start-up manual and the technical guide have a table of contents but lack an index. The start-up guide contains a glossary. Overall, we rate Northgate's documentation very good.

SETUP:
Our machine came with the hard disk formatted and DOS installed. All we had to do was plug in the monitor and turn it on. The CMOS setup utility is accessible from the keyboard. The supplied disk cache and disk optimizer software are also set up. We rate setup very good.

EASE OF USE:
The power switch is located on the side, toward the back of the unit. On the front panel is a hardware reset switch and the CPU speed switch. The reset switch is a bit exposed and easy to push. There are lights for disk access, power, and turbo (20-MHz). The key lock will turn the keyboard off, but it doesn't physically lock the case. Ease of use earns a good score.

SERVICEABILITY:
Northgate's 286/20SM system comes with a sturdy metal case. We found only one jumper wire on the motherboard. There are no signs of last-minute changes. Workmanship is very good.

Northgate offers a one-year warranty. The keyboard carries an independent three-year warranty. Service is handled by the manufacturer with the customer paying for shipping one way. If Northgate's technical support staff determines that you have a failed component, they will ship you a new one for next-day delivery (assuming it's a user-serviceable part). The vendor offers extended support for corporate customers. There is unlimited free technical support available, but it is a toll call; hours are Monday through Friday 7 a.m. to 7 p.m. Central time. Overnight replacement of failed parts helps support policies rate good.

We had no problems getting through to technical support, and our questions received courteous and complete responses. Technical support earns a good score.

VALUE:
If raw computing speed is your main concern, Northgate's 286/20SM provides it at an excellent price: $3,370 gets you a 16-bit VGA and analog color monitor, MS-DOS, 1 megabyte of RAM, and the speedy 42-megabyte SCSI hard drive. Compared with Dell's System 220 ($3,319 for an 8-bit VGA and analog color monitor, DOS, 1 megabyte of RAM, and 40-megabyte drive), the 286/20SM is just $51 more, but you get a full-size box, two floppy drives, 16-bit VGA, and six slots instead of three. For another $100 you can add a multisynchronous VGA monitor. We rate value very good.□

