

are accessible through the pull-down menus. We found the organization of the menus better than with In-A-Vision. Shortcut keys for most of the functions, including all the important functions, are available to speed the drawing process. Beyond the keyboard shortcuts, Windows Draw also provides mouse shortcuts that accelerate drawing even more.

We noted that Micrografx has eliminated a problem we cited in the In-A-Vision review — namely, the confusing use of the word *copy* for two different functions. Windows Draw calls one function *copy* and the other *duplicate*.

Though very easy to use, Windows Draw is not quite as easy as MacDraw. The primary difference is that it is easier to select drawing shapes with MacDraw. Nonetheless, Windows Draw takes excellent advantage of the Windows environment to share information among programs, and it uses the standard Windows interface effectively. When combined with the shortcuts and direct operations, Windows Draw earns a rating of very good for ease of use.

ERROR HANDLING: All error handling for Windows Draw is provided by the Windows environment. As a result, if a user tries to exit Windows Draw without saving a drawing, Windows will prompt the user to save.

Windows Draw consistently presented dialog boxes cautioning us at the appropriate time to save work or providing information on the status of other operations such as printing.

Windows Draw suffers from the sluggish operation of Windows on an 8088 machine to the point where it affects error handling. When saving a drawing, we were presented with a dialog box and then had to wait for a

drawing to be redrawn. This increased our temptation to not save as often as advisable. It would be nice to see either an automatic save or an abbreviated save feature that would speed up the process. Nevertheless, the error handling is satisfactory for most situations. The error handling capability of Windows is a bonus. When you close the Windows Draw window and work with another program, then try to exit the program, you get a warning message that you have an unsaved file in your Windows Draw window.

SUPPORT: Windows Draw is not copy-protected, an important consideration when working with a hard disk. Micrografx provides the usual 90-day warranty on the program.

Our calls to Micrografx produced prompt and accurate answers to our questions. Although the support service is free, it does require a toll call. We found support for Windows Draw satisfactory.

VALUE: Although Windows Draw has fewer basic objects and lacks some of In-A-Vision's more sophisticated features (like overlays), at \$199, it offers many of the features available in its \$495 sister program. (Note that while Windows Draw requires the \$99 Microsoft Windows package to run, In-A-Vision includes a run-time windows module.) Many users will find that Windows Draw provides tools to create sophisticated drawings, and it possesses the additional feature of directly importing 1-2-3 graphs. When coupled with its ease of use and ease of learning, these features make Windows Draw a very good value and a welcome addition to the Windows environment.

Frank Tansey, a university administrator, has been working with computers since 1966. He also teaches computer application classes.

Displaywrite Can't Match The Others In Its Class

By John Lombardi
Review Board

Not to be outdone in the competitive and lucrative high-power word processing market, IBM has over the years translated its Displaywriter dedicated word processing system into various microcomputer forms. The latest is Displaywrite 3, Version 1.1.

Like Multimate and Office Writer, which also copy the performance characteristics

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REPORT CARD

PERFORMANCE SOFTWARE WINDOWS DRAW

6.2	Unacceptable	Poor	Satisfactory	Very Good	Excellent
■ ■ ■ ■ ■					
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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of dedicated systems, Displaywrite 3 uses the approach of structured menus and a rigid page orientation that hints at its conceptual origins as an automated typewriter. Displaywrite 3 is rich with features, like its competitors in the feature-filled field of corporate word processors. Unfortunately, it has a number of shortcomings, including limited printer support, poor documentation, and badly designed error handling. We can recommend this product only to those who need a program that exactly duplicates the menus of the Displaywriter.

FEATURES: By now, the feature list of high-power word processing programs has become relatively standardized. There are extensive editing commands, powerful formatting options to control the appearance of the printed document, detailed document management utilities to help find and file text material, and utilities for disk management and file transfer.

