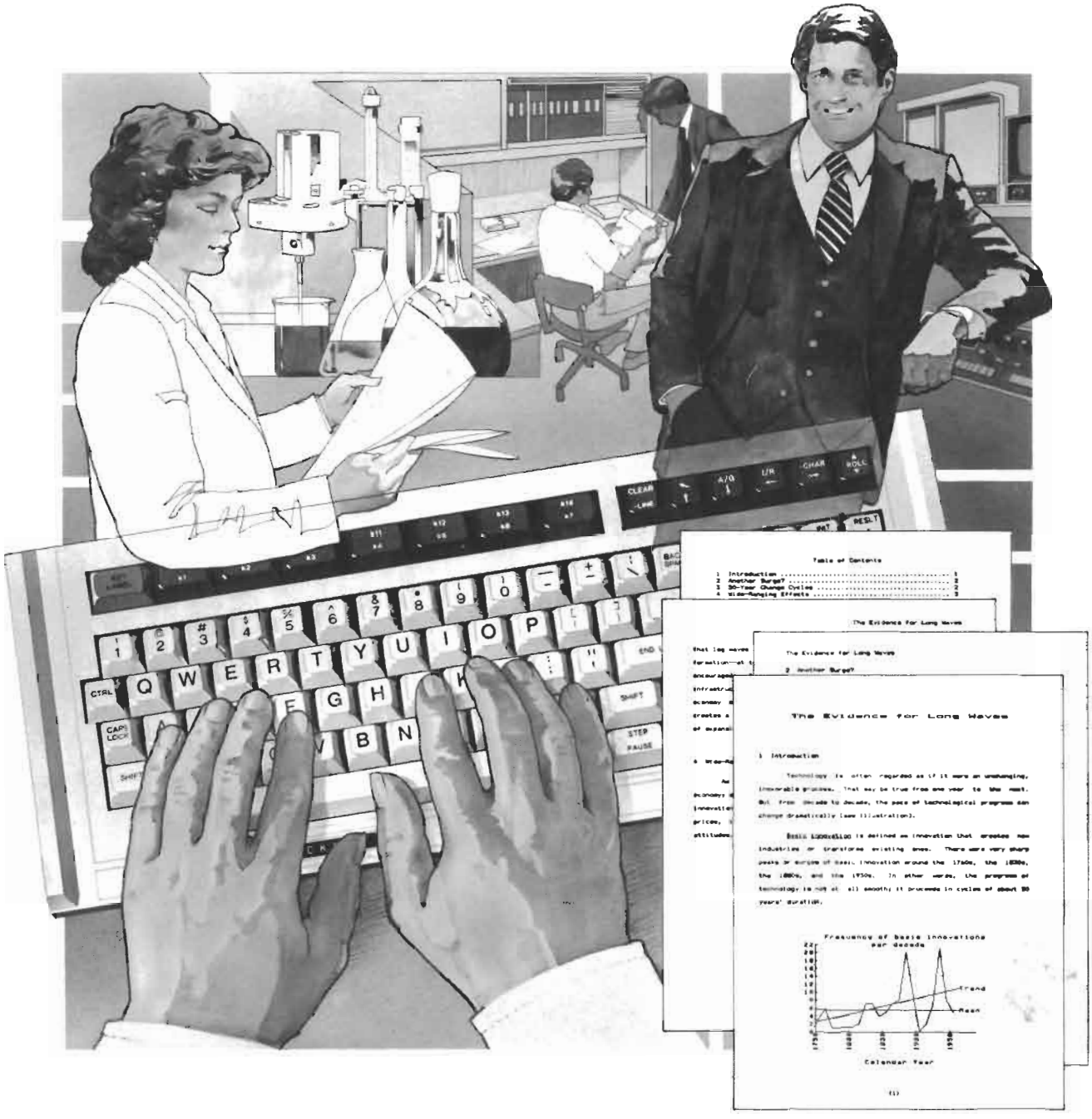
HEWLETT-PACKARD

WORD/80

OWNER'S MANUAL

HP-86/87



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HEWLETT PACKARD

WORD/80
Owner's Manual

HP-86/87

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Section 1

Getting Started

Introduction

WORD/80 enables you to use the HP-86/87 with a disc drive and printer as a complete system to generate memos, letters, and reports. WORD/80 consists of two parts:

- An *Editor* to create, type, print, and store documents.
- A *Formatter* to format and print files created with the Editor.

