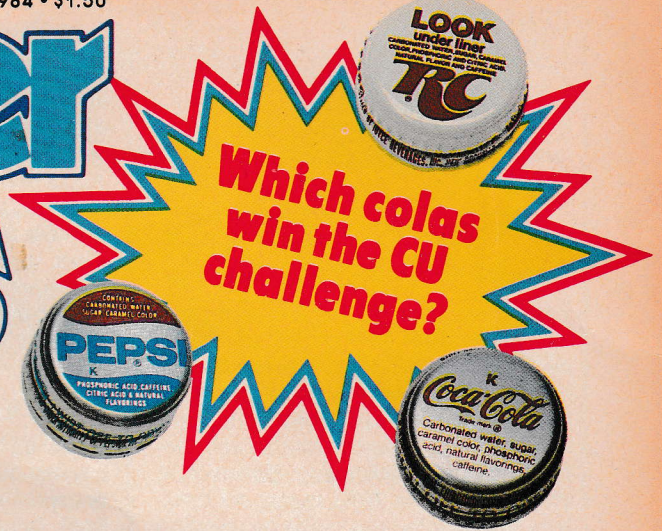


Consumer Reports

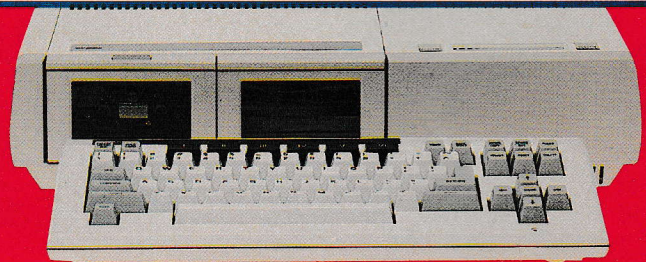


HOME COMPUTERS

FOR WORD-PROCESSING



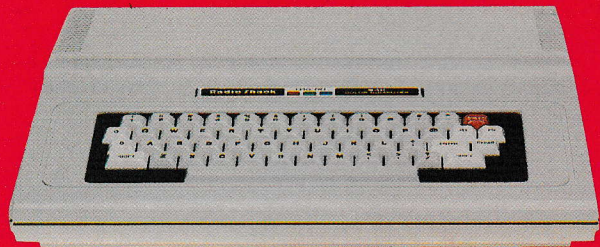
Atari 600XL



Coleco Adam



Commodore 64



TRS-80 Color Computer 2

BRAND-NAME REPORTS

Razors & blades

Shaving creams

Saber saws

Thermometers

Road tests of:

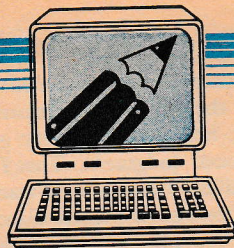
Chevrolet Citation II

Ford LTD

Olds Cutlass Supreme

Plymouth Reliant





HOME COMPUTERS FOR WORD-PROCESSING

A computer at home can play games, run educational programs, file lists, and help with bookkeeping and budgeting. But a survey of our readers who own computers indicates that word-processing is the most significant application they've found.

One recently introduced home computer, the *Coleco Adam*, takes dead aim at that application. It's sold as a single package, or bundle, that includes almost everything needed to use a computer as a word-processor. The package includes a central processing unit with a word-processing program built into permanent memory, a separate keyboard, a unique tape-storage system, and a printer.

The *Adam's* price caused a small sensation when Coleco first announced it at a computer trade show last summer. Coleco said the whole *Adam* bundle would retail at between \$600 and \$700—little more than it would cost to buy a printer alone for most other computer systems.

By the time the *Adam* actually reached stores late last year, however, the bundle was no longer so remarkable a bargain. For about the same price as the *Adam*, it's possible to assemble a complete word-processing system from the offerings of every major seller of inexpensive computer equipment.

That's what we did for this report.

In addition to buying the *Coleco Adam*, we put together complete systems based on the *Atari 600XL*, the *TRS-80 Color Computer 2*, and the *Commodore 64*. The illustration on the facing page shows the bits and pieces of each system. Prices range from about \$620 for a *Commodore 64* system to about \$920 for a *TRS-80 Color Computer 2* system with upgraded memory.

Most inexpensive home computers are designed to accept applications programs in the form of cartridges, which you insert into a slot in the central processing unit. We chose at

least one cartridge word-processing program for each computer other than the *Adam*. In addition, we bought a program on cassette tape for the *TRS-80 Color Computer 2*.

Most word-processing programs are available on disks rather than on cartridges or tapes. But, as we noted in our reports on computers in the September and October issues,* adding a disk drive to an "inexpensive" system would usually bring the price to more than \$1000. The *Commodore 64* is an exception. We were able to assemble a *Commodore 64* system with one disk drive for \$780. So we also tried the *Commodore* with its own disk-based word-processing program.

The only essential component not included in these systems is a monitor for display. The systems are intended for use with your own TV set as the display. You can add a separate monitor to the *Adam* and the *Commodore 64*, but not to the *Atari 600XL* or the *TRS-80 Color Computer 2*.

As important as word-processing may be in the home-computer scheme of things, it wouldn't make much sense to think of any of these systems as a word-processor alone. Their hardware and software limitations make them suitable only for light duty—personal correspondence and school reports.

These systems are not, of course, word-processors alone. You can run the whole gamut of home application programs on them, and you can use them to learn programming if you want to try writing programs for yourself. So let's consider these four models first as computers.

The bits and pieces

The table on page 85 gives the details of each system's main compo-

*We suggest you review those reports as background for this one. If you no longer have those issues, or if you're a new subscriber, you might want to order our special publication, "Computers at Home." You'll find an order form on page 96.

nents and features. Except for the *Coleco Adam*, these are relatively compact models that combine the central processing unit (CPU) and a keyboard in a single unit. So it's possible to move the CPU, or even all the hardware components (CPU, tape player or disk drive, and printer) to a TV set when you want to work with the computer.

It's far more convenient to keep a TV set stationed permanently near the computer, however. With the *Coleco Adam*, that's almost a necessity, because the *Adam's* CPU is a relatively big affair. While the tape drive is built into the unit, the keyboard is a separate component connected by a coiled cord. The printer is also fairly big and heavy. Since the system is cumbersome, the TV set has to come to it or, preferably, reside with it.

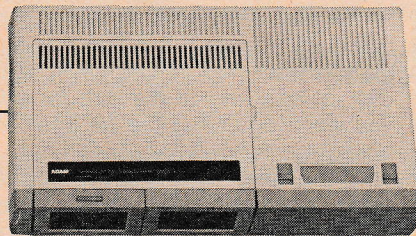
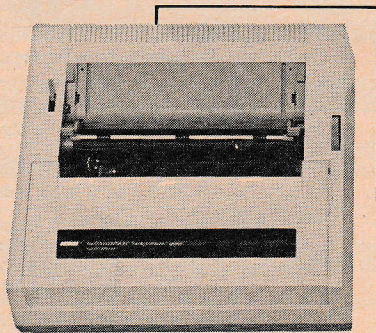
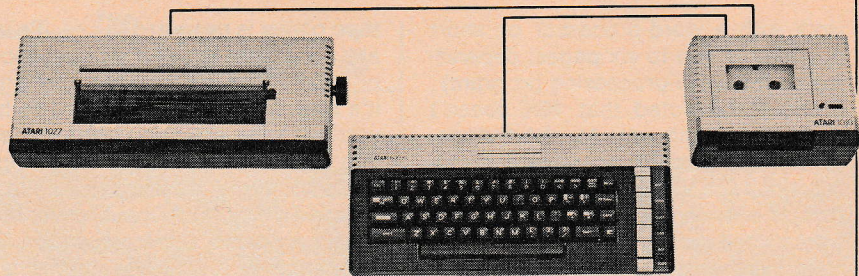
Here's how the bits and pieces of each system compare:

Memory. The size of a computer's temporary memory (also called random access memory, or RAM) defines its maximum capacity to do work. Since many small businesses can get by nicely with a 64K computer, it's hard to imagine home uses likely to crowd the capacity of the *TRS-80 64K Color Computer 2*, the *Commodore 64*, or the *Coleco Adam*. They all have enough memory to contain a document of about 20 double-spaced pages, give or take a few. (The precise amount of memory available for work depends in part on the applications program being used; the program itself usually occupies some memory.) The *Coleco Adam* advertises itself as an 80K computer. Part of its memory is used for screen display and other internal housekeeping, so it doesn't necessarily provide substantially more word-processing workspace than a 64K computer.

The *Atari 600XL* and a cheaper version of the *TRS-80 Color Computer 2* are 16K computers. They have enough memory to run most simple home applications programs, and enough to

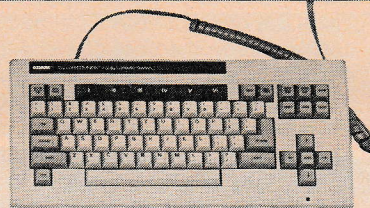
Atari 600XL

| | |
|------------------------------|--------------|
| Atari 600XL CPU and keyboard | \$200 |
| Atari 1010 cassette recorder | 100 |
| Atari 1027 printer | 350 |
| System price | \$650 |



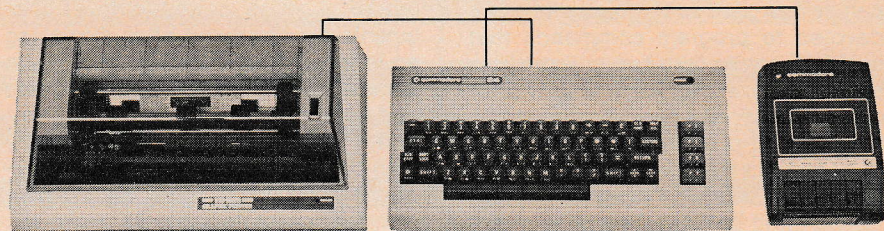
Coleco Adam

Bundle price **\$700**



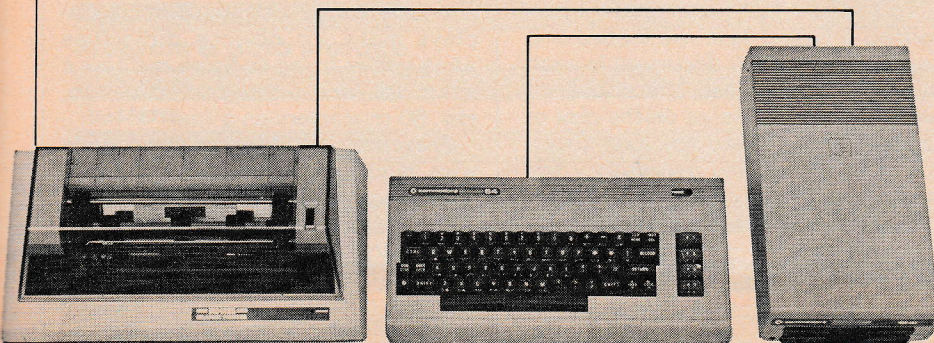
Commodore 64

| | |
|------------------------------|--------------|
| Commodore 64 | |
| CPU and keyboard | \$230 |
| Commodore Datasette recorder | 70 |
| Commodore VIC-1525 printer | 250 |
| System price | \$550 |



