

## News and Speculation About Personal Computing

Conducted by Sol Libes

### **P**eering Into Radio Shack's Crystal Ball:

Tandy Corporation (Radio Shack's parent firm) once kept a very tight lid on upcoming products. But now it's leaking information on product plans, some of which extend well into 1982.

Here's what to expect: Among its most ambitious programs, Tandy plans to double its hardware and software products within the next six months—judging by past performance, it can do it. Several new peripheral hardware products will be added to all of its current machines, from the pocket computer to the Model II business-oriented system. The Model II will be offered with an optional 10-mega-byte hard-disk system that will include a 15 k bpi (bits per inch) tape backup. The complete hard-disk system will cost less than \$5000. Also in the works is a multi-processing and -programming system that will allow up to sixteen Model IIs to be chained together. A new system (Model IV?) with capabilities somewhere between the Models II and III, but closer to the Model II, will be unveiled. It will include 8-inch floppy-disk drives and a better disk-operating system, but it won't be CP/M compatible. Expect its base price to be in the \$1500 to \$1800 neighborhood.

As for software:

- Radio Shack will introduce packages geared toward specific "vertical" markets (eg: medical, legal, educational, etc).
- There will be a software package that allows the Model II to read and write

IBM-format disks and to serve as a terminal on an IBM system.

- There will be upgraded versions of TRSDOS for the Models I, III, and II.

Most of the upcoming Model III software will adhere to the company's policy of maintaining compatibility with the older Model I system. I must give Radio Shack credit for not making the mistake made by most other computer companies who virtually disown their older model computers when a new system is brought out, forcing customers to "junk" the older system and buy a new system merely to run new software.

Tandy also plans to change the name of its Radio Shack Computer Centers to Office Product Centers. These centers will sell copiers, facsimile machines, and other office products, as well as computer systems.

### **Z**ilog's New Fall Fashion:

This fall Zilog will introduce an enhanced Z80 called the Z800. The designation doesn't mean that the Z800 is ten times better than the Z80 and only one-tenth as powerful as the Z8000, but Zilog claims it will have three times the performance of the Z80.

Zilog says that the Z800 will be fully compatible with the Z80 instruction set, which is a wise decision because the old software can still be used. It will contain circuits that facilitate multiplication, division, and memory mapping to access up to 4 megabytes of memory. It will be offered in a

nonmultiplexed version, like the Z80, and a Z-bus-compatible version that can be used as a Z8000 peripheral. Zilog hopes to start shipping samples soon.

### **C**ommodore Releases The 6508 Microprocessor:

After years of talk about an upgraded version of the 6502 microprocessor (used in the Apple II, Commodore PET, Atari 400 and 800, etc), Commodore Semiconductor, Norristown, Pennsylvania, has finally done it: the 6508. The 6508 has 256 bytes of program-mable memory and an 8-bit parallel port. Its instruction set is compatible with the 6502's and its clock rate remains at 2 MHz. Commodore has let it be known that several other versions of the 6502 are forthcoming. They will include timer/counters, serial ports, and other functions. Its clock rate could go as high as 6 MHz.

### **I**s There A Microfloppy Disk In Your Future?

Sony is currently providing OEMs (original equipment manufacturers) with samples of its new 3½-inch "microfloppy"-disk drives. The drive represents a new technology that departs from the traditional 5- and 8-inch drives. Sony packs 437.5 K bytes per side into a drive that's 27% smaller than standard 5-inch models. Five-inch drives typically store about 250 K bytes (double-density) or 125 K bytes (single-density).

Even though the 3½-inch drive's compactness is very attractive for portable computers and word-processing

systems, Sony is meeting some resistance from OEMs who are leary of purchasing an unproven product from a single source.

The microfloppy has a stiffer media and a rigid envelope with a shutter over the head-access slot to protect the disk. The result is less contamination and better media stability, which, in turn, allows greater accuracy and higher data density. Sony has also borrowed from its video-head technology in developing the read/write head for this drive.

Sample drives range in price from \$400 to \$500, not including a controller interface, although many of the currently available controllers can be used with little or no modifications. The price should drop to \$200 to \$300, in 500-unit quantities.

Sony plans to use the drives in its new word-processing systems, which will be introduced later this year. A 1-megabyte version of the device is expected early next year, and Sony will probably use it in its Series 35 small-business systems. There are rumors that Sony is developing a 3½-inch hard-disk drive.

Shugart and several other floppy-disk suppliers are taking a hard look at "microflopies." There is no doubt that the trend is to smaller disk-storage units. The question really is whether or not manufacturers will adopt the Sony format or create a new standard ... or will something different emerge?

**T**he IAPX432 Picture Becomes Less Fuzzy: Recently, *EDN* magazine commented on where the industry can be expected to go

with the new Intel 32-bit microprocessor. I have taken the liberty of extracting some of the major comments here.

The iAPX432 was designed by and for computer scientists, rather than electrical engineers (as were Intel's 4-, 8-, and 16-bit microprocessors). The iAPX432's internal elements are less accessible than those in other microprocessors, so writing programs will be different.