The Editor features:

- Screen editing with full cursor control, including continuous scrolling, position bar, and variable page size.
- Margin and tab settings.
- Word wrap at end of lines.
- Editing options chosen from display menus.
- Global search and replace.
- Block copies and deletions.
- Block moves by simple "cutting and pasting."
- Built-in formatting capabilities.
- File merging and dynamic file size.
- Output to printer, display, and disc.

The Formatter features:

- Top, bottom, left, and right margins.
- Indentation.
- Variable spacing between lines.
- Page headings and footings.
- Page numbering.
- Four paragraph formats.
- Justifying, centering, and filling of text.
- Numbered and unnumbered section headings.

- Table of contents print-outs of section headings and page numbers.
- Underlining, emphasized printing, and printer control codes.
- Integration of graphics displays and text.
- Chained processing of files.
- Support for alternate and foreign character sets.

The Editor and Formatter are built on four key concepts:

- You have complete control over the location of the cursor (the ▒ symbol) in the computer display. That is, you have complete control over where you type.
- You control Editor and Formatter operations with the seven *special function keys*, k1 - k7, located at the top of the keyboard. Each special function key causes the Editor or Formatter to perform an operation according to the special function key *label* at the bottom of the computer display. For example, to cause the Editor to search for a particular word, you would press k1 —the key labeled 1 Search .
- You select editing and formatting options using the *property sheets* that are associated with the special function keys. To use a property sheet, you press the *shifted* special function key, for example, SHIFT 1 Search , and select the desired option or options, for example, a Backward or Forward direction-of-search. Then you press the *unshifted* special function key, for example, 1 Search , to cause the Editor or Formatter to operate according to the selections you've chosen in the property sheet.
- You use the *Editor* to compose documents and to print documents that do not require extensive formatting. You use the *Formatter* to print existing documents when you want the structure of the document—its headings, paragraph formats, pagination, page breaks, etc.—to be handled automatically.

Definitions

The following list of definitions is provided for quick reference during the time you read this manual. Just glance at it now:

catalog — The directory of files and programs stored on a disc. Each catalog entry shows file name, file type, bytes per record, and records per file.

character — A single displayed or printed piece of information corresponding to an individual keystroke.

close a file — To update the currently opened disc file and enable the Editor to open another file.

column selection — A block of text selected by columns for Editor manipulation. Displayed as a highlighted rectangle.

currently selected disc drive — The disc drive that is being accessed by the HP-86/87 at this time. The currently selected disc drive is set when you switch on the computer, reset the computer, or execute a `MASS STORAGE IS` command.

disc — The mass storage medium that stores WORD/80 programs or stores the files created by WORD/80.

disc drive — The mass storage device that reads from and writes to the disc inserted in the drive.

disc label — The name given to a disc. Consists of a period (.) followed by one to six characters, for example, `.MEMOS`. Also called a *volume label*.

drive identifier — The name of a disc drive. Consists of a colon, an uppercase or lowercase `D`, and three numbers that identify the interface, the disc drive unit, and the individual disc drive, for example, `:D700`.

document — A memo, letter, chapter, or report created by WORD/80.

edit a file — To add to or revise an Editor file during an editing session.

editing key — An HP-86/87 key (for example, BACK SPACE) or keystroke combination (for example, SHIFT BACK SPACE) that enables you to add, modify, or delete characters in the display.

editing session — The time you spend using the Editor, which may be several minutes or several hours.

Editor — The BASIC and binary programs used to create, type, print, and store documents.

