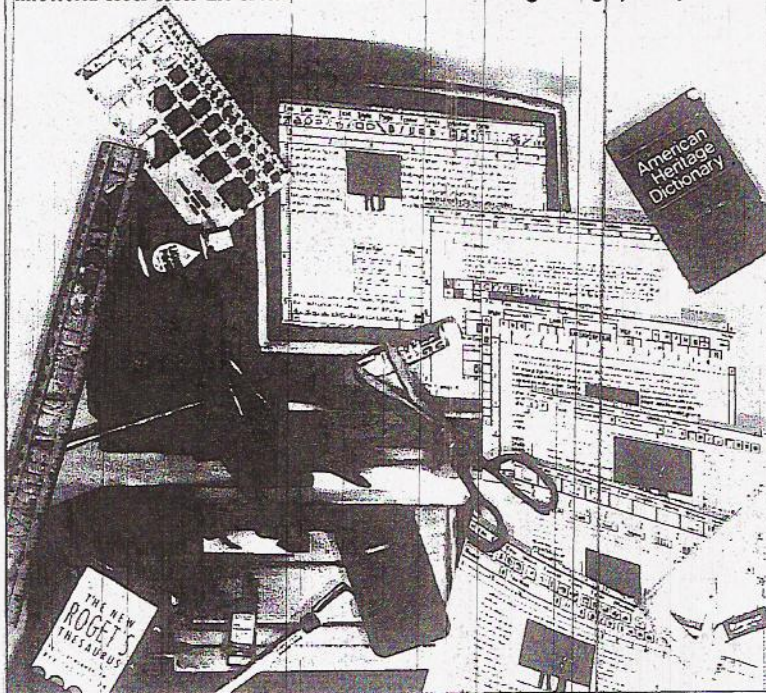


REVIEWS / PRODUCT COMPARISON

Windows word processors

InfoWorld tests the tools and features in six of the high-end graphical products



We are impressed. In this crop of six Windows word processors, half wowed us with their power and ease of use. The rest aren't too shabby, either. The programs we reviewed fall into two clear groups.

At the top of the heap, Microsoft Word for Windows 2.0, Lotus Ami Pro 2.0, and WordPerfect 5.1 for Windows remain kings of the mountain, in that order. These programs share several characteristics: They have all the essential features required of professional programs, including graphics integration, footnotes, tables of contents and indexes, merge capabilities, and macro languages. The breadth, depth, and flexibility of these features exceed those found in the second group, composed of Legacy 2.0, DeScribe 3.0, and WordStar for Windows 1.0.

We introduce a new test plan for high-end word processors with this comparison, and some scores may have changed since our earlier stand-alone reviews.

WORD PROCESSOR DESIGN. Reviews of these products highlight significant features, performance, and other characteristics. Although each product shares similar characteristics in-

herent in the Windows environment, the frequent user soon discovers considerable differences in operating style. Two general approaches characterize these products.

Some products handle the document as a single stream of text characters that flows from beginning to end. For these programs, the purpose of word processing is to put those characters into words, sentences, paragraphs, pages, and sections, applying enhancements to the text to change its appearance or to rearrange its placement on the page. These text-stream products break the text stream with paragraphs, pages, or sections; place pictures or tables or other objects in that stream; add headers and footers to the pages; collect and manage footnotes; and handle cross references within the text stream. This

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method corresponds closely to the way most people read and write text. Word for Windows, and especially WordPerfect, exemplifies this approach.

INSIDE PRODUCT COMPARISON

Report card	80
How we test	84
In-depth comparison	84
Benchmarks	96

Executive summary

Each vendor in this roundup has shipped a new version of its product since our last product comparison (January 7, 1990). All are feature-rich and most will meet nearly any word processing need. Ease of use is what now distinguishes the main players from one another.

Microsoft Word for Windows 2.0 was the clear winner. Not only does the product have nearly every feature imaginable, the implementation of these features is intuitive and easy to use. Word for Windows even contains features to tutor those who are making the switch from WordPerfect 5.1 DOS. Word scored an impressive excellent or very good in all categories, save documentation. In addition, Word for Windows is the only product to have drag-and-drop text, for quick and dirty text manipulation.

Lotus' Ami Pro 2.0 closely follows Word for Windows. Like Word for Windows, Ami Pro has a full feature list and numerous ease-of-use enhancements and customization options. Ami Pro excelled in the performance categories of layout, style sheets, reference tools, import/export, and macros. Ami Pro is the only program to have E-mail integration.

WordPerfect 5.1 for Windows, the long-awaited sibling to the market-leading DOS word processor, makes a fine transition into the Windows market. While it doesn't compete neck and neck with Word for Windows, it is extremely capable and also has customization features. WordPerfect is the only product to support concurrent endnotes and footnotes for your reference needs. In addition, WordPerfect ships with a most impressive list of printer drivers that are fully compatible with the DOS version. One drawback to the program is the lack of macro compatibility between WordPerfect 5.1 DOS and WordPerfect 5.1 for Windows.

Next in the pack is NBI Legacy 2.0. Legacy is a fine product, thanks mostly to its layout features. The major drawback to Legacy is its incapability to have more than one window open at a time. Legacy has taken more of a desktop publishing approach to word processing, and the frame capabilities give you numerous layout options. Like the top players, Legacy has a programmable macro language, and its long list of features is capable and well implemented.

DeScribe Word Processor 3.0 is next in the roundup. DeScribe's feature list is fairly extensive, although the product lacks major reference tools such as an outliner and an automatic table of contents generator. Although, DeScribe doesn't offer much as far as reference tools go, it is tops in documentation and tied for first in ease of learning.

Following DeScribe very closely is WordStar for Windows 1.0. Like Legacy, WordStar lacks the fundamental capability to have multiple windows open simultaneously. WordStar for Windows does come bundled with Correct Grammar for your proofing needs. WordStar also lacks a macro or keystroke-recording capability. On the whole, WordStar is a capable product that falls behind a top-heavy field.

THE SCORES

Microsoft Word for Windows Version 2.0	8.6
Ami Pro Version 2.0	8.3
WordPerfect for Windows Version 5.1	7.1
Legacy Version 2.0	6.7
DeScribe Version 3.0	6.0
WordStar for Windows Version 1.0	5.9

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DOCUMENT
programs that pro

The second approach sees the document as a series of rectangular spaces called frames. Frames can be as large as a page; linked or unlinked; hold text, graphics, or tables; and can be moved or sized. These programs take the text — characters, words, sentences, and paragraphs — and flow it into these frames. Because the frames operate independently, you can have several text streams flowing into frames attached one to another sequentially (just as one page follows another) or into linked frames whose position in the document may be widely spaced (such as in newspaper stories that continue in another section on another page). These programs call the sequence of text that flows through linked frames a story line. A story line can be interrupted by other frames or sequences of frames that hold graphic elements, illustrations, charts and graphs, or other text. This approach corresponds closely to the way a typesetter or layout artist sees documents. Ami Pro, WordStar, Legacy, and DeScribe follow this approach.

The best method depends on what you need to do with text, and how often you need the special characteristics of the different approaches. People who handle large documents often prefer the text-stream approach found in Word for Windows and WordPerfect because it reflects more closely how they prepare and use the documents. Others may prefer the frames of Ami Pro or DeScribe, particularly if their work requires complex formatting of technical documents, numerous graphs and charts, complex multicolumn newsletters, elaborate typographic styles, or similar layout-intensive features. With the first three programs, however, and especially with Word for Windows and Ami Pro, most users will find either method satisfactory, and the purchasing decision should turn on other features.

WordPerfect 5.1 for Windows takes the text-stream approach one step further. In all the other programs, each character is an object that contains such attributes as font, size, bold, italic, or underlined. If you cut and paste this character, these attributes travel with the character. In WordPerfect, characters do not have attributes. Instead, the program applies attributes to characters in the text stream according to the instructions that are in effect at that point in the stream. So if you cut a character that looks bold and underlined, for example, and paste it into the text stream before the code that turns on bold and underlining, the character will not be bold or underlined. As a result, WordPerfect, in theory, is very sensitive to the exact placement of these formatting codes in the text stream, and the management of those codes occupies quite a bit of the operator's attention. In practice in the Windows environment, however, all of the code manipulation is transparent to the user so you don't need to worry about this. Unless, of course, you choose to work with the Reveal Codes window displayed, and you choose to edit the codes manually.

In a nongraphic user interface — such as DOS — this design characteristic helped users understand what their text would look like because they could see the codes that changed an appearance not visible on screen. In a GUI environment, with WYSIWYG editing, these codes prove less helpful for many users.

DOCUMENT CONVERSIONS. Each of these programs has file-conversion routines that promise to translate documents

prepared in another format into the word processor's native format. All of the word processors will accept standard ASCII and most have varieties of ASCII that handle different line endings and translate tabs or other layout information. Most programs will convert from the more or less standard formats known as IBM DCA/RFT (IBM's Document Content Architecture/Revisable Form Text) and MS RTF (Microsoft's Rich Text Format). Additionally, most have converters for the file formats of the DOS versions of WordStar, WordPerfect, or Microsoft

Word. Only a few have converters for Windows word processors and none for the most recent versions. These conversion routines do a fair job. While most will faithfully translate the text, few will accurately translate all elements.

Also, you can't be sure that what one program calls an RTF conversion will perform the same as another program's RTF converter. Without detailed technical analysis, it proves difficult to determine why these converters don't all work as anticipated. When using an intermediate format, such as DCA/RFT or RTF,

two translations take place: The first word processor must translate the document from its native format into the standard (say RTF). Then the second word processor must translate from the RTF standard into its native format. If the translation appears garbled or incomplete, you can't be sure whether the fault is with the first translation or the second translation.

For example, in this group we translated a test file that contains a graphic, a table, and a chart into RTF using Microsoft Word for Windows 2.0. We then imported the RTF file into each of

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the other five programs using their RTF conversions. Only Ami Pro 2.0 could import the file complete with the graphic, the table, or the chart. All other products failed to convert any of the nontext material.

GRAPHICS AND OTHER TOOLS. To accompany the graphics capabilities of Windows, these word processors all have facilities to handle graphic elements, either through frames, boxes, or graphics insertion. They support a variety of graphic formats, and most products contain various drawing tools for lines, shapes, circles, rectangles, and the like. Some products, such as Microsoft Word, have complete drawing, charting, and equation writing packages included as integral parts of the word processor. Others have the drawing tools and equation editors implemented as windows or toolkits, rather than having them totally integrated, as in Word. Each program handles graphics differently, and users with heavy graphics needs should pay particular attention to the tools and procedures needed to do their work.

Other special features worthy of consideration are what we call utility tools.