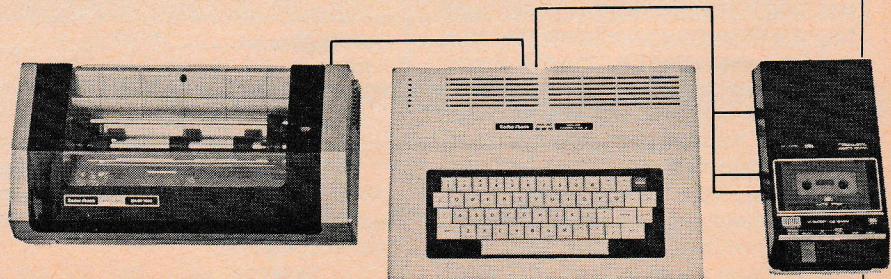
Commodore 64

| | |
|-------------------------------|--------------|
| Commodore 64 | |
| CPU and keyboard | \$230 |
| Commodore VIC-1541 disk drive | 250 |
| Commodore VIC-1525 printer | 250 |
| System price | \$730 |



TRS-80 Color Computer 2

| | |
|-----------------------------|--------------|
| TRS-80 16K Color Computer | |
| CPU and keyboard | \$160 |
| Radio Shack CCR-81 | |
| cassette recorder | 60 |
| Radio Shack DMP-100 printer | 400 |
| System price | \$620 |



work with a word-processor on short documents (up to six pages, depending on the word-processing program). It should be noted that 16K doesn't necessarily limit you to short documents. It's possible to save a document on tape as you near the end of a computer's memory capacity and then work on the continuation as if it were a new document.

Atari says it will offer a \$160 plug-in module that will expand the 600XL's memory to 64K. It has also announced a 64K computer, the *Atari 800XL*. The basic *TRS-80 Color Computer 2* is also expandable to 64K.

Keyboard. All four computers offer a "standard" keyboard—that is, they have full-sized, full-travel, sculptured keys, as on a typewriter. Though none felt as crisp as the keyboard of a good electric typewriter, all were adequate for fast typing. We judged the keyboard feel of the *Adam* and the *Commodore 64* slightly superior to that of the *Atari 600XL* and the *TRS-80 Color Computer 2*.

As a rule of thumb, the more keys on a computer keyboard, the better. Programs written for a specific computer can be designed so that extra keys are devoted to program commands that might otherwise take two or three keystrokes to execute. Keys reserved for special functions are particularly helpful in word-processing, where you must instruct the computer to do such things as "insert," "delete," "save," "print," and so forth. The table opposite shows the number of keys on each keyboard and the number devoted to specific word-processing operations. The *Coleco Adam's* keyboard is by far the most complete, even including a game-controller that snaps into the keyboard to serve as a separate numeric keypad.

Data storage. A computer's RAM is called "temporary" memory because anything in it, including the book report Junior may have worked on for hours, will disappear as soon as you turn off the computer. That's why computer systems need a device for storing data. The cheapest storage medium, and therefore the one most often found with inexpensive home systems, is a tape cassette in a cassette player. The players offered by computer manufacturers look and act like any conventional tape player, though some are modified to accept start and stop commands from the computer.

A cassette tape can hold far more information than can the temporary memory of even a 64K computer. But a

tape player is awkward to use. It's usually necessary to keep a paper record of what's filed on the tape and where it's filed. You need the record to help you find a file when you want to load it into the computer and, more important, to avoid destroying a file by recording other information over it.

Disk systems are far superior. The computer automatically assigns a file to a location on the disk, erasing it only on your direct command. The computer will also automatically find and re-use blank spaces, keep and display a list of the names of files saved on a disk, quickly search the disk for a file you want, and bring the file into temporary memory.

As the table shows, all these computers but the *Coleco Adam* can use either cassette tape or disks to store data. But only with the *Commodore 64* can you keep the cost of a disk-based system to under \$800. (A single disk drive for the others is about \$400.)

The *Coleco Adam* uses a built-in cassette-like tape system unique among inexpensive computers now on the market. It performs its functions automatically, much like a disk system. It searches for and retrieves documents on command after displaying an index of the files; it erases files on command and automatically locates and uses the blank portions of tapes.

The *Adam* loaded files more slowly than the disk system on our *Commodore 64*, but much more quickly than standard cassette systems. However, it took even longer to save files than did a standard cassette system.

To see how fast these systems performed a typical task, we loaded and saved a three-page document in each system. In each case, the document was the third file stored on the disk or tapes. Then we timed how long it took for us to type in the necessary commands and for the system to complete the operation. Here are the results:

| | To load | To save |
|-------------------------|----------|----------|
| Atari 600XL | 230 sec. | 234 sec. |
| Coleco Adam | 40 | 171 |
| Commodore 64 (tape) | 130 | 134 |
| Commodore 64 (disk) | 19 | 23 |
| TRS-80 Color Computer 2 | 74 | 82 |

While time is of the essence in business tasks, those extra seconds may not hang so heavily over the user of a home computer.

On balance, we'd say the conve-

nience of the *Coleco Adam's* tape system represents a substantial improvement over standard cassette storage systems. However, the tape system did not work correctly on two of the four *Coleco Adams* we originally bought. One snapped tapes outright; it was clearly defective. Another, though not defective, destroyed data stored on the tape. That, apparently, was because we used the computer in a way the documentation should have, but didn't, warn against. A fifth *Adam*, bought after Christmas, included revised instructions and warnings that, if followed, should keep you from losing stored data.

Display. A color TV set makes a nice monitor for games and educational programs, which depend on color graphics for effectiveness. It's not so nice as a display for words and numbers, since a TV set's picture is inherently less sharp than a computer monitor's. However, the display generated by the computer also affects the readability of words on the screen. We judged the *Atari's* TV display by far the easiest to read, even better than the *Commodore* and *Coleco* displays on a computer monitor.

A TV set's relative fuzziness also limits the number of characters that can be displayed. Computers designed to work with monitors usually can display as many as 80 characters and spaces (or columns) across the screen. Computers designed to work with a TV typically display 40 columns or fewer.

The *TRS-80 Color Computer 2* produces only 32 columns and 16 rows—and only capital letters. Skimpy displays make for obvious difficulties when you're trying to figure out how a letter will look when printed out to, say, 60 characters on a line.

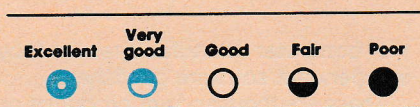
Programming. If you or someone in your family wants to dabble in programming, you'll probably start with a language called BASIC. Each of these computers has a version of the BASIC programming language built into permanent memory or, in the *Coleco Adam*, on tape.

The *Adam's* BASIC is virtually identical to Applesoft BASIC, the language used by *Apple* computers. If your child's school teaches BASIC on an *Apple* computer, as many schools do, and if your child is interested in the subject, that might be a point in the *Adam's* favor.

Microsoft BASIC, however, is the version that has become virtually standard in personal computers. The versions of BASIC used in the *TRS-80 Col-*

Inexpensive word-processors

Listed in alphabetical order. Prices are approximate retail, as stated by manufacturer. Discounts are usually available. In the columns, ✓ means yes, — means no or does not apply.



| | ATARI 600XL | COLECO ADAM | COMMODORE 64 | TRS-80 16K COLOR COMPUTER 2 | TRS-80 64K COLOR COMPUTER 2 |
|-----------------------------------|-------------------------------------|-----------------|---|--|--|
| Price | \$200 | \$700 | \$230 | \$140 | \$400 |
| Hardware included | | | | | |
| CPU | ✓ | ✓ | ✓ | ✓ | ✓ |
| KEYBOARD | ✓ | ✓ | ✓ | ✓ | ✓ |
| STORAGE DEVICE | — | ✓ | — | — | — |
| PRINTER | — | ✓ | — | — | — |
| Software included | | | | | |
| PROGRAMMING LANGUAGE | BASIC | BASIC | BASIC | BASIC | BASIC |
| WORD-PROCESSING | — | ✓ | — | — | — |
| Needed options | | | | | |
| STORAGE DEVICE | Atari 1010 cassette recorder, \$100 | — | Commodore Datasette recorder, \$70, or Commodore VIC-1541 disk drive, \$250 | Radio Shack CCR-81 cassette recorder, \$60 | Radio Shack CCR-81 cassette recorder, \$60 |
| WORD-PROCESSOR SOFTWARE | \$100 | — | \$50-\$70 | \$35-\$60 | \$35-\$60 |
| PRINTER | Atari 1027, \$350 | — | Commodore VIC-1525, \$250 | Radio Shack DMP-100, \$400 | Radio Shack DMP-100, \$400 |
| Basic system price | \$750 | \$700 | \$620 (tape) \$780 (disk) | \$655-\$680 | \$895-\$920 |
| JOYSTICKS | \$20/pr. | Included | \$18/pr. | \$25/pr. | \$25/pr. |
| Memory configuration | | | | | |
| USUAL SIZE | 16K | 80K | 64K | 16K | 64K |
| EXPANDABLE TO | 64K | 144K | — | 64K | — |
| EXPANDED BY | Plug-In module | Card | — | Chips | — |
| Keyboard configuration | | | | | |
| KEYBOARD TYPE | Standard | Standard | Standard | Standard | Standard |
| NUMBER OF KEYS | 62 | 75 | 66 | 53 | 53 |
| KEYBOARD FEEL | ○ | ● | ● | ○ | ○ |
| KEY REPEAT | ✓ | ✓ | ✓ | — | — |
| WORD-PROCESSING KEYS | 3 | 12 | 4 | — | — |
| Program & data storage | | | | | |
| CARTRIDGE | ✓ | ✓ | ✓ | ✓ | ✓ |
| CASSETTE | ✓ | ✓ | ✓ | ✓ | ✓ |
| DISK | ✓ | — | ✓ | ✓ | ✓ |
| Display configuration | | | | | |
| OPTIONAL MONITOR | — | ✓ | ✓ | — | — |
| UPPER/LOWER CASE | ✓ | ✓ | ✓ | — | — |
| COLUMNS | 38 | 36 ¹ | 40 | 32 | 32 |
| ROWS | 24 | 20 ² | 25 | 16 | 16 |
| COLOR | Full | Full | Full | Full | Full |
| READABILITY, TV | ● | ○ | ○ | ○ | ○ |
| READABILITY, MONITOR | — | ○ | ○ | — | — |
| SOUND | 4 voices | 3 voices | 4 voices | 1 voice | 1 voice |
| Documentation | | | | | |
| USER GUIDE | ● | ● | ● | ● | ● |
| BASIC | ● ³ | ○ | ● | ● | ● |

¹ 31 columns when using BASIC instead of word-processor.