Displaywrite 3 also has a powerful mail-merge feature for creating mailing labels and form letters, and it has a document assembly capability for building complex documents from standard paragraphs or sections. The program supports footnotes (end-of-document and bottom-of-page), text-and-numeric columns, outline-numbering facilities, four-function math, and a spelling checker, although there is no thesaurus. There is no indexing facility and no sorting capability, both features that are available in competing programs.

The Displaywrite feature that merges a main document with a file document is powerful, allowing complex conditional list processing using a variety of database and spreadsheet files. Support is built-in for a wide range of file types, including standard Basic files; DIF files available from Visicalc and Lotus 1-2-3, Version 1A; SYLK files from Multiplan 1.00; PDS files from IBM's Personal Decision Series; and Dbase II files from Version 2.4. In addition, special file descriptions can be created to accommodate other file types. None of this is easy to do, but once you've created these file descriptions, they can be a big help.

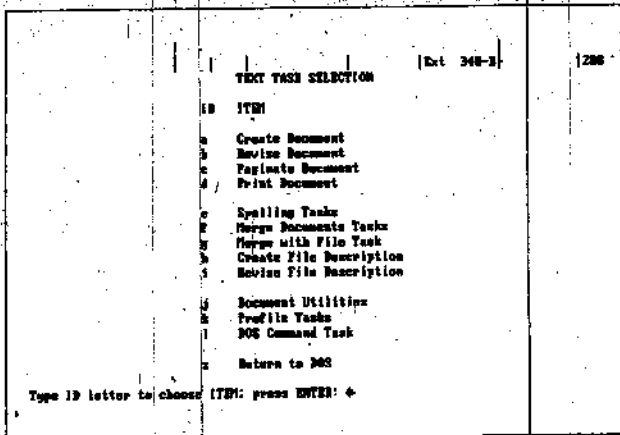
Given the importance of sharing documents, Displaywrite's document conversion features deserve attention. Of course, the IBM Document Content Architecture (DCA) standard is supported in the form of the Reversible Form Text (RFT) format, a subset of DCA which permits word processors to trade files complete with almost all their formatting codes. RFT works exceedingly well, maintaining everything from centering codes to footnotes. In addition, Displaywrite 3 supports Final Form Text, another DCA format that converts the formats into forms that can be printed using the DOS Print utility, without requiring a word processor.

Otherwise the Displaywrite 3 does not recognize the rest of the IBM PC-compatible word processing world. There is nothing that will convert to or from Wordstar, Multimate, Word Perfect or other systems directly. But these word processors are able to work with RFT text, and with the growing acceptance of DCA as the standard document transfer format by these and other microcomputer word processors, this lack of direct conversion routines may not be particularly significant in the future.

Displaywrite has about the same or a few less capabilities than Multimate, Office Writer, WordPerfect, or Wordstar 2000.

PERFORMANCE: The menus are the key to understanding Displaywrite 3. Displaywrite sees its work with text as being composed of "tasks" and the main menu contains about a dozen tasks. Thus, there is a document management task for storing and retrieving documents, a spelling task, a printing task, and an editing task.

The main task is editing. Displaywrite offers an uncluttered screen with 20 lines



Displaywrite 3 "tasks" are chosen through the main menu, including creating a document, spelling checking, pagination, and printing; each menu leads to submenus.

available for text. The top three lines contain a complex set of status indicators, a ruler line for tabs and margins, and lots of other information about file name, page number, line number, type of keyboard in use, and the like. You cannot turn off this status line, which is best described as very busy.

As you type, a block cursor zips along the ruler line. Each time your real cursor crosses a boundary, such as the end of a line, the beginning of boldfacing, or a similar control, a message appears in the upper left corner identifying the special character. Although all this information can be helpful, the volume of information, as well as its quick appearance and disappearance, can be distracting. We kept wishing we could turn it all off and call on it only when needed.

As an editor, Displaywrite is competent. It does the basic jobs of deleting, inserting, moving, and copying text, and other things required in preparing text. But there are some limitations. One is that while there is a key that lets you move the cursor from one side of the line to the other, there is no key to move the cursor a word to the right or to the left.

