Ss(17) Se(1956)

Booz, Allen & Hamilton, 135 So. LaSalle St., Chicago 3, Ill. / Management consultants / Technical services in electronic and automatic data processing for totally integrated management controls systems for industry, commerce, government and institutions. Used by top management in evaluating, planning, designing and implementing data processing systems for business and scientific purposes / ?s ?e

Bowmar Instrument Corp. — k 2

Broadview Research Corp. — k 1

C-E-I-R, Inc. — k 1

Chrono-log Corp., Box 4587, Philadelphia 31, Pa. / — / Process control applications and systems; real-time computer control for both industrial and military applications; technical writing services / Ss (8) Se(1956)

Compumatix, Inc. — k 2

Computech, Inc. — k 1

Computer Associates, Inc., 44 Winn St., Woburn, Mass. / Consultants, specializing in research and development of advanced techniques and systems for the application of digital computers to a wide range of scientific and information processing problems / ?s ?e

Computer Data Processing Company — k 1

COMPUTER OPERATIONS, INC., 600 Old Country Rd., Garden City, L. I., N. Y. / PROGRAMMING SERVICES AND SYSTEMS ENGINEERING / Computer programming, systems analysis, system design, logical design, mathematical analysis, commercial and engineering computation and data processing (equipment available IBM 650, 7090) / — k 2

Computer Sciences Corp. — k 2

Computer Systems, Inc. — k 2

Cook Electric Co. — k 2

Data Processing Corporation of America — k 2

Data Processing, Inc., 1334 Main St., Waltham 54, Mass. / Professionals with background experience in computer applications and related fields. Access on a commercial basis to a number of computers / Consulting, analyzing, and programming services for digital computer applications. Particular capability in advanced logical applications, compilers, artificial intelligence, etc. / Ss(16) Se(1957)

Data Sciences Inc. — k 2

The Daven Co. — k 2

Designers for Industry, Inc., 4241 Fulton Parkway, Cleveland 9, Ohio / Research and development services including prototype production; semiconductor test equipment, manual and automatic. Go/No-Go instrumentation and process control systems / Manufacturing engineering of automated systems and equipment / — k 2

The Diebold Group, Inc., 40 Wall St., New York 5, N. Y. / A world-wide group of specialized management service companies combined to provide a full range of integrated services / Management consulting, specializing in information systems, automation, automatic data processing, and such related fields as numerical machine tool control, data communication, and data handling / Ms(150) Se(1954)

Arnold I. Dumey — k 2

Dynatech Corp., 639 Massachusetts Ave., Cambridge 39, Mass. / Access to: IBM 650 and 704, Philco Transac, RCA 501, Univac, Bendix G-15, Philbrick Analog / General scientific and engineering; specific experience in rocket propulsion, thermodynamics, heat transfer; systems and control dynamics / Ss(40) Se(1957)

EAI Computation Center at Los Angeles, Inc. — k 1

Ebasco Services Inc. — k 2

Electronic Business Services, 3266 Hunts Point Rd., Bellevue, Wash. / Consultation services in automation and data processing, particularly for operators of small and moderate size businesses having

problems in data processing, automation, etc. /  
- k 2

Electronic Data Processing Center, Inc. - k 1  
Fair, Isaac and Co., Inc. - k 2  
Fischbach, McCoach & Associates, Inc. - k 2  
The Franklin Institute Computing Center - k 1

H. S. GELLMAN & COMPANY LIMITED, 481 University Ave., Toronto 2, Ontario, Canada / SYSTEMS CONSULTANTS / Consulting services, specializing in automatic data processing and operations research / - k 2

General Kinetics Inc., 2611 Shirlington Rd., Arlington 6. Va. / Computer input devices on hand; access to customer or rental computers / Programming services for all general purpose computers; recommendation, design, and construction of automatic programming and automatic checking systems to fit specific needs; mathematical studies; numerical analysis; data reduction; information retrieval / Ss Se(1955)

Herbert Halbrecht Associates, Inc. - k 2  
Edward Bernard Healy, Jr., Management Consultant - k 2

S. Himmelstein & Co., 3300 W. Peterson Ave., Chicago 45, Ill. / Consulting/engineering services concerning magnetic storage systems, punched tape systems, photoelectric readers, high-speed printers, computer peripheral equipments; data acquisition, storage and processing systems engineering / - k 2

The I. D. R. Co. (Industrial Data Reduction) - k 2  
Ingenjorsfirma Nordisk ADB AB - k 2  
Jonker Business Machines, Inc. - k 2  
KCS Ltd. - k 1

A. T. Kearney & Co. - k 2  
Edwin A. Lipps Engineering - k 2  
Loyola Laboratories - k 2

Machine Computing Services, 138 South Second East, Salt Lake City 11, Utah / Broker of idle time on a broad line of computer and punched card equipment, including peripheral, some security cleared. Rates quoted by job or hour. Consulting programmers, engineers, mathematicians, etc., available to help with any business or science problem / Ss(4) Se (1960)

Mathematischer Beratungs- und Programmierungsdienst GmbH. - k 2

H. B. Maynard & Co., Inc. - k 2  
McDonnell Automation Center - k 1  
H. Jefferson Mills, Jr., Management Consultant - k 2  
Minute Maid Co., Data Processing Div. - k 2  
The National Cash Register Co. - k 1

Simon M. Newman, Documentation Consultant, 2027 Que St., N. W., Washington 9, D. C. / Independent consultant, with 18 years experience in construction and integration of scientific and technical hierarchical classifications; 6 years experience in the mechanization of such systems for information retrieval. 32 years of experience with Patent Office search

problems, requiring detailed and exact technical searching / Design of information retrieval systems, and recommendations for implementation by use of hardware, when economically justified / Ss(1) Se(1961)

Nuclear Development Corporation of America - k 1  
James Addison Potter, Consulting Engineer - k 2  
Quantum, Inc. - k 1

Remington Rand Univac - k 2  
Scientific Computing Service Ltd., 23 Bedford Sq., London, W. C. 1, England / Access to: Ferranti, Elliott, English Electric, IBM, and Cambridge University EDSAC electronic digital computers; miscellaneous electric and hand desk calculators / General consulting; computations for commerce and industry; advanced applied research; pure research; developing problems in mathematical and statistical fields to the point where they may be effectively computed, then recommending the means / Ss(16) Me(1939)

The Service Bureau Corp., a subsidiary of IBM, 425 Park Ave., New York 22, N. Y. (offices in 70 cities) / Consulting services / Analytical and engineering services to aid in the formulation and design of the solution to data processing problems in business, science, and engineering / - k 2

Marc Shiowitz & Associates, Inc., 12838 Weber Way, Hawthorne, Calif. / Engineering consulting and professional engineering services in electronic systems engineering, logical design, circuit design, mathematical analysis, computer programming for airborne or ground-based computers and automatic test equipment / - k 2

Soroban Engineering, Inc. - k 2  
Technical Operations, Inc., South Ave., Burlington, Mass. / Access to computers / Automatic programming systems; digital simulations; war gaming; scientific computation / Ms(250) Me(1950)

U. S. Air Force, Analytical Systems Branch, Data Processing Div. - k 2

U. S. Naval Weapons Laboratory, Computation and Analysis Lab. - k 2

Univac Service Centers, Remington Rand Univac Div. - k 1

Westgate Laboratory, Inc. - k 2

Wolf Research & Development Corp. - k 1

Woods, Gordon, & Co., 15 Wellington St. West, Toronto, Ontario, Canada (also at Montreal, London, Calgary, Vancouver) / - / Management consulting and system design / Ss(46) Le(1930)

# DESCRIPTIONS OF DIGITAL COMPUTERS

Barry Sheppard  
Assistant Editor  
Computers and Automation

The purpose of this report is to give the characteristics of United States general-purpose digital computers currently available for sale or rent. The next edition of this report will also include digital computers produced in other countries.

The three sections give: (1) Internal Characteristics; (2) Input and Output; and (3) Cost and Use.

Any additions, corrections, or comments are invited.

## Abbreviations:

B	— binary
D	— decimal
FBD	— fast bands on memory drum
K	— 1000
KK	— 1,000,000
m	— millisecond, thousandth of a second
N	— no, none
O	— octal
P	— punch, output
R	— read, input
u	— microsecond, millionth of a second
V	— variable
Y	— yes

## EXPLANATION OF HEADINGS

### 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.

Tape Speed: speed of reading or writing on tape.

Words/Tape: capacity of a reel of tape.

Punched Cards: speed of reading and punching cards.

Paper Tape: speed of reading and punching paper tape.

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.

Percent Good Time: good time divided by attempted-to-run time, expressed as percent.

MANUFACTURERS AND COMPUTERS INCLUDED

- Alwac Computer Div., El-Tronics, Inc., 13040 S. Cerise Ave., Hawthorne, Calif.  
ALWAC III-E
- Autonetics Industrial Products, Operating Div. of Autonetics, a Div. of North American Aviation, Inc., 3400 E. 70 St., Long Beach 5, Calif.  
Recomp II, III
- Bendix Corp., Bendix Computer Div., 5630 Arbor Vitae St., Los Angeles 45, Calif.  
Bendix G-15, G-20
- Burroughs Corporation, 6071 Second Ave., Detroit 32, Mich.  
Burroughs E-101, 205, 220, 251(VRC), 5000
- Clary Corporation, 408 Junipero St., San Gabriel, Calif.  
DE-60
- Control Data Corp., 501 Park Ave., Minneapolis 15, Minn.  
CDC-160, CDC-1604
- Digital Equipment Corp., Main St., Maynard, Mass.  
PDP-1
- General Electric Co., Computer Dept., 13430 No. Black Canyon Highway, Phoenix, Ariz.  
GE 210, GE 225
- Harvey-Wells Electronics, Inc., 14 Huron Dr., Natick, Mass.  
HW-44K
- Honeywell Electronic Data Processing Div., 60 Walnut St., Wellesley Hills 81, Mass.  
H-400, H-800
- International Business Machines Corp., Data Processing Div., 112 East Post Rd., White Plains, N. Y.  
IBM Ramac 305, IBM 650, 704, 705 III, 709, 1401, 1410, 1620, 7070, 7072, 7074, 7080, 7090
- Librascope Div., General Precision, Inc., 808 Western Ave., Glendale 1, Calif.  
Libratrol 1000

- 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, 390
- Packard Bell Computer Corp., 1905 Armacost Ave., Los Angeles 25, Calif.  
PB 250
- Philco Corp., Government & Industrial Group, Computer Div., 3900 Welsh Rd., Willow Grove, Pa.  
Philco 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
- Ramo-Wooldridge, a Division of Thompson Ramo Wooldridge, Inc., 8433 Fallbrook Ave., Canoga Park, Calif.  
RW 400, RW AN/UYP-1
- Remington Rand Division of Sperry Rand Corp., 315 Park Ave. So., New York 10, N. Y.  
Univac I, II, III, 490, 1103A, 1105, 1107, Univac File Computer I, II, Univac Larc, Univac SS 80/90
- Royal-McBee Corp., Westchester Ave., Port Chester, N. Y.  
LGP-30, RPC 4000, RPC 9000
- Sylvania Electronic Systems, a Division of Sylvania Electric Products, Inc., 63 Second Ave., Waltham 54, Mass.  
Sylvania 9400

(See tables commencing on next page)

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NAME OF COMPUTER	I. INTERNAL CHARACTERISTICS																		
	Solid State?	NUMBER SYSTEM				MEMORY			TIMING			MACHINE PROGRAMMING							
		Number Base	Bits/Digit	Digits/Alphabetic	Word Length	Number of Words	Type	Access Time	Add Time	Multiply Time	Divide Time	Number of Instr.	Addresses/Instr.	No. Index Registers	Indirect Addressing?	Floating Point?			
ALWAC III-E	N	D	4	1.5	8	128 8192	drum drum	1m 9m	1m	17m	17m	90	1	1	Y	N			
— Bit by bit checking to and from memory, overflow checking.																			
Bendix G-15	N	D	4	2	7	16 2K	FBD drum	.54m 14.5m	.54m	8m	8m	100	1	Y	N	N			
— Repeat command, indexing by means of interpretive system only.																			
Bendix G-20	Y	O	3		10	4-32K	core	6u	15u	30u	70u	105	1	63	Y	Y			
— Overflow, parity, illegal address checks. Repeat command for add, subtract, test and logic.																			
Burroughs E-101	N	D			12	220	drum	10m	50m			32	1	0	N	N			
Burroughs 205	N	D	4	2	10	80 4000	FBD drum	.85m 8.5m	1.7m	10.8m	14m	64	1	1	N	Y			
— Checks for: forbidden combination, central timing, drum revolution, overflow																			
Burroughs 220	N	D	4	2	10	2-10K	core	10u	185u	2.9m	3.9m	96	1	1	N	Y			
— Running time clock. Checks for forbidden combination and overflow. Partial word operations.																			
Burroughs 251 (VRC)	Y	B	1	7	V	4.8K	core	10u	740u	2.25m	6.05m	14	3	0	N	N			
— Add time: 5 digits + 5 digits; mult. time: 5 digits x 2 digits; div. time: 5 digits ÷ 2 digits. Numerous variations of the 14 instructions.																			
Burroughs 5000	Y	O	3	2	13	4-32K 32-65K	core drum	6u 8.5m	4u	86u	150u	56	V	Y	Y	Y			
— Binary, octal, decimal. Parity check. Built-in multiprocessing with single processor; parallel processing with dual processors. Comprehensive interrupt system. Automatic memory exchange and input-output exchange. Simultaneous parallel memory access with multiple modules. Single format fixed and floating point representation.																			
CDC-160	Y	B	1	6	12	4096	core	6.4u	6.4u	—	19.2u	63	1	0	Y				
— Relative addressing; multiply and divide are programmed.																			
CDC-1604	Y	B	1		48	32,768	core	6.4u	4.8	—	25.2	—	63.6	—	62	1	6	Y	Y
— 2 instructions per word. Real-time clock. Program interrupt.																			
DE-60	Y	D	4		18	32	drum	61m	64m	221m	201m	30	4	Y	N	N			
— Microprogramming. Overflow detection. Automatic decimal point alignment. Program trace routine built into hardware. External interchangeable function generators.																			
GE 210	Y	D	4		6	4-8K	core	32u	64u			90	1	1	N	N			
— Double precision mode.																			
GE 225	Y	B	1		20	2-16K	core	18u	36u			91	1	96	Y	Y			
— Double precision mode.																			
H-400	Y	D		1.5	12	1-4K	core	8u	110u			48	3	3	N	N			
— May be used as binary machine with 48 bit word.																			
H-800	Y	D			12	4-32K	core	6u	24u	150u	312u	51	3	64	Y	Y			
— 8 multiple channel programming. Can be used as a 48 bit word size binary machine.																			

NAME OF COMPUTER	INTERNAL CHARACTERISTICS															
	Solid State?	NUMBER SYSTEM				MEMORY			TIMING			MACHINE PROGRAMMING				
		Number Base	Bits/Digit	Digits/Alphabetic	Word Length	Number of Words	Type	Access Time	Add Time	Multiply Time	Divide Time	Number of Instr.	Addresses/Instr.	No. Index Registers	Indirect Addressing?	Floating Point?
HW-44K		B		24	256	core	8u	8u	32u		8	1	0	N	N	
		— No automatic checking. Divide is programmed														
IBM Ramac 305	N	B		V	2000	drum	10m	50m	V	V		2	0	N	N	
					5-20KK	disk	600m									
		— Parity check. Variable word length.														
IBM 650	N	D		10	60	core	.1m	.7m			100	1	3	N	Y	
					1-4K	drum	2.4m	.7m	7.3m	11m						
					6-12KK	disk	425m									
					digits											
		— Multiply and divide timing refer to 5 digit fields. 60 core words and disk memory are optional. Disk access can be overlapped. Operation code, bi-quinary, and validity checks. Table look up.														
IBM 704	N	B	3	2	36	4-32K	core	12u	24u	240u	240u	91	1	3	N	Y
		— Overflow, underflow, transfer trapping mode, divide, floating point trap checks.														
IBM 705 III	N	D	7	1	V	20-80K	core	9u	.087m	.606m	3.35m	60	1	0	Y	N
					60K	drum	8m									
		— Internal parity check.														
IBM 709	N	B	3	2	36	4-32K	core	12u	24u	24 - 240u	36 - 240u	196	1	3	Y	Y
		— Overflow, underflow, divide, floating point trap checks. Multiple channel programming, sense indicator register.														
IBM 1401	Y	D	7	1	V	1.4 - 16K	core	11.5u	230u	2.1m	2.6m	43	1, 2, 3	N	N	
					10-20KK	disk	550m									
		— Parity, character code and address validity checks. Multiply divide instructions are optional. Easily adaptable to operate with the 7000 series.														
IBM 1410	Y	D	7	1	V	10-40K	core	4.5u	110u	1.2m	2.3m	190	2	15	N	N
					10-100KK	disk	550m									
		— Code and address validity checks, parity check. Dual channel, priority feature, overlap, table look up, synchronization.														
IBM 1620	Y	D	6	2	V	20-60K	core	20u	56m	4.96m	16.86m	32	2	0	Y	N
		— Parity check. 5 additional instructions optional. Immediate addressing, branch transmit.														
IBM 7070	Y	D	5	2	10	5-10K	core	6u	72u	924u	792 - 984u	200	1	99	Y	Y
		— Divide time refers to 5 digit quotient. Fully checked adder, transfer check. Priority processing. Zero suppression. Scatter read-write.														
IBM 7072	Y	D	5	2	10	5-30K	core	6u	12u	64u	74u	200	1	99	Y	Y
		— SEE remarks under IBM 7070														
IBM 7074	Y	D	5	2	10	5-30K	core	4u	10u	56u	70u	200	1	99	Y	Y
		— SEE remarks under IBM 7070														
IBM 7080	Y	D	7	1	V	1K	core	1u				106	1	0	Y	Y
					80-160K	core	2u	11u	100u	253u						
		— Parity checking.														

NAME OF COMPUTER	INTERNAL CHARACTERISTICS															
	Solid State?	NUMBER SYSTEM				MEMORY			TIMING			MACHINE PROGRAMMING				
		Number Base	Bits/Digit	Digits/Alphabetic	Word Length	Number of Words	Type	Access Time	Add Time	Multiply Time	Divide Time	Number of Instr.	Addresses/Instr.	No. Index Registers	Indirect Addressing?	Floating Point?
IBM 7090	Y	B	3	2	36	32K	core	2.18u	4.36u	4.36u - 6.54 - 30.52u	30.52u	227	1	3	Y	Y
— Floating point trap, transfer trapping, overflow, underflow, and divide checks. Multiple channel programming.																
LGP-30	N	B	1	6	31	4K	drum	8.5m	2.25m	17m	17m	16	1	0	N	N
— Interlacing of words on drum reduces memory access time. No automatic checking. Oscilloscope display of registers.																
Libratrol 1000	Y	D	4	1.5	8	8 7872	FBD drum	1m 8m	1m	18m	18m	32	1	1	Y	N
— 128 words accessible by dual tracks.																
Monrobot XI	Y	B	1	6	32	1K	drum	6m	9m	34m		27	1	0		
— 2 instructions per word.																
NCR 304	Y	D	4	1.5	15	2.4-4.8K	core	60u	.6m	3m	3m	37	3	10	N	Y
— Parity and echo checking. Instructions are 2 words long. A single-address microprogrammed instruction system is included.																
NCR 310	Y	B	1	6	12	4K	core	6.4u	12.8u			64	1	0	Y	N
— No automatic checking. Computer is a version of the CDC-160. Multiply and divide must be programmed.																
NCR 315	Y	D	4	1.5	3	2-40K	core	6u	36u	294u	1044u	90	1	32	N	N
— Parity and echo checking.																
NCR 390	Y	D	4		12	200	core	1.2m	11.3m	204.6m	248.6m	26	4	0	N	Y
— There are 10 "string of address" type instructions, e. g., "sum A through D".																
PB 250	Y	B	1		22	16 2.3-16K 16K	delay delay core	.09m 1.5m 24u	24u	288u	264u	59	1	1	N	N
— Parity checking. Memory consists of magnetostrictive delay lines.																
PDP-1	Y	B			18	1-32K	core	5u	10u			49	1	0	Y	N
— Microprogramming. Multiply and divide are programmed (optional multiply and divide hardware). Optional 16 channel sequence break, program resumes according to interrupting channel.																
Philco 2000-210	Y	D	6	1	8	4-32K 32K	core drum	10u 25m	14.8u	69.9u	73.8u	225	1	32	N	Y
— Repeat modes, asynchronous operation, automatic interrupt.																
Philco 2000-211	Y	D	6	1	8	32K 32K 32K	core core drum	2u 10u 25u	4.1u	34.9u	36.7u	225	1	32	N	Y
— Transmission checking. Repeat modes, asynchronous operation, automatic interrupt.																
Philco 2000-212	Y	D	6	1	8	32K	core	2u	.55u	4.3u	9.8u	248	1	8	N	Y
— Transmission parity checking. Four way processing, four repeat modes, automatic interrupt, asynchronous parallel memory access. Look ahead. 7 instructions may be processed simultaneously.																
RCA 301	Y	D			V	10-20K	core	7u	189u			30	2	1	Y	N
— Multiply and divide are programmed.																

NAME OF COMPUTER	INTERNAL CHARACTERISTICS															
	Solid State?	NUMBER SYSTEM				MEMORY			TIMING			MACHINE PROGRAMMING				
		Number Base	Bits/Digit	Digits/Alphabetic	Word Length	Number of Words	Type	Access Time	Add Time	Multiply Time	Divide Time	Number of Instr.	Addresses/Instr.	No. Index Registers	Indirect Addressing?	Floating Point?
RCA 501	Y	D		12	16-262K	core	15u	360u	1.9 - 9.6m	1.3 - 2.4m	49	2	8	Y	N	
— Indirect addressing limited to scatter and gather operations.																
RCA 601	Y	B	1	56	8-32K	core	.9-1.5u	6u			64	2	8	Y	Y	
— Variable length instructions are 1 character, 1/2 word, or 1 word long. Multiple program processing and memory overlap. Double precision arithmetic.																
Recomp II	Y	B	1	5	40	16	disk	.95m	1.49m	11.75m	12.05m	49	1	0	N	Y
					4K	disk	8.64m	9.18m	19.44m	19.74m						
— Echo checking.																
Recomp III	Y	B	1	8	40	16	disk	1.89m	.54m	10.8m	11.07m	52	1	1	N	Y
					4080	disk	9.4m	.54m	10.8m	11.07m						
— No automatic checking.																
RPC 4000	Y	B		32	128	FBD	5m	1m	17m	17m	42	2	1	N	N	
					8K	drum	8.5m									
— Instruction contains the address of the next instruction. Repeat command.																
RPC 9000	Y	D	1	12	72	delay	.8m	.23m	2.9m	3.5m	43	1	0	N	N	
— Memory is nickel wire delay lines and may be expanded. Uses loops of magnetic tape as main storage (see INPUT AND OUTPUT). Single character commands and addresses.																
RW 400	Y	B	1	26	9K	core	10u	14u			43	2	Y	N	N	
— Interrupt system.																
RW AN/UYSK-1	Y	B	1	15	8-32K	core	6u	12u								
Sylvania 9400	Y	B		37	16-32K	core	4u	8u				1	7	N	Y	
Univac I	N	D	7	1	11	1000	delay	242u	525u	2.15m	3.95m	45	1	0	N	N
— Duplicate arithmetic and comparison circuitry, parity check.																
Univac II	N	D	7	1	12	2000	core	40u	200u	1.9m	3.7m	47	1	0	N	N
— Parity check, some duplicate circuits.																
Univac III	Y	D	4	1.5	6	8-32K	core	1.07u	8u	124u	144u	61	1	15	Y	Y
— Field selection, automatic checking, interrupt, multiple word operands, scatter read, gather write, addressable clock.																
Univac 490	Y	B	1	6	30	16-32K	core	1.9u	12u	84u	84u	62	1	7	N	N
					78KK	drum	17m									
— Illegal function and millisecond timeout checks. Concurrent program operation via automatic interrupts.																
Univac 1103A	N	B	1	6	36	4-12K	core	8u	60u	410u	490u	50	2	0	N	Y
					16-32K	drum	17m									
— Parity, overflow, lockout, main control checks. Interrupt feature and repeat command.																
Univac 1105	N	B	1	6	36	8-12K	core	8u	60u	410u	490u	50	2	0	N	Y
					16-32K	drum	17m									
— Parity, overflow, lockout checking. Interrupt feature and repeat command.																
Univac 1107	Y	B	1	6	36	128	film	.3u				115	1	15	Y	Y
					65K	core	1.8u	4u	12u	31.8u						
— Overflow check. Index addressing, cascadable, 128 loop count registers, automatic incrementation.																

NAME OF COMPUTER	Solid State?	INTERNAL CHARACTERISTICS														
		NUMBER SYSTEM				MEMORY			TIMING			MACHINE PROGRAMMING				
		Number Base	Bits/Digit	Digits/Alphabetic	Word Length	Number of Words	Type	Access Time	Add Time	Multiply Time	Divide Time	Number of Instr.	Addresses/Instr.	No. Index Registers	Indirect Addressing?	Floating Point?
Univac File Computer I	N	D	7	1	12	20	core	.9m	8.6m	23.8m	27.5m	23	3	0	N	N
						1020	drum	3.1m								
— Additional 19 plugboard instructions and 63 in/out instructions. Components partially solid state.																
Univac File Computer II	N	D	7	1	12	2000	core	.63u	3.4u			23	3	0	N	N
— SEE remarks under Univac File Computer I																
Univac Larc	Y	D	5	2	12	100	core	1u				76	1	99	Y	Y
						10-97K	core	4u	4u	8u	28u					
						6KK	drums	68m								
— "Processor" controls in/out and information transfer. 76 summary orders from computer to Processor, 88 Processor instructions, including in/out. Automatic checking and 20% duplicate circuits. All single-bit errors detected. Look-ahead permits fast add. 1, 2, or 3 addresses per instruction.																
Univac SS 80/90	Y	D	4	1.5	10	200-1600	FBD	425u	510u	2.2m	2.4m	53	1	3	N	N
						2.4-7K	drum	1.7m								
— Parity, overflow, logical checks.																