Sorting, for example, varies widely in complexity and flexibility from the high-powered sort routine of WordPerfect to the nonexistent sorting capability of Legacy and WordStar for Windows. Equation generators permit the use of complex mathematical symbols that may be several lines high or wider than usual characters. These generators range from the separate equation package of Word for Windows to no equation-writing capability in WordStar for Windows, DeScribe, and Legacy. Users often need to use a math operation in word processing documents, to add a column, calculate a formula in the text, or otherwise manipulate numbers. Some programs have the capability to select or highlight an area of text with numbers and extract a sum or calculate a formula. Word for Windows, for example, can even calculate numbers in different parts of the document by using bookmarks. Word for Windows, Ami Pro, and WordPerfect perform math functions within tables. Legacy, WordStar, and DeScribe do not support math functions.

Macro languages have become one of the hot properties of professional word

processing. Macros permit users to develop a host of special-purpose tools for their text and document needs. By writing a sequence of commands and instructions, you can automate practically any function the word processor performs. Originally, macros simply recorded your keystrokes so you could play them back later. Now, the best macro languages include the features of a computer programming language, in addition to the special functions of word processing. WordBasic, the macro language in Word for Windows, may represent the state of the art, but WordPerfect, Ami Pro, Legacy, and DeScribe all have complete macro languages. Only WordStar has no macro language, although it does have a keystroke recorder. These languages generally require their own manuals, and with the notable exception of DeScribe, the programs reviewed here do not include that manual with the package.

THE PRICE OF POWER. This explosion of power and complexity in professional word processing has costs as well as benefits. Many of these new programs have so many complex features that the programs

themselves have significant problems keeping everything working together. Word for Windows and especially WordPerfect for Windows have had various known bugs. (See *InfoWorld* December 9, 1991, page 8; December 16, 1991, page 3; and December 23, 1991, page 1.) Users can expect on-line updates or fixes that will address these problems.

Every one of these programs needs first-line hardware to deliver on the promise of their power. If you have a modest 386 machine with a mere 2 megabytes of memory, you will find that these programs bog down your hardware. They really need a fast 386, or better yet, a 486; and they require a color VGA board and monitor, 6 to 8 megabytes of memory, a minimum of a fast, 40-megabyte hard disk, and of course, a mouse. If you don't have a laser printer, much of the power of these programs will be painfully slow, the operation of many functions will drive

See **WINDOWS**, page 96

REPORT CARD

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Windows Professional Word Processors

	InfoWorld weighting	Your weighting	Ami Pro Version 2.0	DeScribe Version 3.0	Legacy Version 2.0	Microsoft Word for Windows Version 2.0	WordPerfect 5.1 for Windows Version 5.1	WordStar Version 1.0
Price			\$495	\$495	\$495	\$495	\$495	\$495
Performance								
Basic editing	(80)		Very Good	Satisfactory	Good	Excellent	Very Good	Good
Proofing tools	(80)		Good	Satisfactory	Good	Excellent	Good	Good
Layout	(80)		Excellent	Very Good	Very Good	Very Good	Good	Very Good
Mail merge	(50)	()	Very Good	Satisfactory	Satisfactory	Excellent	Very Good	Satisfactory
Style sheets	(50)	()	Excellent	Very Good	Very Good	Very Good	Good	Very Good
Font/printer support	(50)	()	Very Good	Good	Very Good	Very Good	Excellent	Good
Reference tools	(50)	()	Excellent	Poor	Satisfactory	Excellent	Very Good	Very Good
Import/export	(50)	()	Excellent	Good	Very Good	Excellent	Very Good	Satisfactory
Networking	(50)	()	Very Good	Unacceptable	Good	Very Good	Good	Poor
Speed	(50)	()	Very Good	Satisfactory	Satisfactory	Very Good	Good	Satisfactory
Macros	(30)	()	Excellent	Excellent	Excellent	Excellent	Good	Unacceptable
Documentation	(75)	()	Good	Excellent	Very Good	Satisfactory	Satisfactory	Good
Ease of learning	(75)	()	Good	Very Good	Good	Very Good	Very Good	Good
Ease of use	(130)	()	Excellent	Good	Very Good	Excellent	Very Good	Good
Support								
Support policies	(25)	()	Excellent	Satisfactory	Very Good	Very Good	Very Good	Satisfactory
Technical support	(25)	()	Very Good	Very Good	Satisfactory	Very Good	Very Good	Very Good
Value	(50)	()	Excellent	Satisfactory	Good	Excellent	Excellent	Good
Final scores			8.3	6.0	6.7	8.6	7.1	5.9

Use your own weightings
to calculate your score

GUIDE TO REPORT CARD SCORES

InfoWorld reviews only finished, production versions of products, never beta test versions.

Products receive ratings ranging from unacceptable to excellent in various categories. Scores are derived by multiplying the weighting (in parentheses) of each criterion by its rating, where:

Excellent = 1.0 — Outstanding in all areas.

Very Good = 0.75 — Meets all essential criteria and offers significant advantages.

Good = 0.625 — Meets essential criteria and includes some special features.

Satisfactory = 0.5 — Meets essential criteria.

Poor = 0.25 — Falls short in essential areas.

Unacceptable or N/A = 0.0 — Fails to meet minimum standards or lacks this feature.

Scores are summed, divided by 100, and rounded down to one decimal place to yield the final score out of a maximum possible score of 10 (plus bonus). Products rated within 0.2 points of one another differ little.

Products receive InfoWorld Buyers Assurance Seals if they meet the following conditions: Software vendors must offer 60-day money-back guarantees on the products, and hardware vendors must offer a one-year repair or replacement warranty. No product is eligible that receives a score lower than satisfactory in any of our Report Card categories. Vendors who qualify have signed contracts with InfoWorld that detail these support policies. (InfoWorld does not charge for the Buyers Assurance Seal.) We award the Recommended seal to products that, in addition to the above criteria, receive a final score of 8.0 or higher.

TEST

We introduce a new set of tests for this comparison of Windows word processors, and these tests will carry over into our subsequent reviews of high-end word processors. In the past our test plans have focused on the features present or absent in a product. For this comparison we have taken these tests one step further.

While the competition among these products has become feature-oriented, what good are these features if they are cumbersome to use? For nearly every performance category, we have implemented an "ease-of-use modifier," which is a test of the usability of some of the features in each category.

We rate how easy or difficult it is to accomplish a particular task. If a product is extremely easy to use, we may raise its score in a particular category. Or, the modifier may help determine which way we should rate a borderline product. On the other hand, if we find it difficult or next to impossible to accomplish a task, the ease-of-use modifier can bump a product down one score. We continue to rate ease-of-use separately, scoring how well the product's features are implemented as a whole and how easy it is to produce complex documents.

Elements that contribute to a product's ease of use may be as simple as menu location: Are the commands easy to find and located intuitively within the correct menu? The capability to customize and access features from the ruler or toolbar also enhance ease of use, for example.

Our testing platform is a Compaq Deskpro 386/20e with 4 megabytes of RAM, 110-megabyte hard disk, a Microsoft serial mouse, and MS-DOS 5.0. We installed each application to use a Hewlett-Packard LaserJet Series II printer with 2½ megabytes of RAM as the default printer and a QMS PS 810+ PostScript printer as the alternate printer.

We use two documents for testing, one simple and one complex. The simple document is a 128-page manuscript imported from Microsoft Word 4.0 for the Macintosh in RTF format. This manuscript is divided into seven chapters and appendixes. Most of the document is Times with Helvetica used for headlines and headers, and the document is formatted for a HP LaserJet.

Our complex document is a highly formatted four-page document that we imported from ASCII and formatted in each product's native mode. It contains a color PCX file (we use TIFF if a product does not support PCX) and an EPS chart that was created in Borland's Quattro Pro, Version 3.0. The document also contains a table that we generated with each product's table generator.

We subtract points if a product does not support a required feature, and we award points for bonus features.

PERFORMANCE:

Basic editing covers the tools that are used in common word processing work. In addition to conventional paragraph-style selecting, we require products to support area or columnar cut and paste. Other requirements include search and replace that maintains capitalization, redefinable tabs, the capability to com-

See **HOW WE TEST**, page 88

Ami Pro
Version 2.0

Ami Pro has a strong collection of capabilities. Although you can do almost anything you can imagine with this program, the price of these new features is complexity and occasional user confusion. Ami Pro offers all of the usual word processing features in addition to an endless series of special features. Ami Pro also provides an inexhaustible selection of views, preferences, and customizable options.

Ami Pro's search and replace handles wild cards, tabs, returns, and paragraph styles. The search and replace maintains caps, and it can search or replace backwards and carry a search through all text streams. Ami Pro has time and date stamping — both current and at the time they are printed — and redlining and strikeouts. Tabs include left, right, center, and decimal, and you can choose among dot, dash, or underline leaders. Hyphenation includes a hot zone and manually inserted hyphenation points. You can edit documents in up to nine windows. Ami Pro lacks a columnar cut and paste, but it can link with documents and objects using DDE and OLE.

Ami Pro lacks several ease of use enhancements. For example, you cannot select the entire document. And, when you attach documents to a master file, you must select files one at a time rather than being able to attach or detach a group of files. In addition, bullets can be applied in a document only through the use of styles. **Score: Very Good.**

Ami Pro 2.0 includes a spelling checker and thesaurus. The thesaurus has a word list presented with synonyms, parts of speech, and definitions. If you enter a correction, the speller checks the correction. Replacing maintains capitalization and punctuation, and the speller will alert you to unusual punctuation or double words. You cannot backtrack with the speller. We found that some of the suggestions for Ami's spelling checker could be improved, for example "emphasize" was the third suggestion for the misspelled "emphasise." Ami Pro does not contain a grammar checker.

Score: Good.

Ami Pro 2.0 allows multiple columns of differing widths and different gutter sizes, and you can have columns balanced. You can edit in a variety of modes that display the text large or small, one whole page per screen, using WYSIWYG fonts. All views, except the facing pages view, are editable. The screen can show margins, boundaries, paragraph marks, icons, and rulers. Ami Pro supports easily modifiable frames that you can stack, cascade, make transparent, fix to a place on the page, flow text around, or repeat on different pages. Graphics manipulation includes scale and crop, rotate and flip, fit into a frame or maintain aspect ratio, adjust gray scales, edit, add text, draw lines, fill shapes, and free-form drawing.

See **AMI PRO**, page 88

DeScribe
Version 3.0

DeScribe, originally introduced as an OS/2 word processing program, now reappears in enhanced form and is compatible with both Windows 3.0 and OS/2, Version 2.0. DeScribe doesn't compete in the top tier with Ami, Word, and WordPerfect. Rather, it competes more successfully against Legacy and WordStar for Windows.