Displaywrite is page-oriented, meaning it stores text page by page. The word processor beeps when you reach the number of lines assigned to a page, but allows you to continue typing. To start a new page, you must explicitly end the page on which you are working. When you are done with your work, you must perform a repagination task to get the correct number of lines on each page of the document before printing.

Movement about large documents is fast, and if you know the page number, virtually instantaneous. Displaywrite's search facility finds specific words quickly. However, scrolling line by line through a document is slow, especially when crossing page boundaries.

Compared with the performance of other high-power word processing systems, the performance of Displaywrite 3 can be considered acceptable. It is as quick as most page-oriented systems, but it lacks some editing features common to similar programs. The menu structure and task orientation require the user to move less gracefully between various activities and functions than is the case with competing programs such as Multimate, Office Writer, or Word Perfect. Like its competitors, Displaywrite 3 requires a hard disk system for satisfactory performance. Balancing the many powerful features such as merging, macros, footnotes, automatic numbering for outlines, and columnar typing is its cumbersome implementation. We rate performance an unenthusiastic satisfactory.

DOCUMENTATION: Two large manuals in loose-leaf binders (the standard IBM PC format) provide extensive documentation. The manuals offer a step-by-step orientation and explanation of the essential Displaywrite features and conventions. In addition, there is a great deal of technical detail about keyboards and other special considerations when using this program with various IBM hardware and software.

The documentation is characterized by a modular, piece-by-piece approach that makes for easy updating as the program is changed and improved. The sections that explain the tasks and functions are well-done and have good examples. IBM provides a glossary with good definitions for the special terms it uses, which is good because it uses a host of them. Unfortunately, the documentation is fragmented. For example, printing is covered in five different places. The index isn't very good — it is missing a reference for the stop code used in merging, for example — and it lacks cross-references, such as mentioning in the search and replace reference that "find" is a related command. As a result, this is a very difficult manual to use. In general, it is adequate if you know what you are doing, but poor if you need to find things out.

Because of the index's failings and the complete lack of documentation accessible to normal users about printer support, the documentation for Displaywrite 3 must be judged poor. This is in spite of the good introductory material that helps new users get started.

EASE OF LEARNING: Learning how to use Displaywrite 3 requires a lot of concentration. The manual has a good set of tutorial lessons and much technical documentation, but even so, the complexity of the program, its special IBM vocabulary, and its multilayered menus can quickly leave the novice completely confused. Part of the difficulty stems from the documentation, and part is due to the program design. Because Displaywrite 3 is a very complex program structured in a complex way, it takes quite an expert to figure it out from a cold start. We would not recommend this program to a novice microcomputer user.

The best way to learn Displaywrite 3 is in a class taught by an expert who has learned the arcana associated with this system. A host of details in setup, in learning, and in using this program are beyond the scope of most users. Although many of these details should not bother average users, they will drive many people crazy until an expert can set up the Displaywrite 3 system to work as expected.

Expert help, then, in the form of class instruction, a departmental expert, or a guide

written for new users (which will surely appear, given the difficulty of learning this program) will be a must. Compared with Word Perfect, Multimate, or Office Writer, this program is significantly less easy to learn and thus receives a poor rating for ease of learning.

EASE OF USE: Most high-quality word processing programs become easy to use after you've worked with them for a while. Users tend to like the program they know well, and they generally become proficient in using it. Moreover, *easy to use* and *easy to learn* are not the same, and programs like Displaywrite 3 are often easier to use than they are to learn.

Displaywrite 3's rigid, highly structured menus help guide users through the many functions and facilities of this program, but using the program efficiently requires an orderly approach to text management that is best suited to those kinds of office work where manuscripts are typed from prepared copy, then edited as a separate task. This program is less suitable for those who create original work and edit as they go, jumping around in the document and moving repeatedly from document to document.

