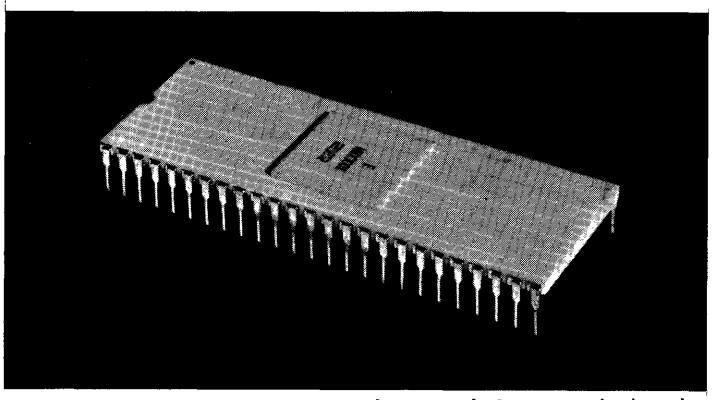
MICROCOMPUTER DIGEST

Volume 3, Number 5 November, 1976

8-BIT BIPOLAR MICROPROCESSOR

A high-speed 8-bit bipolar Schottky monolithic microprocessor, 8x30, with a fixed instruction set and optimized for control operations, is now available from Signetics.

The 8x30 Architecture contains an ALU, eight 8-bit working registers, instruction address register, program counter, instruction data register, on chip oscillator, TTL-compatible input and output, a three-state I/O data bus, and control and decode logic. Cycle time is 250 ns.

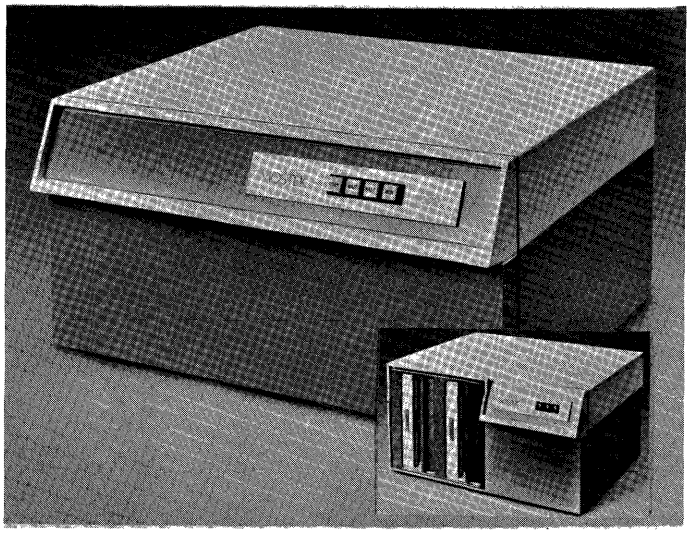


These features, combined with partitioning of the address/data bus into right and left banks, make it possible for 8-bit parallel data to be rotated or masked, to undergo arithmetic or logical operations, and then to be shifted and merged into any set of one to 8 contiguous bits at the destination—all in one 250 nanosecond cycle.

Peripheral circuits available include the 8T32/8T33 Synchronous I/O ports, 8T25/8T36 Asynchronous I/O parts and the 8T39 bus extender.

Price for the new microprocessor in quantities of 100 is $86.75. 811 E. Arques Ave., Sunnyvale, CA 94086 (714) 739-7700.

MOSTEK OFFERING Z-80 FAMILY



MOSTEK is now offering the Z80 Microcomputer family and the Z-80 development system.

The Z80 component family includes: Z80 CPU with 158 instructions—includes all 78 of the 8080A instructions with total software compatibility. New instructions include 4-, 8-, and 16-bit operations; Z80 PIO Controller with two independent 8-bit ports with handshake and four modes of operation under program control; Cont'd on Page 2

FAIRCHILD/MOTOROLA 6800 PACT

Fairchild Camera and Instrument Corp. has announced it will manufacture and market the Motorola 6800 microprocessor family under an arrangement between Fairchild and Motorola, Inc.

Fairchild President W. J. Corrigan said the arrangement "significantly broadens our microprocessor capabilities and allows us to address the market for higher complexity applications, Cont'd on Page 2

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Special Features

MOSTEK OFFERING Z-80 FAMILY

(Cont'd from Page 1)

Z80 DMA Controller: Z80 SIO Controller designed to handle peripherals with serial data interface requirements, both synchronous and asynchronous, capable of full duplex serial I/O channel operation, asynchronous with 5- to 8-bit data including IBM BiSync and SDL communication channel control; and the Z80 Counter Timer Circuit.

The Z80 development system provides two floppy discs with a sophisticated file maintenance network. The user can quickly retrieve, manipulate and store large files of data to minimize software development time. Included in the system is an advanced real-time debug module that connects directly to the user's system providing simultaneous hardware and software debug capability.

The resident software package operates stand-alone on the Z80 Development System and consists of an advanced assembler, disassembler, text editor, disc operating real-time debugging program. The editor, assembler, and file maintenance system are stored on a diskette. The System Executive is resident in ROM. The Executive includes a program loader. 1215 W. Crosby Road, Carrollton, TX 75006 (214) 242-0444.

FAIRCHILD/MOTOROLA 6800 PACT

(Cont'd from Page 1)

such as in the data processing area. Fairchild's F8 microprocessor has established the leading position in the 8-bit, low-cost, high-volume segment of the market. The 6800 will complement that position in applications that require machines structured for the memory-sensitive portion of the microprocessor spectrum."

Under terms of the arrangement, Motorola will provide photomask sets and other technical assistance to assure full product compatibility between 6800 devices supplied by each party. Fairchild expects to begin shipments of 6800 components in the first quarter of 1977.

Fairchild also will produce Motorola's 8,000-bit ultra-violet erasable ROM and has an option to produce the MC10800 ECL 4-bit slice microprocessor family.

In exchange, Motorola will serve as an alternative source for Fairchild's family of low-power Schottky TTL logic, and will have the right to manufacture two other Fairchild products now in development—the one-chip F8 microcomputer and the 65,000-bit charge-coupled memory.

COMMERCIAL TEMP RANGES FOR 6800

Motorola Integrated Circuit Dvision has announced the addition of a commercial/industrial temperature range to its standard line of M6800 micro products.

The new parts are specified for operation from -40° to 85°C.

Pricing for the MC6800CL is $49; MC6820CL $23; MC6850CL $24; MC6852CL $28; MC6860CL $26.20; MC6862CL $31; MC6810ACL $9.25; MCM-6810ACL-1 $9.95. Availability is off the shelf. 3501 Ed Bluestien Blvd., Austin, TX 78721 (512) 928-2600.

REPLACES GEARS IN CONTROLS/HOME

Competing with gears by automating industrial controls and home appliances, a new dedicated microprocessor, 7150, from ITT Semiconductor is a P-channel silicon gate CMOS device. The 24-pin or 18-pin device can control up to 10 machine functions and architecture consists of memory, I/O logic and some linear circuits for sensing. It includes its own clock and the company reports that no external memory is needed, eliminating the necessity for user software development.

Standard patterns are available off-the-shelf. Woburn, MA 01801 (800) 255-1153.