## II. INPUT AND OUTPUT

NAME OF COMPUTER	MAGNETIC TAPE				PUNCHED CARDS	PAPER TAPE	PRINTER SPEED
	No. of Units	Tape Density Char/Inch	Tape Speed Char/Sec	Words/Tape	Cards/Min	Char/Sec	Lines/Min
Alwac III-E	16	175	17.5K	460K	100R 100P	50R 50P	150
— Parity checking. Magnetic tape, card and paper tape editing. Simultaneous read-write-compute. Plotter may be added.							
Bendix G-15	4	57	430	300K	100R 100P	250R 17P	100
— 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.							
Bendix G-20	144	1100	240K	1KK	1000R 250P	500R 100P	1000 1500
— Magnetic tape editing, programmed print editing. High print speed refers to wholly numerical lines. Multiple read-write-compute.							
Burroughs E-101	N				*	20R	*
— * Card read at 17/20 columns per sec., card punch at 17 columns per sec. Printer, semi-ganged, prints at 24 digits per sec. Data plotter may be used.							
Burroughs 205	10	100	6000	400K	300R 100P		150
— Card and print editing via buffer drums and format bands. Datafile Multiple Tape Bin available to computer — 20,000,000 digits per file, 10 files available. Dual lane magnetic tape, independent search in both directions, addressable tape. Card system buffered.							

INPUT AND OUTPUT

NAME OF COMPUTER	MAGNETIC TAPE				PUNCHED CARDS	PAPER TAPE	PRINTER SPEED
	No. of Units	Tape Density Char/Inch	Tape Speed Char/Sec	Words/Tape	Cards/Min	Char/Sec	Lines/Min
Burroughs 220	10	208	25K	1.3KK	300R 100P	1000R 60P	1500 150
— Card and print editing via buffer drums and format bands. Internal paper tape editing. Card system buffered, compute while searching magnetic tape. Multiple inputs (two tapes and computer) for high-speed printer.							
Burroughs 251 (VRC)					200R		214
— Validity checking on card read. 160 char/line print (record processor) and complete masking.							
Burroughs 5000	16	555 200	66K 24K	23KK	800R 100P		700
— Complete 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.							
CDC-160	30	200	30K	7K		350R 60P	
CDC-1604	24	200	30K		1300R 200P	350R 60P	1000
— Multiple read-write-compute.							
DE-60	N				N	N	120
— Print and compute simultaneously. Typewriter, plotter. Numeric keyboard.							
GE 210	13		50K		1500R 100P	500R 60P	1000
— Read-write-compute. Magnetic document sorter-reader available. Printer can print magnetically encoded characters.							
GE 225	64		15-62K		1000R 200P	1000R 110P	600
— Multiple read-write-compute. Magnetic document sorter-reader available. Disk file with access time of 160m.							
H-400	64		64K		650R 250P	1000R 60P	900
— Automatic magnetic tape error correction. Tape reads in both directions.							
H-800	64		64K		650R 250P	1000R 60P	900
— Automatic magnetic tape error correction. Tape reads in both directions.							
HW-44K	N				N	N	N
— Machine is designed to be part of larger system: inputs and outputs are electrical signals.							
IBM Ramac 305	N				125R 100P	60R 60P	150
— Control panel editing. Simultaneous read-compute or write-compute.							
IBM 650	6	200	15K	450K	250R 250P	60	150
— Control panel editing. Automatic checking. Simultaneous read-write-compute. Bulk disk storage (see INTERNAL CHARACTERISTICS).							
IBM 704	10	200	15K		250R 100P		150
— Control panel editing. Automatic checking. Limited overlap of computing with reading or writing. Cathoderay tube plotter may be attached. Physical tape records of any length: physical records can be broken into any number of logical records.							

INPUT AND OUTPUT

NAME OF COMPUTER	MAGNETIC TAPE				PUNCHED CARDS	PAPER TAPE	PRINTER SPEED
	No. of Units	Tape Density Char/Inch	Tape Speed Char/Sec	Words/Tape	Cards/Min	Char/Sec	Lines/Min
IBM 705 III	100	556	62.5K	16KK	250R 100P		1000 500 150
— Automatic checking. Internal tape editing. Read-write-compute simultaneously.							
IBM 709	48	200- 556	15- 62.5K		250R 100P		150
— Control panel editing. Physical tape records of any length; physical records contain any number of logical records. Read-write-compute simultaneously.							
IBM 1401	6	200- 555	7.5- 62.5K	2-7K	800R 250P	500	600 1285
— Control panel and programmed editing. Print is buffered. High speed for printer refers to the printing of entirely numerical lines. A magnetic ink reader-sorter, an optical character reader, and many other devices may be attached.							
IBM 1410	20	200- 555	7.5- 62.5K		800R 250P	500R	600
— In/out editing commands. Automatic checking. Bulk disk storage (see INTERNAL CHARACTERISTICS). Read-write-compute. 1412 magnetic character reader may be added.							
IBM 1620	N				250R 125P	150R 15P	
— Automatic checking. Card input-output buffered. 1711 Data Converter can be added for real-time input.							
IBM 7070	40	200- 556	7.2K- 62.5K	1.5KK	500R 250P	500R 60P	600 150
— Automatic checking. Magnetic tape, paper tape, and printer editing. Paper tape off-line; 600 line/min. printer off-line. Multiple read-write-compute. 1401 used for input and output at high speeds.							
IBM 7072	40	200- 556	7.2- 62.5K	1.5KK	500R 250P	500R 60P	600 150
— Automatic checking. Magnetic tape, paper tape, and printer editing. Paper tape off-line. 600 line/min. printer is off-line. Multiple read-write-compute. 1401 used for data input and output at high speeds.							
IBM 7074	40	200- 556	7.2K- 62.5K	1.5KK	500R 250P	500R 60P	600 150
— Automatic checking. Magnetic tape, paper tape, and printer editing. Paper tape off-line; 600 line/min. printer off-line. Multiple read-write-compute. 1401 used for input and output at high speeds.							
IBM 7080	40	200- 556	15- 62.5K	1.6KK			
— Uses 1401 for card, paper tape and print. Complete overlap of read-write-compute.							
IBM 7090	80	200- 556	62.5K		250R 100P		150
— Card and print editing with panel. Automatic checking, full tape checking. Multiple read-write-compute using a 7606 Multiplexor and up to eight 7607 Data Channels.							
LGP-30	N					200R 20P	
— No simultaneous calculating.							
Libratrol 1000	N				N	120R 15P	N
— As a control computer, the primary outputs are analog signals and logging typewriters. Inputs are analog signals and contact closures primarily.							
Monrobot XI	N					20R 10P	60
— Up to 3 in/out devices can be attached. Typewriter. 16 columns/sec. card read.							

INPUT AND OUTPUT

NAME OF COMPUTER	MAGNETIC TAPE				PUNCHED CARDS	PAPER TAPE	PRINTER SPEED
	No. of Units	Tape Density Char/Inch	Tape Speed Char/Sec	Words/Tape	Cards/Min	Char/Sec	Lines/Min
NCR 304	64	200	30K	86K	2000R 100P	1800R 60P	900
— Automatic checking of cards and paper tape. Complete magnetic tape checking, including readback. In/out editing. Read-write on tapes simultaneously. Card and print buffered. Up to 4 MICR sorter-readers can be used, buffered if only 1 unit used. Printer skips blank lines at the rate of 5040 lines/min.							
NCR 310	20	200	15-30K			350R 1000R 110P	900
— 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.							
NCR 315	8	200- 500	24-60	7KK	2000R 250P	1000R 110P	900
— Polysynchronous operation with demand interrupt permits simultaneous operation of a number of peripheral units. Automatic checking and editing facilities. 16 CRAM (magnetically encoded cards on a drum) random access memory (200m access time) units allow 240 postings per minute. Up to 4 buffered MICR sorter-readers can process 750 checks per minute.							
NCR 390	1	21	210	V	18R 18P	400R 15P	110
— "Magnetic Tape" refers to a magnetic document (magnetic tape affixed to the back of printed documents) unit. Automatic checking. Editing of punched cards and paper tape. Programmable printer allows for different column arrangements on multiple forms.							
PB 250	6	200	2-15K	1KK	400R	300R 1000R 110P	600
— Automatic checking of magnetic tape. No editing facilities. 15K characters/sec. Tape units are buffered for search, read, and write. 2K units not buffered. Voltage plotters, incremental plotters, A/D and D/A converters, high speed buffers, commutators, etc. may be added. Computer can handle many in/out devices.							
PDP-1	48	200	15K		100R 100P	400R 60P	600
— No automatic checking. Tape editing. 3 tape units (each with 16 tapes) can be operating simultaneously. Visual cathode ray tube displays, 10" or 5" precision. Light pen for use with CRT.							
Philco 2000-210	256	750	90K	2.4KK	2000R 100P 250P	1000R 500R 100P 60P	900
— Parity 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.							
Philco 2000-211	256	750	90K	2.4KK	2000R 250P	1000R 100P	900
— Automatic checking; editing. Tape can be read in both directions and is addressable. 9 in/out devices can operate simultaneously, 4 can be magnetic tape units. A clock, interval timer, tape translator, and link with another computer may be added.							
Philco 2000-212	256	750	90K	2.4KK	2000R 250P	1000R 100P	900
— 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, IBM tape translator, clock, interval timer, and a data link system (communication between computers) can be added.							

INPUT AND OUTPUT

NAME OF COMPUTER	MAGNETIC TAPE				PUNCHED CARDS	PAPER TAPE	PRINTER SPEED
	No. of Units	Tape Density Char/Inch	Tape Speed Char/Sec	Words/Tape	Cards/Min	Char/Sec	Lines/Min
RCA 301	12		7.5- 66K		600R 200P	1000R 100P	600
	— Disc Record Files available, up to five units with 4.6KK capacity each. Read-compute, write-compute, or read-write simultaneously.						
RCA 501	63		33- 66K		600R 200P	1000R 300P	600
	— Tapes read in both directions. Read-compute, write-compute, or read-write simultaneously.						
RCA 601	63		33- 66K		600R 100P	1000R 300P	750 600
	— Multiple read-write-compute.						
Recomp II	8	200	1.85K			600R 150P	
	— No buffering. Magnetic tape search speed is 11K char/sec. Tape reads in both directions.						
Recomp III						10R 10P	
	— 1 word buffer. Additional input/output built to customer specifications.						
RPC 4000	N					500R 300P	
	— No simultaneous paper tape-compute.						
RPC 9000	120		52K		400R	500R 300P	1000 150
	— Loops of tape serve as external data memory for the computer.						
RW 400	24		62K		2000R	300R	900
	— Modular construction permits addition of many in/out devices and display systems. Multiple read-write-compute. Inter-module communication.						
RW AN/UYPK-1	— Specifications not received.						
Sylvania 9400	64		90K		2000R 250P	1000R 100P	900
	— Multiple read-write-compute. Real-time channel with priority program interrupt and with an in/out rate of 250K characters/sec. Random access file may be attached. Magnetic tape has scatter read-write. 4 independent in/out processors with 64 devices each, available.						
Univac I	10	128	12.8K	137K	300R 120P	200R 50P	600
	— Card and paper tape equipment is off-line via magnetic tape. Simultaneous read-write-compute. Typewriter. Automatic magnetic tape re-read check.						
Univac II	16	250	25K	420K	300R 120P	200R 50P	600
	— Plugboard editing. Card and paper tape off-line via magnetic tape. Simultaneous read-write-compute. Typewriter.						
Univac III	38	1333 250	133K 25K	8.6KK .44KK	700R 300P	1000R 110P	700
	— Programmed editing. Multiple read-write-compute. Card punching printer may be used.						
Univac 490	192	1027 250	175K 25K	6.5KK 1.4KK	700R 300P	1500R 350R 110P	700
	— Automatic checking. Multiple read-write-compute. System adaptable to analog devices. A variety of specialized inquiry-answering devices available.						

INPUT AND OUTPUT

NAME OF COMPUTER	MAGNETIC TAPE				PUNCHED CARDS	PAPER TAPE	PRINTER SPEED
	No. of Units	Tape Density Char/Inch	Tape Speed Char/Sec	Words/Tape	Cards/Min	Char/Sec	Lines/Min
Univac 1103A	10	128	12.8K	326K	120R 120P	200R 60P	600
— Card plugboard editing. Automatic card checking. 2 input-output registers. Tape reads in both directions. Typewriter.							
Univac 1105	24	208	21K	846K	120R 120P	200R 60P	600
— Simultaneous read-write-compute. Flexowriter output. Cathode ray tube output optional. Plotting feature on high speed printer. Off-line digital to analog devices available.							
Univac 1107	192	1000	120K	5.5KK	700R 300P	400R 100P 300P	700 600
— Programmed editing, automatic checking. Complete simultaneous read-write-compute. System adapted to analog devices.							
Univac File Computer I	10	139	10K	200K	150R 150P	200R 60P	600
— Plugboard control for cards, paper tape and printer. Tape is read in both directions and is checked by re-read. Sorting-collating device, typewriter, Randex Mass Storage are available. Multiple read-write-compute.							
Univac File Computer II	— SEE Univac File Computer I						
Univac Larc	40	250	25K	600K		10R 10P	600
— Input/output control is done by Processor, completely independent of computation. Almost any in/out device can be added to the system.							
Univac SS 80/90	10	250	25K	570K	600R 150P		600
— Programmed editing and checking for card and print. Complete tape checks. Read-write-compute. Tape read and write cannot be overlapped. Randex Mass Memory and card punching printer available.							

III. COST AND USE

NAME OF COMPUTER	Average Monthly Rental	Monthly Rental Range	One-Sum Price Range	Power	Floor Space — Sq. Ft.	Air Cond — Tons	Percent Good Time
Alwac III-E	\$2,400	\$1,820-\$3,600	\$50,000-\$80,000	7.4KW	35 (computer)	85°F	95
— Scientific, real-time, business. Computer is modular and extra units are easily added.							
Bendix G-15	\$1,530	\$1,485 and up	\$49,500 and up	3.8KVA	100	N	96
— Scientific and business. Intercom 500 and 1000, ALGO compilers. Modular construction. Two computers can be joined.							
Bendix G-20	\$15,500	\$8,750 and up	\$390,000 and up	20KVA	600	6	
— Scientific, real-time, business. SPAR, PAR, SNAP assemblies; ALCOM and COBOL compilers. Modular construction permits extra units to be added easily.							
Burroughs E-101	\$1,000	\$875-\$1,200	\$20,000-\$30,000	220V	desk size		
— Scientific and business use, desk size.							
Burroughs 205	\$8,000 \$5,760(3 yr.)	\$4,622-\$13,000	\$79,000-\$350,000	38KVA	1600	12	97
— Scientific and business. Datacode compiler, STAR-O assembly, ALGOL compiler, 604 simulator programs available. Peripheral equipment can be added on a modular basis.							

## COST AND USE

NAME OF COMPUTER	Average Monthly Rental	Rental Range	One-Sum Price Range	Power	Floor Space — Sq. Ft.	Air Cond. — Tons	Percent Good Time
Burroughs 220	\$17,000	\$7,800-\$35,000	\$320,000-\$1,200,000	45KVA	1600	12	95
	— Scientific, business. STAR 2B, assembly; ALGOL compiler. Computer built on a modular basis, extra memory and peripheral units easily added.						
Burroughs 251 (VRC)	\$4,000		\$217,000	120/240V single phase 60 cycle	525	Y	
	— Business. Burroughs Basic Assembler available.						
Burroughs 5000	\$18,000	\$11,820-\$49,750	\$509,205-\$2,064,625				
	— Scientific, business. Unique internal logic permits efficient object programs constructed by compilers. ALGOL, COBOL compilers. Programs easily relocated in memory and are not restricted to specific input/output units. Single pass compiling. Unlimited multi-level variable indexing. Automatic sub-routine operation. Automatic program scheduling. System expansion or contraction without reprogramming. Protection against interference between programs is provided by limit fields contained in all descriptors. Inter-mixed fixed-floating point. Automatic program stacks.						
CDC-160	\$1,500		\$60,000	.7KW	10		
	— Scientific and business. Power requirements are for the computer only. Desk size.						
CDC-1604	\$34,000			7.5KW	47	25	
	— Power and floor space requirements refer to computer and console only.						
DE-60	\$600		\$15,000-\$21,000	110V	desk	N	96
	— Scientific, process control. Desk size, 30" x 36". Hardware allows algebraic statements. Modular construction allows extra units to be added easily. One day programmer training.						
GE 210	\$14,000		\$700,000	10KVA	1200	3	
	— 2 pass assembly.						
GE 225	\$8,000		\$400,000	10KVA	1200	3	
	— 2 pass assembly.						
H-400	\$8,700	\$8,700-\$12,000	\$397,000	15KVA	600	5	
	— EASY assembly.						
H-800	\$22,000	\$12,000-\$30,000	\$980,000	30KVA	1400	7	
	— Argus assembly; Algebraic and Data Proc Fact compiler.						
HW-44K			\$44,000-\$60,000	120V		N	
	— Real-time. To be used as part of larger system. 2' x 2'. Computer is built on a modular basis.						
IBM Ramac 305	\$3,600	\$2,875 and up	\$167,850 and up	12.6KVA	370	4	
	— Business. Extra units easily added; computer built on a modular basis. 305 assembly program. Prices exclude tax.						
IBM 650	\$6,000	\$3,750-\$21,500	\$182,400-\$1,100,000	18KVA	150	5	
	— Scientific, business. SOAP assembly. Extra units easily added. Prices exclusive of tax.						
IBM 704	\$35,000		\$400,000 and up	110KVA	2200	45	
	— Scientific, real-time, business. Computer built on a modular basis; extra units easily added. UASAP and FORTRAN compilers. Prices exclude tax.						
IBM 705 III	\$42,000	\$28,000-\$50,000	\$1,400,000-\$2,500,000	85KVA	1500-2000	15-20	
	— Business and limited scientific. COBOL, PRINT, Autocoder III compilers. Modular construction. Prices exclude tax.						
IBM 709	\$55,200		\$2,630,000 and up	150KVA	3000	50	
	— Scientific, real-time, business. Compilers: IBM SOS, SHARE, FAP, FORTRAN. Modular construction; extra units easily added. Prices exclude tax.						

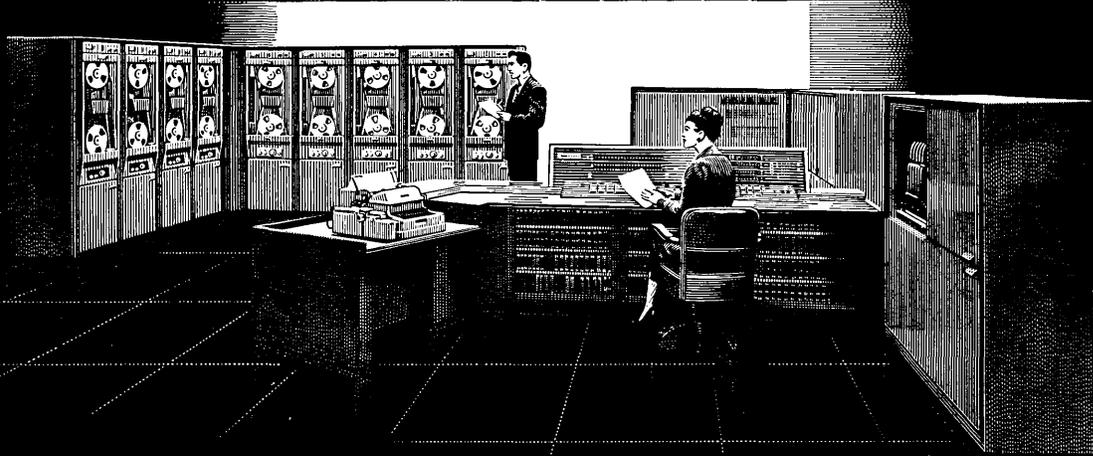
COST AND USE

NAME OF COMPUTER	Average Monthly Rental	Rental Range	One-Sum Price Range	Power	Floor Space - Sq. Ft.	Air Cond. - Tons	Percent Good Time
IBM 1401	\$6,500	\$2,475 and up	\$125,600 and up	7-16KVA	450	3.5	
— Scientific, business. SYMBOLIC, Autocoder assemblies; FORTRAN compiler. 7KVA without tape units. Prices exclusive of tax. Extra units easily added.							
IBM 1410	\$8,000	\$5,365 and up	\$244,550 and up	29KVA	500	5	
— Scientific, real-time, business. Basic Autocoder assembly; FORTRAN compiler. Extra units are easily added. Prices exclude tax.							
IBM 1620	\$1,600	\$1,600 to \$5,000	\$74,500-\$200,000	15A, 230V	22	N	
— Scientific, real-time. FORTRAN, GOTRAN compilers. Symbolic Assembly Program. Floor space refers to computer area only. Extra units easily added. Prices exclude tax.							
IBM 7070	\$24,000		\$1,077,400	45KVA	1200	6	
— Scientific and business. 7070 Basic Autocoder, Autocoder, Four-Tape Autocoder, Basic Fortran, IOCS compilers. Extra units easily added; computer built on modular basis. Program compatibility with 7072, 7074. Prices exclude tax.							
IBM 7072	\$19,825		\$860,550	45KVA	1200	6	
— Scientific. FORTRAN, AUTOCODER compilers. Program compatibility with 7070, 7074. Extra units are easily added; computer is built on a modular basis. Prices exclude tax.							
IBM 7074	\$29,300		\$1,284,350	45KVA	1200	6	
— Scientific. IOCS, FORTRAN, AUTOCODER compilers. Computer built on a modular basis; extra units easily added. Prices exclude tax. Program compatibility with 7070; 7072.							
IBM 7080	\$55,000	\$45,000-\$70,000	\$2,100,000-\$3,200,000	50KVA	1000-2000	7.5-10	
— Business and limited scientific. Autocoder III, FORTRAN compilers. Modular construction; extra units easily added. Prices exclusive of tax and off-line 1401.							
IBM 7090	\$64,000		\$2,898,000	35KVA	1400	25	
— Scientific, real-time, business. Assembly and compiler programs: IBM SOS, SHARE, FORTRAN, FAP, and Commercial Translator. Prices exclude tax.							
LGP-30	\$1,300	\$1,100-\$2,000	\$49,500				
— Business and scientific. Desk size.							
Libratrol 1000			\$97,400-\$250,000	110V, 20A		N	99+
— Real-time, industrial control. Computer cabinet is 48" x 28". Computer comes furnished with its own refrigeration system. The assembly and compiler programs of the Royal McBee RPC 4010 are compatible. Computer is built on a modular basis.							
Monrobot XI	\$700		\$24,500	850W	desk	N	
— Business. Uses wall outlet. 375 lbs., 48" x 22" x 28".							
NCR 304	\$15,000	\$12,500-\$30,000	\$500,000-\$1,250,000	45KVA	1800	12	95-99
— Scientific, business. Extra units are easily added. NEAT compiler.							
NCR 310	\$2,450	\$1,600-\$6,500		310-750W		N	99
— Scientific, business. Control sorting of MICR documents. 6' x 30" computer area, with extra 3' front and back clearance. OSAP assembly. Extra units are easily added.							
NCR 315	\$8,500	\$4,400-\$27,000	\$240,000-\$1,000,000	27KVA	1200	15	
— Scientific, real-time, business. Modular construction permits extra units to be easily added. NEAT and COBOL compilers.							
NCR 390	\$1,725	\$1,395-\$1,850	\$56,300-\$75,000	220V	100	N	98.5
— Business, engineering.							
PB 250	\$1,400	\$1,200-\$5,000	\$39,500-\$100,000	55-115W	4	N	99+
— Scientific, real-time, control. Floor space referred to is for computer only. Modular construction permits extra units to be added easily. SNAP assembly program, NELIAC compiler.							

COST AND USE

NAME OF COMPUTER	Average Monthly Rental	Rental Range	One-Sum Price Range	Power	Floor Space — Sq. Ft.	Air Cond. — Tons	Percent Good Time
PDP-1	\$3,600		\$110,000	1.5KW	32	N	
	— Scientific, real-time, business. Floor space refers to computer and console only. Assembly and compiler programs. Modular construction.						
Philco 2000-210	\$35,000	\$27,500-\$66,000	\$1,250,000-\$2,500,000	24KVA	800	10-12	99
	— Scientific, business, real-time. Computer is built on a modular basis and extra units are easily added. TAC and ALTAC compilers.						
Philco 2000-211	\$40,000	\$30,000-\$66,000	\$1,500,000-\$2,900,000	24KVA	1300	10-12	99
	— Scientific, business, real-time. Computer built on a modular basis and extra units are easily added. TAC, ALTAC, COBOL compilers.						
Philco 2000-212	\$58,000	\$47,000-\$79,000	\$2,000,000-\$3,500,000	40KW	1300	10-12	99
	— Scientific, real-time, business. Extra units are easily added. TAC, ALTAC, COBOL compilers.						
RCA 301	\$5,000	\$3,600-\$10,000	\$268,000	19KVA	400	4	
	— Business, scientific. Assembly program, COBOL compiler.						
RCA 501	\$16,000	\$11,000-\$26,000	\$1,000,000	30KVA	1200	8	
	— Business. Assembly and compiler programs.						
RCA 601	\$32,000	\$24,000-\$68,000	\$1,750,000	55KVA	900	12	
	— Assembly program and COBOL compiler.						
Recomp II	\$2,495	\$2,495	\$95,000	110V	45	N	98.5
	— Scientific, real-time, business. SALT compiler, 3 assembly programs. Extra units easily added.						
Recomp III	\$1,495	\$1,495	\$65,000	110V	38	N	
	— Scientific, real-time, business. Assembly program available on request.						
RPC 4000	\$1,900	\$1,800-\$4,500	\$87,000	120V	50		
	— Business and scientific. Desk size.						
RPC 9000	\$4,500	\$2,500-\$10,000	\$120,000	120V	400		
	— Business and scientific. Assembly and compiler programs.						
RW 400	\$50,000	\$10,000 and up			1800		
	— Complete modular construction. Extra computers, in/out may be added. Off-line displays available also.						
RW AN/UYK-1	— Specifications not received.						
Sylvania 9400	\$67,000	\$55,000-\$90,000					
	— Specifications not received.						
Univac I	\$25,000	\$20,000-\$30,000					
	— Scientific, real-time, business. Assembly programs: FLOW-MATIC, MATH-MATIC, FLEXI-MATIC, XI.						
Univac II	\$28,000	\$25,000-\$30,000	\$1,250,000-\$1,500,000	120KVA	2000	30	
	— Scientific, business. FLOW-MATIC, MATH-MATIC, XI assembly programs.						
Univac III	\$22,500	\$15,000-\$30,000	\$720,000-\$1,440,000	52KVA	1850	12	
	— SALT assembly system, COBOL compiler.						
Univac 490	\$25,000	\$18,000 and up	\$810,000 and up	61KVA	196	12	
	— Scientific, real-time, business. Extra units easily added. COBOL, SPURT compilers. Floor space requirements refer to computer area.						
Univac 1103A	\$35,000	\$21,500-\$45,000	\$922,000-\$1,900,000	82KVA	1800	20	
	— Scientific. Extra units easily added. USE, UNICODE compilers.						
Univac 1105	\$43,000	\$33,060-\$55,000	\$1,612,000-\$2,700,000	175KVA	3100	35	
	— Scientific, real-time, business. AIMACO and UNICODE and USE compilers. Extra units easily added.						