Editor file — A data file created using the Editor 2 **Create** key. The record length will appear as `1683` bytes in the catalog. All WORD/80 files are assumed Editor files unless otherwise noted.

field — An area in an Editor or Formatter property sheet, such as the `Top Margin:` field in the Layout property sheet, that may be filled in or changed by the user.

file — A block of information on disc that consists of data (as opposed to program instructions). Also called a *data file* or a *disc file*. WORD/80 allows two types of data files—*Editor files* and *text files*. A copy of all or part of an Editor file may reside in system memory.

file name — A string of 1 to 10 characters that distinguishes one file from another, followed by an optional *disc label* or *drive identifier*. File names may consist of any characters except colons (:) and periods (.). The file name *alone* identifies a file from the currently selected disc drive. The optional disc label or drive identifier serves to identify the disc on which the file is stored. Examples: `Voyager` (file from currently selected disc drive), `Voyager:d701` (file name and drive identifier, joined by colon) and `Voyager.Word80` (file name and disc label, joined by period).

Formatter — The BASIC and binary programs used to format and print files created with the Editor.

information window — The main portion of the Editor display, used to enter and view text.

key buffer — A location in system memory that temporarily stores up to 128 keystrokes until the Editor or Formatter finds time to execute them.

line selection — A block of text selected by lines for Editor manipulation. Displayed as a highlighted area extending over complete lines.

mass storage — Permanent, external storage for programs and files, available through discs and disc drives.

menu window — The bottommost line of Editor and Formatter displays, consisting of special function key labels to indicate options at a given time.

open a file — To access a new or existing Editor file.

print a file — To print the text of an existing WORD/80 file using either the Editor or Formatter.

printer control code — A string of characters sent to a printer to access alternate character sets, print compressed or expanded characters, etc.

property sheet — A title/feedback window used to check and change Editor and Formatter settings. Current settings are displayed in the *fields* of property sheets.

source file — The file that the Formatter processes and sends to the printer, display, or disc drive.

special function key — One of seven special HP-86/87 keys, k1 through k7, used to operate WORD/80. Special function keys correspond to *labels* appearing at the bottom of the computer display.

string — A contiguous group of characters in one line of text.

system memory — The built-in memory available to you as part of the HP-86/87 and plug-in memory modules (up to four).

text — Any collection of characters.

text buffer — Temporary storage for text copied or deleted from an Editor file.

text editing — The process of composing and revising documents.

text field — A field in a property sheet—such as the Search For: field in the Search property sheet—that accepts characters typed from the keyboard.

text file — A disc file consisting of strings that is created by the Editor or Formatter. The record length will appear as 256 bytes in the catalog. Text files are accessed by means of the Editor 6 Get key.

text formatting — The process of laying out the physical appearance of words, sentences, paragraphs, and pages of a document.

title/feedback window — The upper portion of the computer display reserved by WORD/80 for displaying status information and accepting user inputs.

word — A collection of characters between spaces.

WORD/80 file — An Editor or text file created by WORD/80.