"Instead of considering the machine in terms of bits and registers, you must focus on software objects . . . the 432 has no assembly language, per se; you might consider its instruction set to be a high-level language . . . a nearly optimum intermediate language specifically designed to simplify the task of writing efficient compilers. In turn, these compilers can effectively handle programs coded in high-level languages." The iAPX432's instruction set "does not constitute a complete operating system; rather, it contains the essential primitives from which you can construct such an operating system . . . the machine can't be programmed directly in code written in, say, Ada or FORTRAN; you need the appropriate compiler. Because the 432 simplifies system programming, programmers need not be hardware experts; thus personnel with a lower level of expertise can program it. Further, programs written in high-level languages can generally be developed more rapidly than those coded in assembly language.

"The machine performs arithmetic operations quickly and with a high level of precision. It also automatically prevents many typical programming errors (you can't inadvertently execute data, for example). Further,

it provides functional redundancy checking, a feature that allows graceful system degradation when a CPU [processor] fails in a multiprocessing environment. And finally, the 432 ensures that all programs are naturally reentrant and recursive. The 432 chip set is complex and currently very expensive. It could incur speed penalties when performing certain operations."

The iAPX432 will not be the ultimate processor. "Although its instruction set is close to the ideal," says *EDN*, "it might be improved in other ways." It will not make 4-, 8-, and 16-bit microprocessors obsolete; and, in fact, it should increase the market for these as 'peripheral processors.'

"In summary, a good analogy is that the 432 is to standard microprocessors what the 7400 Series TTL was to discrete-device logic gates and flip-flops. It should free EEs [engineers] from many mundane system-design chores, allowing them to concentrate on more rewarding creative pursuits, while also reducing their projects' software costs. It's a minicomputer replacement, one that will open up scores of application opportunities."

Intel is already shipping a board-level iAPX432 evaluation system, called the Inteltec 432/100. It consists of a board with a complete iAPX432 processor, RS-232C serial interface, evaluation software, and seven volumes of documentation. The user can plug the board into an Intel Inteltec development system and create and execute iAPX432 programs using an object-oriented language. The 432/100 costs \$4250.

The Inteltec uses the Intel Multibus (IEEE-796), which has a 16-bit-wide data bus.

The 32-bit-wide processor is interfaced to the bus via an interface-processor that handles data-bus transfers as two 16-bit words (the IBM 360, which was also a 32-bit processor, handled data transfers as 8-bit words, on its smaller machines).

Several S-100 (IEEE-696) bus-system manufacturers have iAPX432 development projects underway. I expect to see an S-100-based iAPX432 machine with disk operating system later this year.

## **T**he Software Shop:

When I was a kid, I would go to the record shop and buy a copy of one of the top-ten records on the hit-parade. Well, soon I may be going to the "software shop" to buy a copy of one of the top-ten programs. At least that is what Cut & Curl hopes. It plans to open a franchised chain of stores that sell only software—"software supermarkets." Cut & Curl already franchises 500 Edie Adams Cut & Curl and Great Expectations Precision Haircutting salons. The first Programs Unlimited store has been opened, and Cut & Curl is talking about 100 more stores.

## **R**andom News Bits:

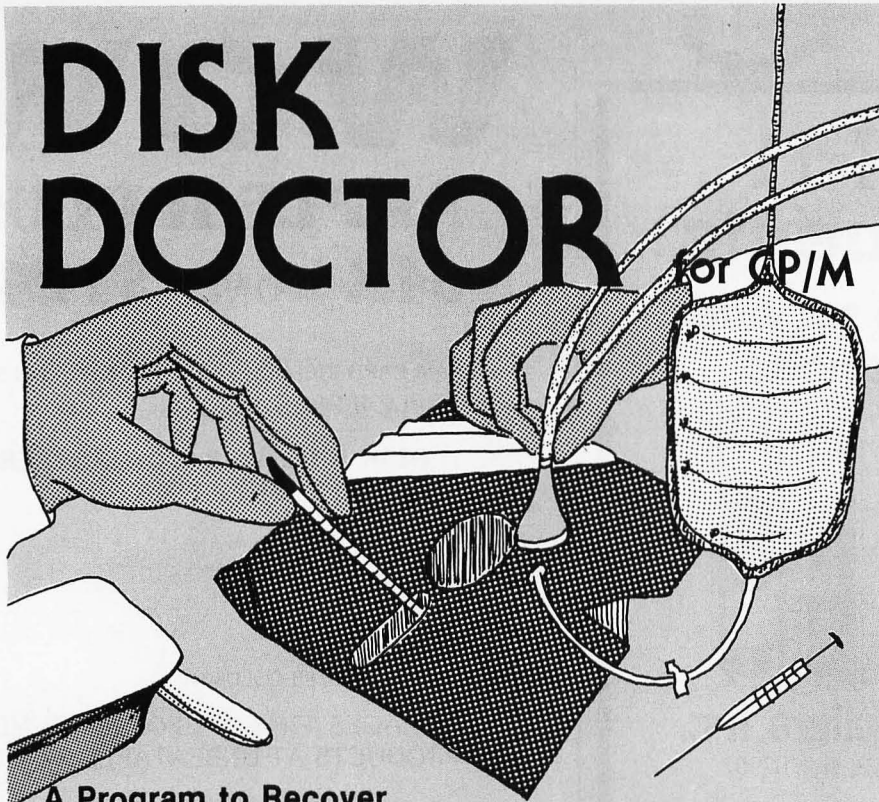
Apple Computer Inc reported that sales for the first quarter of 1981 tripled over the same period a year ago. Sales were nearly \$79 million, with a net of \$9.2 million—a 16% increase over the previous quarter. Also, Apple claims to have produced over 200,000 Apple IIs and that the Apple III's "production problems" have been ironed out (most of the original design group has been fired). The Apple III is now in full production. . . . Zilog reported an \$11 million loss on \$42 million