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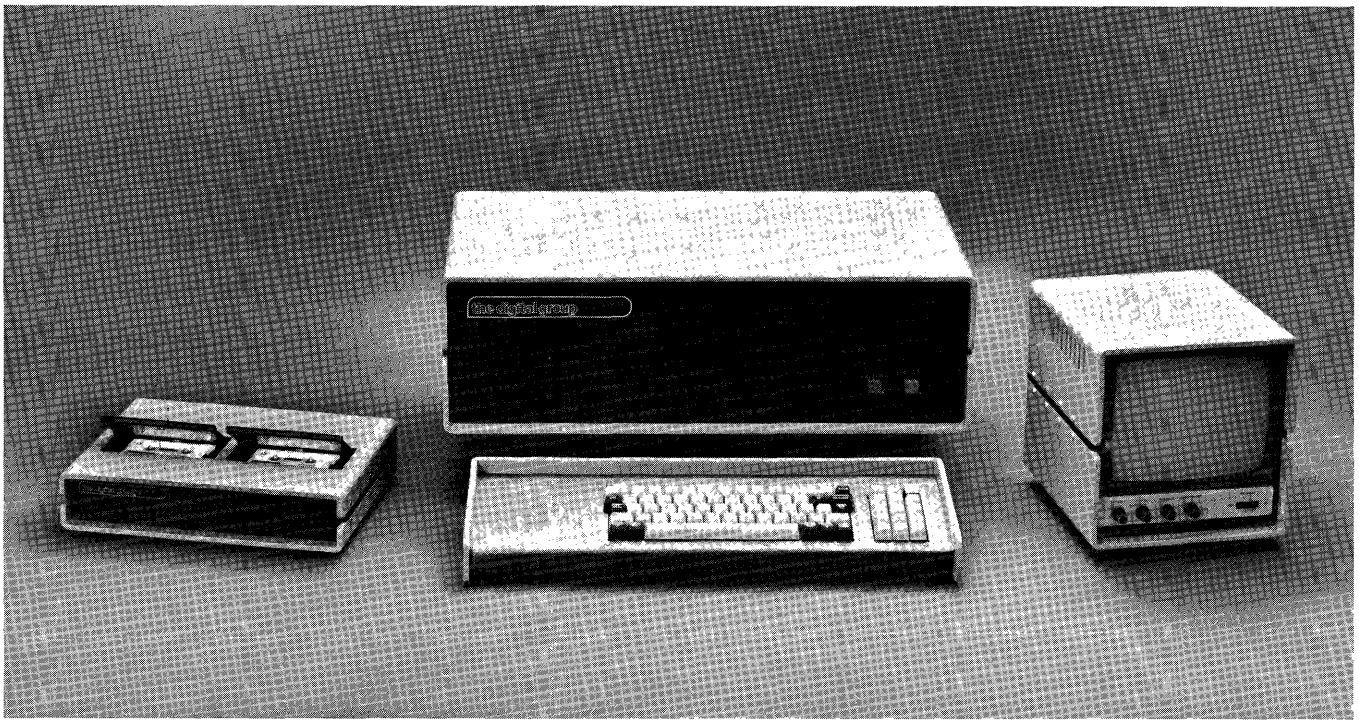
 M.R. Lemas, President. Published monthly. Subscription $28.00 per year, overseas $46.00 per year. DARRELL D. CROW, Editor; LILLIAN LAU, Associate Editor; LINDA KOCHANOWSKI, Circulation Editor; RAY HOLT, Applications Technical Advisor; MANNY LEMAS, Applications Technical Advisor.

Made for each other



by the Digital Group. . .who else?

There's a simple reason why a system from the Digital Group looks like it belongs together: It was designed that way. And the look is fantastic.

Each component in our video-based microprocessor system has its own cover-up, designed to compliment every other component. The cabinets are a rugged anodized aluminum (computer beige with chocolate brown) with a unique styling that's ours alone. And, each new product will maintain the same unmistakable Digital Group image.

Inside, things get even better. Digital Group systems are complete and fully featured — the pieces really belong together — so there's no need to purchase bits and pieces from different manufacturers. We have everything you need, but almost any other equipment can be easily supported, too, thanks to the universal nature of our systems.

And, we offer interchangeable CPU's from different manufacturers, including 8080, 6800, 6500 by MOS Tech and the exciting new Z-80 from Zilog. They're all interchangeable at the CPU card level, so you can rest assured your system will always belong together — and it won't become instantly obsoleted by new design breakthroughs.

The Digital Group also offers more options, peripherals, expansion capabilities and accessories. They include rapid computer-controlled cassette drives for mass storage, memory, I/O, monitors, prom boards, multiple power supplies, prototyping cards and others. Software packages include BASICs, Assemblers, games, ham radio applications, software training cassettes, system packages and more. All designed to keep Digital Group systems very together.

Our products are made for each other, and they may be made just for you. To find out more, call or write today!

the digital group INC

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Technology

MOTOROLA TO ENTER TWO MICROS

1977 should see the entrance of two new microprocessors should everything go according to schedule at Motorola.

An N-channel 8-bit microprocessor, the M6700, is a simpler version of the 6800 and is geared primarily for automotive control. The 16-bit MPU chip includes memory and I/O circuitry. The other MPU, the 16-bit N-channel 6900, is primarily intended for the computer industry.

Both chips are slated for introduction at first of 1977 with volume production at mid-year.

INTEL TO SAMPLE MPUS SOON

Intel Corp. has confirmed reports that the firm will sample two 8-bit N-channel microprocessors during 4Q76. The 8085 and 8748 will spearhead Intel's next generation of microprocessors. All total, Intel is expected to market five MPUs and over 20 support chips in 1977.

The 8085 is an upward extension of the 8080 and is said to have twice the speed of its predecessor. Not much is known about the chip except that it will include a clock generator, certain controllers and interrupts. The 8748, a downward extension of the 8080 will contain both RAM and a field programmable PROM. Its companion, the 8048, contains a mask-programmable ROM for the user's program once the design has been verified with the 8748.

Two micros unconfirmed by Intel are the 8086, an upward extension of the 8080 with four times the throughput, and the 8016, a 16-bit version of the 8080 to compete with IBM's low-end computers.

Supporting LSI products to be introduced include the 8271 Floppy Disc Controller Interface, the 8273 Synchronous Data Link Communicator, the 8275 CRT Controller, the 8279 Keyboard and Display Controller, 8155 RAM I/O, 8755 ROM I/O, 8253 Interval Timer, 8257 DMA, and 8259 Priority Interrupt.

MIL-SPEC DEVICES STOCKED

Intel Corporation has announced that some 30 Intel memory and microcomputer system components now used in military, aerospace and other high reliability applications will be made available through Intel's franchised distributors, said Hank Molloy, military program manager.

Microcomputer Based Products

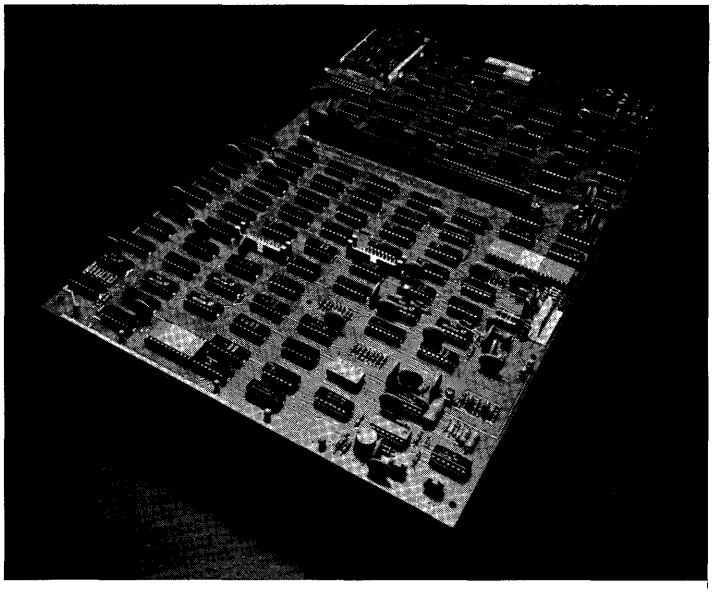
ROCKWELL MISAR IN 77' OLDS

Rockwell International has released details of the microcomputer it is supplying General Motors for the MISAR spark timing system which will be standard on 1977 Oldsmobile Toronados.