# PHILCO 2000 DATA PROCESSING SYSTEMS



Assembled to fit your present needs,  
a Philco 2000 can be updated or expanded  
to meet your future requirements.

The Philco 2000 is not just a single computer but is an extremely flexible system of interchangeable functional units. True asynchronous design makes possible almost unlimited combinations of these functional units to produce the computer best suited to your needs. And, as your needs grow, you can keep pace with them simply by adding or substituting new equipment . . . without major redesign or reprogramming. The resultant economy highlights the value of Philco's philosophy of flexible data processing systems. It provides a method of selecting the data processing system best suited to your needs and keeping pace with your requirements.

Write for complete information on what Philco has to offer you . . . in both systems and customer service.

## Customer Services

An extensive program to "mesh" your Philco 2000 system perfectly with your own individual needs and objectives. Starts long *before* the sale and continues long *after*.

**Management Seminars.** Continuing series to explain uses and potential advantages of Electronic Data Processing in specific applications

**System Analysis.** Thorough study of your data processing needs and system recommendations to meet them.

**Programming.** Skilled programming assistance at your site . . . plus wide variety of Philco automatic programming systems and complete library of routines.

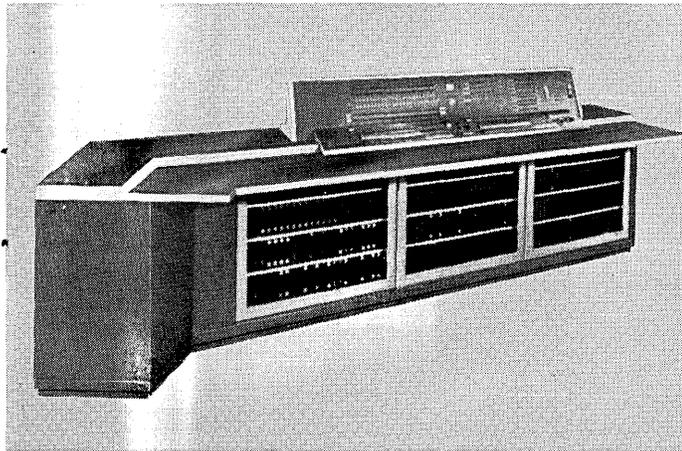
**Customer Training.** Comprehensive courses to train your personnel in all phases of computer operations.

**Installation and Maintenance.** Complete service provided by Philco engineers . . . or training for your own engineers.

**Publications.** Comprehensive manuals for training and programming, plus frequent bulletins on new developments.

# CENTRAL PROCESSORS

The operations of data processing, program processing and operator control are performed by the central processor. You can install a Philco 2000 system now, utilizing either the model 210 or 211 central processor and as your work load increases, replace it with the model 212, without reprogramming!



## MODELS 210 or 211

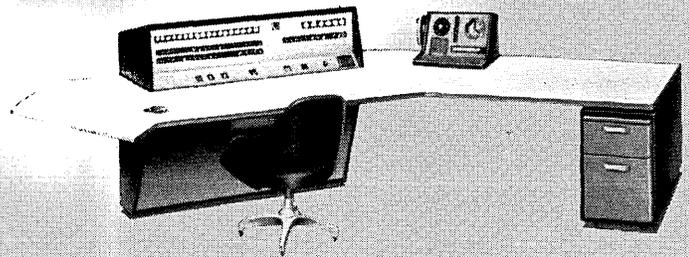
Each model is so compact that it is used as the desk for the central console. Each contains four sections: an arithmetic section, a program section, a console typewriter, and a display and manual control section.

- Asynchronous logic reduces operating computer time to a minimum.
- Extremely fast—average storage access time is only one microsecond for the new high-speed memory.
- Optional index registers—available in groups of 8. Simplifies programming and speeds up addressing.
- Ease of programming—225 instructions, including 59 floating point are recognized.
- Compact and lightweight.

## MODEL 212

Represents an entirely new concept in data processing speed, efficiency and flexibility . . . four times faster than the model 211 central processor. Faster running time, more effective use of memory and reduced programming time, result in the greatest data processing economy.

- Diode transistor logic.
- Multiplication times range between 3 and 12 microseconds.
- Advanced four-way processing. Permits four instructions to be processed simultaneously.
- Access time of 1 microsecond for a pair of instructions.
- Expanded instruction catalog of 248 instructions.
- Four modes of automatic index register modification for maximum program efficiency.
- Expanded repeat instructions allow automatic looping of four instructions up to 256 times.



## Peripheral Equipment

**High Speed Memories.** Random access core storage. Store 8192 48-bit words. Expandable in steps up to 32,768 words. Available in access times of 1 to 10 microseconds.

**Input-Output Processor.** Interconnecting and control link between central computer and 16 I/O channels. Transfer rate—360,000 characters or 630,000 decimal digits per second.

**Magnetic Tape System.** Read/write speed of 360,000 alphanumeric characters per second by simultaneous use of four tape units.

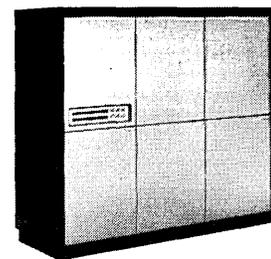
**High Speed Printing System.** Prints 900 lines per minute at 120 characters per line. High speed skipping—9000 lines per minute.

**Magnetic Drum Storage.** Auxiliary internal storage of 32,768 words in eight bands. Up to 32 drums may be operated in one Philco system.

**Universal Buffer-Controller.** Controls off-line data conversions between any two I/O media. Allows printing and punching up to 15 different outputs from one reel of magnetic tape.

**High-Speed Punched-Card System.** New photoelectric technique reads 2000 cards per minute. Double-read-and-compare plus editing provided by program control in the Philco 2400. Card punch—100 or 250 cards per minute.

**High-Speed Paper Tape System.** Photoelectric reading. Reads 1000 characters per/sec. Punches 60 characters per/sec.



## Philco 2400 Data Handling System

Memory, controls and stored program ability such as editing, search and select, sorting and data translations are included in this package. Completely flexible, it keeps pace with expanding needs. Simply add the necessary input-output devices or expand the memory. Can be utilized as an input-output system or as a satellite computer.

# PHILCO®

*Famous for Quality the World Over*

PHILCO CORPORATION • GOVERNMENT & INDUSTRIAL GROUP  
COMPUTER DIVISION, 3900 WELSH ROAD, WILLOW GROVE, PA.

B2A  
B3  
B4  
B6  
C1  
C2  
C3  
C3A  
C4  
C5  
C6  
C7

COST AND USE

NAME OF COMPUTER	Average Monthly Rental	Rental Range	One-Sum Price Range	Power	Floor Space - Sq. Ft.	Air Cond. - Tons	Percent Good Time
Univac 1107	\$50,000	\$40,000-\$60,000	\$1,800,000-\$2,700,000	93KVA	1200	18	
	— Scientific, real-time, business. ALGOL, FORTRAN compilers.						
Univac File Computer I	\$15,000	\$8,000-\$21,000	\$384,000-\$1,108,000	75KVA	1400	60	
	— Scientific, real-time, business. FLAP assembly system.						
Univac File Computer II	— SEE Univac File Computer I						
Univac Larc	\$135,000	\$135,000 and up	\$7,000,000 and up	350KVA	3000	90	
	— Scientific, business, real-time. Second computer unit can be added. SAL assembly.						
Univac SS 80/90	\$8,000			15KVA	800	4	
	— Scientific and business. Extra units easily added. Assembly programs; COBOL, SOUP II, UNITRAN, PROGENY compilers. STEP is a modular version of the Solid State 80/90, for users not requiring a full system.						

SUPPLEMENT

(Information received too late to be included in the table)

L-3060 / Librascope Division, General Precision Inc., Glendale, Calif. / INTERNAL CHARACTERISTICS: solid state, 48 bit binary word, 32,768 words of core storage, with access time of .75u, per computer. Optional version of core memory with 2u access time. ADD, 2u; MULT, 9u; DIV, 6-24u. ADD time increased to 5u with slower memory. Random access disk memory of 750K words with access time of 17m. 103 single-address instructions. 63 index registers. Indirect addressing and floating point arithmetic. The system is designed on a modular basis; 8,192 words of core storage (.75u access) are available as a shared memory between interconnected computers. Priority interrupt feature. Automatic error detection. / INPUT AND OUTPUT: magnetic tape speed, 41,625 characters per second, 960K words per reel. Read 800 cards per minute, punch 250 cards per minute. 132 characters per line printer prints at 1000 lines per minute. Capacity to handle real-time command and control peripheral equipment. / COST AND USE: 156 KW power requirements. Scientific, business, and real-time. Multiple computers permit problem sharing.



by FRANCIS J. MURRAY Designed for scientifically-trained individuals in every field, this exhaustive work reflects the vital contribution of mathematical machines to science and technology.

**VOLUME I** discusses the basic principles of digital computers, stressing fundamental ideas rather than engineering detail. It considers such devices as registers, counters, adding machines, automatic calculators, punched card machines and automatic sequence calculators.

**VOLUME II** examines three categories of machines which use the principal of analogy. Continuous computers and true analogs are covered in the first two parts, while the third presents procedures and designs permitting relatively simple devices to accomplish advanced computations.

Vol. I, \$12.50; Vol. II, \$17.50; The set, \$30.00

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# SURVEY OF COMMERCIAL ANALOG COMPUTERS

Neil Macdonald  
Assistant Editor  
Computers and Automation

Following is a survey of commercial analog 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 for publishing in an early issue of "Computers and Automation".

Nearly all the abbreviations used in these summaries are like those used in a telephone book — contractions of words of such a kind that the words can be easily guessed, especially if the reader refers to the survey form summarized. "\*C" means "checked by the organization"; "61" means "in 1961", etc.

REPLY FORM (may be copied on any sheet of paper)

1. Name of Analog Computer: \_\_\_\_\_
2. Typical field(s) of application: ( )Scientific  
( )Business ( )Real-time ( )Not real-time  
( )Other (please describe) \_\_\_\_\_
3. Accuracy of numerical information the machine will take in and put out, in number of significant figures: ( )2 ( )3 ( )4 ( )5 ( )Other (please describe) \_\_\_\_\_
4. Number of physical variables that the machine can store at one time: \_\_\_\_\_
5. Number of units in the computer for performing mathematical operations (OK to give maximum in largest existing installation): a. Adders: \_\_\_\_\_  
b. Multipliers: \_\_\_\_\_ c. Integrators: \_\_\_\_\_  
d. Arbitrary functions: \_\_\_\_\_ e. Branching operations: \_\_\_\_\_ f. Other (please explain): \_\_\_\_\_
6. Programming: a. Automatic programming of new problem when a problem changes? ( )Yes ( )No  
b. Typical amount of time needed to change from one program to another: \_\_\_\_\_
7. Input-Output: a method of giving information or problems to the machine: \_\_\_\_\_
8. Reliability: a. Automatic checking? ( )Yes ( )No  
b. Typical operating percent (good time DIVIDED BY attempted-to-run time): \_\_\_\_\_%
9. Price range: a. One sum: between \$ \_\_\_\_\_ and \$ \_\_\_\_\_  
b. Monthly rental: between \$ \_\_\_\_\_ and \$ \_\_\_\_\_
10. Sales: a. Number sold or rented: \_\_\_\_\_;  
b. Number on order: \_\_\_\_\_

11. Any remarks? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

This data supplied by: \_\_\_\_\_

Title \_\_\_\_\_ Date \_\_\_\_\_

Organization \_\_\_\_\_

Address \_\_\_\_\_

When filled in, please send this form to COMPUTERS AND AUTOMATION, Berkeley Enterprises, Inc., 815 Washington St., Newtonville 60, Mass.

AN/ASN-15 Navigational System / for aircraft problems / ACCUR: 5 signif figures / CAPAC: store 5 variables / ADDERS: 3 / MULT: 0 / INTEGRATORS: 1 / ARBIT FUNCT: 22 / PRGMG CHANGE-OVER: 5 min / IN-OUT: manual dial settings / RELIAB: no autom checking; operg ratio, 100% / sale \$20,000 to \$100,000 / sold or rented, 3; on order, 3 / Waldorf Instrument Co., Wolf Hill Rd., Huntington, N. Y. / \*C 58

Card Programmed Diode Function Generator / for scientific problems, real-time or not / ACCUR: 4 signif figures / CAPAC: store  $Y = F(X)$  physical variables / LARGST INSTLN: function generators, 75 / no autom prgmg of a new problem when the problem changes; 10 second changeover / IN-OUT: punched card / RELIAB: no autom check; operg ratio, 99.95% / sale, \$3000 to \$225,000 / This is the only function generator allowing most instlns to program non-linear functions as rapidly as the removable patch panel allows them to program the remainder of the computer / General Computers, Inc., 9000 W. Pico Blvd., Los Angeles 35, Calif. / \*C 61

Desired Generation Computer / for electric power utilities problems / ACCUR: 2 signif figures / CAPAC: store 1000 variables (actually no limit) / ADDERS: 10 / MULT: 4 / INTEGRATORS: 4 / ARBIT FUNCT: square, square root / PRGMG CHANGE-OVER: 1 to 15 min / IN-OUT: AC-voltages / RELIAB: has autom checking; operg ratio 95% / sale \$50,000 to \$500,000 / sold or rented, 2; on order, 7 / Tied into automatic process control directly / Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia 44, Pa. / \*C 58

DIAN 60, 120, 180, etc. / for scientific problems, real-time or not / ACCUR: 5 signif figures / CAPAC: store

- 200 physical variables or more / LARGST INSTLN: 450 adders, 70 multipliers, 200 integrators, 200 to 300 branching operations, also function generators (noise generators) / autom prgmg of a new problem when a problem changes; time needed depends on size of problem — from a few minutes to an hour / IN-OUT: function generators, input-output tables, noise generators / RELIAB: has autom checkg; operg ratio, 99% to 100% / prices available on specific request / Dian Laboratories, Inc., 611 Broadway, New York 10, N. Y. / \*C 61
- Direct Analog Computer / for scientific problems, not real-time and other (design projects in heat transfer, static stress analysis, vibration, aeroelasticity) / ACCUR: 3 signif figures / CAPAC: store 50 to 200 physical variables / LARGST INSTLN: 40 multipliers; 100 amplifiers, each of which may be adder, integrator, or current generator; 150 inductors; 200 capacitors; 200 resistors; 200 transformers; decade-set, passive elements employed in simulation of physical systems by means of passive-element networks / no autom prgmg of a new problem when the problem changes; 2 days to convert entire computer from one problem to another, and make all checks / IN-OUT: Input — parameters: decade settings, potentiometers; variables: function generators, switching eqpmt, oscillators. Output — transient: oscilloscope, camera, graphic level recorder; steady state: digital volt meter, autom printer / RELIAB: has autom checkg / sale, \$150,000 to \$750,000 / sold or rented, 10 / Computer is used for modeling complicated physical systems (thermal and mechanical). Simulation is rapid, with representation over the frequency range 50 to 2000 cycles per sec / Computer Engineering Associates, 350 N. Halstead, Pasadena, Calif. / C \*61
- Donner 3100 / scientific; real-time or not / ACCUR: 3 signif figures / CAPAC: store 15 variables / ADDERS: 15 / MULT: 6 / INTEGRATORS: 15 / ARBIT FUNCT: 6 / PRGMG CHANGEOVER: 1 min / RELIAB: has autom checkg / sale, \$12,000 to \$20,000 / Donner Scientific Co., 888 Galindo St., Concord, Calif. / \*C 59
- Dystac <sup>®</sup>5800 Iterative Analog Computer / for scientific problems, real-time and not, and other (general purpose analog computer with digital capabilities) / ACCUR: 4 signif figures / CAPAC: store 34 variables / LARGST INSTLN: 18 adders, 30 multipliers, 34 integrators, 5 servos, 20 direct function generators, 8 comparators / when the problem changes, change patch boards, function switches, and quadrant control / IN-OUT: manual set, punch tape, card, digital, etc. / RELIAB: has autom checkg; operg ratio, 95% / sale, \$20,000 to \$100,000; rental, \$2000 to \$20,000 / sold or rented, 14; on order, 8 / Computer Systems, Inc., Culver Rd., Monmouth Junction, N. J. / \*C 61
- EASE (Electronic Analog Simulating Equipment), 1100 Series / scientific; real-time and other (on-line hardware) / ACCUR: 4 signif figures / CAPAC: store 450 variables / ADDERS: 96 / MULT: 138 / INTEGRATORS: 96 / ARBIT FUNCT: 40 / 28 electronic sine generators, 450 coefficient potentiometers / PRGMG: autom changeover, 10 min / IN-OUT: "DO/IT" (Digital Output-Input Translator), patchboard, and paper tape; also direct pushbutton entry / RELIAB: has autom checkg; operg ratio 90-95% / sale, \$10,000 to \$450,000; rental, \$500 to \$13,500 per mo / sold, 100 / Beckman Instruments, Inc., Berkeley Division, 2200 Wright Ave., Richmond 3, Calif / \*C 59
- Electronic Associates 221R / scientific; real-time or not / ACCUR: 4 signif figures / CAPAC: store 20 variables / ADDERS: 27 / MULT: 30 / INTEGRATORS: 18 / ARBIT FUNCT: 30 / Other: resolvers and fixed function generators also avail / PRGMG CHANGEOVER: 10 min / IN-OUT: patch panel / RELIAB: has autom checkg; operg ratio, 90% / sale, \$16,850 to \$120,000 / sold or rented, 15 / a medium-to-large, 0.01%, general purpose analog computer / Electronic Associates, Inc., North Long Branch, N. J. / \*C 59
- Electronic Associates 231R / scientific; real-time or not / ACCUR: 4 signif figures / CAPAC: store 30 variables / ADDERS: 45 / MULT: 50 / INTEGRATORS: 30 / ARBIT FUNCT: 50 / Other: resolvers and fixed function generators also avail / PRGMG CHANGEOVER: 10 min / IN-OUT: punched paper tape and patch panel / RELIAB: has autom checkg; operg ratio, 90% / sale, \$20,000 to \$250,000 / sold or rented, 150 / a medium-to-large .01% general purpose analog computer / Electronic Associates, Inc., North Long Branch, N. J. / \*C 59
- Electronic Associates TR-10 / scientific; real-time or not real-time / ACCUR: 3 signif figures / CAPAC: store 8 to 12 variables / ADDERS: 12 / MULT: 9 / INTEGRATORS: 10 / ARBIT FUNCT: 9 / Other: resolvers and fixed function generators also avail / PRGMG: no autom changeover; 15 min changeover time / IN-OUT: patch panel / RELIAB: has autom checkg; operg ratio, 90% / sale, \$3750 to \$10,000 / sold or rented, 10 / a small, transistorized, desk-top, 0.1%, general purpose analog computer / Electronic Associates, Inc., North Long Branch, N. J. / \*C 59
- ESIAC / for scientific problems, not real-time and other (operates in frequency domain; used in feedback system design) / ACCUR: 2 signif figures / CAPAC: store 50 physical variables / computer is a potential field analog of a unique design / when the problem changes, time needed to change program normally 15 minutes / IN-OUT: uses direct pole-zero prgmg, plots root loci on graph paper / RELIAB: no autom checkg / sale, \$9800; rent, \$350 to \$600 / sold or rented, 15; on order, 2 / Electro Scientific Industries, 7524 S. W. Macadam Av., Portland, Ore. / \*C 61
- Gravity Analogue Computer / for scientific problems and potential field studies / ACCUR: 3 signif figures / CAPAC: store 1 variable / UNITS: optical system, 1 unit / PRGMG CHANGEOVER: 3-5 min / IN-OUT: shaded drawings to scale / RELIAB: no autom checkg; operg ratio, 95% / sale \$2000 / sold or rented, 5; on order, 1 / Instrument uses opaque plate with light openings arranged accord to the (Please turn to page 124)

# SURVEY OF SPECIAL PURPOSE COMPUTERS AND DATA PROCESSORS

Neil Macdonald  
Assistant Editor  
Computers and Automation

Besides general purpose digital and analog computers, there are special purpose computers. Examples of them are:

- Travel reservations machines
- Simulators
- Automatic training devices
- Spectroscopic analysis equipment
- Process industry plant flow analyzers
- Geophysical seismic readers and profile plotters
- Digital differential analyzers
- Automatic bookkeeping machines
- Information retrieval systems
- Power company network analyzers
- Airborne digital computers
- Flight control computers
- Machine tool control systems
- Automatic elevator control systems
- Remote control telemetering systems
- Telemetered data reduction systems
- Automatic graph readers
- Air traffic control computers
- Early warning analysis and response systems
- Fire control computers
- Automobile traffic light controllers
- Automatic railway traffic controllers
- Automatic data sampling systems
- File-searching machines
- Inventory machines
- Automatic navigating systems
- Character reading and recognizing systems
- Telephone message accounting systems
- Test scoring machines
- Programmable electric typewriters

Following is a roster of organizations making special purpose computers and a description of their computers. The responses are reported in relation to the following reply form.

## SURVEY OF SPECIAL PURPOSE COMPUTERS and DATA PROCESSORS — REPLY SHEET

1. Brief description of the types of special purpose computers and data processors that you currently market?

Type	Purpose	Price Range

(attach more paper if needed)

2. In your opinion which types of these machines will become the most important, will represent the largest growth areas, for our industry in the next few years?

3. a) Do you also supply general purpose computers and data processors? \_\_\_\_\_

b) If so, what would be your estimate of the approximate percent of your special purpose machines produced to all your data-handling machines produced? \_\_\_\_\_%.

4. Any remarks? \_\_\_\_\_

5. Number of employees? \_\_\_\_\_

6. Year established? \_\_\_\_\_

Filled in by \_\_\_\_\_ Title \_\_\_\_\_

Date \_\_\_\_\_

Organization \_\_\_\_\_

Address \_\_\_\_\_

Any additions, corrections and comments are welcome.