² 24 rows when using BASIC instead of word-processor.

³ Reference guide, in booklet form, is the only BASIC documentation supplied.

or *Computer 2* and the *Commodore 64* are quite close to Microsoft BASIC. Someone who learned programming on those computers would have little trouble making the transition to most other computers later.

Atari's BASIC is the least desirable, and the weakest point in an otherwise admirable computer system. We consider it harder to learn than the other common BASIC variants and, once learned, less convenient and less powerful. (Atari says it plans to offer Microsoft BASIC as a cartridge program. As of this writing, it's not available.) Further, Atari makes no effort to provide decent learning materials; the programming instructions that come with the computer represent little more than the reference material that would be used by a trained programmer. Instead of providing good documentation itself, Atari recommends several books on Atari BASIC.

Software support. Program cartridges are not interchangeable from one brand of computer to another. If you expect to use your computer for games, education, and other home tasks, you had best consider the quantity and quality of program offerings by

the computer manufacturer and by independent software publishers.

There are thousands of programs on the market. New ones come out daily, and old ones are often republished in improved versions. We can here give you only our impressions of what's available, based on our ongoing software evaluations and on a review of catalogs and mail-order offerings.

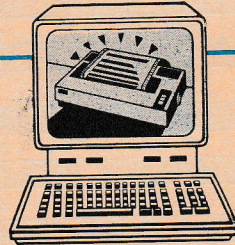
There is a very large library of *Atari* cartridges, many of them games, of course, given the company's roots in video game machines. But there are also many interesting-looking educational programs and other home applications. As we'll explain later, the *AtariWriter* word-processing cartridge is among the nicest simple word-processors we've reviewed.

Radio Shack, which sells the *TRS-80* computer line, also offers a good selection of programs for the *Color Computer 2*. In addition, the *Color Computer* has been around long enough to have captured the attention of independent software writers; we had no trouble finding three simple word-processing programs for that model. Programs for the *Color Computer* may not all be the cream of the crop, but at

least they're easy to find at retail through Radio Shack computer stores.

Commodore has been slow in providing software support for its home computers. But each succeeding Commodore catalogue is thicker than the one before, and software suppliers are unlikely to ignore what has become the best-selling home computer in the country. Whether the programs are generally as good as those available for other inexpensive models is at least a question mark. We were not impressed by either word-processor we bought for the *Commodore*.

The *Coleco Adam* is full of promise and promises, but there's precious little software for it. Since its word-processing program is built into permanent memory and is central to Coleco's sales pitch, there's little incentive for publishers to offer a better one on cartridge or tape—even though owners of an *Adam* may well wish for a better one. Otherwise, there's a tape video game that comes with the package. There are the game cassettes made for Coleco's video game machine, *Colecovision*. And there are promises of software to come. ■



HOW THE PRINTERS COMPARE

The printer in a word-processing system is normally bought separately from the computer. You can usually choose from a range offered by both the computer maker and aftermarket suppliers. Coleco broke this mold with its *Adam* by tying the printer to its computer (the on/off switch for the system is on the printer instead of the CPU). You can't buy a different printer for the *Adam*, and you can't use its printer with any other computer.

It was the bundling of the printer in the system that made the *Adam*'s price so interesting. The price of print-

ers has not been dropping nearly so fast as the price of computers; you can now buy powerful small computers such as the *Commodore 64* for less than even the most primitive printers.

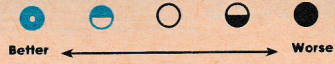
In choosing a printer, you normally look for two things—good-looking print and speed. In selecting the printers for this project, we added another stiff criterion. We wanted printers that would keep the system price competitive with the price of the bundled *Adam* system.

More than anything else, it was the price constraint that led us to the printers we chose for the other three com-

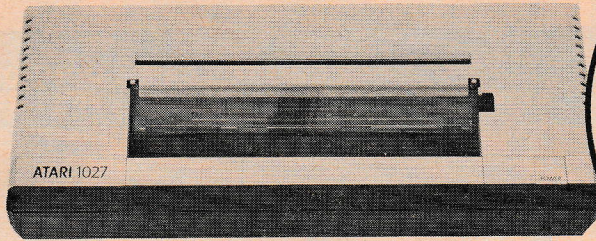
puters. In each case we were more or less limited to the cheapest printer sold under the computer maker's own name. That fetched the *Atari 1027* printer for the *Atari 600XL*, the *Radio Shack DMP-100* printer for the *Color Computer 2*, and the *VIC-1525* printer for the *Commodore 64*. We could have chosen better printers for those systems, but they would have driven the cost of the complete systems out of the *Adam*'s range.

Print appearance. For the look of a printer's output to match the appearance of type from an electric typewriter—"letter-grade," we call it—it's

How the print looks



Atari 1027
Print quality: ②

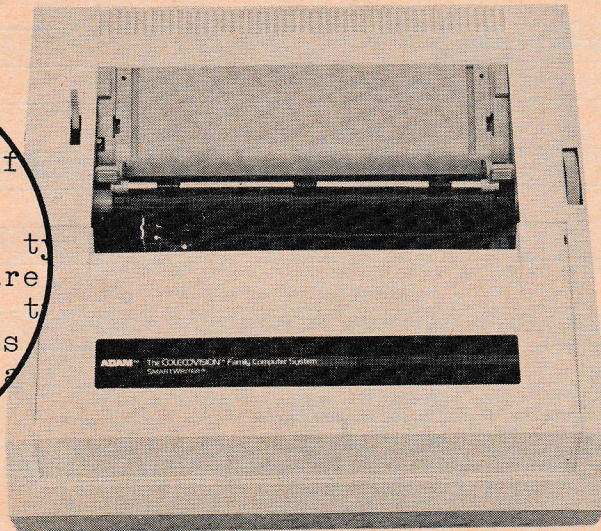


Thank you for your
load impedance for

The two popular typewriter
systems today are the
In the magnetic typewriter
stylus. The magnet
this motion induces
case of the moving
field provided by

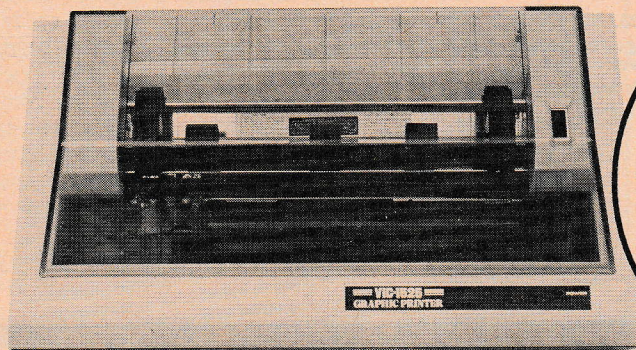
Thank you for your
load impedance for

The two popular typewriter
systems today are the
In the magnetic typewriter
The magnet moves
motion induces
the moving coil
provided by



**Coleco Adam
Smart Writer**
Print quality: ③

**Commodore
VIC-1525**
Print quality: ④

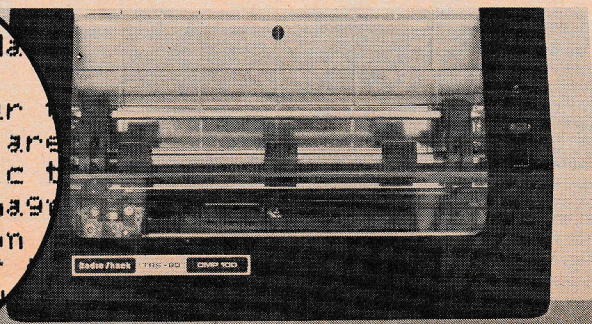


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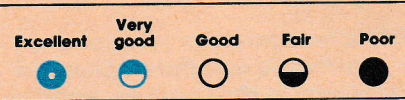
The two popular
systems today are
In the magnetic
stylus. The mag
and this motion
In the case of
magnetic field



Radio Shack DMP-100
Print quality: ⑤

Printers

Listed in alphabetical order. Prices are approximate retail, as stated by manufacturer. Discounts may be available. In the columns, ✓ means yes, — means no or does not apply.



| | ATARI 1027 | COLECO ADAM SMART WRITER | COMMODORE VIC-1525 | RADIO SHACK DMP-100 |
|--|-----------------|--------------------------|--------------------|---------------------|
| Price | \$350 | ☐ | \$250 | \$400 |
| Type ^② | Roller | Daisy wheel | Dot matrix | Dot matrix |
| Print quality | ● | ● | ● | ● |
| True descenders | ✓ | ✓ | — | — |
| Speed | | | | |
| MFR.'S CLAIMED (CHARACTERS PER SECOND) ^③ | | ☐ | 30 cps | 50 cps |
| CU-MEASURED (LETTER) | 2 min., 26 sec. | 2 min., 13 sec. | 1 min., 14 sec. | 40 sec. |
| Paper format | | | | |
| SINGLE SHEET | ✓ | ✓ | — | — |
| SPROCKET (FANFOLD) | — | — | ✓ | ✓ |
| PAPER WIDTH | 8½ in. | 9½ in. | 4½-9½ in. | 4½-9½ in. |
| Paper feed | | | | |
| FRICTION | ✓ | ✓ | — | — |
| TRACTOR | — | — | ✓ | ✓ |
| EASE OF INSERTION | ● | ● | ○ | ○ |
| Ease of ribbon-changing | ● | ● | ● | ● |
| Self-test | — | — | ✓ | — |
| Instruction manual | ○ | ● | ○ | ○ |
| Comments | A | F,G | B,C,D | B,D,E |

☐ Printer included in Coleco Adam system, \$700.