DeScribe's search-and-replace capabilities include superb pattern matching, finding special characters, and finding and replacing formatting. You can opt to have DeScribe maintain capitalization when replacing. DeScribe's tab options include centered, left, right, decimal forms with dot, dash, underline, and user-defined leader characters. You can append a selection to material already in the clipboard (most programs overwrite the clipboard when you copy or delete), and you can cut and paste columns, but there is no area cut and paste. You can choose to set a hyphenation zone and hyphenate automatically or manually, but DeScribe does not support user-prompted hyphenation. It splits the window horizontally or vertically to edit the same or a different document; it can link information with Dynamic Data Exchange (DDE).

In our ease-of-use tests, we found awkward mouse support in that the mouse point must be directly at your editing point to reposition the cursor. **Score: Satisfactory.**

DeScribe has a spelling checker and a thesaurus, but there is no grammar checker. The speller checks all text streams or the stream from the insertion point onward. You can replace or ignore one or all occurrences of a word, check marked blocks, or start and stop anywhere in the text. DeScribe's spelling checker also alerts you to double words and unusual punctuation. You cannot backtrack during a spelling check. The thesaurus has synonyms, antonyms, parts of speech, definitions, related words, contrasted words, and compared words. We found in our ease-of-use process that DeScribe incorrectly recognized words as all capitals as different from those with lowercase letters. **Score: Satisfactory.**

Based on frames the program calls objects, DeScribe can format and arrange text or graphics on the page in many ways. You can group frames, put columns or graphics inside frames, and move or place frames as required. DeScribe can balance columns but cannot create columns of uneven width. Rulers and fonts and other layout characteristics can exist as templates in separately named files for subsequent reuse. Pages can have different layouts for odd or even numbers. DeScribe has a flexible table facility, but no math or equation editor. You can scale graphics to fit the frame or crop images, and you can also group or ungroup graphic objects. The program includes drawing tools for lines and

See **DESCRIBE**, page 88

Legacy
Version 2.0

Legacy has fewer features than the top-of-the-line products, but it is a capable product that can handle most word processing tasks. Like WordStar for Windows, Legacy sees a document as a sequence of frames linked to produce the final document. The program can link these frames into individual story lines that carry through either continuously or are broken across pages as in a newspaper story.

Legacy supports basic cut and paste, but it does not support columnar cut and paste outside of tables. An extensive search and replace searches by story lines and in frames; maintains caps; finds and replaces tabs, returns, and formatting; has an elaborate wild card feature; and automatically searches headers and footers. Standard tabs include left, right, centered, and decimal varieties with dot or underline leaders. Hyphenation follows a TeX algorithm — which is an algorithm that is used to decide where to hyphenate words, as opposed to using a dictionary, and permits an exception list, but it does not support user-prompted hyphenation. With Legacy, you cannot have multiple windows open simultaneously for the same or different documents.

In our ease-of-use process, we found that changing styles of a highlighted paragraph sometimes caused U&Es, especially if you try to change the style of a paragraph that contains two styles. **Score: Good.**

Legacy contains a thesaurus, spelling checker, and integrated grammar checker. The powerful thesaurus provides synonyms, antonyms, near synonyms and antonyms, and "see also" words. The speller checks all text streams, but it does not check tables. The spelling checker does, however, alert you to double words or unusual punctuations. You can replace or skip a word once, but you cannot replace all or skip all occurrences of a word. Legacy's grammar checker will go back and check entered corrections, so you can recheck a misspelled word in that manner. In our ease-of-use process, we found that the spelling checker did not offer user-added words as suggestions. **Score: Good.**

Legacy offers versatile frames, story lines, and multiple layouts in stored templates. The product also has borders, divider lines, and box-drawing tools. Legacy supports drawing tools for lines, arcs, and other shapes, but not free-form drawing. You can lay out different formats for left and right pages, balance columns, and use two columns of different sizes. You can view the document in draft mode (without rulers), in detail mode with all marks and formatting tokens, and in a proof mode for preview. You can zoom from 25 to 200 percent, and you can choose that text below a certain size appear greeked. Graphics support includes the capability to rotate, scale, crop, fit to frame, dither, manipulate colors, invert,

See **LEGACY**, page 88

Microsoft Word for Windows Version 2.0

Microsoft Word for Windows sets the state of the art among Windows professional word processors. Not only is it the most powerful word processor, it is also the most graceful, as the features are coupled with numerous ease-of-use enhancements. Word for Windows even includes features to make the transition from the market-leading WordPerfect 5.1 DOS quick and painless.

WordPerfect for Windows Version 5.1

WordPerfect 5.1 DOS makes the transition to Windows, and the features list remains virtually unchanged. The interface, however, is completely new and benefits from the advantages of the Windows interface. However, WordPerfect 5.1 for Windows is not as competitive among the big Windows players, Ami Pro and Word, as the market-leading DOS version.

WordStar for Windows Version 1.0

WordStar for Windows adopted its base code from Legacy's engine. WordStar has added its own enhancements and completely redesigned the interface. WordStar's story lines consist of connected text, tables, or graphics that flow from one frame to another in sequence. They can be separated by intervening material, and the story line will flow from one frame to another until it has reached the final frame.

Summary

Each company in this comparison has shipped a new version of its Windows word processor since our last word processing roundup. A few of the products (DeScribe, WordPerfect 5.1 for Windows, and WordStar for Windows), are new to the Windows market. Ami Pro and Word for Windows have made a lot of progress since their earlier versions, especially in the breadth of features and ease-of-use enhancements.

BASIC EDITING

Word for Windows 2.0 has the revolutionary capability to drag and drop text. Word for Windows can cut and paste, and it also includes an easy-to-use rectangular area cut and paste. You can choose to have the search and replace feature maintain capital letters, and you can also search for character and paragraph formatting. Word for Windows lets you time stamp your documents, use redline or strikeouts, and maintain left, right, center, or decimal tabs with leaders. There are options to justify your paragraphs left, center, and right. You can have up to nine open windows including nine documents, or nine different sections of one document. Documents can link with other documents or objects with Dynamic Data Exchange (DDE) and Object Linking and Embedding (OLE) capabilities.

Word for Windows is by far the easiest program to manipulate for basic editing. The implementation and use of the features is intuitive, and the drag and drop feature is a breeze to use in comparison to cut and paste. **Score: Excellent.**

Users new to Windows can maintain the traditional WordPerfect DOS keyboard for editing functions. Search and replace will search all text, including headers. The search and replace maintains capitalization; it can find and replace formatting, items in frames and notes, and use wild card characters. WordPerfect has time and date stamping, revision marking with redline, and strikeouts. WordPerfect has area select, and you can cut and paste columns. Tabs include the standard left, right, and decimal, as well as a centering tab. Hyphenation is automatic or user-prompted. You can edit in up to nine windows simultaneously. WordPerfect supports DDE document linking, although it does not support OLE.

We found that WordPerfect's mouse action is a little difficult to control when you are dragging objects between pages; the results were inconsistent because sometimes the object would appear on the previous page, or sometimes it would appear on the intended page. **Score: Very Good.**

WordStar for Windows has most of the editing features expected of a full-featured program. It has variable justification by paragraphs. You can search and replace using wild cards or find formatting and style tags, and the search will maintain capitalization. There are tabbed columns and tables. However, you can't cut and paste columns of text outside tables nor can you have more than one document on screen at a time, which complicates cut and paste between documents.

Tabs include all the standard varieties with standard leader options. Automatic, but not user-prompted, hyphenation works with selected text. The program supports file linking through DDE but does not have time and date stamping. We found cutting and pasting between documents to be cumbersome in our ease-of-use process, because of the windowing limitations. **Score: Good.**

PROOFING TOOLS

Word for Windows contains a spelling checker, thesaurus, and an integrated grammar checker. The speller checks corrections that you enter, ignores one or all occurrences of a word, supports phonetic lookups, and alerts you to double words and unusual punctuation. You can start and stop a check at any point in your document, undo your last action, backtrack during a check, and globally replace a misspelled word. You can have user dictionaries and an exclusion dictionary. The thesaurus offers synonyms, antonyms, and parts of speech. All of the top suggestions made by Word's spelling checker were accurate. Like basic editing, the proofing utilities are quite intuitive and very easy to use. **Score: Excellent.**

WordPerfect has a spelling checker and thesaurus. The thesaurus handles synonyms, antonyms, "see-also" lists, and parts of speech, but it does not offer definitions. The speller checks entered words, and it will replace or skip one or all occurrences of a word. It will check text in headers, footers, and marked blocks, and it also alerts the user to double words and unusual punctuation. However, you can't backtrack during a spelling check. WordPerfect also supports user dictionaries and international dictionaries.

We found that suggestions from the speller could be more accurate; for example "material" was the first suggestion for "material," and "emphasis" was the first suggestion for "emphasise." **Score: Good.**

WordStar for Windows' proofing tools consist of a spelling checker, thesaurus, and Correct Grammar, which is bundled with the application. The speller doesn't check your corrections to misspelled words, and you can't quit and restart a check. The speller will alert you to double words and unusual punctuation. You can replace one but not all occurrences of a word, although the replaced word will appear first in the list of suggestions. The thesaurus offers parts of speech and definitions, as well as synonyms, near synonyms, antonyms, near antonyms, and "see-also" words. We found that the spelling window covers up the text so you can't always see the text surrounding the misspelled word. **Score: Good.**

LAYOUT

Word for Windows' layout capabilities include a full list of features. However, Word does not support multiple columns of unequal width. Frames enclose text, graphics, tables, or other document objects, and you can manipulate the frames for size and position on the page, although the program does not have the story-line capabilities of Ami Pro. You can have left-right page layouts, floating headers and footers, different headers and footers on the first and subsequent pages, and multiple editable views with zoom from zero to 200 percent. Word for Windows includes a formula editor and a superior table editor. You can perform math functions in tables and by selection. The graphics capabilities include draw-

See **WORD FOR WINDOWS**, page 89

The layout capabilities of WordPerfect 5.1 for Windows include margins of varying size, customizable tabs, and options for word and character spacing. Columns may be of different widths, and there is widow and orphan control. WordPerfect 5.1 for Windows includes a powerful equation editor. In the tables, you can calculate by rows and columns and accept relative formulas that adjust when copied into another cell. Multiple views include a draft mode and a preview with zoom. The editing screen never shows the entire page with headers or footers. Graphics support allows you to mirror images or show them in black and white or in outline form. You can rotate, scale, and crop these images, and draw

See **WORDPERFECT**, page 89

WordStar's frames can expand up to a page, and if the contents of a frame exceed the frame size, it can spill over into other, linked frames. Frames float or you can fix them to a specific location, and text flows around frames or underneath them. You can stack frames, make them transparent, or fill them with background shading or color. Frames can also contain other frames. You can scale the text to fit the screen and display at a normal percent, or as greeked, below any specified type size. You can display facing pages, and the program supports multiple columns with column balancing. You can scale graphic images, imported into frames from a range of graphics formats. Graphics can also be rotated and edited.