Aeronutronic Systems, Inc., a subsidiary of Ford Motor Co., 2701 Halliday St., Santa Ana, Calif. / SPEC PUR: 100%: FLIDEN, a Flight Data Entry Device, to organize and enter messages to an air traffic control computer; its applications include: remote data entry, inventory control, air traffic control, customer account maintenance, scheduling communications message screening, electronic file inquiry. Digital System Simulator (about \$18,500) for direct simulation of digital systems, direct check of reduction of logical equations, study of systems operation prior to construction, aid for studying alternate logical designs / LARGEST GROWTH AREA: FLIDEN Data Entry Device / GEN PUR: 0 / Ms(200) Se(1956) / \*C 58

- Aircraft Armaments, Inc., Cockeysville, Md. / SPEC PUR: Custom design, development, and manufacture of special purpose computers for training devices and simulation systems / \*C 61
- Alleghany Instrument Co., Inc., 1091 Wills Mountain, Cumberland, Md. / SPEC PUR: 100%: K-7 Error Computer (simulator) for computing errors in wire strain gage transducer systems (\$4,000); K-1, K-2, K-4 Ballistic Computers, employed to study nonrecurrent phenomena; integrates electronically, records peak values, records action time, records delay time, presentation is digital / Ms(100) Se(1952) / \*C 58
- Armour Research Foundation, Electrical Engrg Research Dept., Computer Systems Section, Illinois Inst. of Technology, Technology Center, Chicago 16, Ill. / RESEARCH AND DEVELOPMENT IN: an electronic calculator using cold cathode tubes; a complete order system computer using magnetic cards; a data storage and computing system to inventory a tank farm; arithmetic units for billing and accounting systems; a hybrid data processor which (1) takes in statistical information on trips by individuals in a metropolitan area, recorded serially on magnetic tape, and (2) puts out integrated pictorial maps, using photographs of a precision cathode ray tube, showing traffic density for various selections of the input data / Ls(1250) Me(1937) / \*C 58
- The Austin Co., Special Devices Division, 76 9th Ave., New York 11, N. Y. / SPEC PUR: Custom engineered automatic control systems; sonar simulator for submarine attack trainer; data processing system that senses input information from an automatic profile milling machine, computes chip loads, and automatically varies the angular velocity of the work spindles to produce a uniform chip load; computer and control center for machine tool control; color scanner for automatic production of color separation negatives; Weather Information Telemeter System (WITS), to sense and record weather information and automatically transmit local conditions by teletype or microwave / GEN PUR: none / Ms(Division 150, company 25,000) Me(Division 1943, company 1878) / \*C 58
- Automation Management, Inc., 25 Brigham St., Westboro, Mass. / SPEC PUR: 100%: Sampling performance computer to compute and record efficiency of a machine during a short period of time (\$490). Cumulative performance computer to compute and record the efficiency of a machine since the beginning of its run (\$490) / LARGEST GROWTH AREA: centralized automatic production and cost control / GEN PUR: none / Ss(3) Se(1955) / \*C 61
- Bailey Meter Co., 29801 Euclid Ave., Wickliffe, Ohio / SPEC PUR: 100%: Bailey 755 system, for automation of power plants / GEN PUR: none / Ls(1500) Se(1960) / \*C 61
- Beckman Instruments, Inc., Systems Div., 325 N. Muller Ave., Anaheim, Calif. / SPEC PUR: 90%: Type 123 Data Logger, recording and giving alarms for process variables, 100 points (\$40,000 to \$50,000); Type 112 Data Processing Computer, recording, computing, alarming, process variables, 50 to 1000 points (\$100,000 to \$300,000); Type 210 Data Processor (Hi-Speed) processing data prior to computer (\$50,000 to \$300,000); Low Speed Data Processors for process industry instrumentation and control (\$80,000 to \$200,000); Telemetered Data Reduction System, recording telemetered data on aircraft and missile flight on magnetic tape or cards (\$50,000 to \$200,000); Missile Checkout Systems, Hi-Speed scanning and alarming of missile electronics (\$10,000 to \$100,000); Tachometer Systems, recording and monitoring engine speeds, etc., (\$10,000 to \$100,000) / LARGEST GROWTH AREA: missile checkout systems, high speed data processors, standard data loggers (Type 123) / GEN PUR: 10% / Ms(300) Se(1955 as a division) / \*C 58
- Bendix Corp., Fisher Bldg., Detroit, Mich. / SPEC PUR: 60%: Flight system simulators (three-axis flight tables) for simulation of missiles, aircraft, etc. (\$200,000 to \$600,000). Digital differential analyzers for engineering computation (\$13,700, attachment to G-15 computer). Flight control computers for missiles and aircraft. Machine tool control systems using continuous path control as in milling (\$65,000, complete 3-axis system). Automatic navigating systems for aircraft. Air data computers to process raw sensor data to compute Mach No., etc. Reactor simulators for use in design / GEN PUR: 40% / Ls(48,000) Me(1929) / \*C 58
- Bendix Corp., Bendix Computer Div., 5630 Arbor Vitae St., Los Angeles 45, Calif. / SPEC PUR: 12%: Digital differential analyzer for solution of equations (\$13,700). Accessory to the Bendix G-15 general purpose digital computer (\$49,500) / LARGEST GROWTH AREA: process control, simulators / GEN PUR: 88% / Ls(690) Se(1952) / \*C 61
- Bendix Corp., Industrial Controls Section, 21820 Wyoming, Detroit 37, Mich. / SPEC PUR: Machine tool numerical control unit, to provide interpolation and continuous path control to machine tools (\$50,000 to \$85,000). G-15 D general purpose computer rendered special purpose with AN-2 unit, to automatically prepare machine control tape from blue print information (\$60,000 to \$70,000) / LARGEST GROWTH AREA: numerical control unit / Ms(51, this division) Se(1957, this division) / \*C 58
- Benson-Lehner Corp., 11930 West Olympic Blvd., Los Angeles 64, Calif. / SPEC PUR: 25%: Data Reduction Devices for film and oscillograph analysis (\$10,000 to \$25,000); Terrain Data Translators, automatic processing of information from stereographic photographs (\$7,000 to \$10,000); Data Retrieval Machine, automatic look-up of microfilm records (\$30,000 to \$150,000); spectroscopic analysis equipment; geophysical seismic readers and profile plotters; automatic graph readers; file-searching machines; inventory machines; programmable electric typewriters / LARGEST GROWTH AREA: Data storage and retrieval equipment / GEN PUR: 75% / Ms(250) Me(1950) / \*C 58

- Burroughs Corp., Detroit, Mich. / SPEC PUR: B270 electronic data processing system, for expediting and controlling the interchange of checks among U. S. banks. Provides automatic proof and transit operations and converts on-us items to magnetic tapes for computer processing. For automatic deposit analysis and account reconciliation services (rental, \$6165 to \$8860 per month; sale, \$252,130 to \$366,130) / \*C 61
- Computer Control Co., Inc., 983 Concord St., Framingham, Mass. / SPEC PUR: 210 digital data converter for translating data from (1) magnetic tape in Univac II excess three code, (2) paper tape in Univac II excess three code, and (3) punched cards in IBM (Hollerith) 12 level code; receives data in any of these three media and translates the data to the formats of either of the other two media. High speed stored program digital data processor for solving a wide range of scientific, engineering, and statistical problems, which cannot be economically handled by large-scale computers. DR-14 digital resolver for accurate high speed conversion from Cartesian to Polar to Cartesian coordinates. Universal tape to tape converter for converting output data into a magnetic tape with a format suitable for input to IBM 650 and 704, and Univac 1103A high-speed computers. SPEC, Stored Program Educational Computer, providing a laboratory and classroom tool for education, computation, and experimentation (\$19,818 to \$27,882) / GEN PUR: yes / Ms(260) Se(1953) / \*C 61
- Computer Systems, Inc., Culver Rd., Monmouth Junction, N. J. / SPEC PUR: 10%: Simulators for process control (\$20,000 to \$100,000). Missile range instrumentation for radar tracking (\$15,000 to \$250,000). Linear programmer (\$10,000 to \$75,000) / LARGEST GROWTH AREA: simulators / GEN PUR: 90% / Ms(150) Me(1950) / \*C 61
- Control Data Corporation, 501 Park Ave., Minneapolis 4, Minn. / Production data recorder, which reads punch cards, accepts automatic recording of time and keyboard manual input, and produces punched paper tape or punch cards, with automatic sequence control, for control of in process inventory and factory scheduling (\$5500) / Ms(225) Se(1957) / \*C 58
- Curtiss Wright Corp., Electronics Div., Carlstadt, N. J. / SPEC PUR: 100%: Analog AC and DC and Digital Flight Simulators (\$80,000 to \$1,200,000) / Ls(1600) Me(1947) / \*C 58
- Delco Radio Div., General Motors Corp., 700 East Firmin St., Kokomo, Ind. / SPEC PUR: 100%: Spectral comparator computer for analyzing low frequency spectra. Vernier velocity control computer for missile guidance / GEN PUR: none / Ls(approx. 4500) Me(1936) / \*C 61
- Dian Laboratories, Inc., 611 Broadway, New York 12, N. Y. / SPEC PUR: 50%: Reactor simulator for study of reactor kinetics; submarine dynamics simulator and flight simulator for training of personnel; process analyzer for automatic control of plants; navigating system for automatic tracking of missiles. Prices available on request / LARGEST GROWTH AREA: all are becoming increasingly important / GEN PUR: 50% / Ss(12) Se(1955) / \*C 61
- Donner Scientific Co., 888 Galindo St., Concord, Calif. / SPEC PUR: 60%: nuclear reactor simulator (\$25,000); flight control computer for automatic hovering of helicopter (\$5500); fire control computer using logarithmic computation (\$5000) / LARGEST GROWTH AREA: flight control devices, simulator devices / GEN PUR: 40% / Ms(150) Se(1953) / \*C 58
- Dresser Electronics, 10201 Westheimer, Houston, Tex. / SPEC PUR: 100%: Analog computer (in process) for chemical and refining, optimum control (\$6000 to \$14,000) / GEN PUR: none / Ls(700) Me(1945) / \*C 61
- Epsco, Inc., 275 Massachusetts Ave., Cambridge 39, Mass. / Data Transmission System (DT-800), providing transmission of highly accurate analog data between remote locations with the ability to use Class C or D telephone lines; Structure Analysis Data Reduction System, used to gather and prepare for computer analysis data from structure tests on large sections of military missiles or air frames; Telemetry Data Reduction System, for automatically preparing telemetry data for analysis in a digital computer; Addaverter Computer Linkage System for linking an analog computer and a digital computer into one integrated computational system for large-scale simulation studies of a complete ballistic missile system; Petro-Chemical Data Acquisition System, for gathering data for computer statistical analysis of functions of various processing plants / LARGEST GROWTH AREA: automatic control systems which in addition to receiving, recording, and acting upon data, also serve as control loops to operate process machinery / Ls(1200) Se(1954) / \*C 58, 61
- Ferranti Electric Ltd., Electronics Div., Industry St., Mt. Dennis, Toronto 15, Canada, and elsewhere / SPEC PUR: 90%: (1) Travel reservations and inventory system for airline inventory with "Transactor" for data input/output medium; (2) Post office mail sorting system; (3) Early warning analysis and response system; (4) Simulators for nuclear reactor start-up and control; (5) Nuclear reactor control systems; (6) "JANET" data communication system (point to point, V. H. F., using forward scattering of radio waves from meteor trails); (7) Ground Support system for airborne digital computers; (8) Numerical control of machine tools via (a) continuous tool-path for tape controlled milling, or (b) discrete positioning for tape controlled drilling, boring and milling / LARGEST GROWTH AREA: Reservations and inventory control, numerical control of machine tools, data communication / GEN PUR: 10% / Ms(150, Electronics Div.; 600, all divisions) Me(1949) / \*C 58
- Fischer and Porter Co., Hatboro, Pa. / Analog computer for calculating 11 operating guides in a petroleum refinery (\$50,000 to \$100,000). Series 1200 Data Recording and Alarm Scanning System, for process industries (\$30,000 to \$150,000). Multiple Pressure Read-out System, for simultaneous measurement of many pressure readings in testing aircraft gas turbines (\$50,000 to \$200,000). High Speed Digital Recording System, using analog to digital converters,

- for high speed sequential recording on magnetic tape (\$25,000 to \$100,000) / LARGEST GROWTH AREA: data logging and alarm scanning systems, with digital recording systems, for general process industry applications / Ls(1100) Me(1937) / \*C 58
- FMA, Inc., 142 Nevada St., El Segundo, Calif. / SPEC PUR: FMA FileSearch for information storage and retrieval / \*C 61
- Ford Instrument Co., Division of Sperry Rand Corp., 3110 Thomson Ave., Long Island City 1, N. Y. / Airborne digital computers, flight control computers, fire control computers, file-searching machines, inventory machines, automatic navigation systems, employee time control systems, cost control systems, order control systems, rocket launching computers, missile launching computers, harbor plotting systems, missile control order computers, ballistic cams (serving as precision memories for ballistic data), land-based combat vehicle navigation systems, plotting systems, etc. / Ls(4000) Le(1915) / \*C 58
- The Franklin Institute Laboratories for Research and Development, Benj. Franklin Pkwy at 20 St., Philadelphia 3, Pa. / RESEARCH AND DEVELOPMENT IN: a radar computer and data analysis system used in studying the statistical characteristics of the fluctuations of radar signals; data processing equipment used in studying radio wave propagation phenomena; a flight control simulator for the determination of "describing functions" for the human pilot; a "Reactivity Computer" for nuclear reactor instrumentation systems; "The Sampled-Data Simulator and Computer" (SADSAC), a new type of analog computer for the solution of partial differential equations / Ms(350) Me(1946) / \*C 58
- General Automatics, Inc., 331 Alma St., Palo Alto, Calif. / SPEC PUR: 100%: Automatic merchandising systems and automatic charge systems for automatic handling of consumer credit purchases (\$20,000 to \$200,000). Automatic identity systems for automatic general purpose identity establishment (\$50,000 to \$500,000). Automatic library systems for automatic recording of subscription flow (approx. \$10,000 per document). Automatic security systems for plant protection (\$5000 to \$25,000) / LARGEST GROWTH AREA: automatic merchandising charge systems / GEN PUR: none / Ss(15) Se(1953) / \*C 61
- General Dynamics/Electronics, Information Technology Division, P. O. Box 2449, San Diego, Calif. / SPEC PUR: 100%: Custom-made digital computers for tracking, guidance, and scientific purposes / LARGEST GROWTH AREA: high speed digital computers to solve higher mathematics in real time / GEN PUR: none / Ls(600) Se(1955) / \*C 61
- General Electric Co., Light Military Electronics Dept., French Rd., Utica, N. Y. / SPEC PUR: 100%: Fire control for Polaris missile launching; missile guidance for Polaris and Skybolt guidance; variable increment for airborne central station computer; computer-detector for W2F-1 airborne early warning; missile launch for sidewinder missile launching; and others / LARGEST GROWTH AREA: missile guidance / GEN PUR: none / Ls(6000, plus) Me(1953) / \*C 61
- HRB-Singer, Inc., State College, Pa. / SPEC PUR: 100%: SEMA, inventory, distribution, table look-up (magnetic drum), as memory attachment for IBM punched card machines - 402, 407, 088, etc. - (sale, \$20,000 to \$40,000; rental, \$532 to \$1100 per month). SIM, inventory (magnetic drum) for retail, warehouse, etc., 2000 to 20,000 words (\$25,000) / LARGEST GROWTH AREA: SEMA / GEN PUR: none / Ls(900) Me(1946) / \*C 61
- Hughes Aircraft Company, Culver City, Calif. / SPEC PUR: 100%: Digitair, Airborne Digital Computer, for automatically controlling the routine functions of flight, programmed fuel consumption, navigation, search, and attack. Industrial Digital Control System, for automatic control of industrial operations using machine tools operated from punched tapes and controlled by transistorized digital computers / Ls(30,000) Me(1948) / \*C 58
- Industrial Nucleonics Corp., 650 Ackerman Rd., Columbus 2, Ohio / SPEC PUR: 100%: Process control center for computing statistical variance of selected quantity or quality for multiple manufacturing processes; analyzes efficiency of each process by comparing actual performance against a standard (\$73,000 to \$100,000). Quality control center, a process control center without efficiency analyzer (\$48,000 to \$75,000). Portable process analyzer, a single process quality control center (\$18,000) / GEN PUR: none / Ms(450) Se(1950) / \*C 61
- Laboratory for Electronics, Computer Products Div., 141 Malden St., Boston 18, Mass. / SPEC PUR: RASTAC, random access storage unit containing 1 to 35 magnetic file drums each storing about 1.7 million alphanumeric characters, able to be connected to any large or medium size existing commercial digital computer; (\$200,000 and up); RASTAD, random access storage and display (\$300,000 and up); SM-1 and SM-2 data display systems (\$16,000 and up) / LARGEST GROWTH AREA: random access storage and data display systems / Le(1000 plus) Me(1945) / \*C 58
- Leeds and Northrup Co., 4901 Stenton Ave., Philadelphia 44, Pa. / SPEC PUR: 80%: Analog-automatic dispatch computer to regulate power system generation (\$100,000 to approx. \$500,000) / GEN PUR: 20% / Ls(3000) Le(1898) / \*C 61
- Librascope Division, General Precision, Inc., Glendale 1, Calif. / SPEC PUR: ASN-24 airborne digital computer for aircraft navigation; missile and space-vehicle guidance. Centaur digital guidance computer for guidance of Centaur space craft. LIBRATROL 500 digital control computer for industrial control (\$84,500). LIBRATROL 1000 digital control computer for industrial control (\$97,400). Fire control analog and digital computers for undersea and surface fire control. CP-209 digital computer for aircraft bombing and navigation. Central data processor (digital) for air traffic control / LARGEST GROWTH AREA: all computers in this list / GEN PUR: yes / Ls(5000) Me(1937) / \*C 61

Minneapolis-Honeywell Regulator Co., Industrial Products Group, Wayne and Windrim Aves., Philadelphia 44, Pa. / SPEC PUR: Nuclear reactor simulator for training in nuclear reactor operation (approx. \$17,000). Thermal plant simulator to solve nuclear design and operational problems; training device for nuclear power plant operation (approx. \$21,000). Wave analyzer for data reduction (\$17,000 and up). Gas flow computer for measuring gas flows and correcting to standard conditions (\$4000). Analog-digital recorder-transcriber for automatic data sampling (\$30,000 and up). BTU meter for computing BTU formula in gas measurements (\$1800 and up). Remote control telemetering system for telemetering and supervisory control (\$500 and up). Fractionator reflex analog computer for calculating amount of internal reflux in distillation column (\$1600). Analog computer using B-constant principle for economic dispatch of power system generation (\$25,000 and up). Batch computers, analog type, systems blending liquids, solids, slurries. Special purpose analog computers for on-line control. Honeywell 290 general purpose industrial digital control computer for on-line data acquisition and control / LARGEST GROWTH AREA: automatic data sampling systems, analog-type batch computers for systems blending liquids, solids or slurries; remote control telemetering systems, special purpose analog computers for on-line control / \*C 61

George A. Philbrick Researches, Inc., 127 Clarendon St., Boston, Mass. / SPEC PUR: General purpose electronic analog computers components put together by customers to make special purpose computers: correlation computers; simulators for missiles, jet planes, submarines, and other vehicles of all types; in-line process control equipment; simulators for nuclear power plants; Fourier analyzers; power measuring and control equipment; frost penetration computers; target simulators; computing instrumentation / LARGEST GROWTH AREA: Computing instrumentation and control, analog linear programming, training simulators / GEN PUR: yes / Ms (under 500) Me(1947) / \*C 58, 61

Philco Corp., Government & Industrial Group, Computer Div., 3900 Welsh Rd., Willow Grove, Pa. / SPEC PUR: 10%: BASICPAC - general purpose field data computer for military usage. C-3000 control computer, small scale, for use in process control systems. Military computers for use in space vehicles, aircraft, and other military purposes, including simulation, automatic training devices, information retrieval, airport and flight control, traffic control, fire control, navigation, etc. / LARGEST GROWTH AREA: special computers for the military and federal government / GEN PUR: 90% / Ls(24,000) Le(1892, corporation; 1952, computer division) / \*C 61

J.B. Rea Co., Inc., 1723 Cloverfield Blvd., Santa Monica, Calif. / SPEC PUR: 50%: Readix Digital Computer in scientific data logging systems (\$130,000). Reacon Analog-Digital Converter, used as component in scientific data logging system (\$11,000) / Ms(230) Sc(1951) / \*C 58

Remington Rand Univac Div., Sperry Rand Corp., 1902 West Minnehaha Ave., St. Paul, Minn. / Mobile, high-speed, special purpose electronic digital computer, with a display output consisting of a projected and numerical presentation, for controlling electronic warfare devices, mounted on two 35 foot semi-trailers. The system is fixed program, internal binary, serial, machine programmed to identify, filter, and process incoming target data / Ls(1000) Me(1946) / \*C 58

Rese Engineering, Inc., "A" and Courtland Sts., Philadelphia 20, Pa. / SPEC PUR: 100%: Finda-Fact, for data retrieval (\$75,000) / GEN PUR: none / Ms(90) Se(1953) / \*C 61

Royal McBee Corp., Westchester Ave., Port Chester, N.Y. / LGP-30 digital computer applied by customers for travel reservations, simulators, statistical analysis, process industry plant flow analyzers, machine tool control system for cutting irregularly shaped gears / Ls(12,000) Me(1946, computer division) / \*C 58

Sperry Gyroscope Co., Div. of Sperry Rand Corp., Great Neck, N.Y. / SPEC PUR: Miniature aerospace digital computers for aircraft, missile and space vehicle navigation, guidance and control. Airborne logic computers for situation evaluation and counter action. Flight control computers for automatic pilot flight control systems for aircraft. Automatic navigation systems for manned and unmanned navigation and bombing systems. Early warning analysis systems for national defense / Ls(17,000) Le(1910) / \*C 61

## wanted: programming system designers

Technical Operations, Incorporated, working on the frontiers of programming systems, war gaming, large simulations, and computer applications, has a need for senior programming system designers with direct experience in the design and construction of programming system components.

This would include work on assemblers, compilers, string handling packages, monitors, supervisors, and similar techniques. Specific experience in the design of source languages, adaptive programs, and the mechanization of heuristics, would be particularly welcome.

We have developed and are using the CL-I programming system, and we are now ready to build a more powerful one.

*Resumes to James L. Jenkins will be treated confidentially.*

*All qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.*

**3600 M Street Northwest, Washington 7, D. C.**



## SURVEY OF COMMERCIAL ANALOG COMPUTERS

(Continued from page 118)

math of the problem. Problem is presented to instrument as drawing of varying opacity / Seismograph Service Corp., Box 1590, Tulsa Okla. / \*C 58  
Philbrick K2, K3, K5, K7 / scientific, business; real-time or not / ACCUR: 3 signif figures / CAPAC: modular, therefore number of variables a function of size / ADDERS: 50 / MULT: 12 / INTEGRATORS: 80 / ARBIT FUNCT: 10 / BRANCHING OPER: 20 / PRGMG CHANGEVER: Possible in some cases, 5 min to 1 hour / IN-OUT: Decade coefficient and voltage settings / RELIAB: operg ratio, 95% / sale, \$350 to \$220,000 (typically) / George A. Philbrick Researches, Inc., 127 Clarendon St., Boston, Mass. / \*C 59

REAC<sup>®</sup>: Reeves Electronic Analog Computer / for scientific, business, process simulation, problems; real-time and other / ACCUR: 4 signif figures / LARGST INSTLN: 120 adders, 60 multipliers, 60 integrators, 300 invertors, 20 resolvers, 100 auxil amplifiers / autom progmg of a new problem when the problem changes, 5 min changeover / IN-OUT: elec typewriter, tape / RELIAB: has autom checkg; operg ratio, 95% / sale \$100,000 to \$2,000,000 / size of instln not limited by any design considerations / Reeves Instrument Corp., Garden City, N. Y. / \*C 61

- END -

## ROSTER OF ORGANIZATIONS

(Continued from page 41)

- ton, Conn. / \*C 61  
 Design and manufacture of magnetic storage drums.  
 All speeds and sizes delivered; coated or uncoated.  
 Design furnished to fit customer requirements /  
 RMSa Ms Me(1954) Ic
- Wiancko Engineering Co. — name changed to Daystrom-  
 Wiancko Engineering Co., which see
- John Wiley and Sons, Inc., 440 Park Ave. So., New York  
 16, N.Y. / MU 9-7630 / \*C 61  
 Technical books / MSa Ms(300) Le(1807) Ic
- Winchester Electronics Inc., 19 Willard Rd., Norwalk,  
 Conn. / \*C 61  
 Precision electrical connectors and accessories /  
 MSa Ls Me(1941) Ic
- Winsco Instruments & Controls Co., 11789 W. Pico Blvd.,  
 Los Angeles 64, Calif. / GR 8-4728 / \*C 61  
 Modular industrial telemetry system, digital con-  
 verters, temperature sensing devices / Ma Ss(8)  
 Se(1960) DIc
- Wolf Research and Development Corp., 462 Boylston St.,  
 Boston 16, Mass. / COMmonwealth 6-1960 / \*C 61  
 Digital computer services / RC(computing services)a  
 Ms(150) Se(1959) DIc
- Woods, Gordon & Co., 15 Wellington St. West, Toronto,  
 Ontario, Canada (also at Montreal, London, Calgary,  
 Vancouver) / EM 8-2751 / \*C 61  
 Management consulting and system design / CPa  
 Ss(46) Le(1930) Ic
- Wright Engineering Co., Inc., 180 E. California Blvd.,  
 Pasadena, Calif. / MURray 1-8488 / \*C 61  
 Shaft encoders; magnetic digital logic components  
 and systems; buffers and storage systems; data  
 display oscilloscopes, servo components; enclosures  
 and consoles, paper tape controllers / Sa Ss(14)  
 Se(1950) DAic
- Wright Line, 160 Gold Star Blvd., Worcester 6, Mass. /  
 SW 1-0931 / \*C 61  
 Data processing accessory equipment and tape reel  
 handling and storage equipment / RMSCa Ms(300)  
 Me(1934) Ic

## Z

- Zator Company, 140-1/2 Mount Auburn St., Cambridge 38,  
 Mass. / TRowbridge 6-6776 / \*C 61  
 Information retrieval research and artificial intel-  
 ligence research / RCa Ss(5) Me(1947) Ic
- Zusc Kommandit-Gesellschaft, 4, Wehneberger St., Bad  
 Hersfeld, Hessen, Germany / — / \*C 60  
 Electronic and relay digital computers, automatic  
 curve plotters, automatic machine activity recorder,  
 data processing equipment / RMSCa Ms(270) Me  
 (1949) Dc

## wanted: senior problem solvers

OMEGA, a Washington branch of Technical Operations, Incorporated, now deeply engaged in the application of advanced mathematical modeling to digital computer simulation of war for the United States Air Force, has a number of appointments available:  
 Senior scientists for individual or small-group research in support of model-building activities anticipated years in advance.

Experienced model builders, with or without programming experience, to organize team efforts in modeling and simulation programming.

Operations analysts for close liaison with Air Force officers in the short-range solution of immediate problems.

Junior scientists with backgrounds in mathematics, computer applications, operations research.

Resumes to James L. Jenkins will be treated confidentially.