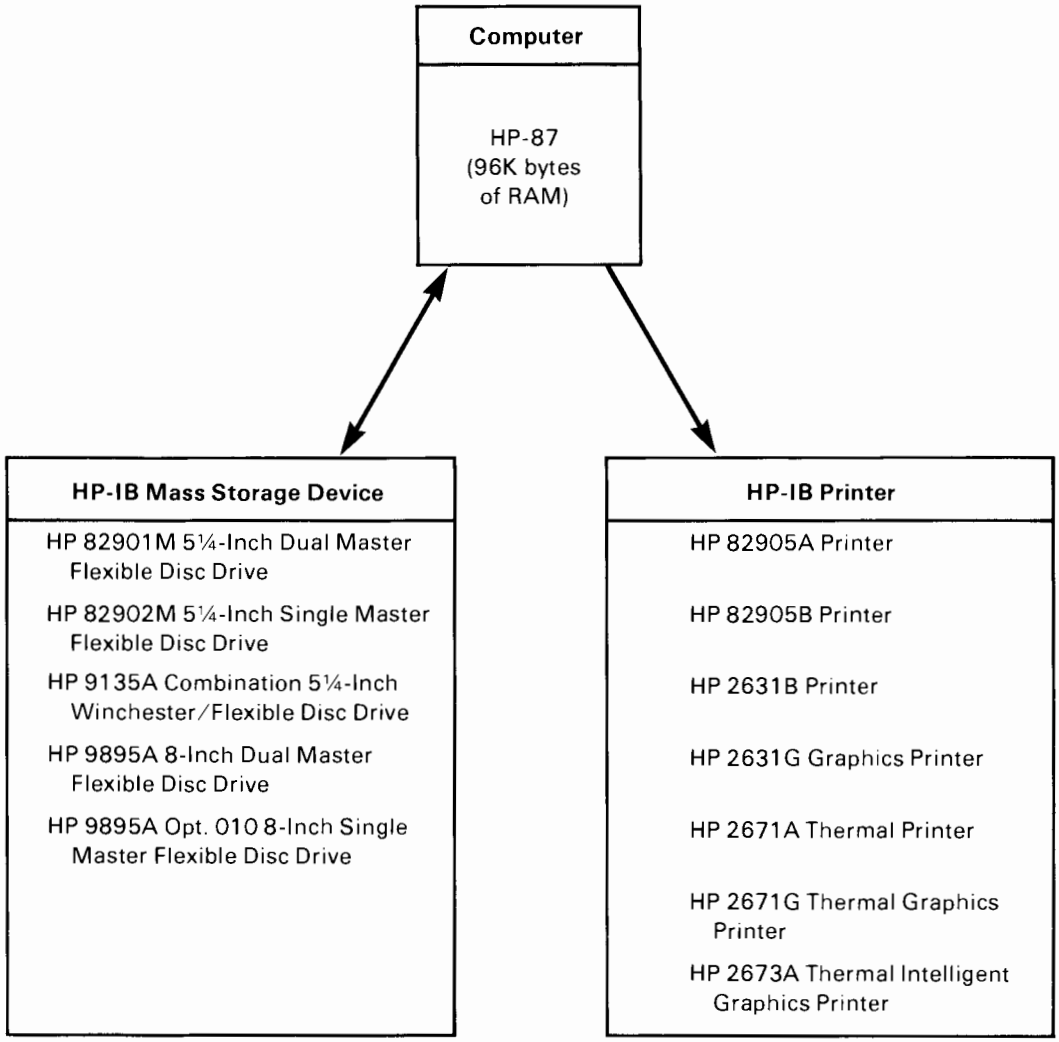
word wrap — The Editor capability that causes a word typed past the right margin to be positioned at the beginning of the next line.

Setting Up the System

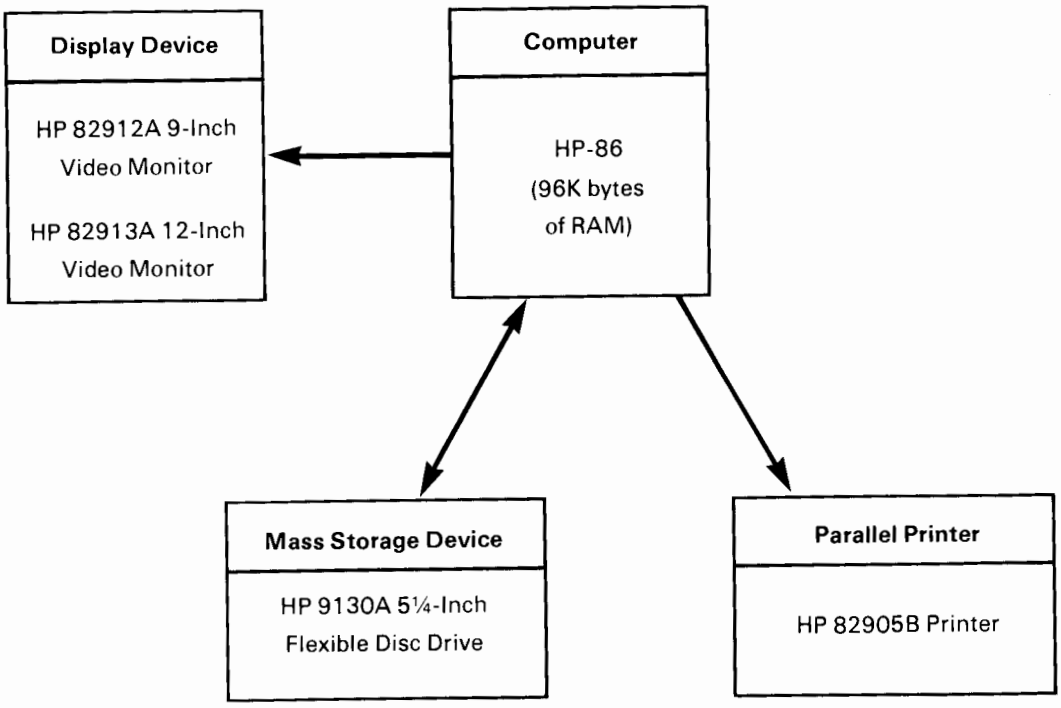
The minimum WORD/80 system configuration consists of:

- An HP-86/87 with a total of 96K bytes of random-access memory (RAM) to control the system.
- A single disc drive to store files.
- A printer to print finished documents.

The following are possible system configurations:



HP-87 WORD/80 System Configuration



HP-86 WORD/80 System Configuration

For typewriter-quality documents, choose the HP 2601A Printer and HP 82939A Serial Interface (RS-232C); your dealer or HP sales representative has more information about system configurations.

This manual assumes that the devices have been properly installed, connected, switched on, and addressed so that they are ready to use. Refer to the owner's manuals for the computer, printer, and disc drive to install memory modules, set device address switches, load paper, insert flexible discs, etc.

In particular, you need to know which disc drive is the *currently selected disc drive*. After the HP-86/87 is switched on, the busy light of one disc drive will light briefly, indicating that the computer has selected that drive as the current disc drive.

You also need to know the address of your system printer. When the HP-86/87 is switched on, the printer address is set to 2 (the computer display screen). Use the `PRINTER IS` command to select the system printer as destination device. For example, type `PRINTER IS 701` (END LINE) from the keyboard of the HP-86 to set the address of the HP 82905B Printer.

Once the system is operational, WORD/80 takes care of the details. You don't need previous programming experience to use WORD/80 or to understand this manual.

There are two parts to WORD/80. The first part, called the Editor, enables you to create a disc file (or open an existing file), to type and edit text, to print the file, and to update the file on disc. The second part, called the Formatter, enhances the finished appearance of the document. Both Editor and Formatter programs take complete control of the HP-86/87, including the keyboard and display, so that the individual components function smoothly as one system.

The Formatter is discussed in sections 3 and 4. The remainder of this section shows how to use the Editor to create, type, print, and store a short document.

Starting the Editor

Follow these steps to start the Editor program:

1. Insert the WORD/80 disc in the currently selected disc drive, and close the drive door. Be sure that the disc drive is turned on.

2. Either:

   - Press and latch the (CAPS LOCK) key, or
   - Type `FLIP` (END LINE) to "flip" the case of the computer.

   Afterwards, unshifted letter keys will type lowercase letters, and shifted letter keys will type uppercase letters.

3. Type `load "Editor"` (END LINE) or `load "Editor.Word80"` (END LINE) to load the Editor program into system memory from mass storage. Be sure to spell Editor with uppercase "`E`" and lowercase "`ditor`" and to enclose the name within quotation marks. When the disc drive busy light turns off, the program has been loaded.