See **WORDSTAR**, page 89

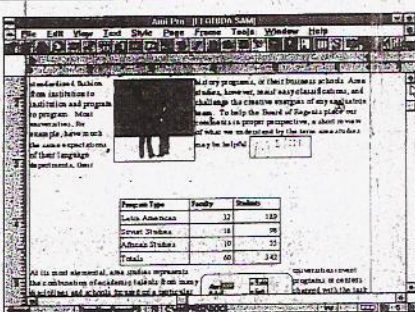
PROOFING TOOLS

Word for Windows was once again the winner of this category. Not only does it contain the basics, but we found the suggestions given by the speller to be the most accurate. Legacy and WordPerfect were fine performers. Although WordPerfect lacks a grammar checker, the speller will automatically check all text, including headers, footers, and defined blocks. Legacy has an integrated grammar checker, but the spelling checker didn't offer user-added words as suggestions for misspellings. Ami Pro has a capable spelling checker and thesaurus, but no grammar checker. WordStar for Windows has Correct Grammar bundled with the application, but we found that the speller will not let you replace all occurrences of a misspelled word.

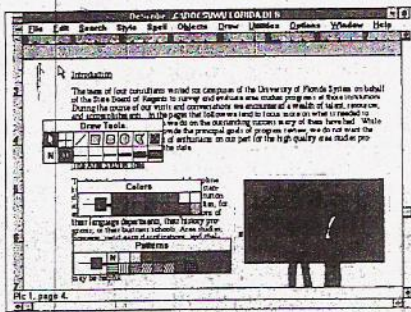
LAYOUT

All of these word processors do a fine job with layout. Ami Pro uses frames, which allow you numerous layout options, and Ami also offers extensive capabilities for manipulating graphics. Word for Windows also uses frames, but it lacks the capability for story lines you'll find in Ami Pro. Word for Windows also offers formula, drawing, table, and graph editors. Legacy, DeScribe, and WordStar follow closely behind Ami Pro and Word. These three programs all use frames to manipulate text and layout. Like the two leaders, these three word processors offer a wide range of graphics capabilities. None of these programs has an equation editor, but Legacy will support simple math. WordPerfect 5.1 for Windows has

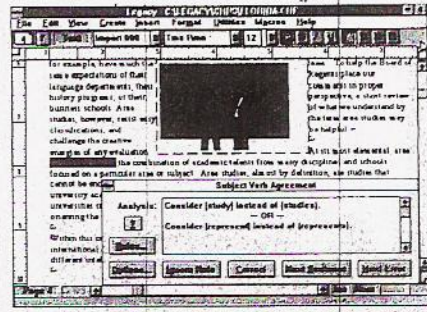
See **SUMMARY**, page 89



Ami Pro contains a powerful equation editor that aids in creating and customizing complex equations.



DeScribe's floating toolboxes make a variety of capabilities available for your editing needs.



Legacy has an integrated grammar checker, and you can customize the rules for various writing styles.

HOW WE TEST / from page 84

Word processors

bine documents, center and full justification, and the option to hyphenate text automatically.

Bonus features include the capabilities to perform sophisticated searches that include wild cards or embedded codes; to define a block of text and copy or move it to another location within the document by dragging it with a mouse; to link documents dynamically; to have user-defined tab leaders; to edit and resize document windows; and to insert the current time and/or date in a document. We also award bonus points to products that support Dynamic Data Exchange (DDE) and Object Linking and Embedding (OLE).

Our ease-of-use process requires basic editing of our simple document, including inserting and deleting phrases and cutting and pasting. In addition, when building our simple document, we note ease-of-use features such as quick keys for moving or deleting text by word or paragraph, ease of navigation through the document, ease of inserting page breaks, and adding "plain" text adjacent to text that is already bold or italicized.

Proofing utilities are the tools that help with checking and correcting errors in your text. In a spelling checker, we require products to show errors in context; to allow for the addition of words to a user dictionary; to maintain capitalization of a replaced word; to backtrack if an incorrect action is accidentally selected; to have the option of replacing a word globally; and to check contents of headers, footers, footnotes, and other framed text automatically. We require products to have access to a thesaurus when editing documents, and we also require a grammar checker. Bonus features include checking spelling corrections that you enter, alerting users to double words or unusual capitalization, flagging errors that are typed in the spelling checker in real time, listing parts of speech or definitions when providing synonyms in the thesaurus, and global replace and undo. We also award bonus points for support of multiple language dictionaries.

In our ease-of-use test, we proof two short documents and note the usefulness of suggested corrections and whether the first suggestion is the "best guess," how much of the context of the error you can view, and the time it takes to wait for suggestions. In addition, we note if words we have added to the user dictionary are included in the spelling checker's list of suggestions.

For mail merge, we require products to see **HOW WE TEST**, page 92

Ami Pro (Continued)

Ami has math in tables with cell references and formulas. There is a table editor, and formula editing takes place in a special window. Ease of use would be improved if you could flow text between frames. Overall we found Ami to be intuitive, and the features are easily utilized. **Score: Excellent.**

Ami Pro's merge has variables, comparison operators — conditional inclusion of text during a mail merge based on the information in the record — and access to the powerful macro language. There is a 3-up template for easy label creation. The program skips bad records without a hitch; produces lists, and handles form letters. Ami Pro will also merge files from the native formats of Lotus 1-2-3, dBase, Paradox, ASCII, and dIF. A superior three-level sort recognizes various delimiters. The customization of the merge is not as simple as in Word for Windows. **Score: Very Good.**

You can use the extensive style library supplied with the program, which includes bullets, labels, outlines, and newsletters, among others. Ami Pro is the only product that supports global styles — you can base any number of documents on one style, and if that style is changed, all connected documents will be updated. You can also modify styles and have them stay with the document but not become permanently attached to that style sheet. You can permanently modify a style, create styles from an existing document, or create a new style. Ami applies styles to paragraphs and handles table layout requirements for columns and rows. Ami's styles are comprehensive and self-explanatory. **Score: Excellent.**

Ami Pro is bundled with ATM and supports all fonts and printers available under Windows 3.0. Ami will perform pair kerning on PostScript printers. Unfortunately, the program cannot print landscape and portrait pages in the same document. **Score: Very Good.**

See **AMI PRO**, page 92

DeScribe (Continued)

simple shapes, as well as color fill and flip.

We found it wasn't as easy to move and resize objects as it could be, although layout is relatively more straightforward than in other products. **Score: Very Good.**

MAIL MERGE

DeScribe's merge has the minimum functionality of combining a data file with a document file to produce mailing labels or form letters. The macro language makes more complex mail merges — such as conditional support — possible, but only as user-programmed functions. With DeScribe's sorting, you can have files with tab, comma or word delimiters. You can do two-level sorts. Merge will use comma-delimited import files from other programs such as spreadsheets or databases, but it does not link directly. **Score: Satisfactory.**

STYLE SHEETS

DeScribe's style sheets include all the information needed to format paragraphs including fonts, layout information, hanging indents, and multiple columns. You can apply styles to characters or paragraphs and save the styles with the document, as well as modify styles permanently or temporarily. You can have style sheets managed as a group or separately, and you can record styles by example. We found style management to be very intuitive, as styles are stored in a DOS-type tree format. This format is a breeze for style creation, but we found it to be a little cumbersome in actual use. **Score: Very Good.**

FONT/PRINTER SUPPORT

DeScribe uses standard Windows printer drivers, and the program doesn't ship with any font-scaling package. You can print in reverse order and without pictures or other special elements in draft mode. You cannot do portrait and landscape printing in the same document, and the printer program can print a range but not selected pages from a document. DeScribe will print with crop marks for nonstandard page sizes. **Score: Good.**

See **DESCRIBE**, page 92

Legacy (Continued)

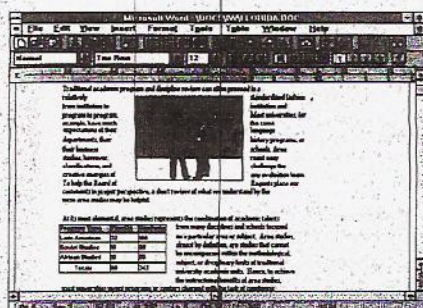
display color as black and white, and reverse black to white. Graphics can be layered and made transparent or opaque. Legacy supports simple math and DDE links to your spreadsheet. We found the layout features to be comprehensive and easy to understand and use. The frames are especially easy to place, move, and size. **Score: Very Good.**

Legacy's mail merge provides the basics for processing data files prepared within the program or imported from ASCII-delimited files. Although you can define delimiter characters, you can't use any of the common database or spreadsheet files without translation to ASCII. Merge doesn't provide conditional selection of records nor does it support skipping blank records or inserting variable fields. There is no sort routine. **Score: Satisfactory.**

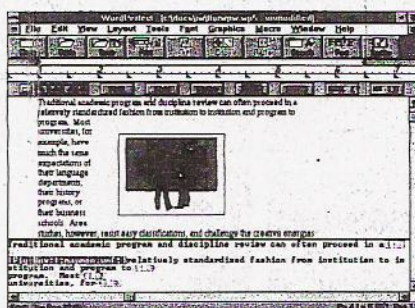
Legacy's styles, stored separately by name, include all the information needed to format paragraphs and characters. You can modify styles permanently or temporarily. You can also create styles by example. Legacy also allows you to save properties (specific attributes associated with frames) in style sheets, which is unique to word processing. Style information can stay with an individual document or become a separately stored style sheet available for use with another document. Style management is somewhat less flexible than with Ami Pro or Word for Windows, although we found Legacy's styles relatively easy to use. **Score: Very Good.**

Legacy supports all Windows printer drivers. You can print landscape and portrait orientation on different pages in the same document, and you can have the document printed in reverse order, collated, and text-only without pictures or other graphic elements. Legacy's typographic controls include tracking and pair kerning, both automatically and manually, to one one-thousandth of an em. **Score: Very Good.**

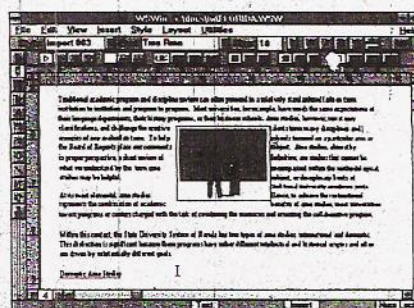
See **LEGACY**, page 92



Microsoft Word for Windows supports graphics import and tables and can perform math functions.



WordPerfect's Reveal Codes capability allows for complex manipulation of formatting.



WordStar's frame capabilities allow you to place a graphic and have text flow around the graphic.