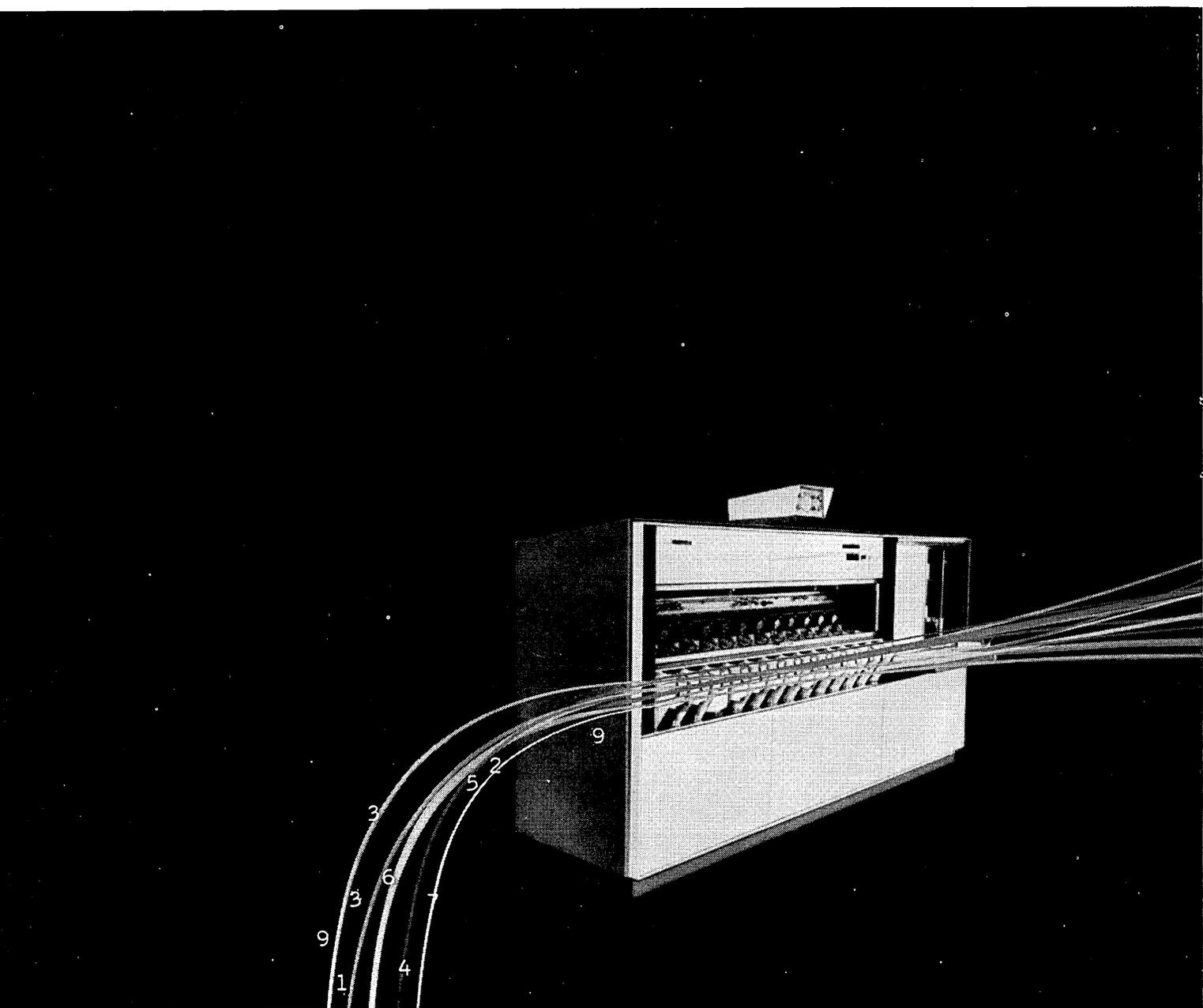
All qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

**Technical Operations, Incorporated**

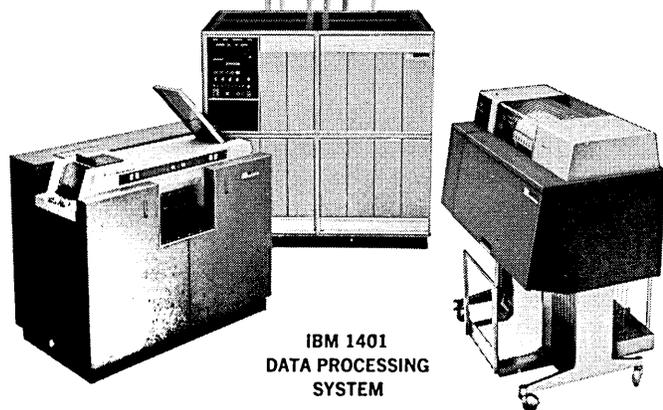
tech/ops

**3600 M Street Northwest, Washington 7, D. C.**





## IBM® 1418 Optical reads printed



IBM 1401  
DATA PROCESSING  
SYSTEM

Direct input to a computer *without manual keypunching*—that's how the 1418 dramatically boosts input speeds, and raises over-all efficiency.

Typical example: in a job that normally would call for 20,000 punched cards, the 1418 reduces 200 hours of keypunching and verifying to *one hour* of "reading." The 1418 reads numerical data and marks on bills, invoices, checks and other papers at speeds up to 480 characters a second... and up to 400 documents a minute.



## Character Reader numbers directly into the 1401 system

Reading is *optical*—no special inks required. Documents prepared on 407 accounting machines, 1403 printers, typewriters equipped with IBM 407 type, or credit imprinters with elongated 407 type, are the “reading matter” for the 1418. Since your 1401 computer controls the feeding of documents into the 1418 reader, you can get either continuous or interrupted feeding for special processing.

Depending on your needs, there are two 1418 models to select from. One has three

stacking hoppers. For more complex sorting jobs, there's another with thirteen which sorts documents either under 1401 control, or independently.

Optional features include: a second optical reading station which permits two lines to be read on a single pass; a mark reading station for reading pen or pencil marks optically.

For more facts about how the 1418 increases the through-put of your 1401 System, call your IBM Representative.

**IBM**<sup>®</sup>  
DATA PROCESSING

# AUTOMATIC COMPUTING MACHINERY

## — LIST OF TYPES

(Cumulative, information as of May 1, 1961)

The purpose of this list is to report types of machinery that may properly be considered varieties of automatic computing or data processing machinery.

Any comments, corrections, and proposed additions or deletions will be welcome.

- Accounting-bookkeeping machines, which take in numbers through a keyboard, and print them on a ledger sheet, but are controlled by "program bars," which, according to the column in which the number belongs, cause the number to enter positively or negatively in any one of several totaling counters, which can be optionally printed or cleared.
- Addressing machines, programmable, which take in names and addresses, either on metal plates or punch cards, and print the names and addresses on envelopes, wrappers, etc., and which may be controlled for selection and in other ways, by notches, punched holes, and other signals, on the plates or cards.
- Air traffic control equipment (including ground control approach equipment), which takes in information about the location of aircraft in flight and gives out information or control signals for the guidance of the flight of the aircraft.
- Aircraft airborne computers, for automatically controlling aircraft flight functions, programming fuel consumption, navigating, searching for targets, selecting target, and attacking.
- Aircraft ground computers, for radar tracking and remote control of aircraft and anti-aircraft devices.
- Analog computers, which take in numerical information in the form of measurements of physical variables, perform mathematical and logical operations, are controlled by a program, and give out numerical answers.
- Analog-to-digital converters, which take in analog measurements and give out digital numbers.
- Astronomical-telescope-aiming equipment, which adjusts the direction of a telescope in an observatory so that it remains pointed at the spot in the heavens which an astronomer intends to study.
- Automobile traffic light controllers, that take in indications of the presence of motor cars from the operation of treadles in the pavement or in other ways, and give out signals, according to a program of response to the volume and density of traffic.
- Ballistic computers, which take in data on a projectile as it is fired from a gun and make computations.
- Card-to-tape converters, which take in information on punched cards, and put out corresponding or edited information on punched paper tape or on magnetic tape.
- Character reading and recognizing systems, which scan a printed letter or digit, photoelectrically, optically, or magnetically, take in data about points, lines, and shapes, send the data through classifying circuits, identify characters, and activate output devices accordingly.
- Color scanners, for automatic production of color separation negatives.
- Correlation computers.
- Data reduction systems, which take in large quantities of observed data and reduce them to small quantities of computed data.
- Data sampling systems, which take in a continuous voltage or other physical variables and give out samples, perhaps once a second or perhaps a thousand times a second; this machine may be combined with an analog-to-digital converter, so that the report on the sample is digital not analog.
- Desk calculating machines, including desk adding machines, which may take in numbers to be added, subtracted, multiplied, and divided, and put out results either shown in dials or printed on paper tape; such machines store one up to several numbers (but not many numbers) at one time, and may store a simple program such as automatic multiplication by controlled repeated addition and shifting.
- Differential analyzers, which take in information specifying differential equations and boundary conditions, and solve the equations.
- Digital computers, which take in numerical, alphabetic, and other information in the form of characters or patterns of yes-noes, etc., perform arithmetical and logical operations, are controlled by a program, and put out information in any form.
- Digital-to-analog converters, which take in digital numbers and give out analog measurements.
- Drafting machines, which take in information describing desired mechanical drawings and produce them to proper scale.
- Early-warning systems, which detect by radar, in-

frared, or other means aircraft or missiles, distinguish friend from foe, determine flight patterns, and provide responses.

Elevator control systems, which accept calls by passengers, automatically control the movement of cars, door opening, and closing, and economize travel and power.

Error detecting and counting systems.

Facsimile copying equipment, which scans a document or picture with a phototube line by line and reproduces it by making little dots with a moving stylus or with an electric current through electrosensitive paper.

File-searching machines, which take in an abstract or a key in code, search for and find the reference alluded to, and provide a copy or other indication of the reference.

Fire control equipment, that takes in indications of targets from optical or radar perception and puts out directions of bearing and elevation for aiming and time of firing for guns, according to a program that calculates motion of target, motion of the firing vehicle, properties of the air, etc.

Flight control computers -- SEE Navigating and piloting systems for aircraft.

Flight simulators, which take in simulated conditions of flight in airplanes, and the actions of airplane crew members, and show the necessary results, all for purposes of training airplane crews.

Fourier analyzers, which take in complex wave forms and analyze them into constituent wave forms.

Game-playing machines, in which the machine will play a game with a human being, either a simple game such as tit-tat-toe or nim (which have been built into special machines) or a more complicated game such as checkers, chess, or billiards (which have been programmed on large automatic digital computers).

Geophysical seismic readers and profile plotters.

Graph readers, which automatically take in the positions of a graph or a curve on a sheet of paper, and give out coordinates to a computer.

Information retrieval devices -- SEE File-searching machines.

Inventory machines, which store as many as ten thousand totals in an equal number of registers, and will add into, subtract from, clear, and report the contents of any called-for register.

Machine tool control equipment, which takes in a program of instructions equivalent to a blueprint, or a small size model, or the pattern of operations of an expert machinist, and controls a machine tool so that a piece of material is shaped exactly in accordance with the program.

Machine tool data processors, which sense input, compute chip loads, and automatically vary the angular velocity of the work spindle to produce a uniform chip load.

Machine tool direction centers, which control machine tools and compute their operations.

Machine tool tape producing machines, which automatically prepare machine tool control tapes from blueprint data.

Materials handling systems, which will move heavy blocks, long rods, or other pieces of material to or from stations and in or out of machines, while taking in indications furnished by the locations of previous pieces of materials, the availability of the machines, etc., all depending on the program of control. (Example: automobile engine block automatic machining system)

Maze-solving machines, which will take in descriptions of mazes or labyrinths and determine, by trial and error or in other ways, the path to the goal.

Missile check-out computers, for examining, scanning, and inspecting missiles and signalling warnings.

Missile-control ground computers, for radar tracking and remote control of missiles and anti-missile devices.

Missile-control missile-borne computers, for issuing properly timed and conditioned commands for the proper functioning of the missile.

Missile-launching computers, for controlling the proper sequence of steps for the launching of the missile.

Navigating and piloting systems for aircraft, ships, and submarines which take in star positions, time, radio beam signals, inertial signals, motion of the air, etc., and deliver steering directions.

Navigating systems for land-based combat vehicles.

Nuclear reactor simulators, for study and design.

Post office mail sorting systems.

Power company network analyzers, which take in analog information about the resistances, inductances, and capacitances of an electric power plant's network of electrical lines and loads, and enable the behavior of the system to be calculated.

Printing devices of high speed, which take in punched cards or magnetic tape and put out printed information at rates from 600 to 2000 characters per second.

Process controllers, pneumatic, electronic, hydraulic, etc., for handling processes, which take in indications of humidity, temperature, pressure, volume, flow, liquid level, etc., and put out signals for changing positions of valves, altering speeds of motors, turning switches on and off, etc.

Process industry advanced control systems, for handling connected or flowing materials, which will take in indications of flow, temperature, pressure, volume, liquid level, etc., and give out the settings of valves, rollers, tension arms, etc., depending on the program of control.

Process industry data processing systems, for recording, information, checking conditions, and signalling alarms.

Process industry plant flow analyzers.

Product assembly control systems, which take in semi-finished materials, position them in work stations, perform assembling operations on them, and deliver units of products to shipping stations. (Example: electronic component assembly systems.)

Punch card machines, which sort, classify, list, total, copy, print, and do many other kinds of office work.

Railway tower signalling equipment, which for example enables a large railroad terminal to schedule trains in and out every 20 seconds during rush hours with no accidents and almost no delays.

Railway centralized traffic controllers, that remember the locations, directions, and speed of trains, optimize the allocation of track space for fulfillment of scheduled train operations, and provide signals therefor.

Random access file computers.

Remote control telemetering systems.

Robots or general purpose manipulating machines, which make use of remote or stored signals from a human operator and act them out in a special environment, such as a heavily radioactive chamber.

Sale recorders, also called point-of-sale recorders, which take in amount, type, and other information about sales of goods, and produce records in machine language, which can later be automatically analyzed and summarized by punch card or computing equipment.

Spectroscopic analyzers, which vaporize a small sample of material, analyze its spectrum, and report the presence and the relative quantities of chemical elements and compounds in it.

Strategy machines, which enable military officers in training to play war games and test strategies, in which electronic devices automatically apply attrition rates to the fighting forces being used in the game, growth rates to the industrial potential of the two sides, etc.

Tape-to-card converters, which take in information on punched paper tape or on magnetic tape, and put out corresponding or edited information on punched cards.

Target simulators, which take in a program of instructions for the behavior of a target and execute them.

Teaching machines (or programmed learning machines), which take in a sequence of items of information for giving instruction and present them successively to a student, promptly telling him whether his answer to each item is right or wrong; the program may be simple or complex, branching or not branching, etc.

Telemetering transmitting and receiving devices, which enable a weather balloon or a missile to transmit information detected by instruments within it as it moves; the information is recorded usually on magnetic tape in such fashion that it can later be used for computing purposes.

Telephone equipment including switching, which enables a subscriber to dial another subscriber and be connected automatically.

Telephone message accounting systems, which record local and long distance telephone calls, assign them to the proper subscriber's account, and compute and print the telephone bills.

Terrain data translators, which automatically process information from stereographic photographs.

Test-scoring machines, which take in a test paper completed with a pencil making electrically conductive marks, and give out the score.

Toll-recording equipment, which records, checks, and summarizes tolls for bridges, highways, and turnpikes.

Training simulators, which take in simulated conditions affecting the training of one or more persons in a job, and their responses under these simulated conditions, and show

the results, all for the purpose of teaching them; SEE also flight simulators.

Travel reservations and inventory systems for airlines and railroads, which record available accommodations and their sale, and answer interrogations.

Typing machines, programmable, which store paragraphs and other information, and combine them according to instructions into correspondence, form letters, orders, etc., stopping and waiting for manual "fill-ins" if so instructed.

Vending machines, which take in various coins and designations of choices, and then give out appropriate change, coffee, soft drinks, sandwiches, candy, stockings, and a host of other articles, or else allow somebody to play a game for a certain number of plays, etc.

Weather observation recording, telemetering, and transmitting systems.

- END -

# COMPONENTS OF AUTOMATIC COMPUTING MACHINERY — LIST OF TYPES

(Cumulative information as of May 1, 1961)

The purpose of this list is to report types of components of automatic machinery for computing or data processing.

Any comments, corrections, and proposed additions or deletions will be welcome.

1. Storage mediums, for both internal and external storage:
  - Punch cards
  - Punched paper tape
  - Magnetic tape
  - Magnetic cards
  - Paper forms imprinted with magnetic ink characters for magnetic recognition
  - Paper forms recorded with special characters for optical recognition
  - Paper forms marked with special pencil for electrically conductive recognition ("mark-sensing")
  - Magnetic wire
  - Metal plates
  - Plugboards, i.e., panels of patch cords

(All these physical forms express machine language; when inserted into a machine, they give the machine information and instruction; when left in a filing cabinet, they hold information and instructions in reserve for later use. Sometimes it is the whole area of the storage medium which is used, as in the ordinary punched card. Sometimes it is only the edge which is used, as in edge-punched cards or edge-slotted metal plates.)

2. Storage mediums, internal only:

- Magnetic drums
- Magnetic tape devices
- Magnetic disc devices
- Magnetic belt devices
- Magnetic cores, arranged either one-dimensionally as in a magnetic shift register, or in two or three dimensions as a magnetic core matrix memory; they may be made of special iron alloys, iron oxide ceramics called ferrites, etc.
- Electrostatic storage tubes, in particular cathode ray storage tubes and glass-metal-honeycomb-type storage tubes.
- Delay lines, of mercury, quartz, nickel, electrical elements, etc.

- Relays, in relay registers and stepping switches
- Electronic tubes, in registers of flip-flops, counting rings, etc.
- Cryotrons, on-off devices operating at liquid helium temperatures
- Barium titanate crystal devices
- Switches: toggle switches and dial switches
- Buttons
- Keyboards
- Rotating shafts
- Voltages

3. Calculating and controlling devices

- a. Digital type:
  - Transistor circuits
  - Magnetic core circuits
  - Electronic tube circuits
  - Relay, stepping switch, timing cam, and switching circuits.
  - Diode and rectifier circuits: using germanium diodes, selenium rectifiers, silicon diodes, electronic tube diodes, etc.
  - Capacitor and resistor circuits
  - Cryotron circuits
  - Packaged arithmetical and logical circuits
  - Mechanical computing elements: latches, gears, levers, ratchets, program bars, cams, etc.
- b. Analog type:
  - Integrators
  - Adders
  - Multipliers
  - Function generators
  - Resolvers: product, sine-cosine, coordinate transform
  - Synchros
  - Automatic process controllers as such: pneumatic, electronic, hydraulic, etc.
- c. Auxiliary circuit elements:
  - Amplifiers: electronic, magnetic, etc.
  - Pulse transformers
  - Voltage regulators
  - Potentiometers

4. Input Devices

- a. Manual positions: buttons, switches, keys

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MARKETING RESEARCH • PRODUCTION SCHEDULING  
LINEAR PROGRAMMING • INVENTORY CONTROL  
BUSINESS SIMULATIONS

- b. Punched holes:  
Punch card readers: electric, photoelectric, mechanical  
Paper tape readers: mechanical, electric, photoelectric
- c. Polarized spots:  
Magnetic tape readers, magnetic card readers
- d. Character readers:  
Optical, with photoelectric reading  
Magnetic ink, with magnetic head reading  
Electrically conducting pencil marks, with electric reading
- e. Small spot scanners: photoelectric, electronic

f. Sensing instruments of all kinds  
(The category "sensing instruments" verges into the science of instrumentation, where humidity, temperature, pressure, volume, flow, liquid level, etc., and many other physical variables can be measured and reported to a data processor in machine language.)

### 5. Output Devices:

- Visual displays, such as lamps, dials, oscilloscope screen, etc.
- Electric typewriter, or other electrically-operated office machine
- Line-a-time printer, which prints a whole line of characters at once
- Matrix printer, that forms each character by a pattern of dots
- Automatic plotter, which will trace or plot a curve according to information delivered by the machine
- Facsimile printer
- Photographic recording
- Paper tape punch
- Magnetic tape recorder
- Punch card punch
- Microphones, telephones, loud speakers, alarms, etc.
- Article delivery mechanisms, as in vending machines
- Positioning devices, that may operate a valve, roller, tension arm, etc., resulting in control of a manufacturing operation or process, the aiming of a gun, etc.

# OVER 500 AREAS OF APPLICATION OF COMPUTERS

Neil Macdonald  
Assistant Editor  
Computers and Automation

## I. Business and Manufacturing in General

### 1. Office

Accounts receivable; posting, rebilling  
Advertising effectiveness analysis, data handling  
Billing and invoicing  
Budgeting  
Capital investment analysis  
Charitable contributions  
Cost analysis  
Depreciation calculations  
Directory advertising calculations, inventory  
Dispatching  
Expenses, flash reports  
File maintenance  
Filing operations, single and multiple  
Forecasting  
Information retrieval  
Inventory control  
Linear programming  
Mailing list operations  
Management games  
Management reports using the exception principle, and others  
Management statistics analysis  
Management strategy analysis and simulation  
Market research: studies  
Operations research applications  
Order acknowledgment  
Order analysis  
Overhead cost allocation  
Payroll changes for general increases  
Payroll determination and issuing  
Pension reporting and updating  
Performance evaluation  
Price analysis  
Property accounting  
Purchase order writing  
Production forecasting  
Questionnaire analysis  
Repair and maintenance: records, scheduling, control  
Royalty processing  
Salary advances  
Sales analysis  
Sales area distribution  
Savings bond deductions  
Taxes, income  
Transportation optimization  
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  
Factory operation simulation  
Labor utilization: schedules, analysis  
Machine loading schedules  
Machine tools: control for automatic reproduction of complete parts, etc.  
Machine utilization analysis  
Materials and parts: requirements, allocation, scheduling, control  
Procurement  
Quality control  
Route accounting (Bakeries, Bottling plants, Dairies, etc.)  
Shop scheduling, optimum

## II. Business -- Specific Fields

### 1. Banking

Check processing accounting  
Corporate trust accounting  
Demand deposit accounting  
Factoring accounts processing  
Fund accounting  
Installment loan accounting  
Inter-office records: transmission, filing, recall  
Loan accounting, records, and analysis  
Money orders  
Mortgage loan accounting  
Payroll accounting  
Personal trust accounting  
Real estate loan accounting  
Savings and loan postings  
Savings Club deposit accounting  
Signature verification  
Stockholder records  
Trust accounting

### 2. Educational and Institutional

Hospital patient billing  
Registration; university  
Revenue and expense accounting  
Supply accounting  
Teaching  
Test grading

### 3. Finance

- Amortization
- Bond evaluation
- Dividend calculation
- Equipment trust accounting
- Fund analysis
- Monthly customer statements
- Portfolio evaluation
- Stock analysis
- Stock price index computed hourly, etc.
- Stock transfers

### 4. Government

- Appropriation accounting
- Budgetary control
- Census analysis
- Election return analysis
- Income tax accounting
- Mail sorting and routing
- Motor vehicles: registration
- Parts cataloging
- Rubbish disposal planning
- Sales tax records, analysis
- Simulation of sections of the economy
- Statistical analysis
- Supplies: inventory and control
- Water and sewer rates revenue

### 5. Insurance

- Actuarial research
- Agency accounting
- Agents' commission calculations
- Asset share calculation
- Automobile coding
- Claims
- Commutation column calculation
- Dividend formula analysis
- Dividend scale calculations
- Gross premiums calculation
- Group annuity calculations
- Group insurance commissions
- Mean reserve calculations
- Mortality tables
- Net premiums calculation
- Non-forfeiture value calculation
- Policy issuance
- Policy reserves calculation
- Premium billing
- Premium and loss distribution accounting
- Renewal rating calculations
- Valuation calculation

### 6. Law

- Crime: analysis, prediction
- Laws: analysis, consistency studies
- Patent searching
- Traffic violations: recording, accounting, analysis

### 7. Libraries

- Information retrieval
- Records and control

### 8. Magazine Publishing

- Renewals: analysis, promotion
- Subscription fulfillment

### 9. Oil Industry

- Absorber calculations
- Aerial surveys and exploration: analyses
- Bulk stations: wholesale sales, billing, accounting
- Credit card accounting
- Crude oil: analysis of properties, evaluation
- Depletion accounting
- Distillation tower design
- Equilibrium flash calculation
- Flow: control
- Fuel deliveries: degree-day accounting
- Gasoline blending
- Gravometric analysis
- Heat exchange calculations
- Heat and material balances
- Lease and well expenses and investments: records and analysis
- Map construction
- Off-shore installations: studies of design variations
- Oil field analysis:
  - Correlation of data from different drill holes;
  - Correlation of data from seismic tests;
  - Estimated amount and direction of flow of fluids through porous rocks
- Oil purchase accounting
- Pipe stress analysis
- Plate-to-plate distillation calculations
- Refinery and gas plant components: design, operation
- Refinery shutdown and maintenance: scheduling calculations
- Refinery simulation
- Secondary recovery: analysis
- Seismic data reduction
- Well logs: corrections
- Wells and fields: prorating analysis

### 10. Public Utilities

- Boiler control
- Circuits and lines: mileage analysis
- Compressor performance
- Dispatch control
- Electric distribution networks
- Equipment: attrition and life expectancy
- Gas distribution networks
- Gas well probation
- Load duration
- Load flows
- Meter reading
- Natural gas measurement
- Pipe line design
- Power distribution calculations
- Power plants: stability of control
- Power production scheduling
- Rate determination
- Repair calls: dispatching, scheduling

Sag-tension studies  
Steam turbine: output, control  
Transformer thermal rating  
Transmission line design and losses  
Water reservoir management

#### 11. Telephone Industry

Coin telephone: collecting, accounting  
Customer payments  
Local service charge billing  
Message register billing  
Toll ticket billing

#### 12. Transportation

Aircraft maintenance scheduling  
Air traffic control  
Automatic toll registration  
Bus scheduling  
Cloud-height-data analyzer for airports  
Collision warning systems  
Elevators: automatic control  
Flight simulation and pilot training  
Motor freight records, analysis  
Navigating systems  
Parking Garages: automatic control  
Preventive maintenance scheduling  
Railroad freight cars: accounting, allocation, distribution, control  
Railroad inventory accounting  
Rail traffic control, centralized  
Ship arrival forecasting  
Subways: automatic control  
Trains: automatic control  
Travel reservations

#### 13. Miscellaneous

Catalog indexing  
Hotels: registration, reservations  
Meat packaging: mixture, optimization  
Television stations: real-time program switching operations  
Vending machine programming

### III. Science and Engineering

#### 1. Aeronautical Engineering

Aerodynamical formulas; evaluation  
Airframe stress analysis  
Critical speed problems  
Curve fitting  
Factor analysis  
Flight simulation  
Flight test data reduction  
Flight training devices  
Flutter analysis  
Ground controlled approach: programming  
Gyroscopic calculations  
Heat transfer analysis  
Helicopter piloting studies  
Navigation training devices  
Rocket fuel analysis  
Satellite tracking  
Suspension reaction for airborne stores  
Systems evaluation  
Theodolite data reduction  
Vibration analysis  
Wind tunnel data reduction

#### 2. Biology

Animals: behavior models  
Hybrid optimization  
Livestock breeding control  
Livestock-feed ingredient-mix: optimization  
Species characteristics: correlation analysis  
Species varieties: automatic classification

#### 3. Chemical Engineering and Chemistry

Chemical compounds: structure studies  
Crystal structure factors  
Distillation processes: determination of starting times, etc.  
Equilibrium equations: studies  
Flash vapor calculations  
Gas line calculation  
Hydrocarbons: structure analysis  
Ion exchange column: performance appraisal  
Mass spectrometer analysis  
Organic compounds: classification  
Organic compounds: file searching  
Permeability, relative: computations  
Process control  
Process simulation  
Reaction analysis  
Spectrum analysis