② Roller type has fully formed characters arranged on a roller. Dot-matrix type prints dots that form each character. Daisy-wheel type has fully formed characters arranged around the hub of a wheel.

③ Not stated; speed was approx. 12 cps in CU's tests.

④ Not stated; speed was approx. 10 cps in CU's tests.

KEY TO COMMENTS

A—Can underline text and print international characters.

B—Has double-width mode.

C—Has reverse-field mode.

D—Has graphics print mode.

E—Can underline text.

F—Can use **Diablo** or **Qume** print wheels.

G—Judged very noisy when printing.

Should you wait for the IBM PC jr.?

As this report was being prepared, IBM announced its long-awaited home computer, called the *IBM PC jr.* It was not on sale early in the year and may not be in stores until spring. Is it worth waiting for?

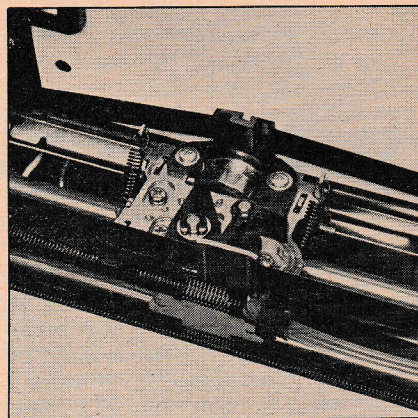
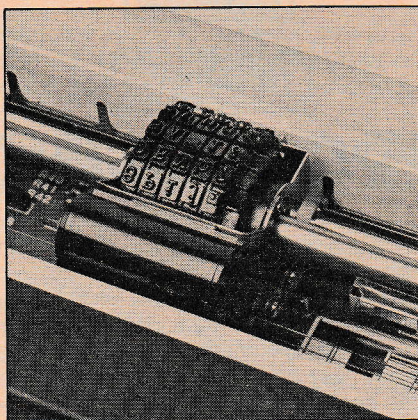
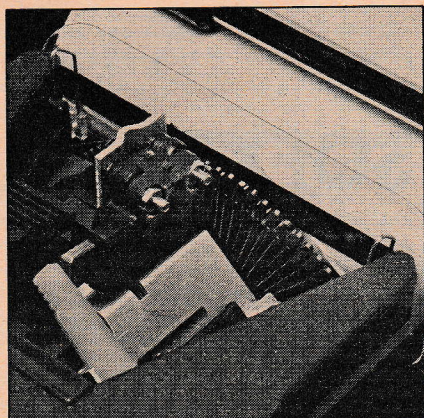
Not if you are trying to buy into home computing for under \$1000.

There are two versions of the *PC jr.* The basic version, a 64K model, will

sell for about \$700. But that's for a CPU and a keyboard alone. Everything else needed to make a usable system—a cassette player for the basic system, a printer, cable connections, and other odds and ends, including software—would bring the price to between \$1200 and \$1500. The basic version, intended to work with a TV set, displays only 40 characters.

The upgraded *PC jr.* includes a disk drive, 80-character display, and 128K of memory. But it will sell for \$1270, and will probably have a system cost of close to \$2000 by the time the necessary extras are counted in.

We intend to compare the new *IBM* to other home computer systems in its general price class, including the *Atari 800XL* and the *Apple IIe*.



Three printing methods: *Adam's daisy wheel (left) print. Dot-matrix head on Commodore and Radio Shack and Atari's roller (center) models is speedy but produces low-quality print.*

usually necessary for the machine to print fully formed characters by striking an inked ribbon against the paper.

Two of the printers we tested, the *Adam's* and the *Atari 1027*, achieve letter-grade quality easily, but they do it by different means. The *Adam* employs a daisy wheel, so-called because the character stampers are arranged around the hub of a plastic disk like the petals of a daisy. Many expensive office printers use daisy wheels, and you can buy *Qume* and *Diablo* brand replacement wheels for the *Adam*. This would let you change the typeface, too, if you wish.

The resulting *Adam* printer is quite a sizeable box, bigger even than the central processing unit. It uses friction feed, as a typewriter does, primarily for single sheets of paper up to 9½ inches wide. The printer stops during printouts to allow you to feed in fresh sheets of paper. (It can also print continuously if you use fanfold paper.) When it is running, its rat-a-tat-tat is much the noisiest of any printer in this group. You'd need thick, solid walls to avoid disturbing a sleeper in the next room.

The *Atari 1027* employs a method of printing that's new to us in computer printers. A spinning, inked rubber cylinder, composed of five rings of letters, moves down the line and impacts the proper letters against the paper as it goes. The result is an unusually light, compact printer that produced crisp, black, and even typescript. We judged it excellent.

Like the *Adam's* printer, the *Atari 1027* uses friction feed for single sheets. However, its maximum paper width is only 8½ inches. You can print the letter, but not necessarily the address on the envelope.

The *Radio Shack DMP-100* printer, used with the *Color Computer 2*, and

the *Commodore VIC-1525* printer, used with the *Commodore 64* computer, are quite similar inside their plastic cases. They're both of a type called dot-matrix. They form a printed character dot by dot until a readable letter appears.

These printers are a variation on the usual dot-matrix theme. Instead of pecking the paper with an array of pins, they use a vertical bar that strikes the paper against a moving platen.

The characters thus formed are extremely crude compared to letter-grade printing, as the photos on page 87 show. There are not enough dots to blend into a smooth letter form, and letters with descenders—g, j, p, q, and y—are artificially pushed upward. The typeface is readable, of course, but we judged its appearance poor.

This pair of printers also shares the same paper-feed method. They are designed to use fanfold paper with sprocket holes on the side. The tractors that pull the sprocket holes can be set at any width from 4½ to 9½ inches apart. You can get paper for this system that reduces to 8½-by-11-inch sheets when you've separated the sheets and stripped off the sprocket holes along the perforated lines. With that kind of paper, of course, you don't have to stop and feed in single sheets.

Printing speed. There would not be dot-matrix printing if there were not a quest for faster printing, and, sure enough, the two dot-matrix printers buzzed out pages two to three times as fast as the *Adam* and the *Atari* rattled them out.

We had each printer print out a 170-word business letter. The table on page 88 shows each maker's nominal speed in characters per second, and gives the time we measured for printing the letter.

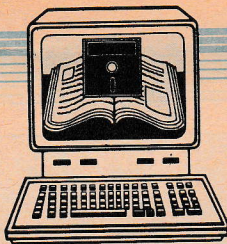
There are times when printing a letter in 40 seconds is too slow—when you have to print 1000 a day, for example. But we believe most home users could spare the two or three minutes it takes to print a letter with the *Atari* or the *Coleco Adam* in return for the excellent appearance of the type. In judging the printers, we gave much more weight to print appearance than speed of printing.

Other conveniences. The dot-matrix printers can do more than merely type. They are capable of producing expanded type, if the word-processor program will produce it. They can even produce oversized type for headlines, or graphics such as bar charts, pie charts, and plotted curves, if you learn how to do the programming necessary to produce such niceties. (You can buy programs for such things, just as you buy word-processing programs.)

The two letter-grade printers don't do much more than print in attractive typescript. The *Adam's* printer can produce superscripts and subscripts for footnotes and chemical formulas; the *Atari 1027* can produce underlining and some foreign characters.

Changing ribbons. None of the printers makes a real problem of ribbon changing. The *Adam* uses a snap-in ribbon cassette. The *Atari* doesn't use a ribbon; a snap-in ink roller inks the cylinder of type as it revolves. The dot-matrix printers both use simple loops of ribbon that are re-inked as they continually loop. Changing the loop is not difficult, but you must handle the inky ribbon.

All the tested printers connect to their computers without any need for special interfaces. This is a decided improvement in the *Atari* line. With previous *Atari* hardware, you had to buy a costly interface in addition to the computer and the printer. ■



THE WORD-PROCESSING SOFTWARE

When you buy the *Coleco Adam* you're limited to the word-processing program built into the computer's permanent memory. With other systems, there are many choices. Each computer brand offers at least one proprietary program, and there are many aftermarket programs.

We looked for programs that were suitable for home use and in keeping with the price and capabilities of the computers and printers. We wanted programs that were inexpensive, widely available, easy to learn and use, and with the basic features needed to make composing letters and short essays easier than on a typewriter.

For the *Atari 600XL* we chose the company's *AtariWriter* (\$100). Having already reviewed this cartridge-based program (CONSUMER REPORTS, October 1983), and having found it thoroughly satisfactory, we did not search further for an alternative.

We picked three programs to run on the *TRS-80 Color Computer 2*. One is Radio Shack's cartridge-based *Color Scriptsit* (\$35); a second is an aftermarket program named *Telewriter 64* (\$50), available on a cassette tape. (We had reviewed those programs in October as well.) We also bought a \$60 aftermarket cartridge program, *VIP Writer* (it used to be called *Super "Color" Writer*).

Commodore promotes its own disk-based program, *Easy Script* (\$50), for its *Commodore 64*. Since we could put together a relatively inexpensive *Commodore 64* system with disk drive, we bought *Easy Script* to run on it. We also bought a cartridge program, *Quick Brown Fox* (\$70), produced by an aftermarket publisher and heavily advertised in computer magazines.

What we looked for

Even a simple word-processor should have good editing functions. That is, it should be easy to make insertions and deletions, whether by letter, word, or long passage. You should be able to move the cursor (the indicator on the screen that shows where things will happen next) to any

point on the screen with ease. And since the screen can display only a part of a document, there should be some way to bring any other part of the document to the screen quickly.

We didn't expect to see ideal screen formats because of the limitations inherent in using a TV set for the display. Still, some of the programs we tested were elegant and some were crude.

Above all, a word-processor that will get only occasional use should be easy to learn, easy to use once learned and to remember after a period of disuse.