Microsoft Word for Windows (Continued)

ing, charting, sizing, drop capitals, lines, rotating images, free-form drawing, shapes, and whatever else a regular drawing package might do. The features are more intuitive than in other word processors. The drawing, table, and graph editors have a nice, easy-to-use feel, although we found that it can be awkward to modify and manipulate text frames. **Score: Very Good.**

WordPerfect for Windows (Continued)

horizontal and vertical lines. The embedded codes for layout proved difficult to manage, because elaborate formatting requires manipulation of the codes, although this may not be a problem for those converting from WordPerfect DOS. We found that when we had a table on a page with three columns of text, we received a UAE. **Score: Good.**

WordStar for Windows (Continued)

but you cannot crop graphics. WordStar for Windows does include a line-drawing capability. In our ease-of-use tests, we found that scaling graphics is difficult, as the changes aren't always visible in edit mode. Overall, WordStar's layout is feature rich and quite capable. **Score: Very Good.**

Summary (Continued)

the weakest layout capabilities. We found that WordPerfect lacks some ease-of-use features necessary to perform layout tasks, such as the capability to see your entire page with headers and footers, and we also found a reproducible UAE in one of our layout tables.

MAIL MERGE

Word for Windows' merge provides automatic assistance for printing labels and a wide range of capabilities for form-letter templates. You can use variables, sort one level, or select by field. With Word for Windows, you can use data directly from Excel DDE links and comma-delimited ASCII only. Word also handles date stamping and record-skipping, along with automatic deletion of empty fields. Word for Windows can also automatically recognize an address in your document for envelope printing. Word will guide you through your merge graphically. **Score: Excellent.**

WordPerfect 5.1 for Windows' mail merge offers all the standard elements plus powerful programming commands for complex form letter and list processing tasks. The program handles labels automatically, but does not accept Lotus or database program files. It will convert ASCII-delimited files constructed with practically any delimiter, but we found that it cannot handle files that include a soft return. The WordPerfect sort routine remains the best in the business, and it performed flawlessly in our tests. Producing a template for 3-up labels was a breeze. **Score: Very Good.**

WordStar's merge will not automatically skip bad records. Rather, an error box appears and the print job is interrupted. You can import ASCII-delimited, comma-delimited, dBase, and WordStar mail list files. The program has complete flexibility in defining field delimiters. WordStar does not support conditionals of any kind, so you can't select a subset from an external list. There is a bug in the export feature: You cannot export over an existing file, which makes editing an ASCII data file cumbersome, because you have to rename the file in DOS or reattach the file under a different name. **Score: Satisfactory.**

MAIL MERGE

Word for Windows, WordPerfect 5.1, and Ami Pro for Windows have strong mail-merge capabilities. You can create form-letter templates and 3-up labels, and all performed well in our tests. Ami Pro's merge does, however, lack user-defined variables. DeScribe, Legacy, and WordStar compete on similar levels for mail merge and offer basic sets of features. WordStar's merge will not automatically skip bad records, and Legacy doesn't provide conditional selection of records or support skipping blank records. DeScribe's merge operates largely through macros, and the merge does not use data from other programs.

STYLE SHEETS

Word's style sheets contain information for fonts, margins, indentations, borders, language, and other appearance characteristics of paragraphs. You can record styles by example, and you can base them on other styles. You can have many different styles associated with one document. Word's styles can form document templates, which have layout and style information, plus boilerplate text that is ready for use and reuse. Word also supports linked styles. When you make changes to the style sheets, your changes apply to the entire document. However, you cannot manage styles independently from your document like you can in Ami Pro. **Score: Very Good.**

WordPerfect 5.1 for Windows uses a glossary of codes it calls styles. Each style is a set of document layout and formatting codes that define the text's appearance. You can have a large number of these style descriptions, but you cannot record styles by example. You can insert WordPerfect's styles into the character stream, and this affects everything from the insertion in the text forward, or you can apply a style to selected text. You can opt to have codes appear in a special Reveal Codes window where you can edit, delete, copy, or move codes, as in the DOS version. We found that styles were relatively easy to create; you must open a dialog box to apply them. **Score: Good.**

Style sheets include information about document layout, fonts, rulers, and graphic information. You can save a collection of styles with a template that can also include text and graphics and table data. This helps create standard documents or forms that you can use repeatedly. We found style creation to be simple, and styles are available for headers and footers, but they are not automatically assigned. We also found that imported styles (from our RTF file) don't retain their original names, rather, they have different style names (such as IMPORT001, IMPORT002, etc.). Style management is somewhat less flexible than with Word for Windows or Ami, for example. **Score: Very Good.**

STYLE SHEETS

Ami Pro offers the most powerful style sheet capabilities: It is the only program that supports global styles. Word for Windows also has capable style sheets. Both programs can record styles by example and base styles on other styles. DeScribe, Legacy, and WordStar for Windows have style capabilities that are complete, although we did notice some ease-of-use differences. DeScribe's method of storing files, while creative and easy for style creation, is difficult to manage when you use the different styles. WordPerfect 5.1 for Windows' styles operate differently because of WordPerfect's reliance on the use of codes, and WordPerfect lacks the capability to record styles by example.

FONT/PRINTER SUPPORT

Word for Windows supports all standard Windows printer drivers, and it will support Windows 3.1 with TrueType. Word can adjust letter spacing for all text or a selection, and you can perform pair kerning from .25 through 14 points in .25-point increments. You can print with portrait and landscape orientation in the same document on different pages, and Word supports duplex printing. **Score: Very Good.**

See **WORD FOR WINDOWS**, page 93

WordPerfect supports standard Windows printer drivers, and it also supports an amazing list of more than 900 special WordPerfect drivers, which let you print different size pages and orientations in the same document. The program supports pair kerning and letter spacing. A printer driver editing program can customize the WordPerfect drivers and you can order a technical manual from WordPerfect for \$19.95. **Score: Excellent.**

See **WORDPERFECT**, page 93

WordStar supports all Windows printer drivers, and it is also bundled with Bitstream's Facelift. Unfortunately, Facelift will install only on the C: drive, and if you don't have enough space there, you have to make room for it. WordStar supports color printers through Windows, in addition to portrait and landscape printing within the same document, duplex printing, and reverse-order printing. **Score: Good.**

See **WORDSTAR**, page 93

FONT/PRINTER SUPPORT

All products offer fine printer support through Windows. Ami Pro is bundled with ATM, and WordStar is bundled with Facelift. WordPerfect ships with a very impressive list of its own printer drivers.

See **SUMMARY**, page 93

HOW WE TEST / from page 88 Word processors

to skip a bad record without disturbing the remainder of the merge, and to permit the user to employ data fields in a different order than they occur in the data file. Bonus features include a simple database or flat-file manager that can sort and search for records, user-prompted merging, and provision of conditional statements to control merging. We also award bonus points for templates that allow you to print labels on a sheet that is three rows by three columns (3-up label templates), a template or other automated way of printing labels directly on a standard envelope, the capability to capture an address from an envelope for insertion into a letter and vice versa, and finally, the capability to merge directly from data stored in popular database

The speed score is based on the performance in our benchmark files.

formats (such as Lotus, Excel, or dBase).

In our ease-of-use process, we perform two merges. The first is a 3-up label merge with simple formatting. The second merge is a simple form letter with conditionals. In these merges we pay special attention to sorting the records or output, conditional inclusion of a field, selecting and placing fields, printing multiple records on a single page, omitting blank lines when fields have no data, gathering records by a common ID, and formatting output fields with font attributes such as size or bold.

Layout scores features used in formatting a document. We require products to support multiple columns, to specify margins (or gutters) between the columns, and to break columns for headlines. If a user must create a separate frame or object for columns, we require the frames to accommodate all text and to have the capability to anchor text frames. We also require products to support definition of inside and outside margins, a WYSIWYG preview, graphics preview, scaling and cropping of imported images, a table editor, and the capability to draw at least two line types.

We award bonus points to products that support WYSIWYG editing, shaded backgrounds, measurement options (for example, inches and picas), widow and orphan control, vertical justification, and anchoring elements. In addition, bonus features include an equation editor, simple math capabilities, and the capability to perform free-form drawing, create simple shapes, and perform simple graphics manipulation, such as rotation.

Our ease-of-use process includes compilation of our simple and complex documents from scratch, and we pay special attention to the implementation of the layout features.

For **style sheets**, we require that a product store information in a form that can be named or numbered, a collection of which must be accessible by another file or can be copied into the document. We also require the capability to record styles by example, i.e., to define the

See **HOW WE TEST**, page 94

Ami Pro (Continued)

Ami Pro's reference tools include footnotes that automatically update numbering when you add or delete footnotes; however, Ami does not allow concurrent footnotes and endnotes in the same document. Ami has a sophisticated outlining function that is based on paragraph styles. You can collapse or expand outlines, promote or demote headings, and define numbering systems. You can also customize the outline display (for example, different colors for various levels) for on-screen viewing and manipulation. The table of contents permits several levels and will work across multiple files for one document. Similarly, the index can include cross-references and will work with multifile documents. You can have only one table of contents and one index per document, although you can set them up in a master document if there are several connected files. **Score: Excellent.**

Ami Pro supports most DOS word processing file formats — various ASCII formats, WordPerfect character formats, DCA/RFT, Microsoft RTF, and many others, including Word for Windows, but not Version 2.0. Ami Pro 2.0 supports dBase, Paradox, Excel, and Lotus spreadsheet formats. You can import most known graphic formats such as CGM, EPS, PIC, TIFF, bit maps, and Windows metafiles. **Score: Excellent.**

In Ami Pro, you can access an already-open file as read only, or you can choose to have your changes saved under a different file name. When you insert annotations, Ami will automatically attach the date, time, and initials of the user. Ami Pro is the only program to support E-mail integration. **Score: Very Good.**

Ami was a quick performer in our speed tests. Its print times were competitive on both of our test files, and it was one of the top three products in all tests except one — generating a table of contents. **Score: Very Good.**

Ami Pro's macros handle simple activities, such as recording keystrokes and playing them back, but they can also perform complex tasks to process words and documents automatically or with user input. The result can be a sophisticated data entry or forms processing capability. Beyond its superb macro programming language, Ami Pro has a dialog editor that creates custom dialog boxes that run within Ami and can offer user menus, buttons, selections, and branch decisions. **Score: Excellent.**

See **AMI PRO**, page 94

DeScribe (Continued)

DeScribe has no outline numbering or collapsing and it cannot number lines. DeScribe also does not include any footnoting, although you can enter a manual note into an individual footer. A solid five-level indexing system can work across different files. The program supports a table of contents function, but you have to make each entry manually by example. **Score: Poor.**