#### 4. Civil Engineering

Abutment design  
Adjustment of level net  
Area calculation by coordinates and by other methods  
Azimuth determination from sun observation  
Beam design  
Bridge design  
Concrete design, prestressed and reinforced  
Construction tie 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  
Embankment stability design  
Freeway assignment  
Freezing and thawing of soils  
Grade sheet processing  
Highway profiles  
Monthly equipment summary  
Pavement design  
Photogrammetric data reduction  
Pier design  
Pile load computation  
Pipe design  
Pressure distribution in layered media  
Ramp and interchange design and calculations  
Retaining wall design  
Roadway elevations  
Route optimization  
Slab volumes and other calculations  
Soil test analysis  
Steel column design

Stress analysis  
Three-point problem solutions  
Traffic density: pictorial simulation  
Traffic simulation  
Transformation of coordinates  
Traverse adjustment  
Traverse closure  
Triangulation  
Vertical alignment

#### 5. Electrical Engineering

Antenna design  
Cathode tube design  
Circuit analysis and design  
Component design  
Electromagnetic wave propagation in various media  
Feedback system, single loop, finding the root locus  
Filter analysis  
Generator calculations  
Logical networks: design  
Motor calculations  
Radar echoes  
Radio interference  
Systems evaluation  
Transformer design  
Transient performance  
Traveling-wave-tube calculations  
Triode design

#### 6. Hydraulic Engineering

Backwater profiles  
Compressible and incompressible flow analysis  
Culverts: analysis, geometry  
Drainage systems design  
Flood and flow forecasting  
Flood control calculations  
Flood frequency analysis  
Flood routing  
Flow in open channels  
Ground water: flow of  
Hydraulic circuits and components: design  
Hydraulic network analysis  
Hydroelectric dam design  
Multi-purpose water-reservoir system management  
Pipe stresses  
Reservoir aggradation  
Reservoir area computations  
Sewer design  
Shock-wave effect analysis  
Surge-tank analysis  
Turbine speed regulation  
Unit hydrographs: determination  
Water hammer analysis  
Wave motion analysis  
Wind-wave analysis

#### 7. Linguistics

Concordances: construction  
Syntax pattern analysis  
Translation from one language to another  
Word frequency analysis

#### 8. Marine Engineering

Compartment pressures in emergency situations  
Compartment ventilation calculations  
Force analysis of space structures  
Form calculations  
Fuel rate analysis  
Gyroscopic-compasses sea-test: data reduction  
Hydrostatic functions  
Large ship maneuvering  
Plate and angle combinations: calculations  
Ship displacement calculations  
Ship models: extrapolation of observations  
Ship waterline characteristics  
Shock isolator calculations  
Submarine hulls: Bon Jean calculations  
Turbine reduction gear systems: vibration analysis  
Ullage tables

#### 9. Mathematics

Boolean algebra calculations  
Calculus of variations  
Constants, important: evaluation  
Convolution  
Coordinate rotation and translation  
Curve fitting  
Determinant evaluation  
Difference equations solution  
Differential equations solution  
Differentiating symbolically  
Eigenvalues and eigenvectors: calculations  
Fourier analysis and synthesis  
Function tables: computation  
Integral equations  
Integration of functions  
Lagrange interpolation  
Least squares fit to inconsistent equations  
Matrix inversion  
Matrix multiplication  
Maximum likelihood functions  
Multi-dimensional partial differentials  
Multiple integrals  
Numerical base conversion  
Partial differential equations  
Polynomial roots  
Simulation of mathematical equations and solutions  
Simultaneous linear equations  
Simultaneous non-linear equations  
Simultaneous ordinary differential equations  
Stochastic difference equations  
Table computation (evaluation of functions)

#### 10. 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 stringers design
  - Compressors: horse power calculations
  - Conveyor geometry
  - Crankshaft vibration analysis
  - Engine and piston computations
  - Flange cross sections, table of properties
  - Foundation settling: effects
  - Heat flow
  - Heat loss of rooms and buildings
  - Machine vibration analysis
  - Moments of inertia
  - Pipe-stress analysis
  - Orifice factors: computations
  - 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
  - Torsional systems, bearing loads, and engine forces: Holzer analysis
  - Truss analysis: stress and deflections
  - Vehicle checkout calculations
  - Vibration analysis
11. Medicine
- Anesthesia control
  - Diagnosis of disease
  - Heartbeat analysis
  - Medical tests: analysis
  - Motor system coordination testing
  - Psychological tests: analysis
12. Metallurgy
- Alloy calculations
  - Crystal structure computations
13. Meteorology
- Weather forecasting
14. Military Engineering
- Ballistic trajectories
  - Bomb impact analysis
  - Bombing tables
  - City evacuation studies
  - Fire control
  - Firing tables
  - Missiles: launching, directing, intercepting, and recovery: calculations
  - Pursuit and combat: analysis, control
  - Radar defense systems: analysis, calculations
  - Rocket trajectories
  - Strategy analysis and optimization
  - Trajectory calculations
  - Weapon control
  - Weapons systems analysis and evaluation
15. Naval Engineering (see also Marine Engineering)
- Cavitation studies
  - Component attrition rate analysis
  - Decompression tables
  - Submerged flow: potential patterns
16. Nuclear Engineering
- Engines: tests, data, control
  - Multigroup criticality calculations
  - Neutron diffraction
  - Neutron flux distribution
  - Power plant monitoring
  - Radioactive fallout: analysis, prediction
  - Radioactive level calculations
  - Reactor design and evaluation
  - Reactor simulators
17. Photography
- Color separation negatives: scanner for automatic production
18. Physics
- Color analysis
  - Cosmic radiation: statistical analysis
  - Crystallography analysis
  - Electron distributions
  - Electron trajectories
  - Interatomic bond lengths and angles
  - Lens coating calculations
  - Neutron transport
  - Optical ray tracing and optical system design
  - Shock waves analysis
  - Thermodynamic equations
19. Statistics
- Bernoulli probability
  - Beta function
  - Binomial coefficient calculations
  - Chi squared function calculations
  - Complex error function and integral
  - Correlation
  - Covariance
  - F-test
  - Factor analysis
  - Forecasting
  - Gamma function
  - Gaussian probability
  - Hypergeometric probability
  - Least-square-polynomial fitting
  - Moments
  - Moving averages
  - Multiple regression
  - Non-linear estimation
  - Period search
  - Poisson probability
  - Time series analysis and adjustment
  - T-test I (sample mean vs. population mean)
  - T-test II (difference between two means)
  - Variance: analysis

# APPLICATION PROGRAMS AVAILABLE

Edmund C. Berkeley  
Editor  
Computers and Automation

In assembling our list of areas of applications of computers we received helpful replies from many organizations.

In our inquiry, we asked an additional question: "If you have a computer program which relates to one of these areas of applications, and would be willing to make it available to other people on a reasonable basis (such as rental or exchange), will you please mark the area of application with the letter "p" (standing for program available)?"

Following each company's name in the list below is the number of "programs available" which they reported. It may of course be true that the company has other programs which are "not available". We are setting up a card file of (1) areas of application and (2) who has programs available. We shall be glad to try to operate an information exchange, to bring together people who have or want programs in particular applications. Please address any inquiry to: Applications Editor, Computers and Automation.

Any additions, corrections, or comments will be welcome.

The Bendix Corp., 21820 Wyoming Ave., Detroit 37, Mich. / George M. Hargreaves, Adv. Mgr. / 1  
The Bendix Corp., Bendix Computer Div., 5630 Arbor Vitae St., Los Angeles 45, Calif. / Phyllis Huggins, Pub. Rel. Coord. / 45  
Bendix Systems Div., 3300 Plymouth Rd., Ann Arbor, Mich. / Sanford F. Tingley, Head, Computations Section / 6  
California Computer Products, Inc., 8714 Clela St., Downey, Calif. / Richard L. Mark, Chief Applications Engineer / 1  
C-E-I-R, Inc., 1200 Jefferson Davis Highway, Arlington 2, Va. / William Orchard-Hays, Vice Pres. / 19  
Clary Corp., 408 Junipero St., San Gabriel, Calif. / Sheldon Deitch, Computer Operations Analyst / 70  
Electric Boat Div., General Dynamics Corp., Groton, Conn. / George J. Siefert, Adm. Mgr., Digital Computers / c. 10

General Electric Co., Computer Dept., P. O. Box 270, Phoenix, Ariz. / H. M. Sassenfeld, Mgr., Applications / 22  
Hughes Aircraft Co., Ground Systems Group, Fullerton, Calif. / Monson H. Hayes, Mgr., Computer Lab. / 4  
McDonnell Automation Center, a Div. of McDonnell Aircraft, Box 516, St. Louis 66, Mo. / Neal T. Dohr, Staff Assistant / 41  
Philco Corp., Computer Div., Willow Grove, Pa. / N. F. Pensiero, Mgr., Mktg. Admin. / 7  
Reeves Instrument Corp., Roosevelt Field, Garden City, N. Y. / Charles Lax, Adv. Mgr. / 73  
The Service Bureau Corp., 425 Park Ave., New York 22, N. Y. / R. F. Meurer, Information Mgr. / 54  
System Development Corp., 2500 Colorado Ave., Santa Monica, Calif. / William A. Johnston, Public Information / 1  
Technical Operations, Inc., South Ave., Burlington, Mass. / R. A. Langevin, Dir., Computer Applications / 3  
Telecomputing Services, Inc., 8949 Reseda Blvd., Northridge, Calif. / P. Ray McInnis, Asst. to the Pres. / 28

# COMPUTER USERS GROUPS

## — ROSTER

Following is a roster of groups of computer users. Each has been cross-referenced where necessary under the computer name and number and the manufacturer's name.

All additions, corrections, and comments will be welcome.

- 
- ALWAC Users Association / ALWAC III-E / Alwac Computer Div., El-Tronics, Inc., 13040 S. Cerise Ave., Hawthorne, Calif.
- Autonetics, a Div. of North American Aviation, Inc. — see Recomp Users Group
- Bendix G-15 Computer — see G-15 Users Exchange Association
- Bendix G-20 Computer — see G-20 Users Group
- Burroughs Corp. — see Cooperating Users Exchange and Datatron Users Organization
- Burroughs 205 — see Datatron Users Organization
- Burroughs 220 — see Cooperating Users Exchange
- Control Data Corp. 1604 Computer — see CO-OP
- CO-OP / Control Data Corp. 1604 Computer / Control Data Corp., 501 Park Ave., Minneapolis 15, Minn.
- Cooperating Users Exchange (CUE) / Mr. R. E. Keirstead, Exec. Sec'y, CUE, c/o Mathematical Sciences Dept., Stanford Research Institute, Menlo Park, Calif. / Burroughs 220 Computer / Burroughs Corp., 6071 Second Ave., Detroit 32, Mich.
- CUE — see Cooperating Users Exchange
- D-1000 User's Group / Mr. Martin N. Greenfield, Exec. Sec'y, D-1000 User's Group, c/o Minneapolis-Honeywell Regulator Co., Datamatic Div., 60 Walnut St., Wellesley Hills 81, Mass. / Honeywell D-1000 Computer / Minneapolis-Honeywell Regulator Co., Datamatic Div., 60 Walnut St., Wellesley Hills 81, Mass.
- Datamatic Div., Minneapolis-Honeywell Regulator Co. — see D-1000 User's Group and H-800 User's Association
- Datatron Users Organization (DUO) / Dr. E. L. Eichhorn, Sec'y, DUO, Burroughs Corp., 460 Sierra Madre Villa, Pasadena, Calif. / Burroughs 205 Computer / Burroughs Corp., 6071 Second Ave., Detroit 32, Mich.
- DUO — see Datatron Users Organization
- G-15 Users Exchange Association / Mr. T. Yamashita, Sec'y, G-15 Users Exchange Association, c/o Bendix Computer Div., 5630 Arbor Vitae St., Los Angeles 45, Calif. / Bendix G-15 Computer / The Bendix Corporation, Bendix Computer Div., 5630 Arbor Vitae St., Los Angeles 45, Calif.
- G-20 Users Group / Mr. T. Yamashita, Sec'y, G-20 Users Group, c/o Bendix Computer Div., 5630 Arbor Vitae St., Los Angeles 45, Calif. / Bendix G-20 Computer / Bendix Corporation, Bendix Computer Div., 5630 Arbor Vitae St., Los Angeles 45, Calif.
- GUIDE / Mr. Edward B. Berninger, Sec'y, GUIDE, c/o Standard Oil Co. (New Jersey), 30 Rockefeller Plaza, New York 20, N. Y. / IBM Computers / International Business Machines Corp., 112 East Post Rd., White Plains, N. Y.
- H-800 User's Association / Mr. Bert L. Neff, Sec'y-Treas., H-800 User's Association, c/o Metropolitan Life Insurance Co., 1 Madison Ave., New York 10, N. Y. / Honeywell 800 Computer / Minneapolis-Honeywell Regulator Co., Datamatic Div., 60 Walnut St., Wellesley Hills 81, Mass.
- Honeywell 800 Computer — see H-800 User's Association
- Honeywell D-1000 Computer — see D-1000 User's Group
- IBM Computers — see GUIDE and SHARE
- LGP-30 — see POOL (Royal McBee Corp.)
- Minneapolis-Honeywell Regulator Co., Datamatic Div. — see D-1000 User's Group and H-800 User's Association
- National Cash Register Co. — see NCR 390 Users Organization
- NCR 390 Users Organization / Mr. D. R. Fruth, Chairman, 390 Users Organization, Professional Bldg., Fostoria, Ohio / NCR 390 / National Cash Register Co., Dayton 9, Ohio
- Philco 2000 — see TUG
- POOL / RPC-4000 and LGP-30 / Royal McBee Corp., Westchester Ave., Port Chester, N. Y.
- Radio Corp. of America — see RCA 501 Users Association
- RCA 501 Users Association / Mr. D. R. Anderson, Sec'y, RCA 501 Users Association, c/o Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh 22, Pa. / RCA 501 Computer / Radio Corp. of America, Electronic Data Processing Div., Front & Cooper Sts., Camden 2, N. J.
- Recomp Users Group (RUG) / Mr. Zyg Jelinski, Sec'y, Recomp Users Group, 3400 East 70 St., Long Beach

(Please turn to page 148)

# ROSTER OF SCHOOL, COLLEGE, AND UNIVERSITY COMPUTER CENTERS

Following is a roster of school, college, and university computer centers. Additions, corrections, and comments are welcome.

The abbreviations used are as follows:

Activities

- Ma Manufacturing activity
- Ra Research and development
- Ca Consulting
- Ga Government activity
- Pa Problem-solving
- Ea Education

(Used also in combinations as in RCEa "re-search, consulting and education activity")

Size

- Ls Large size, over 500 employees
- Ms Medium size, 50 to 500 employees
- Ss Small size, under 50 employees (no. in parentheses is approx. no. of employees)

When Established

- Le Long established organization (1930 or earlier)
- Me Organization established a "medium" time ago (1931 to 1950)
- Se Organization established a short time ago (1951 or later) (no. in parentheses is year of establishment)

Interest in Computers and Automation

- Dc Digital computing machinery
- Ac Analog computing machinery
- Ic Incidental interests in computing machinery

\*C This organization has kindly furnished us with information expressly for the purpose of the Roster and therefore our report is likely to be more complete and accurate than otherwise might be the case. (C for Checking) / 61: information furnished in 1961 / 60: information furnished in 1960 / etc.

Brown University Computing Laboratory, Div. of Applied Mathematics, 180 George St., Providence 12, R. I. / TE 1-5037 and UN 1-2900, ext. 388, 366 / \*C 61

IBM 7070 data processing system; computing service, instruction, research; IBM 650 and auxiliary equipment / RCPEa Ss(9) Se(1960) Ic  
California Institute of Technology, Computing Center, Pasadena, Calif.  
Burroughs 205, LGP-30, IBM 705, and Direct

Analogy Electric Analog Computer built at the Institute. Computer research and computing services for the Institute / RCEa Ss Se DAC  
Case Institute of Technology, Computing Center, Cleveland, Ohio

Research in computation. Computing services on a Univac and an IBM 650 for research projects at Case, industry, and government / RCEa Ss(2) ?e Dc

Cornell University, Cornell Computing Center, Rand Hall, Ithaca, N. Y. / IThaca 4-3211, X2105 / \*C 61  
Service computing bureau using Burroughs 220 digital computer, EASE analog computer / REa Ss(25) Se(1953) DAC

Franklin Institute Computing Center, Benjamin Franklin Parkway at 20th St., Philadelphia 3, Pa. / LOcust 4-3600, X246 / \*C 61

Complete data processing and computing services for business, industrial and scientific applications. Services include consulting, computer oriented courses of study, systems analysis and design, operations research, mathematical and statistical analysis, programming and use of a large scale UNIVAC data processing system on premises / RCPEa Ss(25) Se(1957, Computing Center) Ic  
George Institute of Technology, Rich Electronic Computer Center, Engineering Experiment Station, 225 North Ave., N. W., Atlanta 13, Ga. / TRinity 4-6331, Ext. 223 / \*C 61

Univac scientific (ERA 1101); Burroughs 220; IBM 650; Berkeley Ease analog computer; Donner analog computer / RCEa Ss(40) Se(1955) DAC  
Harvard University, Harvard Computation Laboratory, Cambridge 38, Mass. / \*C 60

Builder of Harvard Mark I, II, III, IV calculators for Navy, Air Force, and own use. Computing service: digital; Harvard Mark I and IV, and Univac I machines / RCPEa Ms Me(1941) Dc  
Imperial College, Mathematics Dept., Computer Section, Huxley Bldg., Exhibition Road, So. Kensington, London, England

Automatic digital computers constructed and in operation / RMEa Ss Le(1922) Dc  
Institut Blaise Pascal, Laboratoire de Calcul Numérique, Bâtiment Henry Poincaré, 11 rue Pierre Curie, Paris 5<sup>e</sup>, France / MED 1692 / \*C 61  
Research on programming and numerical analysis. Computing center using Elliott 402E; IBM 650 with

- floating point, core storage and index registers; Bull Gamma — AET; IBM 704; IBM 706 / RCEa Ms(55) Se(1957) Dc
- Lehigh University, Computing Laboratory, Packard Laboratory, Bethlehem, Pa. / UN 7-5071, Ext. 355 / \*C 61  
Computing service using LGP-30 / RCPEa Ss(7) Se(1957) Dc
- Massachusetts Institute of Technology, Computation Center, 77 Massachusetts Ave., Cambridge 39, Mass. / UNiversity 4-6900 / \*C 61  
Research and education in computer techniques by M. I. T. and most of the colleges and universities in the New England area. Use of IBM 709 computer exclusively for the use of the above groups, free of charge / RPEa Ms(75) Se(1957) Dc
- National Physical Laboratory, Mathematics Div., Teddington, Middlesex, England / TEddington Lock 3222 / \*C 61  
Computing service using DEUCE and ACE. Digital and punched card / RCPEa Ms(60) Me(1945) Dc
- Pennsylvania State Univ., Computer Facilities, Electrical Engineering Dept., University Park, Pa. / UNiversity 5-7701 / \*C 61  
Digital computing service for the University; PENNSTAC digital computer; analog computers, network analyzer / RPEa Ss(13) Se(1952) DAC
- Purdue University, Statistical and Computing Lab., Engineering Administration Bldg., Lafayette, Ind. / 92-2703 / \*C 61  
Statistical and computing services / RCPEa Ms(75) Se(1948) Dc
- Rice Institute Computer Project, Houston, Texas  
Development of a high speed digital computer, to be used as a university research tool / Ra ?s Se(1957) Dc
- Southern Methodist University, Computing Laboratory, Dallas 5, Texas  
Computing facility for academic research and teaching of computer-related work. Univac 1103 / RCEa Ss(5) Se(1957) Dc
- Stanford University, Stanford Computation Center, Stanford, Calif. / DA 1-2300 / \*C 60  
Computing service. Education involving uses of computers. IBM 650, Burroughs 220 / RCPEa Ss(5) Se(1953) Dc
- Swedish Board for Computing Machinery, Drottninggatan 95 A (P. O. Box 6131), Stockholm 6, Sweden / Stockholm 23 55 90 / \*C 60  
State central institution for research, development, education, consulting, system investigation, problem analysis, documentation. Computing service: appl. math., technology; data processing: commercial, operational, governmental. Equipment: BESK, FACIT, EDB, Alwac III E / RMCGPEa Ms(70) Me(1949) DAic
- University of Arizona, Numerical Analysis Laboratory, Tucson 25, Ariz.  
Computer programming, numerical analysis, computer design, and operations analysis. IBM 650 and Ramac 305A / REa Ss(35) Se(1957) Dc
- University of California, Computer Center, 201 Campbell Hall, Berkeley 4, Calif. / THornwall 5-6000, Ext. 2521 / \*C 61  
IBM 704 with 32,000 core memory, 9 tapes; off-line printer, off-line card-to-tape; IBM 701, magnetic core storage, 4 tapes, 4 drums / RCEa Ms(52) Se(1956) DAC
- University of California at Los Angeles, Mathematics Dept., 405 Hilgard Ave., Los Angeles, Calif. / BR 2-6161, X9236 / \*C 61  
Scientific computing service on campus-wide basis, using IBM 7090 computer / RCEa Ms(c.60) Me(1948) DAC
- University of California at Los Angeles, Western Data Processing Center, Graduate School of Business Administration, 405 Hilgard Ave., Los Angeles 24, Calif. / GRanite 3-0971, Ext. 9379, or BRadshaw 2-6161, Ext. 9596 / \*C 61  
Support education and research in the field of business data processing. Provide computing facilities (IBM 7090 installation with auxiliary equipment) without charge for research and education in all academic disciplines / RCPEa Ss(20) Se(1957) Ic
- University of Cambridge, University Mathematical Laboratory, Corn Exchange St., Cambridge, England / 58637 / \*C 61  
Built Edsac 1 and Edsac 2. Computing service (digital) for University / RCPEa Ss(30) Me(1939) Dc
- University of Chicago, Institute for Computer Research, Chicago, Ill.  
Maniac III computer built by the Institute, used for computer research and computing service for the university / RCEa ?s ?e Dc
- University of Colorado, Numerical Analysis Center, Boulder, Colo. / HI 3-2211, Ext. 7255 / \*C 60  
Teach numerical analysis, programming, etc. Computation for people on campus who have need for such service / RPCEa Ss(5) Se(1958) Ic
- University of Durham Computing Laboratory, One Kensington Terrace, Newcastle upon Tyne, 2, England / NEwcastle 2-2457 / \*C 61  
Computing service. Has Ferranti Pegasus computer with magnetic tape / RCPEa Ss(12) Se(1956) Dc
- University of Illinois, Digital Computer Laboratory, Urbana, Ill. / EM 7-6611, ext. 2817 / \*C 59  
Computing service (internal to University). Education including research and teaching / RCPEa Ms(70) Se(1949) Dc
- University of Kentucky, Computing Center, Lexington, Ky.  
IBM 650 / RCEa ?s Se(1958) Dc
- University of Liverpool, Mathematical Institute, Liverpool, England  
English Electric DEUCE computer / RCa ?s Se(1959) Dc
- University of London, Birkbeck College, Dept. of Numerical Automation, Malet St., London W. C. I, England / LAngham 7941 / \*C 61  
Digital and analog computers, machine translation of language, input-output numerical analysis,

- spoken word recognition, simulation of intelligent behavior / RCPEa Ss(20) Me(1946) DAic  
 University of London, Computer Unit, London, England  
 Ferranti Mercury computer. Computer research, teaching, and computing services / RCEa Ss(16) Se(1957) Dc
- University of Mainz, Institute for Applied Mathematics, Mainz, Germany  
 Zuse 22 digital computer / REa ?s ?e Dc
- University of Manchester, Computing Machine Laboratory, Dept. of Electrical Engineering, The University, Manchester 13, England / ARDwick 3333 / \*C 61  
 Ferranti Mercury in operation. Atlas being developed in collaboration with Messrs. Ferranti Ltd. and expected to be in operation in summer of 1962 / RCPEa Ss(25) Me(1947) Dc
- University of Michigan, Institute for Science and Technology, P. O. Box 2008, Ann Arbor, Mich. / NO 3-1511 / \*C 61  
 Has general purpose computers and simulators, including desk calculators, Librascope LGP 30, IBM 709, and a modern large scale analog computer. Research and computing services, including analysis and computation using these types of computers / RCPEa Ls(600) Me(1946) DAC
- University of Michigan, Willow Run Laboratories — name changed to University of Michigan, Institute of Science and Technology, which see
- University of Milan Computing Center, Milan, Italy  
 Univac Solid State 90. Training and teaching of students, and computing services for the university / RCEa Ss Se(1959) Dc
- Universite de Montreal, Center of Statistics, P. O. Box 6128, Montreal, P. Q., Canada  
 Has a digital computer. Mathematical services for research / RCEa Ss(3) Se(1954) Dc
- University of New South Wales, UTECOM Laboratory, Kensington, Australia  
 English Electric DEUCE computer. Computing services for the University, other universities in Australia, and industry / RCEa ?s ?e Dc
- University of North Carolina, Computation Center, Chapel Hill, N. C. / 7037 or 7038 / \*C 60  
 Instruction in: computer-oriented mathematics; research in automatic programming, automatic numerical analysis, solution of partial differential equations, and linear equations; handling research and data processing problems of the three branches of the university; processing business and population data for the U. S. Bureau of the Census / RCGPEa Ms(50) Se(1959) DISc
- University of Pennsylvania, Moore School of Electrical Engineering, Computer Center, 209 South 33rd St., Philadelphia 4, Pa. / EVergreen 6-0100 / \*C 60  
 Computer service: types of computers — analog (Electronic Associates 31R, 131R); analog (mechanical differential analyzer); digital (Univac I) / RCEa Ms(125) Le(1923) DAC
- University of Rochester, Computing Center, Rochester 20, N. Y. / GR 3-3000 / \*C 61  
 Problem solving; research; education; IBM 650 / RCPEa Ss(7) Se(1956) Dc
- University of Southern California, Computing Center for Education and Research, 1010 West Jefferson Blvd., Los Angeles, Calif.  
 Univac Solid State 80 and Honeywell 800, with full tape and other peripheral equipment. Computing services and computer research / RCEa ?s Se(1960) Dc
- University of Texas, Computation Center, Austin 12, Texas  
 Research in numerical analysis; computing service for the university. Control Data 160 and 1604 / RCEa Ss(8) Se(1958) Dc
- University of Toronto, Computation Centre, Toronto Ontario, Canada / WALnut 3-1327 / \*C 59  
 Computing services. Programming and consulting services. Time available on Tape IBM 650 / RCPEa Ss Me Dc
- University of Washington, Research Computer Laboratory, 400A Bagley Hall, Seattle 5, Wash.  
 IBM 650. Computing services for the university and research into mathematical and statistical analysis / RCa Ss(2) Se(1956) Dc
- The George Washington University, Logistics Research Project, 707 22nd St., N. W., Washington 7, D. C. / FE 8-4540 / \*C 61  
 Research in logistics data processing under contract with the Office of Naval Research; ONR logistics computer / RCPa Ss(45) Me(1949) Dc
- Washington State University, Computing Center, Pullman, Washington  
 Computing service for university research; research into computational methods. Outside contract research accepted / RCPEa Ss(10) Se(1956) Dc
- Wayne State University Computing Center, 4841 Cass Ave., Detroit 2, Mich. / TE 1-0703 / \*C 61  
 IBM 650 system with alphabetic device, special character device, immediate access storage, index accumulators, floating point arithmetic, RAMAC, two tape units, 543 reader and 544 punch unit / RCa Ss(30) Se(1950) Ic
- Western Reserve University, Cleveland, Ohio  
 GE 225 and WRUSS (Western Reserve University Relay Searching Selector). WRUSS is used for library information retrieval. Research computing service for the university / RCEa ?s ?e Dc

# ROBOTS —

## ROSTER OF ORGANIZATIONS, AND SURVEY

Another new area in the field of automatic machinery for handling information and acting in regard to it is the field of robots, mobile machines which have apparatus for sensing, for handling information, and for acting in general-purpose, controllable ways.