Two PMOS LSI circuits comprise the 10-bit microcomputer which contains the I/O ports, scratchpad registers, I/O registers, and A-D conversion circuitry.

A 10,240-bit ROM contains specially developed curves in three-dimensional format and preprogrammed instructions to control the microcomputer's functions. A unique look-up table and interpolation function is given the microcomputer to locate data inputs between stored points on the curves, reducing the ROM requirements. 3310 Miraloma Ave., Anaheim, CA 92803 (714)632-2321.

VIDEO/AUDIO/KEYBOARD CARD



A single board PC kit for use as either a computer or intelligent terminal has been announced by Processor Technology, known as the Sol Terminal Computer, the new unit with memory and interface electronics including video display, keyboard interface, audio cassette interface, all necessary software plus the ability to accept the Processor Technology line of memory and interface modules sells for $475 in kit form.

The Sol can be used as a microcomputer, low cost CRT terminal, and editing terminal. Built around the 8080 microprocessor, the Sol terminal consists of a PC assembly with the microprocessor, 512 eight-bit bytes of PROM on a plug-in personality module, 2K RAM, a 1024 character video display generator, keyboard

interface, serial and parallel interfaces for connection to external devices and an edge connector for memory expansion. Optional extras include a power supply, video monitor, ASCII keyboard and case. Other options are a floppy disc system, high speed papertape reader, PROM programmer and color graphics interface. Bonfield Associates, Inc. 855 Sansome Street, San Francisco, CA 94111 (415) 434-2244

8080 MONITORS DIESEL EXHAUST

Alnor instruments is using a popular 8-bit microcomputer in their MICRO-8800 to monitor diesal exhaust temperatures. MICRO-8800 scans up to 32 engine cylinders at a rate of one zone/s, comparing the temperature of each cylinder against the most recent average temperature of all cylinders.

PROGRAMMABLE, REMOTE TERMINAL

Unitech has introduced a programmable, remote batch terminal that includes a microcomputer-based 12K byte communications processor, card reader, synchronous communications adapter, and a choice of consoles and printer.

Basic configuration with a Teletype console and a 125-lpm printer, is priced at $18,350 and leases for $594.45 a month, on a 2-year contract. Austin, TX.

MICROPROCESSOR COMMUNICATOR

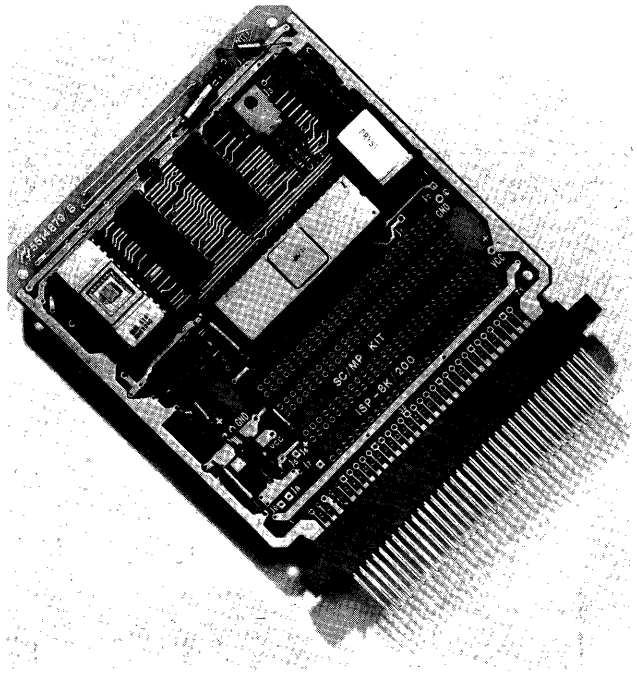
Bell & Howell reports their binary synchronous communicator includes an IMR-80 microprocessor, a 300-card-per-minute transport, modern control interface, power supply, control pane and TTY compatible interface for printer or CRT, leases "for as little as $322 a month." Pasadena, CA.

4-BIT UNIT MEASURES DISTANCE

Bendix Avionics has introduced a new distance measuring equipment (DME) unit based on a 4040 CPU. DME-2030, is used to measure distance, ground speed, and time-to station for aircraft ranging in size from medium single-engine planes through turbo-props and small jets. Price was given as $3,995.

SC/MP KITS AVAILABLE ASSEMBLED

Pre-assembled and fully tested "SC/MP KIT" microcomputer boards are now available from National Semiconductor. The kit boards or



SC-8 boards include all the firmware and components needed for a user to make full evaluation of the SC/MP system.

Priced at $125 in single quantities, the SC-8 board measures 4"x5" and incorporates a standard 72-pin edge connector. Each board, which is fully tested and ready for operation contains the SC/MP microprocessor, a 4,096 ROM, two 1K RAM, -7V supply, one 8-bit data buffer, on-board clock, and teletypewriter interface.

The KITBUG firmware allows programs to be entered directly into the read/write memory from a TTY. Programs can then be executed while examining the contents of the memory and the SC/MP registers to monitor program performance.

MEASURES THICKNESSES

Unit Process Assemblies' Compuderm-B uses a microcomputer specifically designed for measuring the thicknesses of platings or coatings, allowing measurements to be accomplished more quickly, accurately, reliably.

REMOTE INTELLIGENT TERMINAL

The Computer Division of the Warner & Swasey Company has announced deliveries of its new RT-4 Remote Intelligent Terminal.

System modules include a CPU; a memory with 1K x 8 PROM and 320 x 4 RAM; 8 channel AC Input and AC Output Modules; RTD Module; Thermocouple Input Module; A to D and D to A Converter Modules and a Serial Communications Module. A basic system is $1495. 7413 Washington Ave. Edina, MN 55435 (612) 941-4454

CDP 1800 TRAINING UNIT

A complete package consisting of an assembled and tested $495 1802 microcomputer and training aids is being offered by Infinite, Inc. UC1800 is completely self-contained and can be used as a training device in the construction and use of computers, as well as a device for evaluating microprocessor applications in new products.

An OEM version also is available. Dept. CPNR, 151 Center St., Cape Canaveral, FL 32920.

NEW 4040 KIT

Intel is now offering its 4040 in a new low cost microcomputer system kit for development and low volume manufacturing applications.

Designated the MCS-40 System Kit B, the new kit contains the 4040, 4201A system clock generator, 4265 programmable I/O, 4269 programmable keyboard/display unit, 4289 standard memory interface, 2111A 1K static RAM and 4207A erasable PROM.

The $60 kit also includes system and components data and a 304 page user's manual. 3065 Bowers Ave., Santa Clara, CA 95051.

INTELLIGENT TURNTABLE

The first intelligent electronic turntable, the Accutrac 4000, can select any or all of the dozen or more tracks on long-playing records, under microcomputer control.

The microprocessor specially designed for the turntable is a two-chip system that was developed by General Instrument Microelectronics Ltd., in Scotland. It can store and execute up to 25 individual commands. One chip contains the microprocessor and its memory, and the second chip contains the program instructions.