DeScribe's import and export formats from other word processing formats include standards such as Ami Pro, Versions 1.x, WordPerfect DOS, Word DOS, WordStar and WordStar 2000, but not Word for Windows. You can import Excel and Lotus 1-2-3 files, in addition to Microsoft RTF files, although we had some trouble using this filter and we received garbage on screen with an imported graphic. Graphics formats include GEM, PCX, PIC, CGM, BMP, and anything that the Windows Clipboard can import. **Score: Good.**

DeScribe's networking is supposed to allow you to open a second copy of a file as read-only, or open and save changes to a different name. However, we found a bug that allows two users to open the same file in read/write mode — the last version of the file that is saved is the one that prevails. DeScribe will be shipping a fix for this bug in about two weeks. **Score: Unacceptable.**

DeScribe was especially slow in its reordering of chapters, because we had to accomplish that manually via cut and paste. DeScribe was unable to print the EPS file in our complex document, so we could not evaluate its times for the highly formatted text. **Score: Satisfactory.**

DeScribe supports a complete macro programming language. The program ships with 30 prerecorded macros, or you can record keystrokes, or write your macros with all the power of a full programming language. You can also assign macros to keys and menus. DeScribe provides the macro manual in the shipping package, which is a major advantage over other packages. **Score: Excellent.**

See **DESCRIBE**, page 94

Legacy (Continued)

While Legacy will number and indent paragraphs using styles, it does not have an outlining capability. You can number lines through an included macro. Footnotes have considerable flexibility in numbering and renumbering, placement, separator line, continued text, and formatting — although you can create endnotes only through a macro. You can have separate footnote sequences by story line. Legacy has indexing and table of contents, but the table of contents automatically uses the physical page number, not the logical page number. You can have multiple indexes and lists with cross-references, and Legacy includes a macro to allow you to create a single index or table of contents out of multiple chapters. You must generate all indexes and tables of contents into a separate file and then import them into the document for formatting, which is a clumsy process. **Score: Satisfactory.**

Legacy's import and export features include the file formats through the latest DOS versions of WordPerfect, Word, WordStar and WordStar 2000, Microsoft RTF, and IBM DCA/RFT, as well as various forms of ASCII. The only Windows word processors that Legacy will import are Ami Pro, Version 1.x, Legend, and WordStar Legacy. Legacy will import Lotus 1-2-3 files and DIF spreadsheet files. You can import a variety of standard graphics files automatically including Lotus PIC, BMP, PCX, TIFF, CGM, EPS, DRW, and others. We did find that the RFT driver is faulty and produced garbage on our screen. **Score: Very Good.**

If one user has a file open and another user attempts to open it, Legacy will give you the option to open the file as read only, or you can open the file and save your changes to a different name. Legacy will track the original author and the revising authors of documents through document management. **Score: Good.**

Legacy was a solid performer in all of our speed tests, although it was no speed demon. It was middle-of-the-road in all tests except one: reformatting and repaginating our complex file, in which it tied for first. **Score: Satisfactory.**

Legacy's macros include a keystroke recorder and macro editor program. Macros can contain keystrokes, Legacy word processing commands, and general programming constructs. Legacy supports a full programming language. NBI ships about 20 prerecorded macros with Legacy and a separate macro editor. You can assign macros to key combinations or to menus. The manual does not ship with the program, but it is available on request. **Score: Excellent.**

See **LEGACY**, page 94

Microsoft Word for Windows
(Continued)**WordPerfect for Windows**
(Continued)**WordStar for Windows**
(Continued)**Summary**
(Continued)**REFERENCE TOOLS**

Word's comprehensive footnoting puts notes at the bottom of the page, gathered at the end of sections, or the end of the document. You can have various numbering styles for footnotes or use a symbol instead of a number. You can customize footnote and endnote formats, but you cannot have footnotes and endnotes in the same document. The outlining features include collapsing headings, multiple numbering systems, and the capability to promote or demote headings up to nine levels. Indexes can have regular style or run-in style, where sub entries follow in the same line. You can have cross-references and index across multiple files. A macro generates a table of contents based on headings defined by the document's styles, or you can create your own headings. Tables of contents are quite easy to build, although they are not as customizable as Ami Pro's.

Score: Excellent.

WordPerfect is the only product that supports concurrent footnotes and endnotes in the same document. You have several footnote customization options: You can choose to use symbols instead of numbers, and you can vary the numbering system. You cannot collapse or expand automatically numbered or indented outlines, although you can number lines. WordPerfect supports index and table-of-contents generation both for a single or multiple documents and 10 lists of figures, tables, text boxes, and other elements. An elaborate cross-referencing system and an automatic table of authorities facility help construct complex technical and legal text. We found that inserting marks for each TOC isn't the easiest method; other products, for example, can generate a TOC by searching for a style, say, headers. However, creating a master document was simple and easily modifiable. **Score: Very Good.**

WordStar for Windows has an outlining feature, but it includes only numbering options without the capability to collapse or expand headings. You can't number lines. There is a footnoting feature, but the program does not allow for concurrent endnote and footnotes. Various formatting options let you adjust the numbering and appearance of endnotes and footnotes, and you can automatically renumber footnotes. The program supports cross-references in the text, and the indexing will also handle cross-references. Both index and table of contents produce separate files on disk that you then must import into your main document for printing and formatting. You can't index multiple documents. You can also make up to 15 lists, although each entry in a list must be no longer than 150 bytes, including formatting tags. Overall, we found WordStar easy to use. **Score: Very Good.**

REFERENCE TOOLS

Once again, Ami Pro and Word for Windows were the top performers. Both have complete footnote capabilities and extensive outlining features. In addition, both support table of contents and index creation that include cross-references across multiple files. WordPerfect 5.1 for Windows is the only program to support concurrent endnotes and footnotes that are quite customizable, but you cannot collapse or expand outlines. WordStar for Windows has basic outlining, and you can create indexes and tables of contents, but you cannot index multiple documents. Legacy has extensive footnoting options, but it lacks a full outlining capability. DeScribe has weak, if nonexistent, reference tools.

IMPORT/EXPORT

Word for Windows supports various forms of ASCII transfer, all WordPerfect character-based formats (and WordPerfect for Windows, because the file formats are compatible), all versions of Word for DOS, DCA/RFT, and Microsoft RTF. Word also supports WordStar through Version 5.5, dBase III and IV, Excel, Lotus 1-2-3 2.x and 3.x, and Macintosh Word 4.0 and 5.0 files. Graphics conversions include Windows WMF, WPG, PCX, TIFF, EPS, and AutoCAD, Lotus 1-2-3, CGM; among others. In one test we found that the conversion with a highly formatted Word 5.5 file resulted in some slightly inaccurate formatting. **Score: Excellent.**

WordPerfect supports Ami Pro, Version 1.x, ASCII and ANSI, DCA-RFT, Word DOS through 5.5, Word for Windows through 1.1a, Microsoft RTF, and others. WordPerfect 5.1 for Windows uses the same file formats as the DOS version, so file transfer is transparent. You can import Excel, Lotus, and PlanPerfect compatible file formats into tables or the text. Conversion of graphics includes such standard formats as PCX, PIC, TIF, EPS, CGM, MSP. There is a bug in the RTF converter: "LnNum On" must be removed from the document, or else you get a "Divide by Zero" error at print time. This will be fixed in an interim release. **Score: Very Good.**

WordStar for Windows has a reasonable number of import and export text formats. While the program handles Ami Pro Versions 1.x, Microsoft Word, WordPerfect through 5.1, and WordStar 3.2 through 6.0 and 2000, it lacks a Word for Windows and a DCA/RFT converter. WordStar for Windows imports tables from Lotus and Excel automatically if you create your table in your spreadsheet. The program will import EPS, DRW, HPGL, CGM, WMF, PCX, BMP, and TIFF files, but it doesn't handle Lotus 1-2-3 PIC format graphics. The RTF converter has a bug in it that prevents the conversion. **Score: Satisfactory.**

IMPORT/EXPORT

Ami Pro, Word for Windows, and WordPerfect 5.1 for Windows offer the most complete import and export capabilities. All support most DOS word processors, DCA/RFT, RTF, in addition to a host of graphics formats. DeScribe and Legacy also support an impressive list of formats. WordStar lacks support for Lotus graphics, and there is a bug in the RTF converter that prevents a successful conversion.

NETWORKING

Word for Windows gives the user the option to open an already-open file as read only, or save edit changes under a different name. With Word, if a user makes comments or annotations in a file, you can choose to have his or her user ID incorporated into the annotations. Additionally, user IDs can be associated with any revision marks. There is also password file protection. **Score: Very Good.**

WordPerfect 5.1 for Windows will allow you to open a second version of an open file as read only, and you can edit the file and save it under a different name if you choose. **Score: Good.**

WordStar will let you open an already-open file as read only, but there is no way to edit and save changes to a differently named file. **Score: Poor.**

NETWORKING

WordStar is the only product that will not allow you to edit an already-open file and save your changes to a different file name. We found a bug in DeScribe's networking that allows two users to have a file open simultaneously. (DeScribe will be shipping a fix shortly.) Word for Windows and Ami Pro let you have user ID annotations, and Ami Pro is the only product that offers E-mail integration.

SPEED

Word for Windows was neck and neck with Ami Pro in our benchmark tests. It was especially quick in our editing and layout tasks for our complex document. Print times were not spectacular. **Score: Very Good.**

WordPerfect was a little sluggish in our speed tests. However, its print time for our complex document on a PostScript printer was particularly quick, probably because of WordPerfect's printer drivers. Its speed in generating a table of contents was on the slow side. **Score: Good.**

WordStar for Windows was an average performer in our simple document. Its editing tasks, however, were quite quick. WordStar was unable to print our complex document, as you need a separate driver to print a PCX and an EPS file in the same document. **Score: Satisfactory.**

SPEED

Ami Pro, Word for Windows, and WordPerfect 5.1 for Windows were the quickest products, although all are a little sluggish on screen when using a 386 machine. Legacy finished close in our benchmark tests, followed by DeScribe and WordStar.

MACROS

Word for Windows' WordBasic language can handle nearly any function you need using words or numbers and a document. You can perform conditionals, arrays, do-loops, while-when, if-then-else, and a host of other functions. The program comes with numerous preprogrammed functions covering a variety of common word processing tasks. All Word for Windows's menu commands can appear in a macro and a macro recorder will copy all of your keystrokes. **Score: Excellent.**

WordPerfect has a powerful macro facility that permits programming constructs that are equivalent to WordBasic or Ami Pro's macro language. The program has a converter that converts WordPerfect 5.1 DOS macros to WordPerfect 5.1 Windows format, although WordPerfect recommends recreating your macros in Windows because the Windows version macros use different keystrokes than the DOS version. You can record actions and keystrokes to construct relatively simple macros. **Score: Good.**

WordStar for Windows has no programmable macro facility and no keystroke capture facility. **Score: Unacceptable.**

MACROS

All of the programs, save WordStar, offer complete programmable macro options. DeScribe is at an advantage because it is the only program to ship with its macro manual. Legacy and Word's manuals are free to registered users. Ami's Macro Developer's Kit costs \$9.95 for shipping and handling, and WordPerfect's manual is \$15.95. WordStar offers no programmable macros, and it has no keystroke capture facility.