The elaborate document management utilities (which include document history screens) help manage large collections of files such as you might accumulate on a sizeable hard disk. Indeed, without a hard disk this program would be much less easy to use, because its many tasks require four floppy disks just for the program.

When crossing page boundaries to start a new page, Displaywrite 3 presents an empty screen without a hint as to the last lines on the previous page. If an author is revising material that crosses page boundaries, there is much jumping back and forth

InfoWorld

REPORT CARD

PERFORMANCE SOFTWARE
DISPLAYWRITE 3

4.1

	Unacceptable	Poor	Satisfactory	Very Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Learning	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Value	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

With a 4.1 rating, Displaywrite 3 is an appropriate choice for IBM environments in a corporate word processor for offices that have a limited budget. It provides a powerful and flexible word processing environment. However, the complexity of the program, its special IBM vocabulary, and its multilayered menus can quickly leave the novice completely confused. Part of the difficulty stems from the documentation, and part is due to the program design. Because Displaywrite 3 is a very complex program structured in a complex way, it takes quite an expert to figure it out from a cold start. We would not recommend this program to a novice microcomputer user.

The best way to learn Displaywrite 3 is in a class taught by an expert who has learned the arcana associated with this system. A host of details in setup, in learning, and in using this program are beyond the scope of most users. Although many of these details should not bother average users, they will drive many people crazy until an expert can set up the Displaywrite 3 system to work as expected.

Expert help, then, in the form of class instruction, a departmental expert, or a guide

between pages to keep the text in view. The on-line help is extensive and provides excellent guidance. There is almost enough information here to permit reasonably experienced users to dispense with the manuals. Unfortunately, the on-line index is not very good, and new users, who have the least familiarity with the special IBM vocabulary for word processing and editing functions, may find it difficult to locate information. For example, although formatting codes are an important part of a Displaywrite document and although the status line constantly flashes information about them, there is no index entry for "code" in the on-line help. Even with these inconveniences, the on-line help is impressive and effective.

Finally, the lack of printer support mentioned above will make this a very difficult program to use whenever non-IBM printers are needed. Once a user becomes familiar with this product, however, the

system is relatively easy to use, and we rate it satisfactory in ease of use.

ERROR HANDLING: Displaywrite 3 handles most user errors gracefully. The rigid structure of menus and selections helps ensure that you don't overwrite existing files or make other potentially damaging moves without answering a confirming prompt. The program also appears bug-free and doesn't crash on its own or due to user error. However, the undelete feature is unsatisfactory, because it only restores text deleted with the block-delete function. It is possible to scramble the text by making formatting errors, thereby making it difficult to return to what you had intended.

With system errors, Displaywrite 3 is less graceful. As a page-oriented word processor, Displaywrite 3 is always working directly with the disk file, displaying the current page and storing the other pages. Like databases that also work directly with disk files, Displaywrite 3 has to close its files at the end of the edit session. If there is a power failure, the document is unusable until you've run a file-recovery utility to close the file properly. The manual provides only minimal information about what the recovery can accomplish. How much can be recovered depends on where you were in the document when the failure occurred. We had a machine failure in the middle of a document and lost the last five pages.

Worse, Displaywrite 3 does not automatically make backup files, which means you are always working with your original, a dangerous proposition. Finally, even if you want to make your own backups, Displaywrite 3's elaborate menu system discourages you. You have to close the file, go back to the main menu, to the utilities menu, to the copy document menu, fill out the file name and new file name, exit the utilities menu, call up the edit task, bypass the comments menu, and scroll through the document to where you left off. Anybody who goes through that rigmarole regularly to back up files deserves a medal; everybody else will live dangerously, and come to regret it.

Because the design of the product is a potential threat to one's data, and at the same time an impediment to backing up files, we are obliged to rate Displaywrite 3 unacceptable in error handling.

SUPPORT: Instead of directly supporting this product, IBM provides support only through authorized dealers. The manual is quite clear on this point, and no telephone number is supplied for users to call. Therefore, it is extremely difficult to rate the support since it will depend greatly on the quality of individual dealerships, a highly variable item.