The table on page 94 sums up the functions each program makes available. A full explanation of those functions appeared in our October report on word-processing. What follows is a brief summary of functions and a description of the major advantages and disadvantages of these inexpensive programs.

Screen editing. With word-processing, unlike typewriting, you can alter your typed words before committing them to paper, correcting errors or reorganizing thoughts without retyping everything you've written. You position the cursor at the place you want to make a change, then make the change. The rest of the document adjusts to accommodate the editing.

The keyboards of the systems we assembled have "arrow" keys pointing up and down, left and right. Normally, holding down the arrow key propels the cursor in the direction the arrow is pointing, so you can range around the display fairly quickly. But with the *Adam*'s program or the *Quick Brown Fox* cartridge in the *Commodore*, the up and down arrow keys usually bring lines to the cursor, rather than the cursor to the line. We found that approach cumbersome—especially with *Quick Brown Fox*, which makes you shift from a "typing mode" to an "editing mode" before you can move the cursor up or down.

The *Adam* program and the *Quick Brown Fox* share another shortcoming. Neither lets you jump the cursor all the way to the beginning or end of the document in one quick move. That wouldn't matter if you seldom write

documents longer than a page or so. But if you often write longer documents, we think that the omission is serious enough to make you wish you had another program.

Once you've placed the cursor where you want to make a change in what you've written, you call on the word-processor's ability to insert, delete, or move letters, words, sentences, or paragraphs. How easily and elegantly this can be done at the keyboard depends to a large extent on the skill of the software designer. Using the editing functions can be so natural and effortless that they fit right into the flow of your typing, or so awkward and complex that you have to stop and think, even consult a manual, in order to get things done.

In reaching our "ease of use" judgments, we gave heavy weight to how naturally these editing functions came to the fingertips—something we consider even more important than the gross number of editing functions available. We judged *AtariWriter*, *Telewriter 64*, and *Color Scriptsit* (the latter two for the *TRS-80 Color Computer 2*) easiest to use.

Block operations. Word-processors can deal with a section, or block, of copy at once—move it to reorganize a manuscript, copy it to avoid retyping, delete it in one swoop, or save it to use again later. All these programs can copy blocks, and all but the *Adam*'s program can delete a block. As with the editing functions, not all the block operations were equally easy to perform. The relative difficulty was one of the factors that went into our "ease of use" judgments.

Search and find. Word-processors can search a manuscript for a chosen word and call it to the screen whenever it shows up in the document. You can use the feature to make automatic corrections for the word you've searched—to correct a persistent misspelling in one operation, for example, or to spell out words you've abbreviated while typing. Most programs let you choose whether you want to pause at each occurrence, so you can decide on changes individually, or

whether you want a "global" search-and-replace—that is, a change made automatically everywhere the searched word is found.

Screen formatting. Since these computers display 40 or fewer characters per line, it's up to the program to provide some way to let you know how many pages the document will be when printed out to, say, 60 characters per line, and to give you an idea of how the printed document will look.

One approach designers of simple word-processors take is the "print preview" feature. The screen becomes, in effect, a window over the document as it is formatted for printing. Although you can't see a whole page of the formatted document at one time, you can manipulate keys to shift the page around under the window to view where pages end and paragraphs lie. All except *Telewriter 64* and *Color Scribes* provide print-preview.

Another approach is to design a program that can display more characters per line than the computer itself normally does. *VIP Writer* offers this approach as well, as does *Telewriter 64*, the other aftermarket program for the *Color Computer*. There are two problems with it. First, the characters aren't as clear when you make longer lines; reading them invites eyestrain. Second, the extra programming needed for this character-generation routine can slow down other operations, especially when the document you're working on gets lengthy.

Neither "print preview" nor "character generation" is entirely satisfactory. Lacking one or the other, however, you're stuck with printing out a trial run of the document to see how it looks. That's the case with Radio Shack's *Color Scribes* program. *Color Scribes* is also the only one we tested that lacks lower-case letters in the screen display, a decided drawback.

The most serious omission we noted among the tested word-processors is the lack of "word wrap" in the display of Commodore's *Easy Script*. In word-processing, unlike typewriting, you needn't pause to hyphenate or return a carriage at the end of a line. You continue typing and let the words take care of themselves. In almost all programs we've seen, words that don't fit at the end of a line are automatically brought down to the beginning of the next line as you type. Since *Easy Script* lacks this "word wrap" feature in its display, the display becomes difficult to read; lines may often end with curious word fragments, such as the

first letter alone. *Easy Script* does provide word wrap in its printed output; it would be a totally useless product if it didn't.

Print formatting. Expensive word-processing programs offer the possibility of elaborate page formats. Our inexpensive word-processors are meant for a simpler world where you set only the four page margins—all that's really needed for letters or school reports. (With *Color Scribes*, you can set only one of the four page margins; with *Quick Brown Fox*, only two.)

Although you can set margins, you usually don't have to. Every program but the *Quick Brown Fox* has "default" settings—settings the program uses when you don't select something different. With the *Quick Brown Fox*, you have to make the settings for every printout. As a practical matter, you have to do the same thing with Commodore's *Easy Script*, since it defaults to 80 characters per line.

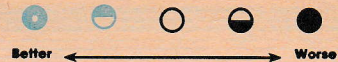
Still, most of the programs will do some of the more interesting tricks that word-processing makes possible. For instance, all will automatically number the pages as they print, and all but the *Adam* will automatically put a page heading on each page for you. Some programs will give you footings also, if you wish. All will give you a range of line spacing. *Adam* can't automatically center titles, but all the others can, and all but *Adam* and *Color Scribes* can produce justified margins—margins aligned on both sides, as in books or magazines.

In word-processing jargon, underlining, bold-facing, and super- or subscripts are called "character enhancements." All of the programs except the *Color Scribes* offer some or all of these, as the table shows.

Learning assistance. Each program comes with a printed tutorial. You follow the tutorial while sitting at the keyboard, and you are guided, step by step, through every routine available in the program.

That's fine for beginners. But afterward it's good to have a manual that lists all the operations (and variations on them) so you can look them up quickly. Two of the *Color Computer 2* programs—*VIP Writer* and *Color Scribes*—lack a reference manual, as does *Quick Brown Fox*, the cartridge program for the *Commodore*. The two *Color Computer* programs don't even come with a reference card—a handy single sheet listing all commands.

The *Adam* program and the *Quick*

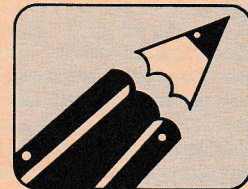


Brown Fox are "menu driven." Instructions appear on the screen to guide you through procedures step by step. Done well, a menu-driven system can practically eliminate the need to refer to written instructions.

The *Adam* is nearly self-teaching. Its keyboard has six extra keys, called "smart keys." As you follow the screen menu through the procedure, you press the indicated smart keys to accomplish each subsequent step until the procedure is finished.

While a menu can make learning painless, it can make operation painful after the learning period is over. Once you've learned a procedure, you want to accomplish it as quickly as possible, in the minimum number of keystrokes, without going through the step-by-step menu-selection process. The *Adam* and the *Quick Brown Fox* require you to continue operating the program like a beginner. In the case of *Quick Brown Fox*, the menu operation is so clumsy that it represents, in our view, close to a disabling flaw.

The discussion below gives you a rundown on the good and bad points of each program.



WORD-PROCESSING PROGRAMS

ATARI WRITER, \$100

Atari Inc.
1265 Borregas Ave.
Sunnyvale, Calif. 94086

For: Atari 600XL

Ease of learning: ●

Ease of use: ●

Features: ●

This cartridge program is quite easy to learn and use, and, just as important, easy to pick up again after a lapse of a few weeks. The combined tutorial and reference manual is well thought out—small, logical, and indexed. A reference card lists the keystrokes for all commands and should suffice for occasional reminders once you've learned the program. We think most people could set up the program and run it without additional help.

The program makes intelligent use of the

Atari 600XL's keyboard and works well with other Atari models.

The program provides the important cursor controls, scrolling, insert, and delete functions, and the desired block commands. You can delete from the cursor to the end of the document and recall the most recent deletion. You can have the program search and delete, as well as find or replace. A few operations are prompted to assist you along.

The program will let you work on up to six double-spaced pages in the Atari 600XL's 16K memory. You can break longer documents into separate files and print them in succession.

The 36-column screen display can't show the document as it will be printed, but you can call up a preview of the document as it will be printed and scroll left, right, up, and down to see a complete page.

AtariWriter has all the print-formatting functions that the Atari 1027 printer can handle, and then some. With a more elaborate printer, AtariWriter can produce compressed and expanded typefaces, plus proportional printing.

Overall, we consider it the best of the inexpensive programs we've reviewed.

VIP WRITER, \$60

Nelson Software Systems,
Div. Softlaw Corp.
9072 Lyndale Ave.
S. Minneapolis, Minn. 55420
For: TRS-80 Color Computer 2

Ease of learning: ●

Ease of use: ○

Features: ○

This cartridge program for the TRS-80 Color Computer 2 is one of the most feature-filled of those tested. However, that doesn't make it the best, especially for a beginner unfamiliar with the Color Computer or with programming concepts. (We tested the program as Super "Color" Writer; the publisher has since changed the name.)

The lengthy tutorial throws chunks of fairly technical information at you—and not necessarily in logical sequence—rather than take you in easy steps through the process of making a few documents. It could take days to become reasonably proficient, and you'd probably have to work

with the program regularly thereafter to avoid losing the skills you've learned.

Once you've mastered the program, you can do a lot with it. The editing functions are complete and easy enough to use. The cursor can be moved speedily to any point in the document. Deletions can be made by character, word, line, or marked block, and most commands can be cancelled and the damage undone if a finger happens to slip.

VIP Writer lets you program three keys on the Color Computer 2 for special functions. You might devote keys to special printer commands, for instance, or to set formats for special documents. You can mark up to 10 blocks at once for a sequential block operation.

VIP Writer lets you change the Color Computer's 2's display from the normal 32 columns to 51, 64, or 85 columns. The letters grow increasingly difficult to read, however; you'd probably change to the 64- or 85-column display mainly to see how a document will look when printed. Since part of the memory is used for this special character generation, operations tend to slow down as the manuscript grows longer. If you wish, you can change the display only when using the program's print-preview feature to scroll over formatted copy.