See **WORD FOR WINDOWS**, page 95

See **WORDPERFECT**, page 95

See **WORDSTAR**, page 95

See **SUMMARY**, page 95

HOW WE TEST / from page 32

Windows professional word processors

settings for a style from text already formatted in the document. Bonus features include the capability to have style preview; to create styles based on other styles; and to share or transfer styles, in which a style sheet can be shared by any number of documents or transferred from one style sheet to another.

In our ease-of-use process, we pay attention to creating a template with styles and other formatting, defining new styles, linking styles, altering the style in one document and applying the changes to documents that share that sheet, and using styles automatically in tables of contents, footers, or headers.

For font and printer support we

We award bonus points to products that support WYSIWYG editing.

require that products support scalable fonts and reverse (or back to front) printing. Bonus items include support for different printer options, such as duplex printing; the capability to print several thumbnails on one page; scaling; font effects such as automatic dropcaps or font shading; additional type styles such as outlined or shadowed; typographic capabilities such as kerning and tracking; and for the inclusion of a font-scaling package such as ATM. We award bonuses for products shipping with their own, better printer drivers, such as WordPerfect.

For reference tools, we require products to support an outlining utility that will automatically number entries; they must also be able to rearrange categories and to permit at least one sublevel. In addition, we require products to gather footnotes and endnotes (although not concurrently), and to automatically mark or number a note that is inserted into a document. Bonus features include a highly integrated outliner, the capability to attach body text to any outline item, the capability to collapse and expand headlines, allowance for more than three numbering methods, backward and forward references, and additional table support. Other bonus features include table of contents and index capabilities across documents or from an outline, customizable footnote formats, concurrent endnotes and footnotes in one document, and automatic indexing.

In our ease-of-use process, we build an outline from the first two levels of headings in our sample document, then we number and reorder the outline. We then build a portion of an index using whatever tools are available. In addition, we footnote several references in our document. We evaluate the ease of use for repeatedly marking index entries, marking the two levels of table of contents headings, creating index subheadings and "see-also" entries, organizing separate documents in a single, multiple-chapter "master" document, creating endnotes, moving between footnotes entries and the body text they refer to, integrating the

See HOW WE TEST, page 96

Ami Pro (Continued)

Ami's documentation consists of a substantial user manual and booklets for installation, ATM, style sheets, and a tutorial. There is extensive on-line help, although not always in context. The macro programming language and the dialog box editor have no printed documentation, but they have complete on-line help. The macro manual does not ship with the program, but a complete developer's kit is available for \$9.95 shipping and handling. **Score: Good.**

Whereas a novice can easily produce a fine, clean document from the installed version of Ami Pro 2.0 without using special features, it isn't too difficult to get lost once you venture into Ami's more powerful tools. Expert users will need to study some of the implementations of complex features to understand how to use them for the first time. The tutorial and documentation help a lot in ease of learning. **Score: Good.**

If Ami Pro 2.0 takes much effort to learn, it's quite easy to use. This is partly due to Lotus' "SmartIcons," which allow on-screen customization for special functions or frequently used menu commands. The capability to define numerous user preferences and the number of customization options let you create a version of Ami Pro that is tailored to your most exotic preferences. Ami Pro also has timed save options, in addition to a multiple-level undo. **Score: Excellent.**

Lotus offers unlimited technical support from 8:30 a.m. to 8 p.m. Eastern time, Monday through Friday via a toll call. Lotus also offers BBS support on CompuServe, fax support, corporate-extended policies, and a 60-day, money-back guarantee. **Score: Excellent.**

Ami Pro's technical support staff was thorough, knowledgeable, and quick. Our longest hold time was 5 minutes. **Score: Very Good.**

At \$495, Ami Pro has an impressive list of features, is extremely powerful, and is relatively easy to use. Although it is not quite up to par with Word for Windows 2.0, Ami Pro does give Word a run for its money. **Score: Excellent.**

Company: Lotus Development Corp., Word Processing Division, 5600 Glenridge Drive, Atlanta, GA 30342; (800) 831-9769.

DeScribe (Continued)

DOCUMENTATION

DeScribe's documentation includes a large user manual, a substantial macro manual; a quick-start booklet, a LAN administrator's guide, a 2-inch thick three-ring reference manual, and a reference card. The documentation has clear examples and explanations, and a strong index. This documentation is coupled with on-line help and a helpful (but not on-line) tutorial. **Score: Excellent.**

EASE OF LEARNING

Relatively easy to learn, DeScribe has an effective user interface and strong documentation and tutorials, although some of the on-line help is less complete than the competition. Novices can learn to use the program without major difficulty, although mastery of some complex functions required to produce highly formatted documents, including the macro language, requires more time and effort. **Score: Very Good.**

EASE OF USE

DeScribe's ease of use improves with familiarity. The program's macro language and its capability to customize the menus and screen appearance enhance the ease of use for experienced users. The absence of a solid mail merge, automatic footnotes, grammar checker, and the incapability to outline detract from ease of use. DeScribe, however, does have the most amazing undo of all packages: You can undo any changes you have made since your last save, including table and sort operations. **Score: Good.**

SUPPORT POLICIES

DeScribe offers 90 days of technical support from 8 a.m. to 5 p.m. Pacific time, Monday through Friday. The company also offers BBS and fax support. **Score: Satisfactory.**

DeScribe's technical support was extremely helpful each time we called. We had to wait for a callback once, but we received it promptly. **Score: Very Good.**

DeScribe offers competent word processing for Windows users at the standard price of \$495. The program does a fine job with layout-intensive documents, but its lack of footnoting and sophisticated mail merge functions make it unsuitable for most office environments. The superior macro facility, however, may help experts overcome some of the program's limitations. **Score: Satisfactory.**

Company: DeScribe Inc., 4047 N. Free-way Blvd., Sacramento, CA 95834; (916) 646-1111.

Legacy (Continued)

Legacy's documentation contains a getting-started booklet, a shortcut card, and a large reference manual. The manual provides solid explanations, examples, and a fine index. On-line help and in-context help with indexes, plus an on-line tutorial, pull-down menus, smart keys, and multiple preferences enhance the printed documentation. The documentation does, however, lack a manual for the powerful macro facility, but you can request the manual for no charge. **Score: Very Good.**

Legacy contains several tools that enhance its ease of learning, such as a fine tutorial, strong on-line help, and a solid reference manual. However, the complexity of frames and story lines, powerful macros, and other high-end features can be quite intimidating to new users. **Score: Good.**

Once users learn their way around this program, it becomes quite easy to use. Legacy is well designed, and has good screen layout and many special customizing possibilities for menus and screen display. Icons, menu bars, and the powerful macro facility also enhance ease of use. Legacy has an undo and redo, and you can set the program to make automatic timed backups of your original files, but the timed backups will write over your original document. **Score: Very Good.**

NBI offers a 60-day, money-back guarantee and toll-free support from 7 a.m. to 5 p.m. Monday through Friday, Mountain time. NBI also offers BBS and fax support, and a document makeover service. **Score: Very Good.**

Technical support was helpful and friendly, although on one call, the technician wasn't sure of the keystrokes to accomplish a task. She had to walk herself through it, but was eventually able to help us out. **Score: Satisfactory.**

At \$495, Legacy is less powerful than Word, Ami Pro, and WordPerfect, but it is a fine product for people interested in design-intensive documents such as newsletters or other publications that require separate story lines. **Score: Good.**

Company: NBI Inc., 3375 Mitchell Lane, P.O. Box 9001, Boulder, CO 80301; (800) 334-4189, (800) 624-1111, (303) 444-5710.

Microsoft Word for Windows
(Continued)**WordPerfect for Windows**
(Continued)**WordStar for Windows**
(Continued)**Summary**
(Continued)**DOCUMENTATION**

Word for Windows comes with a user guide, manuals for the equation editor, a graph and a draw program, and a getting-started booklet. Additionally, there is complete on-line documentation and an on-line tutorial. However, a macro manual is not included with the program, although you can receive one free from Microsoft. We found that sometimes the manual refers you to on-line documentation, which fails to have the full information. **Score: Satisfactory.**

WordPerfect documentation consists of a workbook and a reference manual. The workbook illustrates the basic features of the program and provides a guided tutorial using documents supplied with the program. Unfortunately, WordPerfect fails to include a macro reference manual and has minimal on-line help for macros. A macro manual is available for \$19.95. The on-line help for WordPerfect is less comprehensive and detailed than the top-rated programs. **Score: Satisfactory.**

WordStar for Windows has a reference manual, getting-started booklet, a using WordStar for Windows book, and a quick-reference booklet. Facelift and Correct Grammar programs come with their own manuals. The manuals have good explanations and examples. However, the reference manual's deficient index lacks a reference to mail merge. The program comes without an on-line tutorial, although the manuals do a good job of introducing the program. On-line documentation is complete. **Score: Good.**

DOCUMENTATION

DeScribe ships with the most complete documentation, including a macro manual, in addition to complete on-line help. Ami Pro offers extensive documentation and on-line help. WordStar for Windows documentation is fairly complete, and it includes an on-line tutorial. Legacy's documentation includes on-line documentation and an on-line tutorial. WordPerfect 5.1 for Windows has complete documentation, but on-line help for macros, in addition to WordPerfect in general, could be stronger.

EASE OF LEARNING

An extremely complex program, Word for Windows helps new users adapt to the product with a user interface that has clear icons, rulers, ribbons, and other visual cues. You can customize numerous keyboard shortcuts, pull-down menus offer additional information such as dialog boxes, and in-context help works well. Word for Windows has a complete emulation of the WordPerfect keystroke commands for common editing functions for users converting from WordPerfect DOS 5.1. **Score: Very Good.**

We found WordPerfect for Windows easy to learn. Those who have had experience with Windows and WordPerfect DOS will find this product a breeze. WordPerfect 5.1 for Windows includes all the standard elements of the Windows interface including ribbons, multiple windowing capabilities, and the like. WordPerfect also includes a customizable button bar. The workbook speeds introduction to the program, the on-line help answers simple questions, and the menus make navigation easy. **Score: Very Good.**

Beginners will find the basic features of the program relatively easy to learn, although the complexity of options, the frame structure, and the confusion of icons and menus make the desktop very complicated for new users. The on-line help and the documentation provide needed assistance. **Score: Good.**

EASE OF LEARNING

The complexity of these products keeps any of them from being a complete breeze to learn. DeScribe offers a fine tutorial in addition to solid on-line help and nearly complete documentation. Word for Windows makes the transition from WordPerfect 5.1 DOS quite simple with complete WordPerfect 5.1 DOS commands, in addition to context help and numerous customization options. WordPerfect 5.1 for Windows is also customizable, and a workbook helps users run in the Windows environment.