4. Press the (RUN) key.

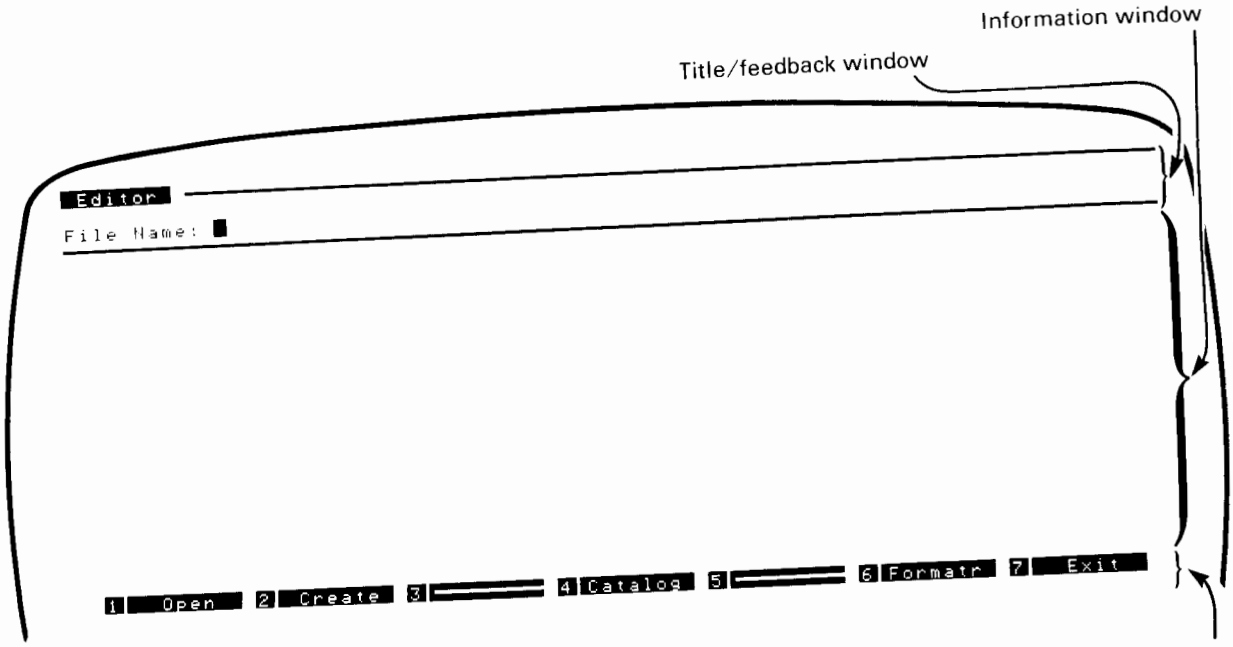
The HP-86/87 power light blinks continuously after you press (RUN) to remind you that a program is executing.

When the Editor cursor—a steadily blinking rectangle—appears in the upper left corner of the display, the Editor program has assumed control of the system. At this point, you may remove the WORD/80 disc from the disc drive and insert another disc in its place.

Note: The WORD/80 disc as sent from the factory is almost completely filled with programs and data, leaving just enough room for the examples of this section and section 2. Consequently, do not as a matter of practice use the WORD/80 disc to store new files.

The Display Screen

After the welcome message, the following display appears:



The Initial Editor Display

The Editor divides the screen into three areas, or *windows:*

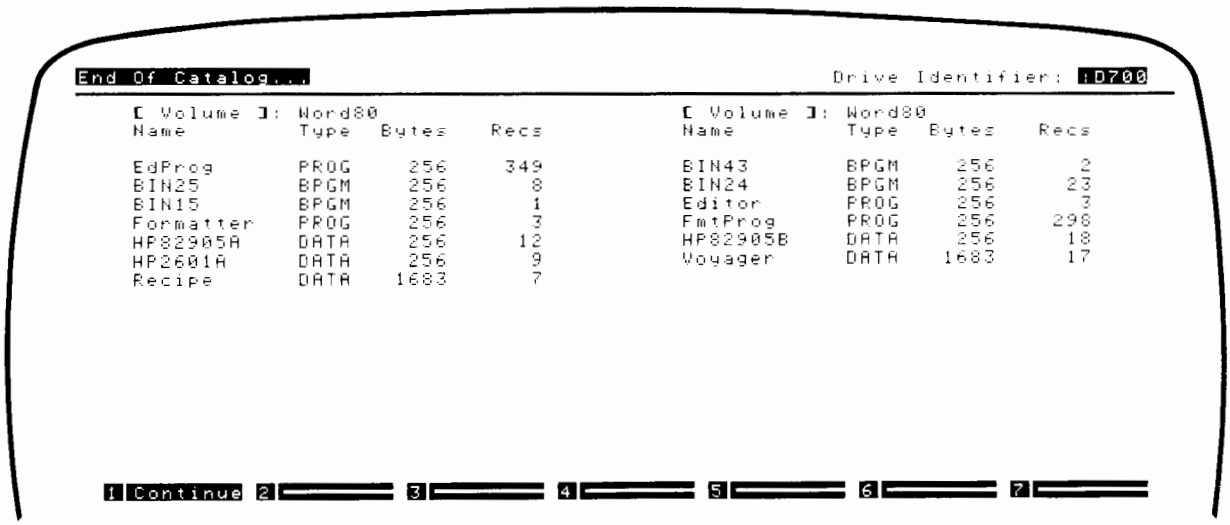
- The *title/feedback window* at the top of the screen is used for identifying the current operation, for displaying messages, and for selecting Editor settings.
- The *information window*, the main portion of the screen, is used for typing and editing text.
- The *menu window* at the bottom of the screen shows the available Editor commands as special function key labels.