The program will let you work on about four double-spaced pages in the 16K Color Computer 2. With the 64K model, you could go on for 34 pages. The program has print-formatting capabilities that go well beyond what's needed for home operation—you can program in graphic symbols or in fancy formats, for instance.

In short, VIP Writer provides a lot—perhaps too much for home use. In our opinion, it's not a program designed for easy use on letters and school reports.

TELEWRITER 64, \$50

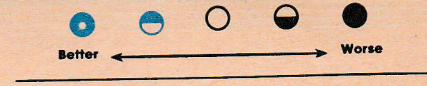
Cognitec
704 Nob Ave.
Del Mar, Calif. 92014
For: TRS-80 Color Computer 2

Ease of learning: ●

Ease of use: ●

Features: ○

This cassette program runs on the 16K Color Computer 2, but it isn't ideal for that model, since it leaves room in memory for



only about two pages. It's much more practical, and quite good, for a Color Computer 2 that has 64K of memory.

The program offers many of the desirable capabilities of VIP Writer, including column widths of 51, 64, and 85 characters, with few of the drawbacks. The tutorial is thorough but easy to follow, as is the reference section. We think you could teach yourself this program from the materials provided, and retain it through occasional use.

All the most important screen editing procedures are present, including block manipulations and search-and-replace—and they work in logical ways. The screen doesn't display line or page numbers, but it will on request tell you how many words and lines you've written and the amount of space left in memory.

As with VIP Writer, the printing capabilities are quite extensive, including automatic page numbering, title centering, and automatic page headings. You can also embed printer control codes for type embellishments and special formats. Although these procedures do not come lightly to the fingers, a reference card helps you track yourself through them if you don't use the codes often. We'd guess that typical home users would use these codes only occasionally, to make a reusable letterhead, say, then forget about them.

For best use, the Telewriter 64 needs not only more than 16K of memory but a printer more adequate than the Radio Shack DMP-100 we used. Telewriter 64 is programmed to work well with Epson printers. The program is also available on disk for \$60.

COLOR SCRIPSIT, \$35

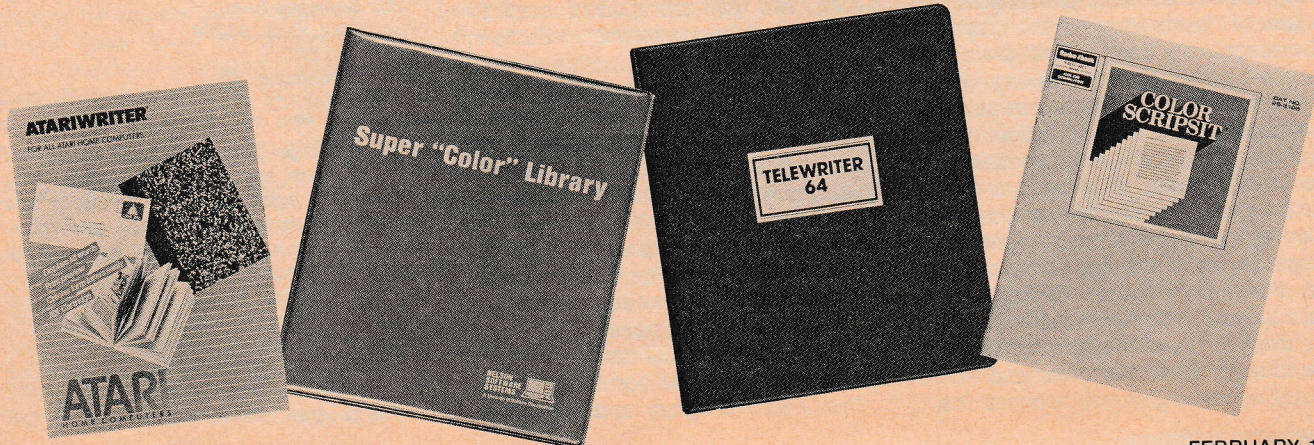
Tandy Radio Shack
1500 One Tandy Center
Fort Worth, Tex. 76012
For: TRS-80 Color Computer 2

Ease of learning: ●

Ease of use: ●

Features: ●

This is Radio Shack's low priced word-processor. It comes with a well-written tutorial that should make the program fairly easy to pick up, even without a specific reference manual or reference card. The important editing functions are available and easy enough to use.



The features are skimpy—but adequate for a youngster with simple writing chores.

Unfortunately, unlike the other word-processing programs for the *Color Computer 2*, *Color Scribes* sticks you with the computer's own meager display—only 32 characters wide and capital letters only. Should you set a line length longer than 32 characters, the screen will scroll sideways, so the screen never shows a whole line. You'd quickly learn to set for 32, and then reformat for printing.

For print-formatting, you don't set the margins directly. Instead, you specify the line length and how many lines per page. That procedure works for a letter or simple document, but isn't at all flexible. There's no print preview; you have to print out a copy to see what it will look like on paper.

There are no justified right margins or character enhancements. But, curiously in such a minimal program, there is automatic hyphenation.

Its low price and ease of use make *Color Scribes* a nice child's introduction to word-processing. But you'd eventually want something more powerful, we believe.

EASY SCRIPT, \$50

Commodore Business Machines Inc.
681 Moore Rd.
King of Prussia, Pa. 19406

For: Commodore 64

Ease of learning: ○

Ease of use: ○

Features: ○

In October, when we reviewed a program for another *Commodore* model called *Word Pro 3 Plus*, we said it was hard to conceive of a costly (\$295) program that did not offer such a basic feature as word wrap. That word-processing basic is missing as well from *Easy Script*, a disk-based word-processor for the *Commodore 64*.

It's a curious and, in our view, disabling omission from an otherwise full-featured word-processor that is reasonably easy to learn and use.

The important editing commands are present. In addition, you can send the cursor directly to a specified line number, and you can tab to a decimal point so that columns of figures will line up on the points.

The formatting capabilities are extensive.

But since you must embed the commands for them in the document, you can't change the format without going back into the document and changing each embedded command. There is a print-preview feature with sideways scrolling so that you can see the whole document. (You can't scroll upward in this mode, though.)

Extensive character enhancements are also available—boldfacing, underlining, expanded or condensed type. But you'd need more of a printer than the *VIC-1525* to take advantage of them.

QUICK BROWN FOX, \$70

Quick Brown Fox
548 Broadway
New York City 10012

For: Commodore 64

Ease of learning: ●

Ease of use: ●

Features: ●

This widely advertised cartridge word-processing program for the *Commodore 64* gets you off to a slow start with poor documentation that leaves you ill-prepared for using this confusing program.

The editing functions for *Quick Brown Fox* are the clumsiest we've seen. When you enter copy, the cursor disappears at the second screen line. You can't range freely through the document and make quick changes. To make a change, you must first exit the text-enter mode and go to a line-editing mode and select the procedure you want. Then changes are made on a single line at a time.

If you want to scroll upward, the document's lines pop onto the screen in reverse order, as though they had been written from the bottom to the top. (If you can read upside down, it might help to stand on your head.) Block moves are possible, but the procedure is the most awkward we've seen. And you can't usually move quickly to the beginning or end of the document; you have to poke along line by line.

The program's print-preview feature is somewhat misnamed. If you've set the format lines longer than the 40 characters visible on the screen, the extra characters appear on the screen as doubled lines, so you don't actually preview pages as they will be printed.



ADAM 'SMART WRITER'

Coleco Industries Inc.
945 Asylum Ave.
Hartford, Conn. 06105

For: Coleco Adam (built into system's permanent memory).

Ease of learning: ●

Ease of use: ●

Features: ●

The word-processor built into the *Adam* is very easy to learn. The extensive keyboard has dedicated keys for all the principal operations, and six additional "smart keys." Each "smart key" calls a menu of up to six options to a space reserved for menus on the screen. You pick the option, strike the appropriate "smart key," and continue through the operation, following new menus as they appear. A child could do it, which is obviously the point.

In some other word-processors, you have the option of turning the menus off once you know the keystroke sequences. Then you can stroke out the operations at typing speed without waiting for screen updates. Experienced typists prefer that.

The program offers the most important features for editing, but lacks some that are very desirable. You can move the cursor by letter or by line, but you can't move quickly to beginning or end.

It's possible to move or copy a block, but not to delete one. Because of the *Adam's* tape-handling system, you can save a block to tape without leaving the program.

There is a representation of a typewriter roller at the bottom of the screen display. All the writing and editing action happens on the roller. If you're working in a format longer than the display's 36 characters, the lines double up on the roller (and stay doubled as they pass on up the screen). You can move the cursor quickly anywhere on the roller, but vertical cursor commands bring lines to the roller (slowly) rather than move the cursor up and down the screen. (The roller disappears when you call up the print-preview screen format, and then the cursor is freed to range about the screen while all the other editing functions continue to work.)

You can set all the margins for print formatting, but you can't get justified right margins or centered titles. Neither can you get automatic page headings and footings. The only character enhancements are superscripts and subscripts. These missing features probably wouldn't be missed by the youngsters for whom the program appears to be designed.

In sum, the *Smart Writer* seems to be very well designed for the beginner at word-processing. However, since every beginner eventually becomes experienced, the program would be far more desirable if you could graduate to faster operation and a fuller choice of features.

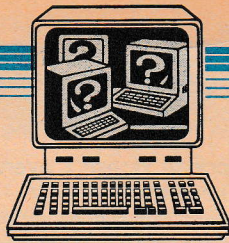
This review is based on testing four samples of the *Coleco Adam* in an attempt to learn how the program works when it works as its designer intended. But the program did not work without frustrating bugs in any one of our samples. Buyer beware. ■



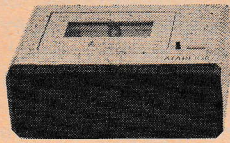
Word-processing programs

Listed in alphabetical order, by CPU.
In the columns, ✓ means yes and
— means no or does not apply.