$189 GNAT COMPUTER

GNAT computers is offering the MC80 which contains 8080, 256 words of static RAM and up to 2K words of PROM on single 5x7 in. PC board. Also included are buffered address data lines, two 8-bit parallel I/O ports and a crystal clock. Cycle time is 488 nsec.

Support products for the $189 board include a F.S. development system, front panel, maintenance and diagnostic software, single voltage power-supply board, communications board and GP wire-wrap socket board. 8869C, Balboa Ave., San Diego CA 92123 (712) 560-0433.

BIPOLAR SLICE USED IN COMPUTER

Randal Data Systems will begin immediate manufacturing of the microcomputer and memory use in their LINK 100 and LINK 200 business computer systems.

The RDS 605 is a 16-bit general purpose microprogrammed microcomputer consisting of four bipolar LSI 4-bit microprocessors, the associated bipolar LSI PROMs and standard TTL support circuitry. N-channel LSI memory modules with 800 ns cycle times are produced in 32 to 64K byte increments. 365 Maple Ave., Torrance, CA 90503 (213) 328-8550.

6800 REAL TIME COMPUTER

The MTOS-68 real time system has been developed for systems based on the 6800 microcomputer, a 256-byte scratchpad RAM and an adjustable interrupt clock offered by Industrial Programming, Inc. The $2,000 MTOS-68 provides four kinds of service: management of tasks; coordination of shared subprograms; management of time; and input and output for console messages. 9 Northern Blvd., Greenvale, NY 11548 (516) 621-8170.

FCC APPROVED GAMES

Fairchild Camera and Instrument Corporation has announced that its programmable electronic video game, for use with home television receivers, has been approved by the Federal Communications Commission.

The Fairchild Video Entertainment System, Model FVE100, was issued FCC designation TV 262. Based on the company's F8 microprocessor it utilizes semiconductor memory cartridges to reporduce game and other formats—in full color and sound—on the TV screen. 4001 Miranda Ave., Palo Alto, CA 94303 (415) 926-3617.

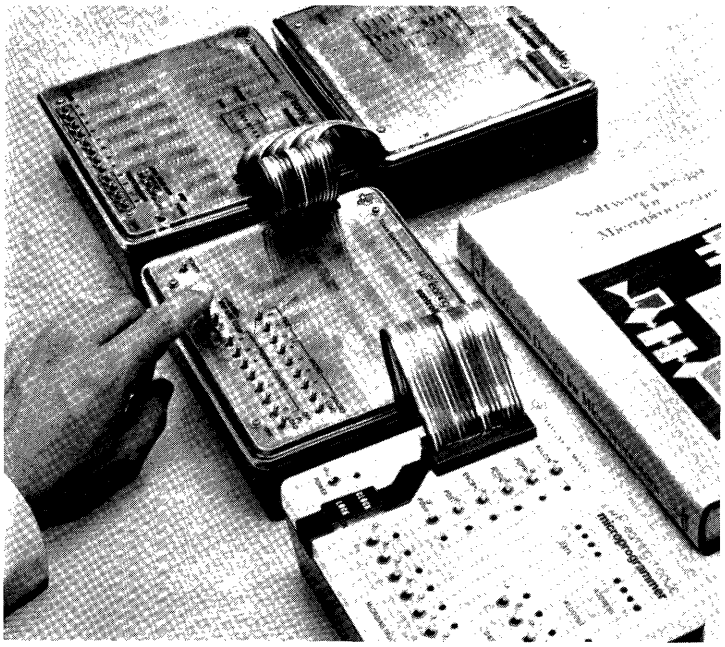
EXPANDED MICROCOMPUTER

Electronic Products Associates is marketing the Expanded-68, a $1,050 microcomputer. It includes 8K of memory, a power supply, a 16-digit keyboard, a TTY adapter, a hexadecimal LED display, and expansion cabinet, and application and programming manuals.

The firm also supplies dual floppy disc-drive, 40-column inpact printer, 132-column printer, cassette tape interface, tv interface, general-purpose board, and full ASCII keyboard, all configured for direct interfacing. 1157 Vega St., San Diego, CA 92110 (714) 276-8911.

MICROCOMPUTER LEARNING MODULES

Three pre-assembled add-on modules (Controller, Memory and I/O) to the Texas Instruments Microprogrammer Learning System are now available to provide further training for microcomputer software and hardware development.



Each module has its own instruction manual, battery, charger and interconnecting cables and connectors. The system is provided with enough hardware and interface circuitry for the learner to design actual 4-bit applications.

For those not familiar with fundamental hardware/software relationships, TI's learning center has published a 390-page book, Software Design for Microprocessors. The book is an ideal companion to the learning system and is designed to give the reader fundamental machine and assembly language concepts.

The Microprogrammer is priced at $149.95 with the Controller at $189.95 and I/O module priced at $109.95. The lab manual sells for $4.50 and the software design book is $12.95. PO Box 5012, Dallas, TX 75222 (214) 238-2481.

EXPLOSIVE MICRO

Sandia Laboratories' newest thermonuclear weapon, the B77 megaton-range bomb, will be controlled by an RCA 8-bit 1802 microcomputer. The microcomputer will make several dozen decisions that formerly required relays, switches, and discrete hardware. With the new design "the weapon can respond to digital transmissions from aircraft, as well as the traditional 28-volt signals."

μC-BASED ANALOG INSTRUMENT

The microcomputer-based analog data acquisition analysis and control system (ADAACS) has been designed by Lion Precision for analog instrumentation systems. Its major functions are to provide control of the instrumentation and digital encoding of analog data signals, and to process data and provide output in analog and digital form to peripheral devices such as a visual alphanumeric display, meters, and a data-logging printer. Newton, MA 02195 (617) 969-4710.

NUDGING MINI TERRITORY

A dual I/O bus system in the single-board 5/16 processor bridges the gap between microcomputers and minicomputers, allowing interfacing with both minicomputer peripherals and the low cost I/O devices being supplied for microcomputers.

Interdata's card incorporates a full 16-bit processor with 16 general purpose registers, 114 instructions, line frequency clock input, and built-in self test. It has 8K bytes of n-MOS dynamic R/W memory (expandable up to 64K bytes) with a 600 ns memory cycle time, and directly addresses up to 64K bytes. Up to 48K bytes of ROM replacement for main memory is available as an option.

LRC METER USES MICRO

Electro Scientific Industries has incorporated a microcomputer into their Model 296 LRC meter, measure, R,L,C,G, and calculate D and Q. Programmable limits option allows up to 10 comparison values to be set for multiband sorting. 13900 NW Science Park Dr., Portland, OR 97229 (503) 646-4141.

INTELLIGENCE ADDED

Hewlett Packard is using two microcomputers, one for measurement control, and the other for computation and remote programming, in their new fully-guarded 3455A Digital Voltmeter. Designed for bench or systems use, the $3200 DUM measures dc from 1 microV to 1,000 volts, true rms from 10 microV to 1,000 volts, or with an optional average ac converter, from 10 microvolts to 1,000 volts average. Resistance measurements cover from 1 milliohms to 15 megohms in six ranges, either two or four wire. A high-resolution mode uses 6-½ digits, for faster reading, 5-½. 1501 Page Mill Rd., Palo Alto, CA 94303 (415) 493-1501.

Microcomputer Software

ARITHMETIC SOFTWARE PACKAGE

An arithmetic software package designed for use with Intel 4040 microcomputer performs algebraic addition, subtraction, multiplication and division of decimal numbers up to 16 digits. Simple subroutine addressing instruction enables each arithmetic function. Available from Leuven Research & Development requires a minimum system configuration of 512 x 8. Groot Bergijnhof, Bernedesstraat 59, B-3000 Leuven, Belgium.