business for 1980. Zilog has yet to show a profit. . . . Commodore expects to introduce its "Micromainframe," with 132 K bytes of memory and 6502 and 6809 processors. It is really a PET computer with a second processor (the 6809). You can elect to run either the 6502 or the 6809. Commodore claims to have BASIC, FORTRAN, APL, Pascal, and an Assembler ready for the machine. COBOL will come later. The software was developed at the University of Waterloo in Ontario, Canada. Commodore has not yet set the price. . . . Interlude, Houston, Texas, claims to have sold 15,000 copies of its sex-oriented software package for the Apple II and TRS-80 computers. The program asks users questions about themselves and their partners, and then tells them how to enjoy their spare time. . . . Florida Data Corporation, Melbourne, Florida, has introduced two serial dot-matrix printers that can rocket along at 600 cps (characters per second) for draft or data-processing output and at 150 cps for letter-quality output—that's three times faster than any daisy-wheel printer. The letter-quality output is produced by passing the head over each line four times, with the dots displaced slightly on each pass to fill in the character. . . . Intel will introduce a set of two integrated circuits for the Ethernet controller and interface that will allow a user to implement the physical and data links. A little bit of extra circuitry, some special cables, and interfacing software, and you can connect any personal computer to an Ethernet system. . . .

**T**exas Instruments' **Bubble Bursts:** In a surprise move, Texas Instru-



# DISK DOCTOR



## A Program to Recover "Crashed" Discettes AUTOMATICALLY!

Maybe it was a lightning storm, static from the rug, or just too late at night to be working. Whatever the cause, when a discette "crashes" and valuable data or programs are destroyed, the loss is enormous, both in time and money.

DISK DOCTOR is a program which automatically recovers bad discettes. Best of all DISK DOCTOR does not require any knowledge of CP/M file structure! If you can operate CP/M, then you can use DISK DOCTOR. The entire system is menu driven with key information displayed.

DISK DOCTOR is comprised of five "wards", each capable of performing a specific discette recovery operation.

- **Ward A:** Verifies discettes and locks out bad sectors without touching the good files that remain.
- **Ward B:** Copies whatever can be read from a "crashed" file and places it into a good file under user control.
- **Ward C:** Copies discettes without stopping for bad sectors. Bad sectors are replaced by spaces.
- **Ward D:** "Un-erases" files. That is, Ward D will recover accidentally erased disk files.
- **Ward E:** Displays directory of recoverable erased files.

DISK DOCTOR will pay for itself the first time it is used.

Best of all, DISK DOCTOR operates almost complete automatically. The small amount of user interaction is explained in the manual as well as prompted by DISK DOCTOR.

Requires: 48K CP/M, two drives needed for complete operation.

DISK DOCTOR: \$100.00  
Manual Alone: \$ 10.00

CP/M Formats: 8" soft sectored, 5" Northstar, 5" Micropolis Mod II, Vector MZ, Superbrain DD/QD, Apple II +

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CP/M REGISTERED TRADEMARK DIGITAL RESEARCH

## BYTELINES

ments (TI) will phase out its magnetic bubble-memory products as part of a company-wide retrenchment program. The move, ironically, comes less than a month after TI announced it was expanding its line. Rockwell International announced a similar move earlier this year. Besides dropping its bubble-memory line, TI also announced plans to get out of the digital-watch business and lay off 3% of its work force.

## The 64 K-Bit Memory Devices Are On The Way:

Intel and a few other integrated-circuit makers are now shipping 64 K-bit memories. Prices are currently in the \$30 range but are expected to drop to around \$8 by year's end. Look for products using these circuits by early next year. It's rumored that Apple has placed an order for 60,000 of the devices, at \$12 a chip, for a new business computer.

Reportedly, Intel has 256 K-bit memory devices in the prototype stage. Using the 64 K-bit devices, you could build a 64 K-byte memory system using only eight memory circuits. When the 256 K-bit products become available, only two circuits will be required.

**MAIL:** I receive a large number of letters each month as a result of this column. If you write to me and wish a response, please include a self-addressed, stamped envelope.

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