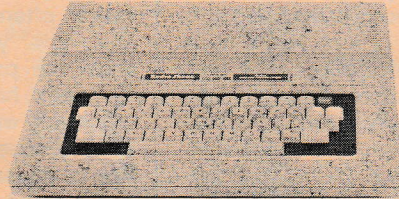
| | ATARI 600XL | | COLECO ADAM | | COMMODORE 64 | | TRS-80 COLOR COMPUTER 2 | |
|------------------------------------|--------------|--------------|-------------|-----------------|----------------|----------------|-------------------------|--|
| | ATARI WRITER | SMART WRITER | EASY SCRIPT | QUICK BROWN FOX | COLOR SCRIPSIT | TELE-WRITER 64 | VIP WRITER | |
| | Cartridge | Built-in | Disk | Cartridge | Cartridge | Cassette | Cartridge | |
| Format | | | | | | | | |
| Screen editing | | | | | | | | |
| CURSOR: BY LETTER | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| BY WORD | — | — | ✓ | — | — | — | ✓ | |
| BY LINE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| BY PARAGRAPH | — | — | — | — | — | — | — | |
| TO END/BEGINNING | ✓ | — | ✓ | — | ✓ | ✓ | ✓ | |
| DELETE: BY LETTER | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| BY WORD | — | — | — | ✓ | ✓ | — | ✓ | |
| BY LINE | ✓ | — | ✓ | — | — | ✓ | ✓ | |
| INSERT: BY LETTER | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| OPEN LINE | — | — | ✓ | — | ✓ | — | ✓ | |
| RECALL DELETION | ✓ | ✓ | — | — | — | — | ✓ | |
| BLOCK: MOVE | ✓ | ✓ | ✓ | ✓ | ✓ | — | ✓ | |
| COPY | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| DELETE | ✓ | — | ✓ | ✓ | ✓ | ✓ | ✓ | |
| SAVE | — | ✓ | ✓ | — | — | ✓ | — | |
| SEARCH: AND FIND | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| AND REPLACE-ASK | ✓ | ✓ | — | ✓ | ✓ | ✓ | ✓ | |
| AND REPLACE-NO ASK | ✓ | ✓ | ✓ | — | ✓ | — | ✓ | |
| Screen format while editing | | | | | | | | |
| COLUMNS | 36 | 36 | 40 | 40 | 32 | 51-85 | 32-85 | |
| LOWER CASE | ✓ | ✓ | ✓ | ✓ | — | — | — | |
| LINE NUMBERS | — | — | — | — | — | — | — | |
| PAGE NUMBERS | — | — | — | — | — | — | — | |
| WORD-WRAP | ✓ | ✓ | — | ✓ | ✓ | ✓ | ✓ | |
| TABS | ✓ | ✓ | ✓ | — | ✓ | ✓ | ✓ | |
| PAGE BREAKS | — | — | — | — | ✓ | — | — | |
| Print formatting | | | | | | | | |
| LEFT MARGIN | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| RIGHT MARGIN | ✓ | ✓ | ✓ | ✓ | — | ✓ | ✓ | |
| TOP MARGIN | ✓ | ✓ | ✓ | — | — | ✓ | ✓ | |
| BOTTOM MARGIN | ✓ | ✓ | ✓ | — | — | ✓ | ✓ | |
| HYPHENATION | — | — | — | — | ✓ | — | — | |
| HEADINGS | ✓ | — | ✓ | ✓ | ✓ | — | ✓ | |
| FOOTINGS | ✓ | — | ✓ | — | ✓ | — | ✓ | |
| LINE SPACING | 1-3.5 & up | 1-3.5 & up | 1,2,3 | 1-3 & up | 1,2,3 | 1-3 & up | 1-3 & up | |
| CENTERING | ✓ | — | ✓ | ✓ | ✓ | — | ✓ | |
| JUSTIFIED MARGINS | ✓ | — | ✓ | ✓ | — | ✓ | ✓ | |
| PRINT PAUSE | ✓ | ✓ | ✓ | ✓ | — | ✓ | ✓ | |
| DEFAULT SETTINGS | ✓ | ✓ | ✓ | — | ✓ | ✓ | ✓ | |
| CHARACTER ENHANCEMENT | ✓ | ✓ | ✓ | ✓ | — | ✓ | ✓ | |
| Conveniences | | | | | | | | |
| SAVE AND RE-EDIT | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| MENU-DRIVEN | — | ✓ | — | ✓ | — | — | — | |
| REFERENCE CARD | ✓ | ✓ | — | ✓ | — | ✓ | — | |
| TUTORIAL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| REFERENCE MANUAL | ✓ | ✓ | ✓ | — | — | ✓ | — | |



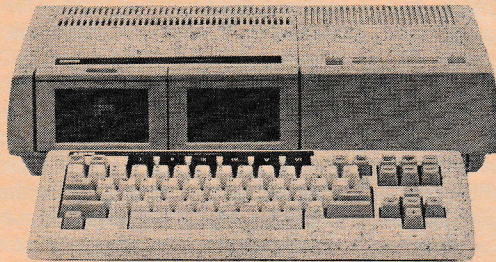
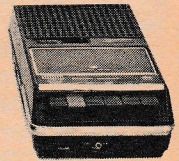
HOW THE SYSTEMS COMPARE



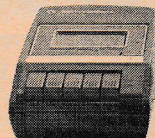
Atari 600 XL



TRS-80 Color Computer 2



Coleco Adam



Commodore 64

Except for the *Coleco Adam*, each of the systems we assembled for this report could be set up with components other than the ones we chose. Any system would work more quickly and conveniently with a disk drive, for example, and you can buy disk drives for any but the *Adam*. The *Color Computer 2* and *Commodore 64* we bought, to take another example, cry out for better printers than the ones we chose. Finally, it's quite possible that among the thousands of software programs available there are a few inexpensive word-processors better than any we have reviewed to date.

But if we were in search of an ideal word-processing package, we would have budgeted thousands of dollars, not hundreds of dollars. We were looking not for the ideal system but for ways a family could get into computing, including word-processing, for well under \$1000. Here, then, are our recommendations:

Atari 600XL

The *Atari 600XL* is our first choice. Our system includes the *Atari 600XL* computer, the *Atari 1027* printer, the *Atari 1010* cassette recorder, and the *Atari-Writer* cartridge-based word-processing program. As the table on page 85 shows, the total price comes to \$750.

The different parts of this system are well thought out and come together in a tidy, compact package of compo-

nents that are easy to move to a TV set in use and to put out of sight later. Letters displayed on a TV set are pleasantly easy to read.

The printer is ingenious. Though by far the smallest and lightest of the tested printers, it produced type just as handsome as that produced by an electric typewriter. It's slow, but not, we think, too slow for typical home use. The printer will churn out a one-page letter in about 2½ minutes.

The *AtariWriter* word-processing program offers every feature needed for the straightforward word-processing likely to be done at home. It is reasonably easy to learn and use, and, just as important, easy to pick up again after a few weeks away from word-processing.

Finally, there's a wealth of other applications programs for the *Atari*. You won't soon run out of things to do with this model.

There are two drawbacks: The computer's 16K memory is on the skimpy side, though still enough to let you produce a document of six double-spaced pages using the *AtariWriter* program. It's also possible to produce longer documents by dividing them into separate files, saving one file while working on another, and then printing the separate files in sequence. Since Atari says it will offer a memory expansion to 64K, there is a possibility that this model can grow if you find the need for more memory.

For those intent on learning how to program, Atari BASIC represents an-

other drawback. Potential programmers may want to delay a purchase until Atari makes good on its promise to offer Microsoft BASIC in a cartridge—or to look at another computer system.

TRS-80 Color Computer 2

Radio Shack's *Color Computer* has slowly built a big following as an entry-level computer. Although the original model was fairly primitive by today's standards, Radio Shack has made useful improvements in the keyboard and in the memory size. We have spoken highly of this computer in the past—because of its relatively low price, its excellent BASIC language and BASIC tutorial, and the convenience of having help and software immediately to hand at any Radio Shack store.

Our systems included the *TRS-80 Color Computer 2* both in 16K and 64K versions, the Radio Shack cassette recorder recommended for it, and the *Radio Shack DMP-100* printer. Depending on which word-processing program you bought, the cost would range from \$655 for a 16K system to \$920 for a 64K system.

Our system's big weakness is the *Radio Shack DMP-100* printer, the cheapest printer in the Radio Shack line. Its print quality leaves almost everything to be desired when used for correspondence or school papers; we can recommend it only for printing out personal files or programming records.

It's only fair to emphasize again, however, that we chose the cheapest Radio Shack printer merely to see what you could buy for roughly the same price as the *Coleco Adam* bundle. For \$100 more, you could substitute the *Radio Shack DMP-120*, a presumably better dot-matrix printer that should be adequate for word-processing (we haven't tested it), or look into a number of other printers that could, with appropriate interfaces, work with the *Color Computer*. (We reported on several still-current printers in October.)

If you decide on a 16K *Color Computer*, you then have to choose a word-processing program. The best of the three we tried is *Telewriter 64*. When operating it with a 16K computer, however, you'd run out of memory space after typing only two pages. *Telewriter 64* is intended for a computer with at least 32K of memory.

The other two programs, *Color Scribes* and *VIP Writer*, present you with a difficult choice.

Color Scribes is easy for a beginner to learn and use, but its features are skimpy indeed, and the program does nothing to alleviate the drawbacks of the *Color Computer's* narrow, shallow display (32 columns and 16 rows).

Color Scribes doesn't even provide lower-case letters.

VIP Writer, on the other hand, is a very full-featured program, but it's also very difficult to master. Because of its complexity, made worse by instructions that approach incoherence, we believe you'd have to use the program rather often to maintain proficiency, even after you've mastered it. If you learn the program and remain proficient at it, however, you can do almost as much with this program as with word-processors costing much more. We consider it a hacker's dream, but not a good program for beginners or casual users.

Commodore 64

If you measure a computer in terms of kilobytes of memory per dollar, nothing beats the *Commodore 64*. That's why this model has become a favorite of hobbyists, who can use its 64K of memory, and its good graphics and sound capabilities, to write their own programs. Not only is the computer itself cheap, so are its peripherals. That's why we were able to assemble, for \$780, a *Commodore* system with a disk drive that was in many respects

equivalent to an *Apple IIe* that would sell for \$1800 or more.

But, as with the *TRS-80 Color Computer 2*, keeping the price down meant economizing on the printer. The *VIC-1525* printer used in our system is mechanically the same as the inexpensive Radio Shack printer; it produces the same ugly computer type. Money could cure that. You could buy a much better printer if you were willing to add \$200 or so to the budget.