SOFTWARE DEVELOPMENT TOOLS

A low-cost package of software development tools for microcomputers has been introduced by Extensys Corp. Extensys Corp's new software package, includes an editor, assembler, and monitor preprogrammed on four 2708 PROMs that plug directly into the Intel board. Complete documentation is provided.

The editor prepares assembler input tapes while the one-pass assembler assembles code directly into the SBC 80/10 memory. The monitor contains functions for software debugging, including tape dumping and loading, storage and register modifications, and selective program execution. The package price of $995 includes the four PROMs, complete documentation, periodic software updates and a warranty. RDP2 is available for immediate delivery. 592 Weddell Dr., Suite 3, Sunnyvale, CA 94086 (408) 734-1525.

6500 FORTRAN CROSS-COMPILER

Zeno Systems, Inc. is making available a FORTRAN cross-compiler for the Synertek/MOS Technology 6500 microcomputer. The Fortran compiler accepts an enhanced version of the FORTRAN IV language and produces as output a well annotated assembly language program which is then processed by the Zeno 6500 cross-assembler to produce an object file in either the KIM board, 6500 simulator, Synertek ROM, or etc.

Microcomputer programmers will find the language rich in data types with the inclusion of INTEGER*1, INTEGER*2, INTEGER*4, REAL*4, REAL*8, LOGICAL, and varying length character strings. Specification statements include COMMON, DATA, DIMENSION, EQUIVALENCE, FUNCTION, and SUBROUTINE. Mixed mode assignments and expressions are not allowed, but the built in functions IFIX and FLOAT provide type conversions.

The compiler is available from Zeno for a one time licensing fee of $4000. 2210 Third St., Santa Monica, CA 90405 (213) 396-6020.

INTEL EXPANDING LIBRARY

Hundreds of microcomputer programs will be made available on paper tape and in listing form through a new, expanded user's library by the Microcomputer Systems Division of Intel.

Named Insite, the new library will be operated as an industry service by the division. It is an outgrowth of the Intel Microcomputer User's Library.

Membership to the library is $100 and a prepaid handling fee of $15 will be charged for each source tape. As a bonus, new members will receive five free source tapes of their choice when they return their registration card.

Memories/Peripherals/Support

FLOATING POINT HARDWARE

A high speed floating point arithmetic unit available from North Star Computers, Inc. consists of a single card. It performs add, subtract, multiply and divide on BCD format floating point values with 14 digit precision.

The $449 Model A board is designed for use with the 8080 microcomputer with 30 days delivery. Extended BASIC software utilizing the floating point hardware is also available. PO Box 4672, Berkeley CA 94704 (415) 527-6760.

DISKETTE DRIVE

Imsai has introduced a diskette drive for its Imsai 8080 small computer. The unit has an interface/controller that uses the 8080A and is complete with cabinet and power supply, is priced at $1649 assembled and $1449 unassembled. An additional disc-drive to fit in the same cabinet is $925.

DUMB TERMINAL KIT

Lear Siegler, has entered the computer hobbyist market with the ADM-3 "Dumb Terminal" kit.

Priced at $875 the kit is a full 24-line, 12-inch screen capable of displaying 1,920 characters at 80 per line. The standard set is 64 ASCII characters generated in a 5 x 7 dot matrix displayed as upper case, plus punctuation and control.

The kit comes with two basic assemblies; the CRT section which is premounted in the cabinet and the display electronics section, with keyboard control and power supply also pre-mounted. The PC board is provided with sockets ready for all integrated circuits.

The ADM-3 can directly replace a TTY offering software compatibility through both a switch selectable 20 mA current loop interface and the EIA standard RS232C interface.

PRIORITY INTERRUPT CONTROLLER

A Priority Interrupt Controller (PIC) has been added by Motorola for optimizing M6800 systems. The PIC eliminates software interrupt polling routines in systems with eight or multiples of eight I/O devices. The circuit can change the interrupt vector, reserved in memory, into one of eight alternate vectors assigned to the I/O service routine. Price is $7.50 in 100 to 999 lots for a plastic 24-pin device.

256 X 4 CMOS RAM FAMILY

American Microsystems, Inc. has introduced a new family of 256 x 4 high-speed CMOS RAMs offering ultra low power requirements, fully static operation, and complete compatability with TTL logic.

Standby power requirements for the S5101 family is only 50 nW/bit. Powered by +5V access time is 450 ns with other versions available at 650 ns. Output is three state.

Price in 100 quantities is $15.25 for the 22-pin device. (408) 246-0330.

LINE PRINTER

Developed for use with microcomputer development systems, the new Houston Instrument line printer operates at speeds to 2,400 lpm for an 80 column operation and 1400 lpm for a 132 column version. The interface signals for the $3,000 unit have been arranged for easy interfacing with popular microcomputers. One Houston Square, Austin, TX 78753.

ALPHANUMERIC DATA PRINTERS

The DMTP-6 series of alphanumeric data printers for microcomputer-based systems is based on Practical Automation Inc.'s proprietary minature needle printer. Features include ASCII characters, 120 cps rate, throughput 50 c/s continuous, based on a carriage movement of 10' per sec.

The normal input language is serial. These printers are best adapted to bit parallel character serial RS232 or 20 mA current loop input transmission, as would be typical for telephone, data and microcomputer coupling. Priced at $200, delivery is 6 weeks.

DISKETTE MEMORY SYSTEM

Data Systems has introduced the DSD 210 Diskette Memory System specifically designed for use with the DEC PDP-8, PDP-11 and LSI-11.

An 8-bit bipolar microcomputer controls all data transfers, monitors read/write head positionings, and performs data error checks. A self-testing microcode verifies that the system is error free. Each interface card plugs directly into one computer bus I/O slot.

The $2,795 system comes with single, double, or triple Shugart drives with deliveries 2 to 4 weeks. 1122 University Ave., Berkely, CA 94072 (415) 849-1102.

CARTRIDGE TAPE DRIVE

A cartridge tape drive for microcomputer applications offers 11.6M-Byte storage capacity. The Lodestar drive features an industry standard interface, and an available formatter provides plug and software compatibility with existing controllers designed for reel-to-reel transports. Write and read occur at 30 in./s and search is at 90 in./s. Data transfer rate at 6400 bits/in. is 192 kHz. Reverse read capability is standard. 17481 Red Hill Ave., Irvine, CA 92714.

FLOPPY DISC STORAGE SYSTEM

The North Star MICRO-DISC SYSTEM is a complete, high performance floppy disc storage system for use with 8080 or Z80 microcomputer systems. The single quantity price of $699 includes all hardware and software needed to turn on the computer and start loading or saving programs and accessing online data files.

The North Star controller is a single 5" x10" PC card compatible with the S-100 (Altair/IMSAI) buss. It can control up to 3 drives, with or without interrupts. An onboard PROM contains power-on bootstrap software.

A file-oriented disc operating system and a disc version of North Star extended BASIC are included. North Star BASIC has multiple-dimensioned arrays, strings, multiple-lined functions, formatted output, machine language interfacing sequential and random disc file accessing, and much more.

The MICRO-DISC SYSTEM includes: The North Star controller, the Shugart mini-floppy drive (model SA-400), disc-to-controller cabling and connectors, two diskettes (one pre-loaded with DOS and BASIC), and complete hardware and software documentation. Additional drives are $425 each, including cables. Diskettes are $4.50 each. PO Box 4672, Berkeley, CA 94704 (415) 527-6760.