Environments which human beings cannot enter because of heat, cold, pressure, radiation, and in which there are jobs to be done, have caused some of these robots to come into existence. Also general-purpose manipulative tasks, which need to be repeated from half a dozen times up to several hundred times, have led to the development of some of these robots.

Following is a first, preliminary, edition of a roster of organizations in the field, and two reports from two companies kindly sent to us for use in the Computer Directory.

To prepare this survey, we asked manufacturers for: 1. Descriptions of your robots? -- 2. Control or input (punched paper tape, wired boards, magnetic tape, etc.)? -- 3. Applications or output of your robots? -- 4. Rental and sales prices? -- 5. Any remarks? The abbreviation "nr" means "no response".

Additions, corrections, and comments are invited.

### I.

American Machine and Foundry Co., 261 Madison Ave., New York 16, N.Y. / nr  
American Radiator and Standard Sanitary Corp., 40 West 40 St., New York 18, N.Y. / nr  
Central Research Laboratories, Inc., Red Wing, Minn. / nr  
Consolidated Controls Corp., 75 Durant Ave., Bethel, Conn. / Danbury Pioneer 3-6721

Robot called Unimate with hydraulically actuated arm; size 5 ft. by 4 ft. by 4 1/2 ft. high; maximum load, 25 lbs. at normal operating speed; positioning accuracy, ±0.050 inches in each dimension; memory capacity, 20 sequential commands; clamping force, up to 180 lbs. at the end of four inch fingers; hands and fingers to suit a particular job. Input is via recording the position of the arm and hand (5 degrees of freedom) on a magnetic memory drum. Main application, performing repetitive jobs that last from a few hours

to many days; can easily be taught a new job. Price, \$25,000 each. See picture and further story below.

General Electric Co., One River Rd., Schenectady 5, N.Y. / nr  
General Mills, Inc., 9200 Wayzata Blvd., Minneapolis 26, Minn. / nr  
Hughes Aircraft Co., Nuclear Electronic Laboratories Div., Florence and Teale Sts., Culver City, Calif.

Robots called Mobots for nuclear, underwater, and space environments, and for automation. Control input for the automatic Mobot is magnetic tape. Designed for applications in environments which are impossible, difficult, or fatiguing for human beings. Price, \$25,000 to \$200,000; also available on rental. See story and pictures below.

Robodyne Div., U. S. Industries, 12345 New Columbia Pike, Silver Spring, Md. / nr  
Vare Industries, Inc., 128 West First Ave., Roselle, N.J. / nr  
Vitro Laboratories, 140 Georgia Ave., Silver Spring, Md. / nr

### II.

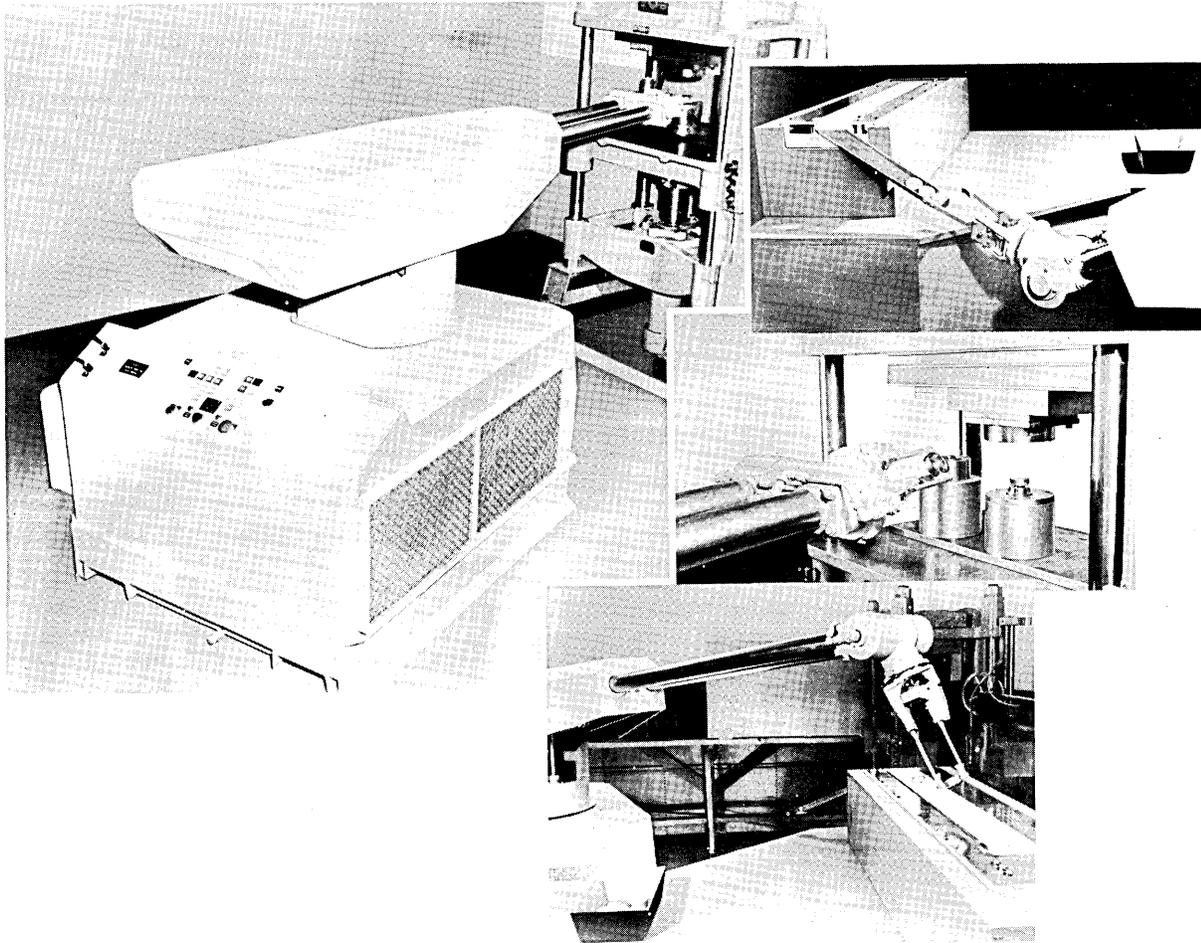
#### UNIMATE, WORK-HANDLING MACHINE

C. M. Colt  
Consolidated Controls Corp.  
Bethel, Conn.

The present market for robots to replace human labor in routine, repetitive factory jobs is something over \$120,000,000, this company has estimated, as a result of intensive market studies which led to the development of the company's Unimate, "teachable," universal work-handling machine.

Studies in co-operation with 25 heavy industrial plants turned up more than 300 applications, involving 100 different kinds of operations in which robots of the Unimate type could perform more efficiently than human labor. From these observations, this company considers that more than 40,000 places presently exist in industry in which Unimate could cut costs and improve production. One major manufacturer has put the number of Unimates which could be used in its own plants at more than 1,000.

Among typical applications found for Unimate were press operation, welding, loading materials,



— Shown here in a simulated factory activity, Unimate, the new "teachable" robot, by Consolidated Controls Corporation, picks billets from a feed chute, puts them through a two-stage forging operation and delivers the finished parts to a conveyer.

transferring materials, forging operations, loading automatic lathes, packing cartons, assembly, inserting and tightening nuts and screws, spray-painting and hardness testing.

How does Unimate work? Here is a simplified explanation, which applies to only one movement, extension or contraction of arm length.

The hydraulic actuator provides the "muscle". It is controlled by a solenoid flow control valve. The code disc of the shaft position encoder is mechanically linked to the actuator so that it must move coincidentally with it. The pick-offs, or reading heads, read the code combination presented at every position of the code disc; therefore, the code combination defines the position of the disc and, in turn, the actuator, at any time. Whenever the actuator returns to a given position, the unique code pattern defines that position.

The memory drum is shown in perspective with the recording and readout heads mounted axially along the surface. If we wish to record the position of the actuator, the code number from the encoder is stored on the drum. When a repeat

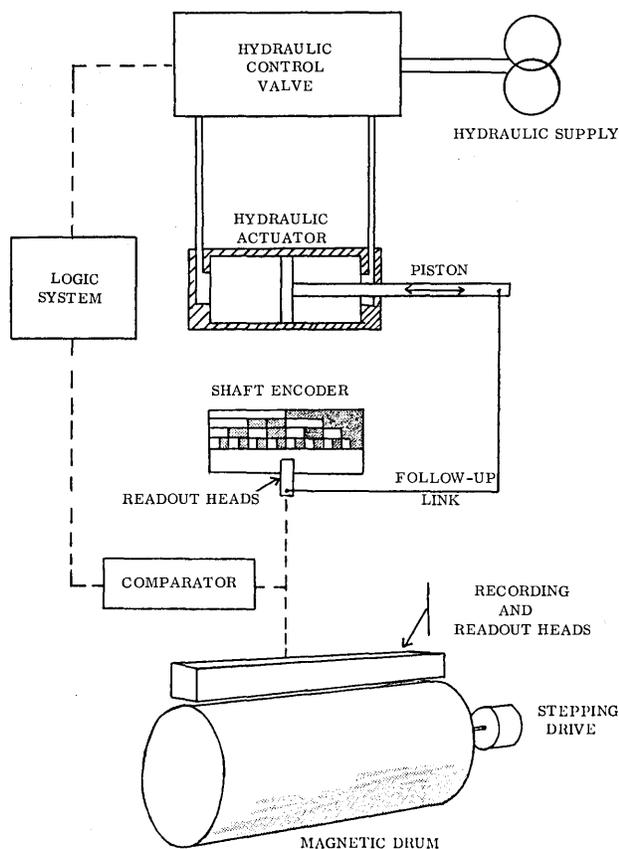
of this position is desired, the drum is turned until the record is opposite the readout heads. In the comparator, the record on the drum is compared to the code from the converter and the difference determined. The logic system acts upon this difference and operates the control valve to move the actuator in the proper direction to reduce the difference to zero. The actuator moves at maximum velocity when the error is large, and very slowly as the error is reduced to a small amount.

The load moves a part of the required distance to be traversed at a maximum speed, and at a predetermined distance from the final position, the load is decelerated to a slower speed by partially closing the valve. At another predetermined distance from the final position, the valve closes further and the load is decelerated still further. The second deceleration removes essentially all of the kinetic energy from the load and moving Unimate structure, and results in a relatively slow speed.

When the actuator has moved to the desired position, the comparator sees the same code number from both the drum and the encoder; therefore,

the logic system halts the actuator by completely closing the valve and moves the drum on to the next command.

The magnetic drum memory, unlike most other magnetic memory devices, can be "read" while stationary. This property, extensively used in the control of Unimate, makes the drum ideal for a wide range of machine tool and materials handling applications. It can remain stationary, providing a continuous reference signal against which to compare actual movements of the device being controlled. Only after actual movements correspond with those indicated by the drum need the drum step to its next position to indicate a new end-point toward which the machine should move.



As used in Unimate, the magnetic memory drum has a capacity of 16,000 bits of information. These are recorded in 200 rows around the circumference, each row consisting of 80 bits parallel to the drum axis. The 200 rows correspond to the number of distinct movements which Unimate can "remember". The 80 parallel bits per row represent the number necessary to control all of the functions which may be needed for Unimate to make a movement and to actuate auxiliary machinery.

In recording a sequence of movements, Unimate is led by the hand to the first position in the sequence. Shaft-position-to-digital converters generate signals corresponding to this position. A record button is pushed. The record button actuates amplifiers which drive "write"

heads which impress a magnetic pattern on the drum. The drum then steps to its next position, ready to receive the pattern corresponding to the next movement of Unimate. This step-and-record sequence may be continued until each row on the drum, 200 in all, indicates a movement for Unimate.

After a sequence has been recorded, Unimate can repeat the recorded movements indefinitely. When its "repeat" button is depressed, the drum steps to its first position. Magnetic "read" heads detect the pattern and initiate movements which will bring Unimate's position into correspondence with the recorded pattern.

While Unimate is moving, signals generated by shaft-position-to-digital converters attached to its joints are continuously compared in a specially designed comparator with the pattern presented by the Dynastat drum. As Unimate nears the end of its movement, the comparator slows the action so as to avoid overshoot and over-stress which might result from an instantaneous stop. When the signals received from Unimate exactly match those from the drum, action is stopped. The drum then moves on to the next step in the routine and the action is repeated until Unimate has gone through its entire "memorized" routine. At the end of the routine, the drum goes immediately back to its starting position, ready to repeat the entire sequence.

### III.

#### MOBOT, REMOTE-CONTROLLED ROBOT

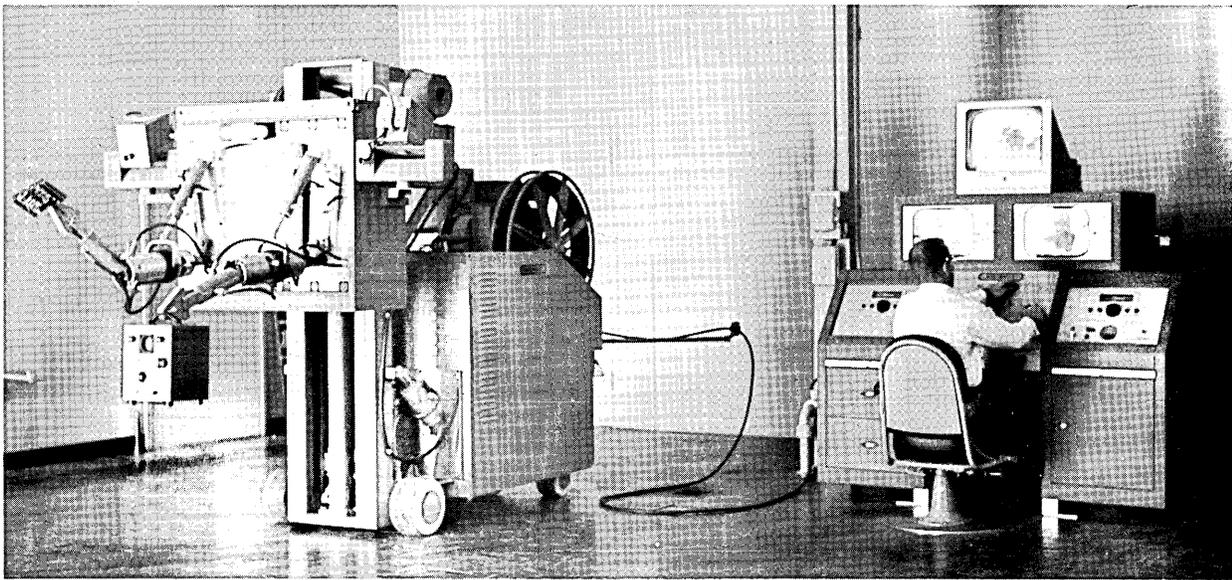
J. J. Kowall  
Nuclear Electronics Laboratory  
Hughes Aircraft Co.  
Culver City, Calif.

#### Robots for Automation

This laboratory's work on automated handling systems has evolved from its work on nuclear handling systems. The basic requirement of transferring an object from one position to another, and perhaps changing its orientation and subjecting it to one or more processes during the transfer, can readily be accomplished by remotely-controlled arms. The electrical commands which cause the arm to execute a desired geometrical path in space may be derived either from manual inputs to a control console or from recorded signals on a tape or other storage medium.

The Mobot Mark I is a hydraulically actuated manipulator; the Mark IB, a hydraulically actuated manipulator available in modular form; and the Mark II, an electro-mechanical system which is also available on a modular basis.

An automation robot system, or universal transfer device, is now under active development, and employs conventional magnetic tape as a means of recording and recreating motion sequences. Any new sequence is "taught" to the machine by



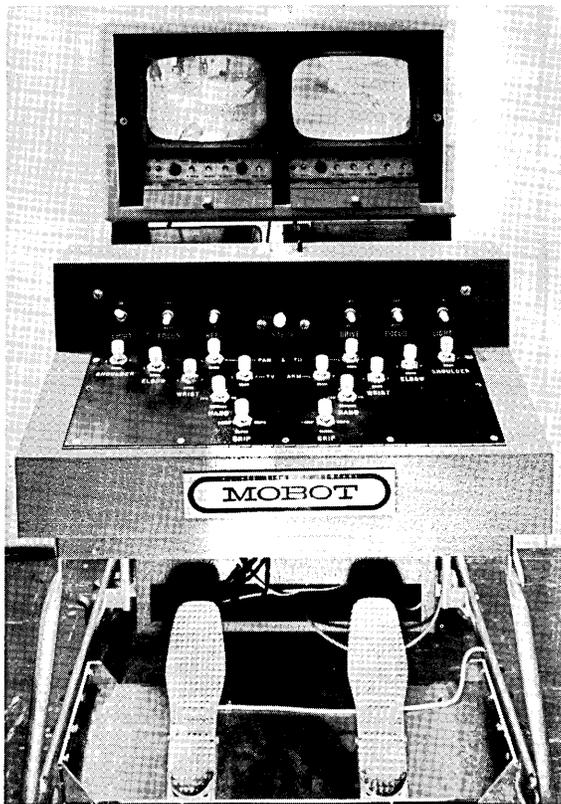
### Robots for Underwater

Parallel efforts in the broader field of electronically-commanded remote handling in progress at this company include the development of remotely-controlled underwater handling systems. These perform many of the functions commonly performed by deep-sea divers. The versatile, remotely-controlled systems operate without limitation as to depth and period of immersion, and offer great promise in developing the riches of the ocean. One such machine is currently undergoing its final operating test.

### Robots for Nuclear Environments

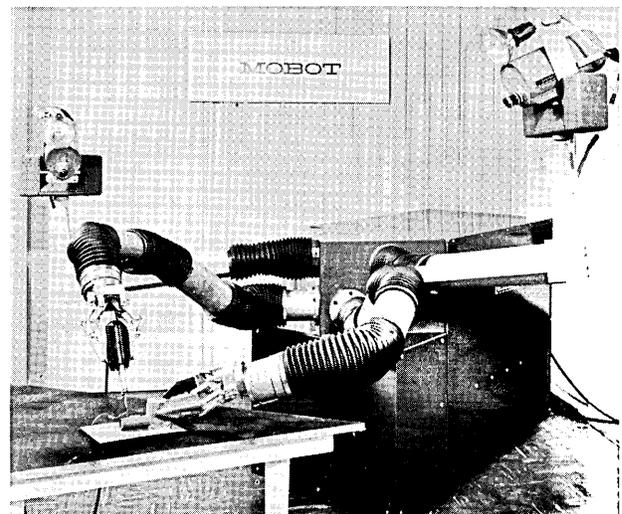
All the applications noted above are of course in addition to the original uses of electronically-commanded Mobot systems in connection with nuclear technology.

It is interesting to note that the basic research and investigations in nuclear remote handling prove to have application in the several diverse technologies noted above, and will no doubt find still further application in the future.



an operator employing a manual control desk similar to those used in remote operation. All of the control signals are recorded on tape. When this tape is played back, the motion sequences are reproduced. Means are provided to ensure that under changing conditions the geometrical paths are reproduced with the desired accuracy.

This system offers considerable flexibility in that programs are very readily changed and may be pre-selected under control of external sensing devices, permitting the machine to react to a variety of external conditions. Speed, versatility, and complexity of these machines are potentially almost without limit.



# TEACHING MACHINES AND PROGRAMMED LEARNING — ROSTER OF ORGANIZATIONS

One of the newly recognized areas in the field of machines for automatic handling of information is the area of machines and devices especially adapted to the teaching or learning of human beings. Many of these machines specialize in sequences of small items or questions, each of which is responded to or answered by the student, and corrected by the machine, before the student proceeds to the next item or question.

The shortage of teachers in the United States, the fact that many subjects are well suited to learning in small increments, and the important recent discovery that many subjects can apparently be learned better and faster by very careful programming of the information to be learned — all have caused a number of organizations to enter the field of supplying teaching machines and/or programmed learning. Naturally, no teaching machine is useful unless it contains a program.

Following is the first, preliminary, edition of a roster of organizations in this area. Additions, corrections, and comments are invited.

## Abbreviations

M — teaching machines, auto-instructional devices  
P — programmed learning, programs  
B — books expressing teaching machine philosophy  
R — research and development in the area

## Roster

- American Institute for Research, 410 Amberson Ave., Pittsburgh, Pa.  
American Management Association, 1515 Broadway, New York 36, N. Y.  
American Systems, Inc., 1625 East 126th St., Hawthorne, Calif. / M  
Atronic Learning Systems, Div. of General Atronics Corp., One Bala Ave., Bala-Cynwyd, Pa. / M  
Auto-Instructional Devices, Inc., 12 Manheim Rd., Essex Falls, N. J. / M  
Basic Systems, Inc., street?, New York, N. Y.  
Bell Telephone Laboratories, Inc., Murray Hill, N. J.  
Bolt Beranek & Newman, Inc., 50 Moulton St., Cambridge, Mass. / R  
Cenco Instruments Corp., 1700 Irving Park Rd., Chicago 13, Ill.  
Columbia University, Electronics Research Laboratories, 632 W. 125th St., New York 27, N. Y. / R  
Davis Scientific Instruments, 12137 Cantura St., Studio City, Calif.  
The Devereaux Foundation, Devon, Pa.  
Dictaphone Corp., 730 Third Ave., New York 17, N. Y. / M  
Doubleday & Co., Garden City, N. Y. / B  
Dyna Slide Co., 600 So. Michigan Ave., Chicago 5, Ill.  
Earlham College Student Self-Instruction Project, Earlham College, Richmond, Ind. / R  
Eastman Kodak Co., 343 State St., Rochester 4, N. Y. / M  
Eastman Kodak Co. — see also Recordak  
Edwards Co., Inc., 90 Connecticut Ave., Norwalk, Conn.  
Electric Boat Co., Div. General Dynamics Corp., Groton, Conn.  
Electronic Teaching Lab., 5034 Wisconsin Ave., N. W., Washington 16, D. C.  
Encyclopaedia Britannica Films, Inc., 1150 Wilmette Ave., Wilmette, Ill.  
Foringer & Co., Inc., Rockville, Md. / M  
General Atronics Corp. — see Atronic Learning Systems, Div. of General Atronics Corp.  
General Dynamics Corp., 445 Park Ave., New York 22, N. Y.  
General Electric Co., Education Techn. & Prod. Proj., Technical Prod. Operation, Electronics Park, Syracuse, N. Y.  
Grolier, Inc., 575 Lexington Ave., New York, N. Y.— see Teaching Materials Corp., Div. of Grolier, Inc.  
Hamilton Research Associates, Hamilton College, Clinton, N. Y.  
Harcourt Brace & Co., Inc., 750 Third Ave., New York, N. Y. / B  
Honeywell-Ordnance Div., Duarte, Calif.  
Hughes Aircraft, Industrial Systems Div., International Airport Station, P. O. Box 90904, Los Angeles 45, Calif.  
The Industrial Education Corp., 33 North LaSalle St., Chicago 2, Ill.  
Instrument Research Co., Garden Grove, Calif.

Institute of International Research and Development,  
Lubbock, Texas

Intellectronics, Div. of Thompson Ramo-Wooldridge,  
8433 Fallbrook Ave., Canoga Park, Calif.

International Business Machines Corp., 590 Madison  
Ave., New York 22, N. Y.

International Tel. & Tel. Corp., 67 Broad St., New  
York 4, N. Y.

Litton Systems Inc., 5500 Canoga Ave., Woodland  
Hills, Calif.

Magnetic Recording Industries, 126 5th Ave., New  
York, N. Y. / M

Management Research Assoc., 317 Sauk Trail, Park  
Forrest, Ill.

McGraw-Edison Co., St. Charles St. Rd., Elgin, Ill.

McGraw Hill Book Co., 330 West 42 St., New York  
36, N. Y. / B

Milton Bradley Co., 43 Cross St., Springfield, Mass.

Motorola, Inc., 4545 Augusta Blvd., Chicago 51, Ill.

National Education Association, Department of Audio-  
Visual Instruction, Washington, D. C. / R

Paul W. Nesbit, 711 Columbia Rd., Colorado Springs,  
Colo. / B

North American Aviation, Inc., Autonetics Div., 9150  
East Imperial Hwy., Downey, Calif.

George Peabody College, The Graduate School, Mur-  
freesboro, Tenn.

Positronics Inc., street?, Chicago, Ill.