We're not sure money could cure the shortcomings of the two word-processing systems we tried. The lack of such basics as word wrap is reason enough to reject *Easy Script*, Commodore's own inexpensive disk program.

One of the few cartridge-based word-processors we could locate for the *Commodore 64* is *Quick Brown Fox*. After we struggled to learn the program from its poor documentation, we concluded that this is the clumsiest word-processor we've seen yet. We can't recommend it to anybody, least of all a beginner.

There are a lot of enthusiasts out there in computerland, and they have bought a lot of *Commodore 64's*, helping make it the best-selling computer in the country. It's a fine buy for hob-

ESSENTIAL INPUT

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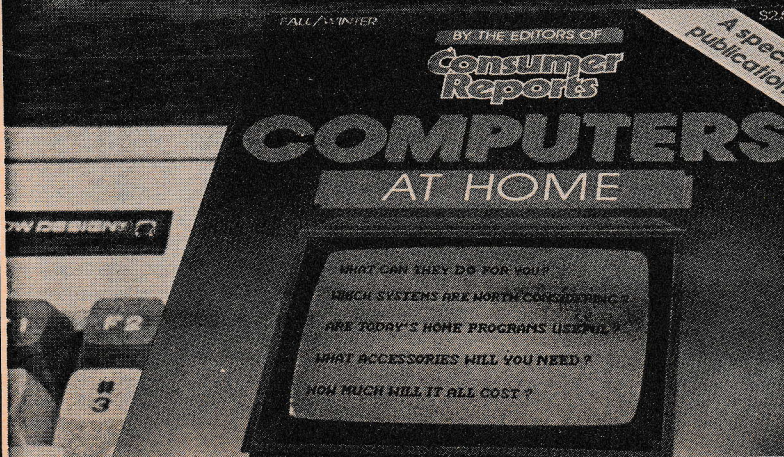
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Movies

bysts. But we believe it will disappoint those who merely want to put a computer to immediate practical use with readily available off-the-shelf applications programs.

Coleco Adam

There's a lot to be said in favor of the *Coleco Adam*. It's easy to buy. Put down your \$700 and you take home one very big box containing everything you need to use a computer as a word-processor or to start writing programs for yourself. Its built-in tape storage system is a decided advance over the cassette systems likely to be used with other relatively inexpensive home systems; when working properly, it offers much of the convenience of a costly disk drive, sacrificing only speed—a small sacrifice in nonprofessional use, we believe. The *Adam* offers a more complete keyboard than any other inexpensive computer. Its printer turns out copy about as handsome as that of an electric typewriter. And the word-processing software, present as soon as you turn the machine on, is easy enough to learn quickly.

There's a lot to be said against the *Adam*, too. The components are big and heavy. They will occupy most of a fair-sized desk or table, and you'll have to haul a TV set to the system or leave one set up permanently with the system.

The printer is distractingly noisy.

The convenience of having a word-processing program in permanent memory is offset by the fact that you're stuck with the program Coleco has devised. It's a good program for beginners, but it requires you to work like a beginner permanently.

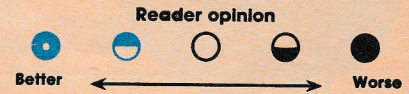
As we go to press, there are no applications programs other than the word-processor and games. Buying a *Coleco Adam* on the assumption that programs for it will quickly come to market is a gamble. The availability of a substantial library of software should be among the first considerations in judging a computer system, not the last.

Finally, the *Adams* that first came off the assembly line were insufficiently reliable. The tape system caused problems. And the word-processing program had bugs that would leave a novice puzzled about what was going on. We bought our samples almost immediately after the *Adam* came on the market, and it's obvious that Coleco rushed production in order to have the *Adam* in stores before Christmas. ■

CONSUMER REPORTS

CU makes no judgments about the movies listed below; it simply reports the total number of opinion-votes received from participating readers and the average Rating of the opinions. Ratings of movies with less than 25 votes should be considered preliminary. Movie names may be abbrevi-

ated. Key numbers are for use by the reviewers in filling out their ballots.



| Key no. | Movie | Rating | Total vote | Key no. | Movie | Rating | Total vote |
|---------|-------------------------------|--------|------------|---------|--------------------------|--------|------------|
| 464 | Amityville 3D | ○ | 10 | 417 | Night Of Shooting Stars | ○ | 96 |
| 463 | Baby It's You | ○ | 68 | 462 | Now & Forever | ● | 55 |
| 416 | Betrayal | ● | 164 | 431 | Octopussy | ○ | 718 |
| 465 | Big Chill | ● | 272 | 473 | Osterman Weekend | ○ | 34 |
| 442 | Brainstorm | ○ | 102 | 374 | Outsiders | ● | 350 |
| 407 | Breathless | ● | 321 | 390 | Pirates Of Penzance | ○ | 147 |
| 430 | Britannia Hospital | ○ | 33 | 432 | Perky's II | ○ | 188 |
| 421 | Choice Of Arms | ○ | 19 | 426 | Psycho II | ○ | 287 |
| 504 | Christmas Story | ○ | 9 | 413 | Return Of The Jedi | ● | 1188 |
| 443 | Class | ○ | 176 | 487 | Richard Pryor Here & Now | ○ | 30 |
| 468 | Cross Creek | ○ | 15 | 506 | Right Stuff | ○ | 25 |
| 481 | Cujo | ○ | 76 | 479 | Risky Business | ○ | 251 |
| 444 | Curse Of Pink Panther | ○ | 71 | 427 | Rock & Rule | ○ | 8 |
| 445 | Daniel | ○ | 28 | 475 | Romantic Comedy | ○ | 43 |
| 466 | Dead Zone | ● | 102 | 476 | Running Brave | ○ | 16 |
| 456 | Deal Of Century | ○ | 38 | 489 | Scarface | ○ | 13 |
| 408 | Dr. Detroit | ○ | 178 | 490 | Silkwood | ○ | 9 |
| 499 | Dresser, The | ○ | 8 | 451 | Smokey & The Bandit, III | ○ | 23 |
| 440 | Duel | ○ | 38 | 455 | Something Wicked | ○ | 114 |
| 446 | Easy Money | ○ | 172 | 425 | Spacehunter | ○ | 238 |
| 409 | Eddie Macon's Run | ○ | 27 | 402 | Spring Break | ○ | 173 |
| 469 | Educating Rita | ● | 91 | 501 | Star 80 | ○ | 11 |
| 460 | Fanny & Alexander | ● | 103 | 452 | Star Chamber | ○ | 150 |
| 441 | Flashdance | ○ | 635 | 433 | Staying Alive | ○ | 347 |
| 478 | Golden Seal | ○ | 20 | 391 | Sting II | ○ | 210 |
| 482 | Gorky Park | ○ | 9 | 459 | Strange Invaders | ○ | 34 |
| 461 | Grey Fox | ● | 100 | 434 | Stroker Ace | ○ | 117 |
| 496 | Heat & Dust | ○ | 14 | 491 | Sudden Impact | ○ | 8 |
| 422 | High Road To China | ○ | 354 | 435 | Superman III | ○ | 546 |
| 457 | Honorary Consul | ○ | 37 | 436 | Survivors | ○ | 546 |
| 384 | Hunger | ○ | 149 | 392 | Table For Five | ○ | 100 |
| 385 | Independence Day | ○ | 21 | 429 | Tales Of Madness | ○ | 54 |
| 447 | Jaws 3D | ○ | 210 | 428 | Ten To Midnight | ○ | 54 |
| 448 | Krull | ○ | 145 | 403 | Tender Mercies | ● | 288 |
| 410 | Lone Wolf McQuade | ○ | 128 | 492 | Terms Of Endearment | ● | 33 |
| 484 | Lonely Hearts | ○ | 13 | 502 | Testament | ○ | 468 |
| 389 | Lovesick | ○ | 257 | 493 | To Be Or Not To Be | ○ | 9 |
| 519 | Man Who Loved Women | ○ | 9 | 437 | Trading Places | ● | 677 |
| 423 | Man With Two Brains | ○ | 204 | 404 | Trenchcoat | ○ | 130 |
| 424 | Man, Woman & Child | ○ | 53 | 438 | Twilight Zone | ○ | 415 |
| 411 | Max Dugan Returns | ○ | 404 | 494 | Two Of A Kind | ○ | 8 |
| 412 | Meaning Of Life | ○ | 400 | 503 | Uncommon Valor | ● | 8 |
| 497 | Merry Christmas, Mr. Lawrence | ○ | 24 | 477 | Under Fire | ○ | 79 |
| 480 | Metalstorm | ○ | 20 | 376 | Videodrome | ○ | 133 |
| 449 | Mr. Mom | ○ | 286 | 453 | War Games | ● | 832 |
| 450 | Nat'l Lampoon's Vacation | ○ | 333 | 394 | Without A Trace | ● | 233 |
| 505 | Nate & Hayes | ○ | 14 | 439 | Yellowbeard | ○ | 102 |
| 373 | Never Cry Wolf | ○ | 12 | 495 | Yentl | ○ | 19 |
| 458 | Never Say Never Again | ○ | 232 | 454 | Yor, Hunter From Future | ○ | 50 |
| | | | | 400 | Zelig | ○ | 172 |

NEW MOVIES

| | | | | | |
|-----|---------------------|-----|---------------------|-----|---------------------|
| 507 | AGAINST ALL ODDS | 471 | HANNA K | 515 | RACING WITH MOON |
| 508 | AMADEUS | 511 | HARRY & SON | 516 | ROMANCING THE STONE |
| 509 | BLAME IT ON RIO | 472 | HEAVEN | 488 | SAHARA |
| 498 | BROADWAY DANNY ROSE | 512 | HOTEL NEW HAMPSHIRE | 474 | SCANDALOUS |
| 510 | BUDDY SYSTEM | 513 | LISSITER | 517 | SWING SHIFT |
| 467 | CRACKERS | 483 | LAST RIVER TO CROSS | 518 | UNFAITHFULLY YOURS |
| 470 | FIRE & ICE | 514 | LONELY GUY | | |

If you attend movies and would like to have your votes on this page, write to us for computer ballots: Movie Poll, Consumer Reports, 256 Washington St., Mount Ver-

non, N.Y. 10553. CU has compiled its movie polls from 1947 to 1978 into a booklet, "Movies for TV." For details about how to order, see coupon on page 117.