PROGRAM CONTROLLER

A new twist in microcomputer support instruments is being offered by Adaptive Systems. The model 1000 microcomputer program controller eliminates the need for a TTY terminal in assemblying programs. The instrument has its own keyboard that is coded with 8080 assembly words and visual annunciators that provide double verification for minimizing programming errors.

The system is priced from $3,000 up depending upon options. Delivery is 8-12 wks, Popano Beach, FL 33061 (305) 942-4200.

SOFTWARE DEVELOPMENT AIDS

A DEC PDP-11 interface is now being offered by Wyle Computer Products to aid in the development and debugging of programs on the firm's series of microcomputer systems. The interface simply allows the PDP-11 to exercise full control over the MPU's address, control, and I/O buses.

Wyle's modules consistis of an 8080 CPU, up to 64K combination RAM/PROM memory, analog and digital I/O, priority interrupt, DMA and a PROM programmer. The programmer is also used under control of the PDP-11. The CPU is priced at $170 with each 1K byte of RAM at $100. 3200 Magruder Blvd., Hmapton, VA 23666.

MICRO INTERFACE CARD

Data Works Instrumentation has introduced its Model 840 RS232/TTY microcomputer interface card, a stand-alone serial interface for 4, or 8-bit microcomputers.

Priced at $140 in quantities of 25, the card performs parallel-to-serial conversion tasks in hardware.

MICRO CHIPS/CARDS TESTER

The Micro 3/90 computer-controlled system performs high-speed tests of microcomputer and similar cards. Standard configuration is an 80-pin system capable of megahertz data rates on all pins simultaneously. Included in the $140,000 system, are a minicomputer, 96-K bytes of core, and a dual 5-M byte disc. Multitest-head/multiterminal systems are realizable. 769 Susquehanna Ave., Franklin Lakes, NJ 07417 (201) 891-9300.

ANALOG/DIGITAL CONVERTER

The 88-Mux is Mits' companion card to the 88-Analog/Digital Converter, which will expand the input capacity of the 88-ADC for applications requiring a large number of analog inputs.

The 88-ADC is actually a stand-alone card for many systems, because it contains an onboard 8-channel multiplexer. But for the majority of system layouts, the real potential of the ADC and Mux conversion system lies in the ability of the Mux to process up to 96 analog signals!

The 88-Mux will be available within 60 days of order placement at a cost of $319 (assembled only). 2450 Alamo, S.E., Albuquerque, NM 87106.

People, Literature and Events

TWO-DAY DESIGN SYMPOSIUM

The IEEE Technical Committee on Design Automation and the ACM Special Interest Group on Design Automation are co-sponsoring a Symposium on Design Aids for the Design of Microprocessors and Microcomputer systems.

The two-day symposium is scheduled for February 24-25, 1977, in Palo Alto, CA just prior to the COMPCON 77 Spring meeting.

In addition to refereed papers and invited talks, which will be published in a proceedings, the symposium will include a number of informal sessions. In order to stimulate open discussion, these will not be recorded in the proceedings. Stanford University, Palo Alto, CA 94305 (415) 497-1270.

LSI GROUP FORMED

Fairchild Camera and Instrument Corp. has formed the LSI Group, to be headed by David J. Marriott as Vice President and General Manager.

The LSI Group will consolidate responsibilities for engineering, manufacturing and marketing of a full range of state-of-the-art memory and logic devices. The new group consists of the Bipolar Memory, ECL Products Division, the MOS Products Division, and the Strategic Marketing Unit and parts of Commercial and Components Marketing. 464 Ellis St, Mtn. View, CA 94042 (415) 962-2452.

NATIONWIDE HOBBY SEMINARS

E&L Instruments is conducting a series of nationwide computer hobbyist oriented seminars. The first of the seminars was held October 9 and 10 at Kenilworth, NJ. The seminars are hands on sessions working with actual computer systems, and taught by qualified instructors.

The seminar cost is $80 per student for two days and includes $30 worth of Bugbooks and a $50 discount on any E&L microcomputer hardware purchase during or after the seminar. 61 First St., Derby, CT 06418 (203) 735-8774.

HANDS-ON SHORT COURSES

Wintek Corp. has scheduled its 3-day "Hands On Microprocessor Short Course With Take Home Microcomputer" at nine locations next February and March. Each attendee receives a microcomputer to use at the course and then take home—a WINCE MICRO module including a 6800 MPU, clock, ROM, RAM, serial and parallel I/O. It is fully expandable using WINCE RAM and ROM modules. The ROM contains FANTOM II, a monitor/debug program that allows single step execution of user programs, insertion and deletion of break points, and set up of interrupt vectors as well as allowing user to load and dump programs, examine and change memory and registers, and reset.

The course covers microprocessor hardware, software, firmware, and economics. Tuition is $495. 902 N 9th St, Lafayette, IN 47904 (317) 742-6802.

CALL FOR PAPERS

A call for papers has been issued for the first major convention to be held on the West Coast, exclusively concerned with personal and home computers. To be held April 15-17, 1977, The First West Coast Computer Faire will be held in the San Francisco Civic Center. It is expected to draw 7,000 to 10,000 people for the two and a half days of talks and exhibitions.

The conference portion of the Computer Faire is expected to offer 50-100 tutorials, informal presentations, formal papers, and discussion sessions. The Exposition portion of the Faire will place a variety of "home-brewed" personal computer systems on display, as well as presenting a massive exhibition of of low-cost and exotic computer systems, components, and peripherals available from commercial vendors. Over 200 such commercial exhibits are expected.

Papers are invited for the following topics:

- o Personal Computers For Education, which will have associated with it, a University of California short-course
- o Computer Graphics on Home Computers
- o Computer-driven & Computer-assisted Music Systems
- o Personal Computers for the Physically Handicapped
- o Computers & Amateur Radio
- o Hardware, Software & Systems for Home

Word Processing.

- o Speech Syntheses Using Home Computers
- o Computers & Systems for Small Businesses
- o Microprogrammable Micros for Hobbyists
- o Digital Casette Tape Standards
- o Program & Date Input via Optical Scanning of Bar Coded Information
- o Peripherals Interface & Bus Standards
- o Software Design, Modularization & Portability
- o Floppy Disc Systems for Home Computers
- o Computer Games-Alphanumeric & Graphic
- o Discussion Sections for Computer Club Officers, Convention Organizers, Club Newsletter Editors, etc.

Other Conference Sections will be added as topics are proposed and speakers found.

All papers are to be submitted to Jim Waren, Faire Chairman, Star Route Box 111, Woodside, CA 94062.

STEP-BY-STEP HANDBOOK

Iasis Inc. is offering a step-by-step hand book for microcomputer design. The company says the book will guide users through all phases of design for a working microcomputer system including writing a system monitoring program.

Both development and OEM systems are said to be covered in detail by the $7.95 book.

CONSULTING RATES SURVEY

The 1976 PATCA survey of consulting rates has been released by the Professional and Technical Consultants Association.

New in this year's survey report is a profile of the busiest consultants in the business—the top half of the surveyed consultants, in terms of time billed to clients.

"The survey indicates that the busiest half of those consultants included actually received 21% more for their services than the other half. It also shows that the busiest consultants are more experienced, serve more clients, and that they tend to specialize in certain fields now in high demand." PO Box 4523, Mtn. View CA 94040.