EASE OF USE

Word for Windows is a breeze to manipulate after a short time. The drag and drop text is the new addition users will enjoy the most. There is a modifiable tool bar, so you can create icons for your most-used tasks. Word also includes an impressive file manager that lets you search for files by title, subject, or key words. Not every user will want to learn enough to create sophisticated forms, design templates, and standardized styles, but if you do, this program makes it easy. **Score: Excellent.**

Experienced users will find WordPerfect 5.1 for Windows easy to navigate. There are many options for customizing the screen display, the command structure, and the keyboard. You can assign macros to keystrokes, use a WordPerfect standard keyboard, and directly access formatting through the Reveal Codes window. WordPerfect also has an impressive file manager. Those users not familiar with WordPerfect DOS may find the use of codes in complex documents confusing. **Score: Very Good.**

Once you understand the meaning of all the icons on the tool bar and fully understand the different kinds of frames, WordStar for Windows is quite easy to use. The program offers multiple ways of accomplishing tasks, and the tool bars and icons let you point and drag for most functions. Command shortcut keys help speed a variety of options, and you can customize the appearance of the screen. The absence of a macro facility reduces the ease of use of this product. **Score: Good.**

EASE OF USE

Ami Pro, Legacy, and Word for Windows are a dream to manipulate. The customization and user-preference features aid tremendously. WordPerfect for Windows is also extremely easy to use, although unless you are converting from WordPerfect DOS, the use of codes may be confusing. DeScribe and Legacy are also fairly easy to navigate. DeScribe's ease of use decreases because of the absence of a strong mail merge and automatic footnoting. WordStar for Windows lacks a macro facility.

SUPPORT POLICIES

Microsoft provides free, but not toll-free, technical support from 6 a.m. to 6 p.m. Monday through Friday Pacific time, in addition to fax and BBS support. There is a 60-day money-back guarantee, and Microsoft also offers corporate support policies. **Score: Very Good.**

WordPerfect offers a 30-day money-back guarantee, toll-free support Monday through Friday from 7 a.m. to 6 p.m. Mountain time, and non-toll-free telephone support 24 hours a day. There is also BBS support, fax support, and corporate policies. **Score: Very Good.**

WordStar offers unlimited technical support Monday through Friday from 7:30 a.m. to 4:30 p.m. Pacific time. However, on Wednesday, technical support closes at 4 p.m. There is BBS support on CompuServe. **Score: Satisfactory.**

SUPPORT POLICIES

Lotus, Microsoft, and NBI offer a 60-day money-back guarantee, and unlimited technical support. WordPerfect continues to offer its impressive 24-hour technical support. NBI and WordPerfect are the only companies that provide toll-free support.

TECHNICAL SUPPORT

Microsoft's technical support was extremely helpful with our questions. They were able to help us out on the spot, and we usually got through with minimal time on hold. **Score: Very Good.**

We reached technical support easily, and our questions were answered promptly and adequately. Support was friendly and offered to ship us free disks of an interim fix when it ships for the "Divide by Zero" bug. **Score: Very Good.**

Technical support was friendly, and our questions were usually answered quickly. **Score: Very Good.**

TECHNICAL SUPPORT

We found support for all products to be extremely proficient and helpful.

VALUE

At \$495, Word for Windows is the most powerful and easiest product to use in this group. The one feature it lacks is the capability to link frames and story lines. **Score: Excellent.**

WordPerfect 5.1 for Windows lists for \$495 and, although somewhat less powerful than Word for Windows, is an excellent value. It also competes closely with Ami Pro. It has a strong set of features and an impressive set of printer drivers. Those converting from the DOS will find an easy transition. **Score: Excellent.**

Sold at the same \$495 price as the full-featured programs such as Word for Windows, Ami Pro 2.0, or WordPerfect, WordStar for Windows is a decent value. WordStar has a solid frames capability, although it lacks some features that the higher end products support, such as multiple windowing capabilities. **Score: Good.**

VALUE

Word for Windows is clearly the top product in this bunch of sophisticated word processors. Its ease-of-use features are unmatched by the other products. Ami Pro gives Word a run for the money, and WordPerfect falls behind the two leaders with its first Windows release. Those that lack the power of the top three performers are still fine products with impressive feature lists.

Company: Microsoft Corp., 1 Microsoft Way, Redmond, WA 98052-6399; (206) 882-8080, (800) 426-9400.

Company: WordPerfect Corp., 1555 N. Technology Way, Orem, UT 84057; (801)-225-5000, (800) 451-5151.

Company: WordStar International Inc., 201 Alameda del Prado, Novato, CA 94949; (415) 382-8000, (800) 227-5609.

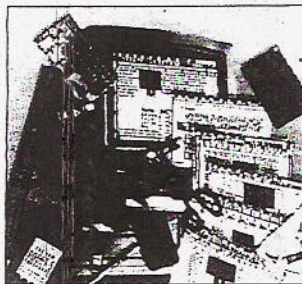
HOW WE TEST from page 94

Windows professional word processors

document itself with the outline, marking two words as a single index entry, and marking plural instances of an index automatically.

We score *import/export* based on the formats that a word processor supports. We require products to support ASCII, DCA/RTF, Microsoft RTF, ZSoft PCX and Lotus PIC. We award bonuses for supporting dynamic links through DDE or OLE, and we award points for other text and graphics formats such as WordPerfect, Word, WordStar, EPS, TIFF, and HPGL.

For *networking* we require products to provide user profiles (all of these products do this automatically through Windows), where information is customizable and stored for individual users, and to allow some method of sharing documents, whether as read-only, or being able to edit a document and save it under a different name. In addition, we require license control, in which the system administrator should be permitted some mechanism to ensure that no more than a designated



number of users launch the application simultaneously.

Bonus features include the capability to set up user profiles automatically, for users to have a license queue and file reservation to wait in for the next available license or full use of a file, to have annotation in which users can automatically have their ID incorporated into any annotations or revisions, and finally for electronic mail integration.

The *speed* score is based on the performance in our benchmark files, in comparison to other products. For our simple file, we time opening, saving, printing, and importing the file from WordPerfect

5.1 DOS. We also test the time it takes to reorder the chapters, to perform a global search and replace, to alter the margins and repaginate the document, to change the base font and repaginate, to jump to the bottom (by pressing Ctrl-End), and to generate a table of contents. In tests with our complex file, we time opening, saving, printing, and the time it takes to display a print preview. We also time searching for the last word in the document, performing a global search and replace, reformatting by changing a font and repaginating, jumping to bottom (again, by pressing Ctrl-End), cutting and pasting, and placing a PCX and an EPS file. In addition, we take into account the overall speed of the application when maneuvering and manipulating a document. None of the products reviewed here receive an excellent because of consistent sluggish screen performance.

For *macros*, we require a product to support a method to capture keystrokes for execution. We award bonus points for programmatic support and for predefined macros that ship with a product.

OTHER CATEGORIES. All other categories are scored the same as they were in our last software product comparison (January 13, page 75).

WINDOWS from page 80

Word processors

you to despair with the delays, and the visual power of the program decreases on a low-resolution display.

WHAT IF YOU DON'T DO WINDOWS? What then about the old standbys, such as WordPerfect 5.1 DOS, WordStar 6.0, Microsoft Word 5.5, and other state-of-the-art DOS-based word processing programs? These products remain entirely competitive, and even more so on less-than-optimum hardware platforms. Users whose text-processing needs do not require graphics, tables, or other complex layout elements can use the top-of-the-line DOS programs without losing any significant advantage. They give up only a small margin in power to these Windows products, but what they do sacrifice is ease of use. The graphical environment, WYSIWYG text and graphics, pull-down menus, and customizable toolbars make word processing easier than ever.

John Lombardi is president of a major university and author of five books. He has been working with computers since 1967.

BENCHMARKS

INFO WORLD

Windows professional word processors

	Ambi Pro Version 2.0	DeScribe Version 3.0	Legacy Version 2.0	Microsoft Word for Windows Version 2.0	WordPerfect 5.1 for Windows Version 5.1	WordStar Version 1.0
File operations/simple file¹						
Open	0:04	0:11	0:06	0:03	0:06	0:07
Save	0:02	0:03	0:04	0:02	0:08	0:04
Print to HP LaserJet	1:20	1:17	1:19	1:33	1:27	1:41
Import WordPerfect 5.1 DOS	0:09	0:21	0:13	0:14	0:07	0:11
File operations/complex file²						
Open	0:07	NA ³	0:13	0:03	0:14	NA ⁴
Save	0:02	NA ³	0:07	0:04	0:05	NA ⁴
Print preview	0:12	NA ³	NA	0:17	0:13	NA ⁴
Print to QMS PS 810	5:16	NA ³	6:43	5:23	2:48	NA ⁴
Search tools/simple file						
Reorder chapters	0:08	8:28 ⁵	1:18 ⁵	0:49	0:21	1:01 ⁵
Global search/replace	0:02	0:02	0:03	0:02	0:05	0:08
Search tools/complex file						
Search for last word	0:03	NA ³	0:06	<1	0:08	NA ⁴
Global search/replace	0:03	NA ³	0:05	0:02	0:09	NA ⁴
Editing tasks/simple file						
Alter margin and repaginate	0:02	0:03	0:06	0:02	0:01	0:01
Change base font and repaginate	0:03	0:04	0:07	0:02	0:02	0:02
Jump to bottom	0:01	0:04	0:04	<1	0:03	
Generate table of contents	1:53	0:32	1:05	1:14	5:24	0:28
Editing tasks/complex file						
Reformat and repaginate (font)	0:04	NA ³	0:02	0:02	0:08	NA ⁴
Jump to bottom	0:04	NA ³	0:10	<1	0:06	NA ⁴
Cut and paste	0:12	NA ³	0:12	0:09	0:17	NA ⁴
Layout tasks/complex file						
Place PCX file	0:09	NA ³	0:27	0:07	0:08	NA ⁴
Place EPS file	0:07	NA ³	0:17	0:05	0:07	NA ⁴

Times are in minutes, seconds, unless otherwise noted.

¹Simple file is a 128-page manuscript divided into seven chapters.

²Complex file is a four-page highly formatted document with a table, a PCX image, a PIC graph, and an EPS file.

³DeScribe was unable to print the EPS file in our complex document.

⁴WordStar cannot print a PCX and an EPS file in the same document.

⁵DeScribe, Legacy, and WordStar do not automatically reorder chapters; benchmark times reflect time to cut and paste chapters.