Since IBM does not support the product directly and provides minimal access to printers, we must judge the support for the product as poor.

VALUE: Displaywrite 3 is a satisfactory value for offices where dedicated IBM word processing needs to coexist with individual IBM PCs and where non-IBM-sanctioned printers are rare. Also required is significant in-house technical support.

For other users, we recommend taking a close look at competing products. Many copies of Displaywrite 3 were distributed in a promotion with new IBM XT's; for those who received the program this way, it is an excellent value. For those who must purchase their own word processing program, however, Displaywrite 3 at \$450 is a poor value. Equivalent or greater word processing power is available for the same price in packages that are easier to learn and use.

Software

Software Review Capsules summarize product reviews from past issues; date of full review is shown.

■■■■ (7.4) **Appletworks, Version 1.3 (Apple Computer)** — Appletworks, Version 1.3 is flexible, convenient, and easy to master. With its new Unidisk 3.5 drive and RAM-card compatibility, it is greatly improved in performance and potential. Offering a word processor, spreadsheet, and file manager in one package, it's a very good value for small business or home use. For the Apple II. Not copy-protected. *Category: Performance Software. (4/28/86)*

■■■■ (5.2) **Backtrack (Tallgrass Technologies)** — A convenient, easily customizable hard disk backup utility, Backtrack is memory-resident and does its work when you're not otherwise using the computer. Backtrack is an interesting approach for those who hate making backups. For IBM PCs and compatibles. Copy-protected. *Category: Performance Software. (4/14/86)*

■■■■ (6.6) **Dbase III Plus (Ashton-Tate)** — Dbase III Plus is Ashton-Tate's latest and most powerful entry in the database management field. Featuring Frameworklike menus, fine documentation, an advanced programming language, and new networking capability, Dbase III Plus, Release 1.0 has everything for everyone, though at a price. The documentation is outstanding. Copy-protected. For the IBM PC. *Category: Performance Software. (4/7/86)*

■■■■ (6.5) **Final Word II (Mark of the Unicorn)** — Final Word II, Version 2.01 gives you an advanced writing tool for preparing and formatting large documents, such as manuals and books, in a typesetting environment. The program is targeted at advanced users and provides no on-screen formatting. For the IBM PC. Not copy-protected. *Category: Performance Software. (4/28/86)*

■■■■ (6.3) **Managing The Market (MECA)** — Managing The Market is a straightforward menu-driven securities price communication program that is set up to work with the Dow Jones News/Retrieval Service. This speedy and easy-to-use program works well with MECA's Managing Your Money or can be used effectively by itself. For the IBM PC. Copy-protected. *Category: Performance Software. (4/28/86)*

■■■■ (7.5) **Microphone (Software Ventures)** — Microphone, Version 1.0 is a powerful, well-designed communications program for the Macintosh. It is particularly good at communications with on-line services and bulletin boards, as well as file transfers between Macintoshes. It is not copy-protected. *Category: Performance Software. (4/21/86)*

■■ (4.5) **Mindreader (Businesssoft)** — Although shy of features that professional writers rave about, quick and clever Mindreader is filled with shortcuts for people who never learned how to type, and it's a blessing if you need to churn out boilerplate form letters. Its shortcomings include documentation that merely teases, and a complete lack of both error messages and telephone support. Copy-protected. For the IBM PC. *Category: Performance Software. (4/21/86)*

■■ (4.5) **Mouse Budget (International Solutions)** — Mouse Budget for the Apple II series is an inexpensive personal

accounting program that performs satisfactorily, but it suffers from poor documentation and error handling and from a steep learning curve. Copy-protected. *Category: Performance Software. (4/14/86)*