MICROCOMPUTER CATALOG

A 64-page Microcomputer catalog has just been released by Newman Computer Exchange. The "Do-It-Yourself MicroCatalog" lists everything from disc based microcomputer systems to individual IC's, plus a variety of peripherals, software and components, among numerous other items. To obtain a copy of Newman Computer Exhange's new microcomputer catalog, wite them at 1250 N. Main Street, Ann Arbor, MI

2650 APPLICATION NOTE

Signetics has released a new 2650 application note: Address and Data Bus Interfacing Techniques, (MP53).

PEOPLE ON THE MOVE

Electronic Memories and Magnetics Corp. announced that LARRY VINCENT joined the Commercial Memory Products division as Senior Staff Engineer, to participate in the plans, definition and design of EMM's new microcomputer products.

LEE ALLGOOD has been appointed marketing manager of MOS RAM for Signetics.

RONALD L. TREADWAY has joined Signetics, Sunnyvale, CA, as Design Manager for the Logic Division.

GEOFFREY R. M. THOMAS has been appointed product line manager of microprocessors at National Semiconductor Corp.

Firms added to NEC's distributor network are SEMICOMP CORP. in Newport Beach, CA; and STERLING ELECTRONICS with offices in Los Angeles, San Diego, Seattle, Phoenix, Albuquerque, Dallas, New Orleans, and Watertown,MA.

National Semiconductor has expanded the data memory marketing group and added to its responsibilities. The new appointments include LARRY JORDAN as bipolar memory marketing manager, RON LIVINGSTON as marketing manager for MOS memories, JONATHAN STINEHELPER as memory applications manager and BILL JOHNSTON, memory applications engineer.

Rockwell's Microelectronic Device Division has been reorganized into four operating entities, each a multi-million dollar device business with its own product planning, design engineering, marketing and financial control functions.

Named to head the four business organizations with the title of business director were H. A. BEALL, Automotive LSI and Subsystems; D. R. BARNHART, Calculator and Consumer Electronics; A SECOR, Microprocessor LSI and Subsystems, and D. P. DEL FRATE, Modem LSI and Subsystems.

Rockwell has moved the production lines of its Microelectronic Device division to Collins Radio's plant in Newport Beach, CA.

Fairchild has announced the promotion of six of its executives to the position of Division Vice. President.

Named to the new posts are JOHN F. ORDWAY,

National Sales Manager, Semiconductor Division; WILLIAM J. O'MEARA, Strategic Marketing Unit Manager, Large-Scale-Integration Group; WILLIAM L. KIRKHAM, General Manger, Diode Division; EDWARD R. BROWDER, General Manager, Digital Products Division; MANUEL A. FERNANDEZ, General Manger, Transistor Division; and BRIAN E. SEAR, General Manger, Systems Technology Division.

National Semiconductor has moved its Western Microprocessor Training Center to Suite 430 at Marina Playa, 1333 Lawrence Expressway, Santa Clara, CA 95051.

Financial

COMMODORE TO ACQUIRE MOS TECH.

Commodore International Ltd. has reached an agreement in principle to acquire MOS Technology. MOS Technology is to become a subsidiary of Commodore and will reamin a separate profit center. Officials state that no management changes are anticipated. The company will remain at its present site in Valley Forge, PA.

Reasons cited for the proposed sale included MOS Technology's recent patent infringement suit with Motorola and the withdrawal of a 6800-pin compatible microprocessor. Also noted, the sale guarantees MOS Technology's survival and gives the firm necessary resources to exploit their microprocessor product line.

NEW INTEL PRICES

New Prices have been announced for Intel's 4-bit MPUs. In 100-up quantities, the P4040 costs $5.50 and the P4004 costs $5.00. Both are supplied in molded epoxy dual in-line packages. The P4040 is contained in a 24-pin package and the P4004 in a 16-pin package.

US SALES TO EXCEED 28% FORECAST

Worldwide sales of all US based semiconductor manufacturers totaled $262 million during July, reflecting the normal slowing of shipments during summer vacation months.

Integrated circuits accounted for $156 million and discrete devices $106 million. New orders booked during July totaled $307 million, maintaining the same positive book-to-bill ratio recorded in June. The new orders were divided at $169 million for IC's and $118 million for discrete devices.

Through the month of July the year-to-date cumulative total of all shipments was $1.9 billion represented by IC's and $800 million by discretes. Cumulative bookings through the firs

the first seven months of the year totaled $2.2 billion, of which $1.3 billion was IC's and $925 million for discretes.

Based on the July data and cumulative totals for the first seven months of 1976, WEMA reiterated its prediction that the US semiconductor industry will probably exceed the estimated 28% year gain.

PCS RECEIVES INVESTMENT

Three venture capital corporations have invested $1 million in Process Computer Systems (PCM) of Flint, MI., A major industrial microcomputer manufacturer.

PCS President Dwight D. Carlson has announced that a $650,00 investment in common stock placement by Citicorp Venture Capital Ltd. of New York; $250,000 by Doan Resources Corp. (DRC) of Midland, MI.; and $100,000 by Venturtech, Inc. of Summit Hill, NJ.

Carlson said that PCS plans to use the investment to "develop the company's new Series 180 industrial microcomputer line and to build a national sales and marketing program." (313) 767-8920.

FAIRCHILD EXPANDS BANK CREDIT

Fairchild Camera and Instrument Corp. has expanded its bank credit lines to $100 million to meet current and anticipated working capital requirements resulting from the company's sales growth. The financing program includes a two-year, $50 million line of domestic revolving credit with eight banks, convertible into a five year term loan. This supercedes a previous agreement with the same banks, entered into in early 1975.

GI CUTS 1600 PRICES

General Instrument has cut prices of its 16-bit CP1600 MPU. In single lots the device was reduced from $99 to $49, in 100 lots from $65 to $38 and 500 lots from $50 to $35.20.

DT5701 REDUCED TO $275

Date Translation has reduced the single piece price of its DT5701 from the previous $350 to $275. Delivery is from stock. 109 Concord St., Framingham, MA 01701 (617) 879-3595.

PERTEC TO PURCHASE ICOM

Pertec has entered into an agreement to purchase iCOM, Inc., manufacturer of floppy discs and microperipherals.

Education

MICROCOMPUTER COURSES, SEMINARS, CONFERENCES. Date, title, cost, location, sponsoring organization (addresses on this page).

December

6- 10 Microprocessor Design Course 4004/4040 $350 Monterey, CA Pro-Log Corp.

6- 10 Microprocessor Design Course 8080 $350 Monterey, CA Pro-Log Corp.

7 LSI-11 Microcomputer Introduction and Applications Free San Jose, CA DEC

7- 8 Microprocessors in Mfgr. and Control $395 Detroit, MI Int. Comp. Sys.

9- 10 Microcomputer Software/System $395 Detroit, MI Int. Comp. Sys.

11-12 Microcomputer Software/System $395 Detroit, MI Int. Comp. Sys.

13-17 Microprocessor Design Course 8080 $350 Monterey, CA Pro-Log Corp.

14-16 Applications of Modular Microelectronics and Microprocessors $365 Miami, FL George Washington University.

January

11-12 Microprocessors in Mfgr. and Control $395 Cincinnati, OH Int. Comp. Sys.

11-14 F8 Microprocessor $300 San Jose, CA Fairchild Micro Systems

13-14 Microcomputer Software/System $395 Cincinnati, OH Int. Comp. Sys.

18 LSI-11 Technical Seminar Free Palo Alto, CA DEC

18-19 Microprocessors in Mfgr. and Controls $395 Toronto, Canada Int. Comp. Sys.

18-20 Microprocessors $365 Hampton, VA George Washington University

20-21 Microcomputer Software/System $395 Toronto Canada Int. Comp. Sys.