RELATED REVIEWS

20-MHZ 80286 COMPUTERS

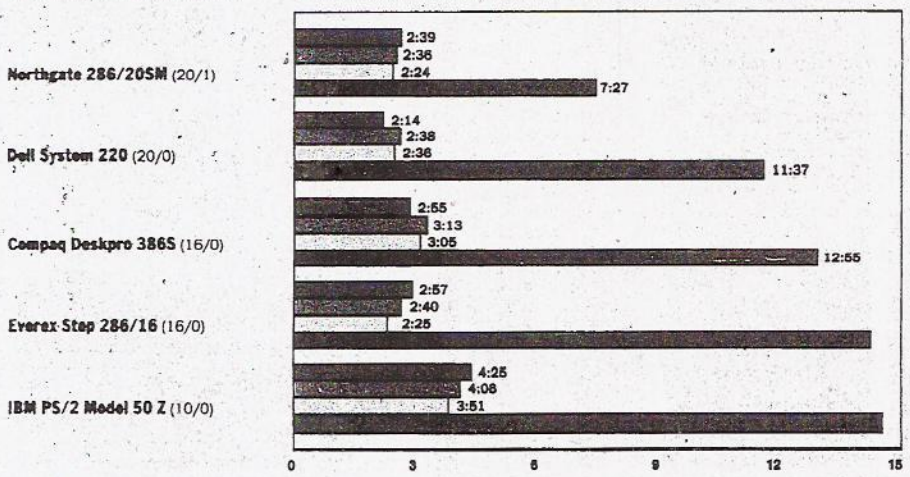
Dell System 220, September 19, 1988

INFOWORLD HARDWARE BENCHMARK TESTS

INTEGRATED THROUGHPUT TEST

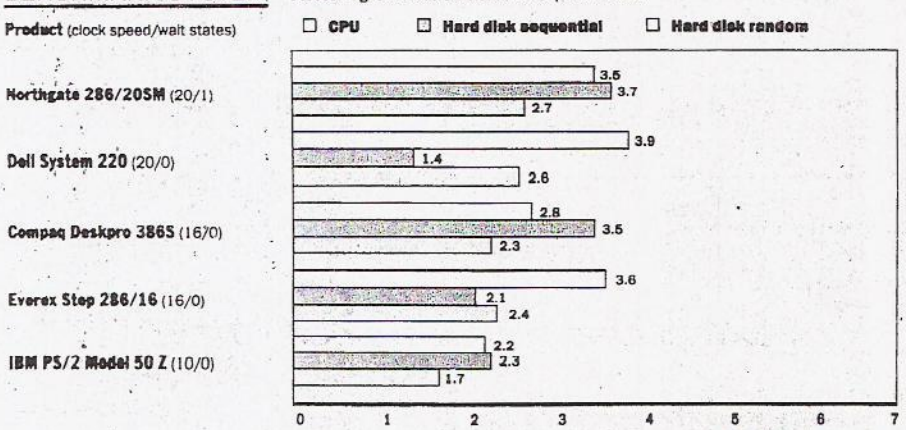
All times given in minutes:seconds; lower numbers indicate better performance.

- **CAD:** Alteration and regeneration of Autocad drawing.
- **Spreadsheet:** Recalculation of large financial forecasting model in Lotus 1-2-3.
- **Word processing/Desktop publishing:** Text processing, loading of graphic files, and screen bit mapping in Word Perfect 5.0.
- **Database:** Index creation of a 100,000-record database in Dbase III Plus.



HARDWARE BENCHMARK SYSTEM

Tests relative to the 6-MHz (Model 099) IBM PC AT as 1.00. CPU test measures main processor performance; hard disk performance is tested for sequential and random data access. Higher numbers indicate better performance.



SOURCE: INFOWORLD TEST CENTER

Total Word 1.2 Adds Speed, Other Features

New version enhances speed and fixes bugs in its thesaurus and spelling checker.

BY JOHN LOMBARDI REVIEW BOARD

With the appearance of Total Word 1.0 last spring, the creators of the highly successful Volkswriter series of word processing programs, Lifetree Software, pushed their way into professional word processing.

Total Word originally impressed us as a slow, relatively powerful, and easy-to-use system. It was complete with most — but not all — of the features present in such market leaders as Word Perfect, Microsoft Word, Samna, and similar heavy hitters.

In this review, we present a review update covering Total Word 1.2, which significantly enhances the old version's speed, fixes a number of thesaurus and spelling checker bugs, and adds a few features.

While a useful upgrade, this version does not represent a major enhancement although it does improve Total Word's report card scores. The scoring and weighting criteria are based on our March 28 product comparison of office/professional word processors.

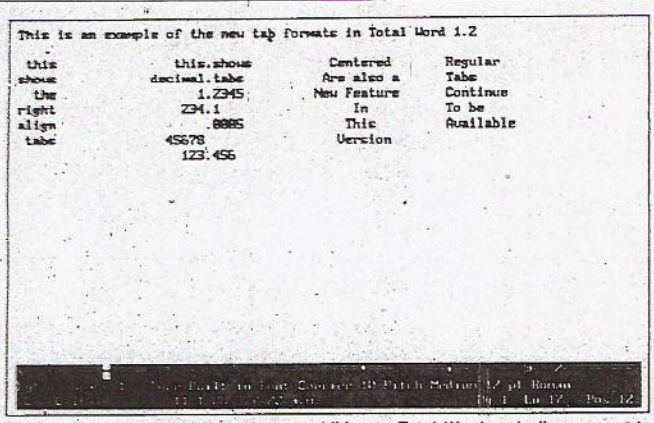
Perhaps the most useful changes in Total Word 1.2 involve the addition of centered, flush right, and decimal tabs. For the latter, you can set either decimal point or decimal comma for the tabs. Facilitating preparation of side-by-side columnar data, the flush left (standard) and flush right (right justified, left ragged) tabs permit a two-column presentation in which inside facing column edges are ragged. Two related commands offer a Shift-Tab keystroke that sets a temporary left margin and an Alt-Q command that moves the cursor to the next tab stop without inserting a tab stop.

To support proportionally spaced print, Total Word's screen now shows character positions in 1/10-inch positions; a screen indicator of 50 character positions really means 5.0 inches.

Additionally, Total Word 1.2 has improved the special keyboard for chemistry symbols and has added support for a variety of new printers. There are also improvements in the Snapshot graphics screen capture utility with additional support for graphics cards, Lotus 1-2-3 and Quattro graphics displays, among others.

Finally, Total Word 1.2 offers five conversion utility disks — only available by mail at the time we received our update — that handle DCA/RFT and a few other major word processing formats. The first two disks are free to registered users and additional format conversion disks cost $20 each.

PERFORMANCE:
Total Word 1.2 performance in correspondence is almost identical to version 1.0. Total Word's search and replace feature performs well, permitting a considerable amount of flexibility. Search and replace speed has been greatly



Enhanced tab support is a welcome addition to Total Word and allows users to experiment with a variety of tab formats.

enhanced. We rate correspondence satisfactory.