■■ (3.9) **Mouse Calc (International Solutions)** — Only consider Mouse Calc, Version 1.01 if you are looking for a spreadsheet for the Apple II computer family that is easy to learn and if your spreadsheet tasks are small. Its slow speed, especially as files become longer, can be frustrating, and its error handling is unacceptable. The latest version (1.2) is not copy-protected. *Category: Performance Software. (4/14/86)*

■■■■ (6.8) **Norton Utilities, Version 3.1 (Peter Norton Computing)** — The Norton Utilities are well-known for their capability to recover erased files, but the package also includes 17 other powerful utility programs that add useful functions to DOS. Version 3.1 is a significant upgrade from 3.0 and provides a new Quick Unerase program. It's a very good value, even though some of the programs assume a knowledge of DOS. For the IBM PC. Not copy-protected. *Category: Performance Software. (4/28/86)*

■■■■ (6.3) **Office Writer, Version 4.0 (Office Solutions)** — Office Writer, Version 4.0 is a solidly built, expensive corporate word processor with a good complement of features for handling complex document editing requirements. It operates faster than similar page-oriented systems. Large memory and hard disk are recommended. Not copy-protected. For the IBM PC. *Category: Performance Software. (4/21/86)*

■■■■ (6.9) **Random House Reference Set (Reference Software)** — Reference Set, Version 2.02 with the Random House Thesaurus and Dictionary is markedly speedier and can spell-check a whole document or a screen at a time. Add in compatibility with memory-resident programs, a couple of file utilities, and a cross-referencing thesaurus, and you've got a bargain at \$89. Not copy-protected. For the IBM PC. *Category: Performance Software. (4/21/86)*

■■■■ (5.7) **VP-Planner, Version 1.1 (Paperback Software International)** — Version 1.1 of VP-Planner takes care of most of the problems encountered in the first release. Considering the increase in speed, this \$99 1-2-3 clone and Dbase-compatible database tool becomes a very good value. A non-copy-protected version is available. IBM PC and compatibles. *Category: Performance Software. (4/7/86)*

■■■■ (6.8) **Wordstar 2000, Release 2 (Micropro International)** — The new release of Wordstar 2000 adds document history, multiple columns, the capability to import 1-2-3 files, and DCA compatibility. It also improves its sluggish speed to allow its many features to shine. Wordstar 2000 fights the feature war of the word processing titans well. Not copy-protected. For the IBM PC. *Category: Performance Software. (4/7/86)*

■■■■ (6.6) **Xywrite III (Xyquest)** — Xywrite III retains the exceptional speed and flexibility that made previous versions famous and adds a number of useful features. This word processor performs like a champ; too bad it's still difficult to learn, with poor documentation and support. Given some improvements in these areas, Xywrite could be one of the best instead of just best-performing word processors for the IBM PC and compatibles. Not copy-protected. *Category: Performance Software. (4/14/86)*

By Cynthia E. F. Review Board

No dead-in-the-water investigation Computer, an App much as the IIC b of the Apple II Apparently, Appl eated in this impo Computers Ltd. o uted by Central F Oregon, among o Customs Service for import, App Having worked w the past few weel

FEATURES:

Laser 128 Personal random-access m around the 65C02 Apple IIC. The l with both AppleD computer has 10 including double-Laser 128-specifi exploited by soft 128: double-vert double-vertical de In appearance, in many respect exception of keyb actually be consi its American near

The plastic c closer in color to IIC. It is about 3 but is comparabl just over 11 pou pound more than rear carrying har portable. The ha tilt up the comput

The 36-watt database with the Laser than the 25-w: accompanies the rable in weight. I keys of the Appl open and closed t 128. The shape 128 is comparab IIC. They are not on the IIC.

In terms of ex 128 Personal Co Apple IIC a trick Apple keyboard, t of 10 function key To the right of t adds a numeric k and break keys. identical to those the right of the s

An important the Laser 128: Located on the si serve as slot 7 Apple IIC add-in computer unprot intended to coun that converts this

John Lombardi is a professor of history and author of five books. He has been working with computers since 1967.