24-26 Integrated Circuits and Applications $360 Washington, D.C. George Washington University

25-28 F8 Microprocessor $400 Miami, FL Fairchild Micro Systems

Febuary

8- 9 Microprocessors in Mfgr. and Control $395 Newark, NJ Int. Comp. Sys.

8- 11 F8 Microprocessor $300 San Jose, CA Fairchild Micro Systems

10-11 Microcomputer Software/System $395 Newark, NJ Int. Comp. Sys.

24-25 Microprocessors and Design Automation San Francisco, CA TC on Design Automation of the Computer Society

28-3 COMPCON Spring 77 San Francisco, CA COMPCON

March

23-25 Fourth Annual Computer Architectur Symposium College Park, MD Dr. B. Wald

April

6- 8 Microcomputers '77 Oklahoma City, OK Dr. S. C. Lee, University of Oklahoma

May

9- 11 EUROCON '77 Venice, Italy Eurocon

24-26 International Minicomputers, Microcomputers and Microprocessors '77 Geneva Switzerland Industrial and Scientific Conference Management.

Sponsoring Oraganizations and Contacts:

COMPCON Spring '77, P.O. Box 639, Silver Spring, MD 20901

DEC, 2565 Walsh Ave., Santa Clara, CA 95050 (408) 984-0200

Eurocon '77, AEI, Viale Monza 259, 20126 Milian, Italy

Fairchild Micro Systems, 1725 Technology Dr., San Jose, CA 95110 (408) 998-0123

Industrial and Scientific Conference Management, 222 W. Adams St., Chicago, IL 60606 (312) 263-4866

George Washington University, Continuing Engineering Education Program, Washington D.C. (202) 676-6106

Integrated Computer Systems, Inc., 445 Overland Ave., Culver City, CA 90230 (213) 559-9265

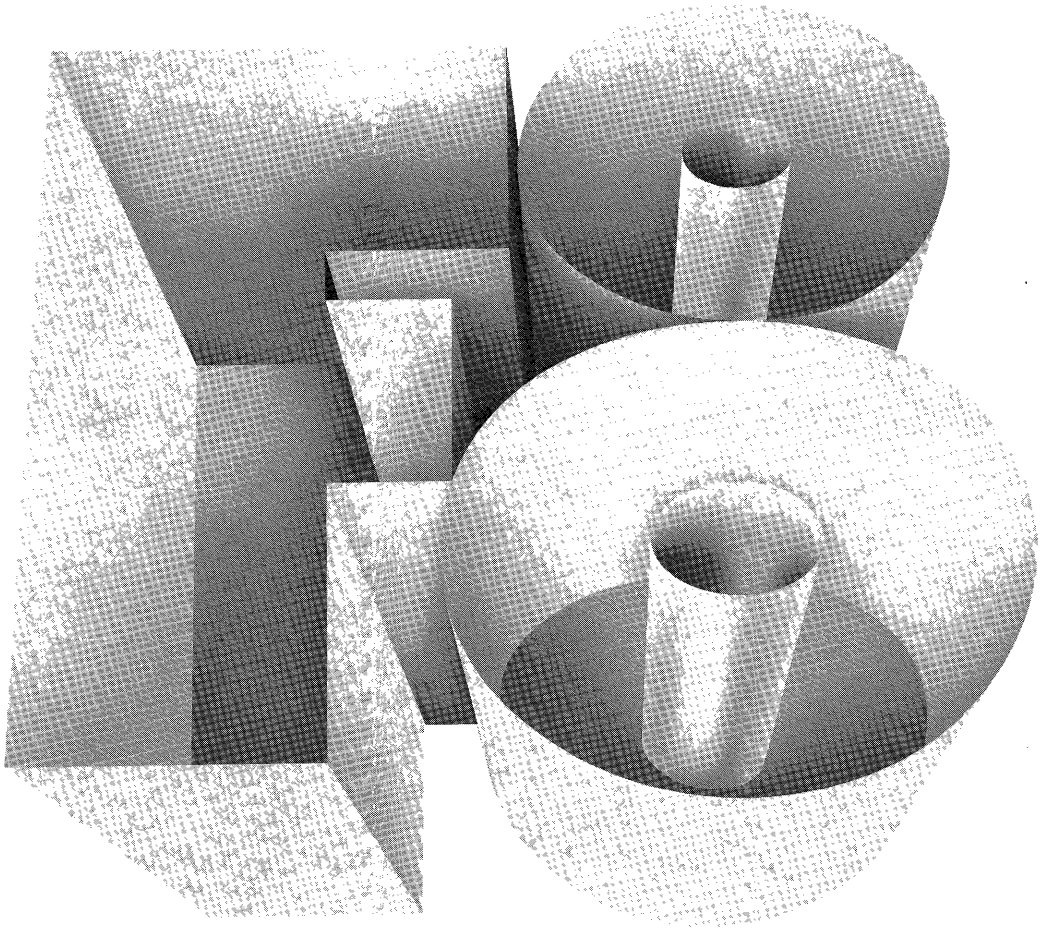
Dr. S.C. Lee, School of Electrical Engineering University of Oklahoma, Norman, OK 73019

National Semiconductor Corp., 2900 Semiconductor Dr., Santa Clara, CA 59051 (408) 732-5000

Pro-Log Corp., 2411 Garden Rd., Monterey, CA 93940 (408) 372-4593

TC on Design Automation of the Computer Society, Dr. W.M. vanCleemput, Stanford Univ., Digital Systems Labs., Stanford, CA 94305

Dr. B. Wald, Communications Science, Naval Research Lab., 4555 Overlook Ave., WAshington D.C. 20390



Savvy.

FAIRCHILD

Need some microprocessor savvy? For just $9.95 you can get all of it you need in a CPU. That's because $9.95 gets you Fairchild's 3850 (the F8 CPU).

Who needs microprocessor savvy? You do if you manufacture controller oriented or "low end" applications like electronic games, machine and motor controls, printer controls, keyboard controls, or traffic control systems.

Fairchild's F8 CPU chip combined with F8 program memory is the perfect microprocessor system for your applications whether they be high volume or low volume.

High Volume Applications

Features of the F8 are shown by this typical high volume system using the CPU (3850) and the PSU (3851) chips:

- 32 I/O lines
- 1K bytes of Program Memory
- 64K Bytes of RAM
- 1 Interrupt Level
- 1 Programmable Timer
- On Board Clock

Additional capability can be added to this system if needed.

Low Volume Applications

The F8 chip set is also ideal for low volume applications. It can be optimized to save engineering and program development time by selecting the right number of I/O lines, program memory size, RAM size, interrupt levels, and programmable timers.

Wyle Distributors—They've Got The Savvy

The key to optimized use of the F8 is proper configuration of the microprocessor before programming and production. That's where Wyle's technological centers come in. Providing the expert service needed to help you choose just the right F8 configuration to fit your application, they will help you realize maximum savings in development time. Give Bill Scharenberg or Dennis Stick a call; they stock the F8 microprocessor, and they've got the savvy to help you get the most out of it.

Fairchild MSD Products by Wyle.

WYLE DISTRIBUTION GROUP

Bill Scharenberg (415) 961-3611
ELMAR ELECTRONICS
Mountain View, CA (415) 961-3611
Denver, CO (303) 287-9611

Dennis Stick (213) 322-8100
LIBERTY ELECTRONICS
El Segundo, CA (213) 322-8100
Phoenix, AZ (602) 257-1272
San Diego, CA (714) 565-9171
Seattle, WA (206) 763-8200

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