The speller and thesaurus continue to work well and some memory management bugs identified in Version 1.0 have been fixed. We rate the spelling checker and thesaurus good.

The mail-merge feature is effective but Total Word, Version 1.2 continues to lack a conditional mail merge, which limits the flexibility of list processing. Total Word does handle most mailing chores reasonably, and we rate mail merge satisfactory.

Outlining is not supported.

Supporting cross-referencing and subtopics, Total Word's table of contents and indexing features perform adequately, although other programs include more options and flexibility in designing indexes and tables of contents. We score this category satisfactory.

Footnoting earns a good score with a particularly easy-to-use footnote window. Footnote numbers appear on screen and the numbers change when notes are added or deleted.

There is no real document history screen in Total Word, although the program's nice redlining and comment facilities compensate to add up to a satisfactory score.

A workable system attaches font and style templates to the file name extension of a document. (You may find this good or bad, depending on your preferences.) Font controls and changes in styles require simple commands, but we think naming layouts might be easier to remember and use than the Total Word numbering system.

Overall, however, fonts and styles are better than average and we rate them good.

Graphics integration involves the use of the Snapshot screen-grabber program. Loaded into memory before running Total Word, Snapshot captures most screen displays for integration in Total Word documents. While the image can be cropped, the sophistication of this program is much less than in competitive products such as Word Prefect 5.0. Further, Snapshot is memory-resident and nothing in the documentation indicates how to remove the program once installed.

Although its hardware compatibility has been improved, it still chokes on some Hercules compatible clones. Because Total Word cannot integrate any standard graphics files directly (Lotus .PIC, .PCX, etc.), we continue to rate its graphics integration poor.

Speed, one of the major areas of improvement in Total Word 1.2, exceeds the average in many of our tests. In general, Total Word's speed is above the norm in most categories and earns a good rating.

Total Word's compatibility with other word processing files still compares unfavorably to competitive programs. To address this problem, the vendor will soon (it was unavailable at press time) offer file conversion software that will permit compatibility with DCA/RFT, Word, Word Perfect (4.2 and 5.0), Displaywrite 2 and 3, FFT, Multimate, Navy DIF (Import), Wang PC (IWP), Samna Word IV, Wordstar Professional and Wordstar 2000, and DEC WPS (DX).

As of this moment, however, Total Word only imports ASCII files, and we rate compatibility poor.

DOCUMENTATION:
Total Word's documentation remains good, although there are a number of corrections that have to be made in the main manual to reflect errors or changes in Version 1.2. Error messages are well-done and on-line help remains strong. The on-screen tutorial helps to get started, and the printer booklet offers good information. There is also a useful booklet describing the changes in Release 1.2. We rate Total Word's documentation very good.

EASE OF LEARNING:
Very easy to learn, Total Word 1.2 retains its excellent score in this category. This is clearly one of the easiest office/professional word processing systems to learn.

EASE OF USE:
Total Word is still very easy to use, thanks to an effective user interface using control and function keys. Installation parameters can be changed easily.

However, the way the screen shows text markings for bolding and centering and other enhancements remains rather cryptic; there is no way to tell what the displayed marking means.

But overall we found the irritations related to ease of use relatively minor. The new features in release 1.2, especially the tabs, help maintain the program's ease of use relative to other competitive programs. We rate Total Word's ease of

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BAD SECTOR ERROR
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SpinRite is immediately available from:

Gibson Research Corporation
P.O.Box 6024, Irvine, CA 92716
(714) 854-1520

$59 plus $1.50 shipping and handling. Please send check, or request UPS COD. ***Credit Card Orders CANNOT be accepted at this time. California residents must include 6% state sales tax.***

use very good.

ERROR HANDLING:
Although some bugs have been removed from the program in this version, the Undo command still can't handle block deletes — a common error. However, we found no problems that resulted in data loss, and consequently we continue to rate Total Word's error handling satisfactory.

SUPPORT:
Bug fixes are automatically sent to registered users, and Version 1.2 is being offered free to registered Total Word users upon request. Lifetree provides users with notices of improvements and upgrades and a free subscription to the company's newsletter. There's a 60-day money-back guarantee. The company supports an unlimited (but not toll-free) customer support line, which is open 8 a.m. to 3 p.m. Pacific time. The money-back guarantee helps earn Total Word a very good score in support policies.