Purdue University, Midwest Program on Airborne  
Television Instruction, Lafayette, Ind.

Radio Corp. of America, Morristown, N. J.

The Rand Corp., 1700 Main St., Santa Monica, Calif.

Recordak Corp., Division of Eastman Kodak, Wana-  
maker Pl., New York 3, N. Y. / M

Rheem Califone Corp., Div. of Rheem Mfg., 1020 N.  
LaBrea Ave., Los Angeles 28, Calif. / M

San Francisco State College, Div. of Education, San  
Francisco, Calif.

Science Materials Center, 59 4th Ave., New York 3,  
N. Y. / M

Science Research Assoc., 57 W. Grand Ave., Chicago,  
Ill.

Smith-Harrison, Inc., Devon, Pa.

Solartron Electronic Business Machines, Farnborough,  
Hants, England / M, P

Systems Development Corp., 2400 Colorado Ave.,  
Santa Monica, Calif. / R

Teaching Machines, Inc., 235 San Pedro, Albuquerque,  
N. M. / M, P

Teaching Materials Corp., Div. of Grolier, Inc., 575  
Lexington Ave., New York, N. Y. / M, P

Thompson Ramo-Wooldridge — see Intellectronics

United States Navy, Special Devices Center, Port  
Washington, N. Y.

University of Virginia, Div. of Educational Research,  
Norfolk, Va.

Van Valkenburgh, Nooger & Neville, Inc., 15 Maiden  
Lane, New York 38, N. Y.

Western Design, Div. U. S. Industries, Inc., Santa  
Barbara Airport, Goleta, Calif.

Williams Research Corp., 2280 West Maple Rd.,  
Walled Lake, Mich.

Wright Air Development Center, Attention: WCLDPTR,  
Wright-Patterson Air Force Base, Ohio

## COMPUTER USERS GROUPS — ROSTER

(Continued from page 139)

5 Calif. / RECOMP / Autonetics, a Div. of North  
American Aviation, Inc., 3400 East 70 St., Long  
Beach 5, Calif.

Remington Rand Univac — see Univac Users Associa-  
tion and USE

Royal McBee Corp. — see POOL

RPC-4000 — see POOL (Royal McBee)

RUG — see Recomp Users Group

SHARE / Mr. Henry A. McCabe, Sec'y, SHARE, c/o  
Union Carbide Corp., Electronic Data Processing  
Dept., 270 Park Ave., 37th Floor, New York 17,  
N. Y. / IBM Computers / International Business  
Machines Corp., Data Processing Div., 112 East  
Post Rd., White Plains, N. Y.

TUG / Mr. John C. W. Cadoo, Jr., Exec. Sec'y, TUG,  
c/o Philco Corp., Computer Div., 3900 Welsh Rd.,  
Willow Grove, Pa. / Philco 2000 Computer / Philco  
Corp., G & I Group, Computer Div., 3900 Welsh  
Rd., Willow Grove, Pa.

Univac — see Univac Users Association and USE

Univac Users Association / Mr. Walter Edmiston,  
Sec'y, Univac Users Association, c/o Philadelphia  
Naval Shipyard, Philadelphia, Pa. / UNIVAC /  
Remington Rand Univac, 315 Park Ave. So., New  
York 10, N. Y.

USE / Mr. James W. Nickitas, Exec. Sec'y, USE,  
c/o Remington Rand Univac, 315 Park Ave. So.,  
New York 10, N. Y. / UNIVAC / Remington Rand  
Univac, 315 Park Ave. So., New York 10, N. Y.

III-E — see ALWAC Users Association

G-15 — see G-15 Users Exchange Association (Bendix)

G-20 — see G-20 Users Group (Bendix)

LGP-30 — see POOL (Royal McBee)

205 — see Datatron Users Organization (Burroughs)

220 — see Cooperating Users Exchange (Burroughs)

390 — see NCR 390 Users Organization (National Cash  
Register Co.)

501 — see RCA 501 Users Association

800 — see H-800 User's Association (Honeywell)

1000 — see D-1000 User's Group (Honeywell)

1604 — see CO-OP (Control Data Corp.)

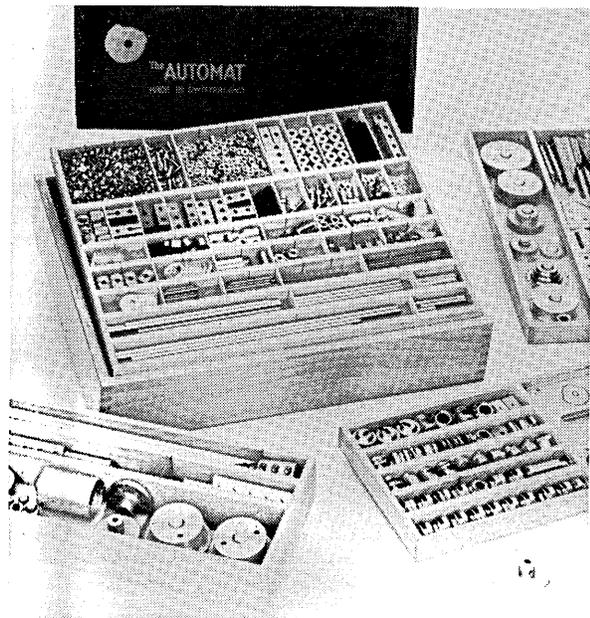
2000 — see TUG (Philco Corp.)

4000 — see POOL (Royal McBee)

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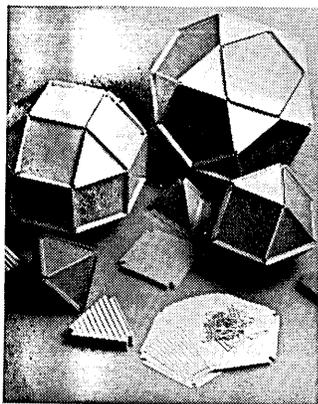
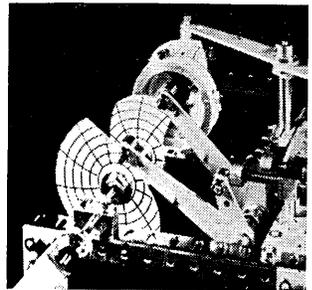
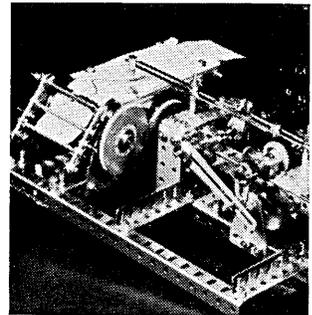
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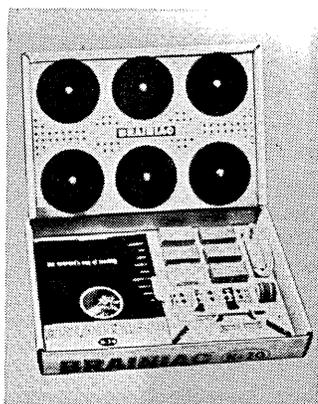
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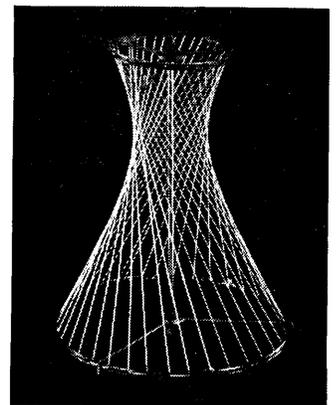
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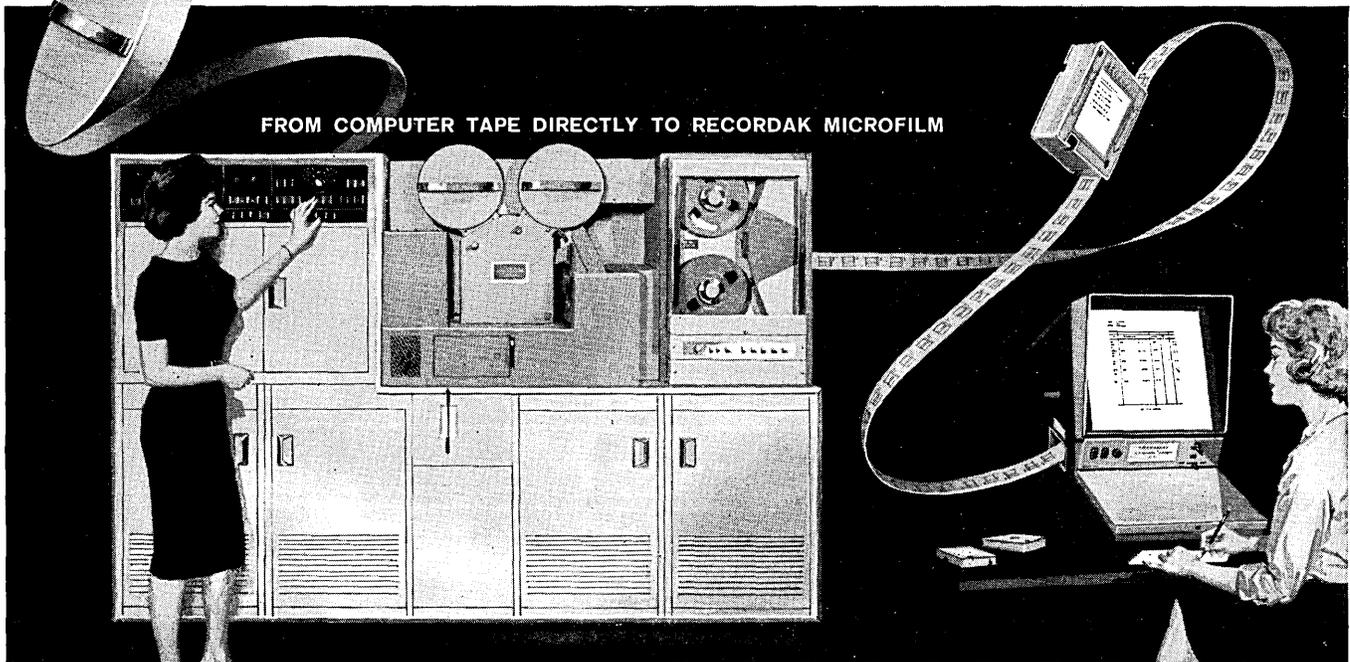
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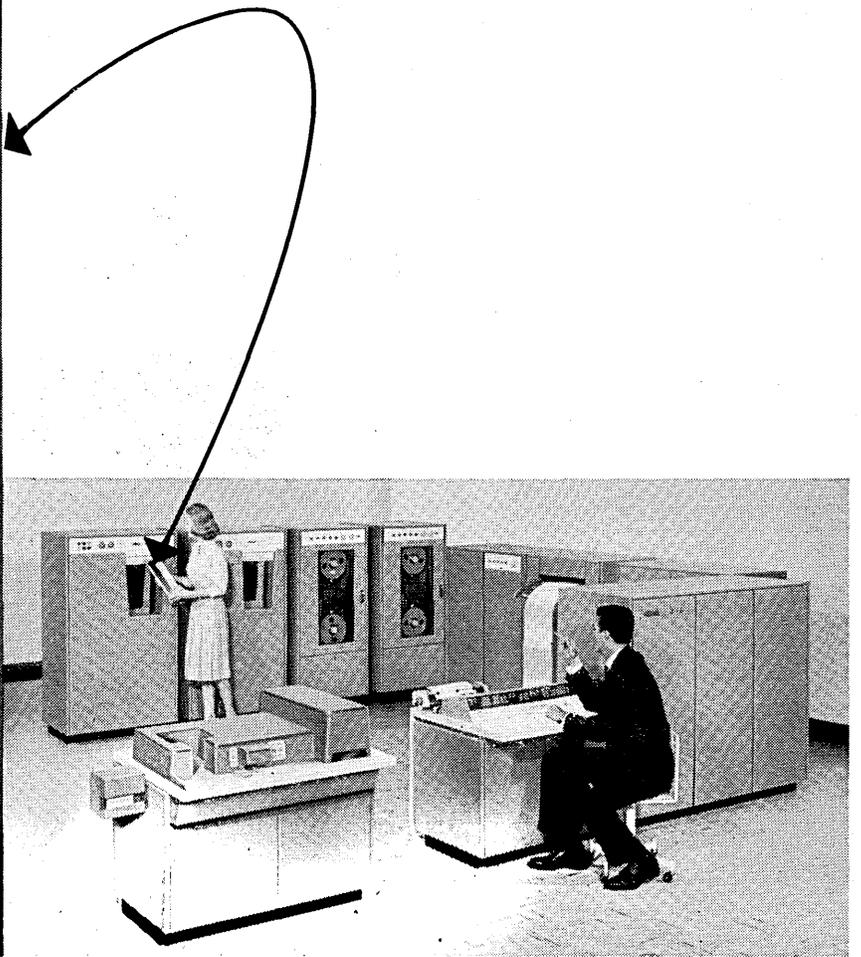
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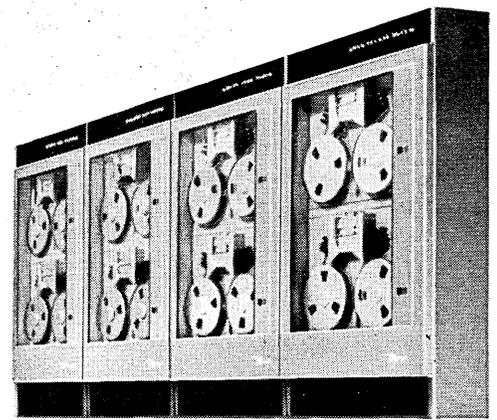
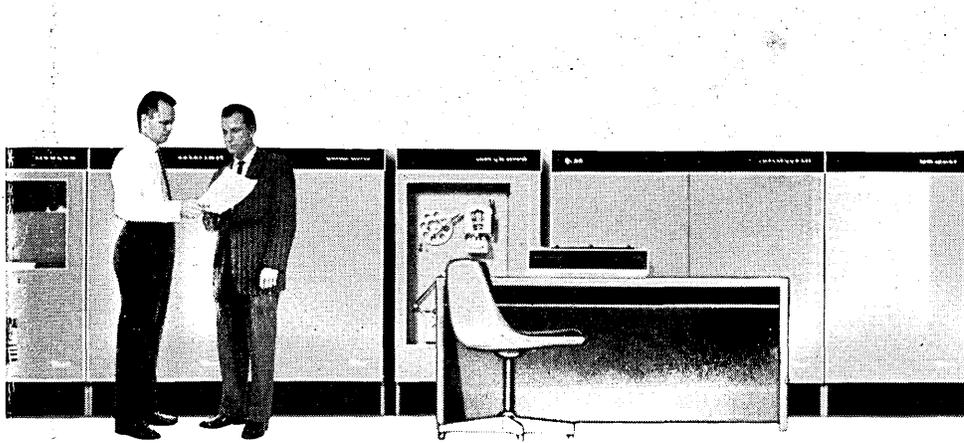
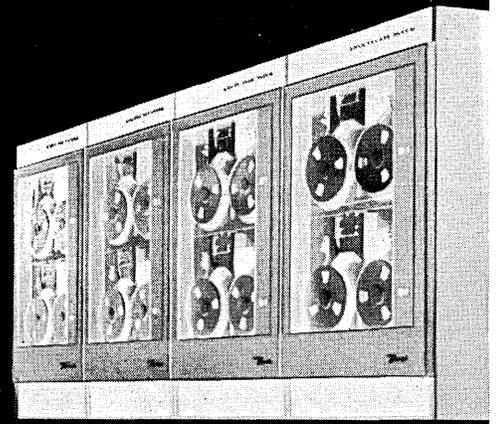
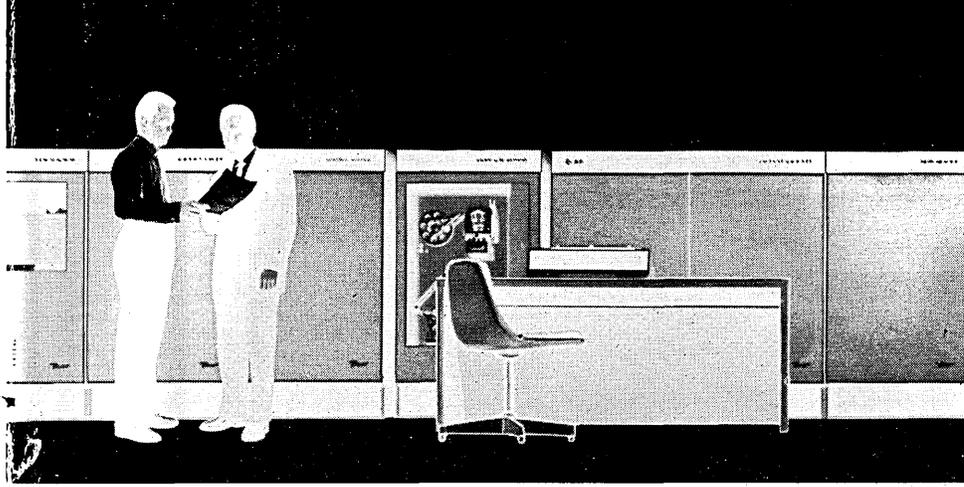
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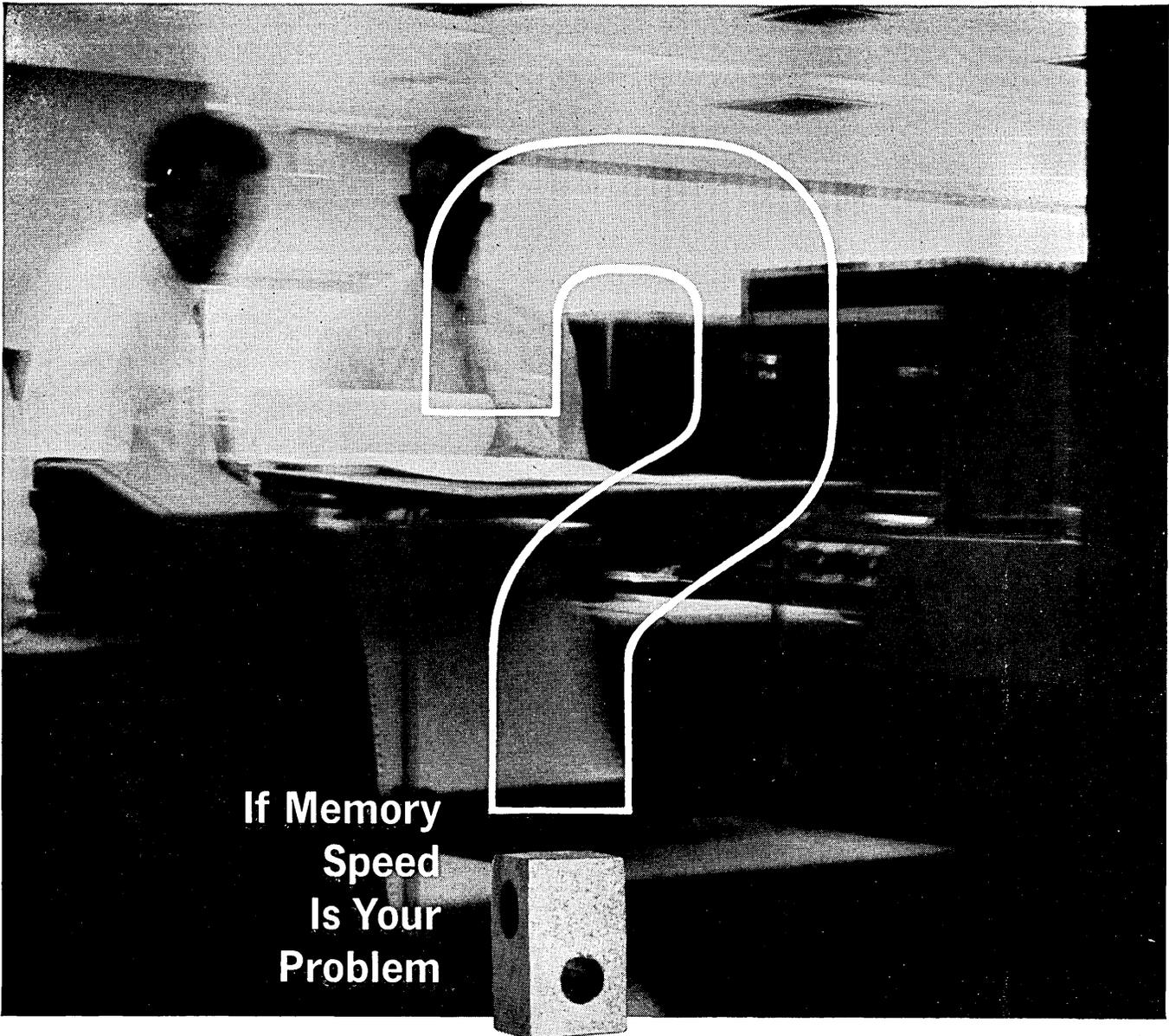
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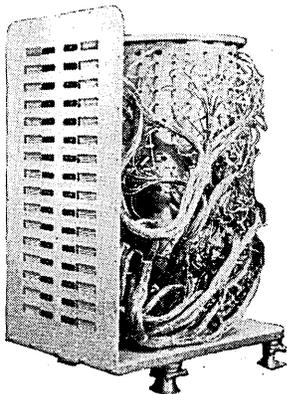
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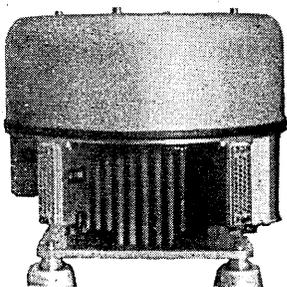
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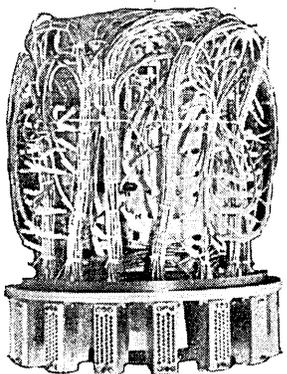
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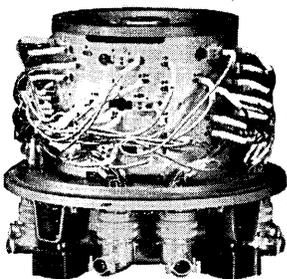
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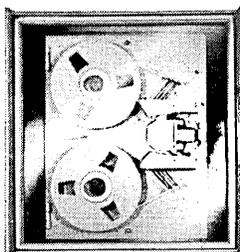
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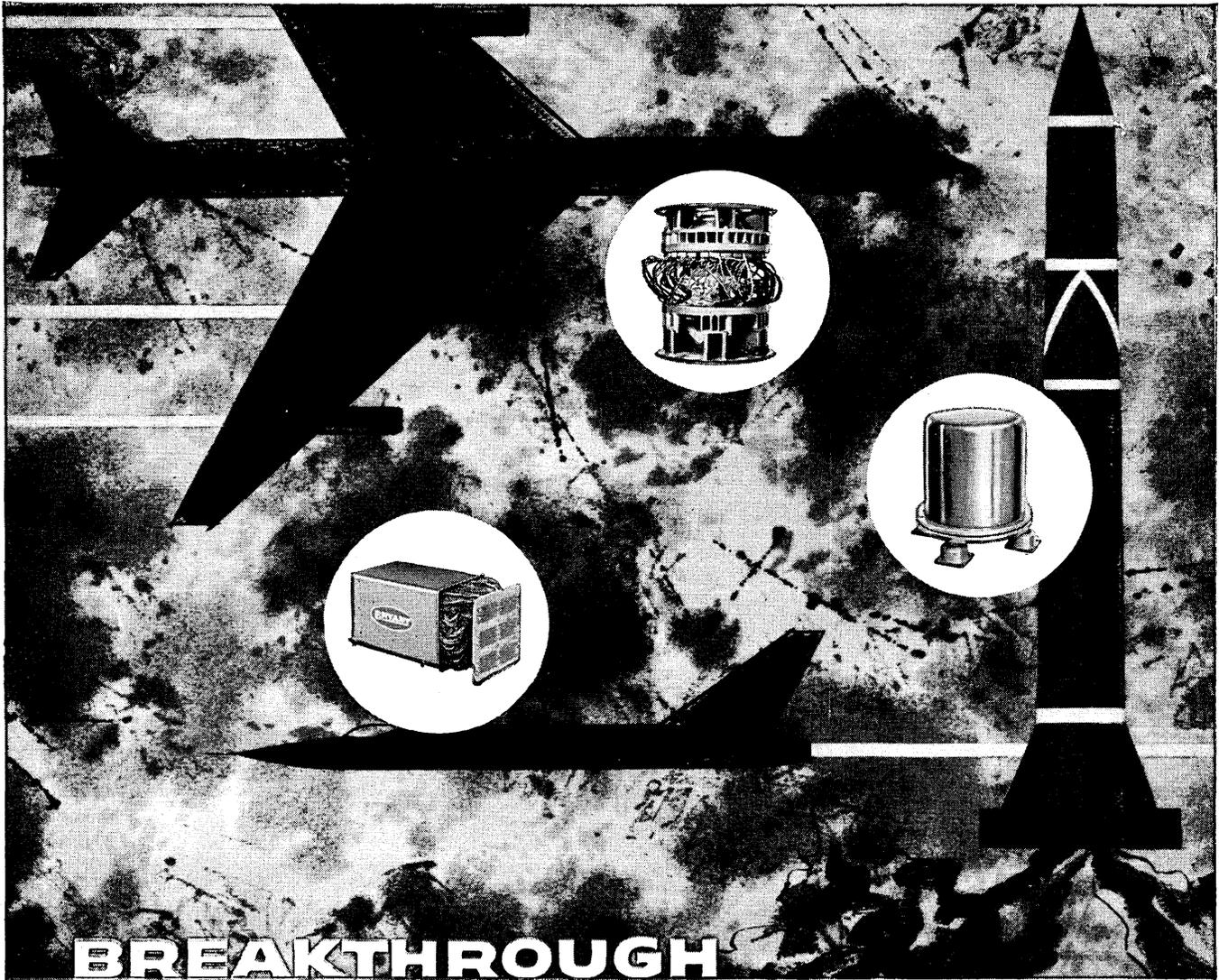
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