We called Lifetree Software's technical support several times before getting through the busy signal. Once we finally got through, the support staff was helpful and friendly. We rate technical support satisfactory.

VALUE:
Within the class of high-powered word processing programs, Total Word, Version 1.2 remains a good value at $495. Less powerful and less flexible than powerhouse word processors such as Microsoft Word or Word Perfect 5.0, Total Word 1.2 nonetheless excels in ease of learning.

Sufficient to meet most users' needs, Total Word's features handle all but the most demanding requirements of a professional office or complex mail-list operations. Especially well suited for users who need a reasonably full complement of features, strong ease of use, and effective but uncomplicated laser printer support, we rate this program a good value. □

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

RELATED REVIEWS

OFFICE/PROFESSIONAL
WORD PROCESSORS
Product Comparison Update:
Office/Professional Word Processing,
September 26: Update on 14 products
Product Comparison:
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March 28: 12 products covered

REPORT CARD **INFO WORLD**

OFFICE/PROFESSIONAL

Total Word

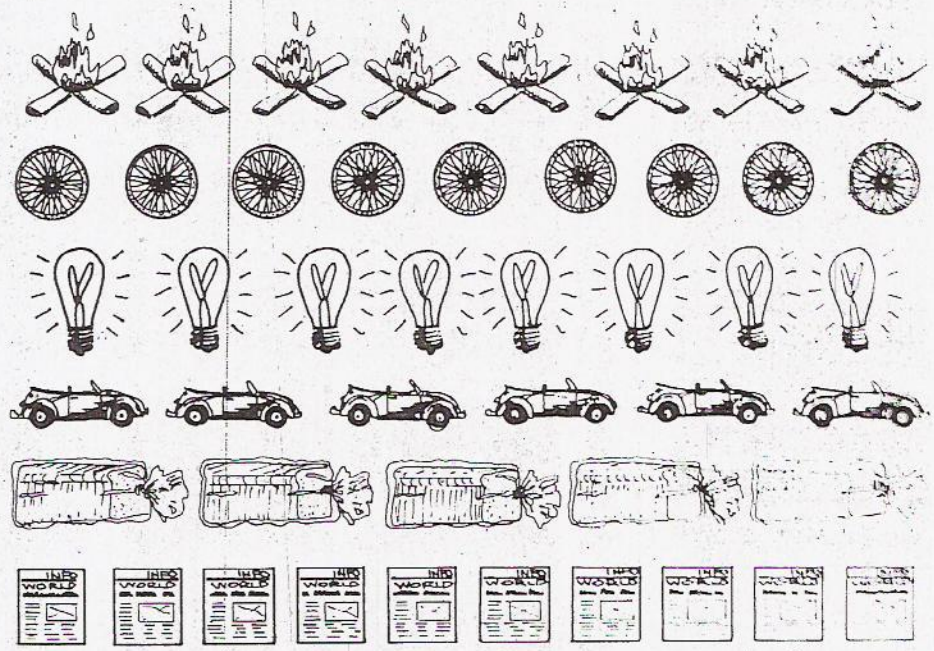
VERSION 1.2

Criterion	(Weighting)	Score
Performance		
Correspondence	(40)	Satisfactory
Speller and thesaurus	(40)	Good
Mail merge	(30)	Satisfactory
Outlining	(25)	N/A
Table of contents and indexing	(20)	Satisfactory
Footnotes	(25)	Good
Document tracking	(15)	Satisfactory
Fonts and style sheets	(25)	Good
Graphics integration	(25)	Poor
Speed	(125)	Good
Compatibility	(30)	Poor
Documentation	(100)	Very Good
Ease of learning	(125)	Excellent
Ease of use	(150)	Very Good
Error handling	(75)	Satisfactory
Support		
Support policies	(25)	Very Good
Technical support	(25)	Satisfactory
Value	(100)	Good
Final score		**6.4**

PRODUCT SUMMARY

Company: Lifetree Software Inc., 411 Pacific St., Monterey, CA 93940; (800) LIFETRE, (800) 831-8733 in CA.
List Price: $495.
Requires: IBM PC or compatible; PC/MS-DOS 2.0 or higher (DOS 3.0 recommended); 480K of available RAM; hard disk.
Pros: Enhanced laser printing support; very easy to learn and use; reasonably full complement of features; much faster than previous version.
Cons: Limited list processing; limited file importing; no outlining.
Summary: Easy to learn and use, Total Word 1.2 now offers enhanced features and printer support and is appropriate for offices that use laser printers and have moderately demanding word processing requirements.

Repeat a good thing.



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