The Special Function Keys and Key Labels.

There is a one-to-one correspondence between the seven special function keys, (k1) through (k7), and the seven numbered key labels at the bottom of the screen.

The key labels indicate your editing choices at a given time. You press a special function key to execute the labeled Editor command. A lined-out selection (for example, 3 ▬▬▬) indicates that the corresponding special function key has no effect.

Example: Press the 4 Catalog key to display the catalog entries of the WORD/80 disc—that is, the disc in the currently selected disc drive.



The Display at the End of the Catalog Operation

Note that the size and number of catalog entries may vary, depending on your version of WORD/80. The display will show both the drive identifier and the volume label of the cataloged disc. The Editor beeps and displays End of Catalog... when all entries have been displayed.

Pressing 4 Catalog makes available the following special function keys:

- The 1 Continue key continues the display of catalog entries if the display has been paused, or continues the Editor when End of Catalog... is displayed.
- The 2 Pause key pauses the display of catalog entries.
- The 7 Stop key stops the Catalog operation.

Press 1 Continue now. The cursor returns to the title/feedback window, and the first set of special function keys becomes available:

- The 1 Open key is used for editing an existing Editor file.
- The 2 Create key is used for creating a new Editor file.
- The 4 Catalog key is used for reexamining the disc catalog.
- The 6 Formatr key is used for loading the Formatter program into memory and running the Formatter.
- The 7 Exit key is used for exiting the Editor.

Pressing 7 Exit causes the Editor program to stop executing—the power light stops blinking, the HP-86/87 cursor returns to the display, and the message `Press CONT Key To Continue Editing...` appears at the top of the screen. Try it now: Press 7 Exit and afterwards (CONT).

Note that you can exit the Editor, perform calculations and other HP-86/87 operations, and press (CONT) to continue the Editor from where it left off.

Pressing (CONT) causes the Editor to continue execution, retaining all of its current settings. Pressing (RUN) instead causes the Editor to restart execution with all settings reset to their default values.

Editor Operations

The Editor operates on one disc file at a time. For the examples in this section, the Editor will be used to create a file of recipes, and a recipe for delicious "huevos rancheros" will be entered in the file. The process involves:

Creating the file: The Editor sets aside disc space for the file and enters the file name in the disc catalog.

Entering text: The user types text into the file from the keyboard.

Printing the file: The user sends text from the file to the system printer.

Closing the file: The Editor updates the information on disc.

During an editing session, an opened file is shared between the disc and system memory. Disc files grow in size as lines are typed from the keyboard. A file created on a newly formatted 5¼-inch disc can grow to accommodate approximately 50 pages of text.

File Names

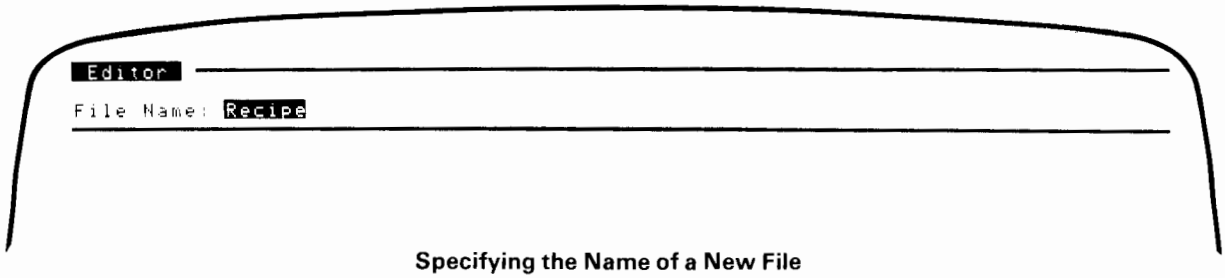
A *file name* consists of 1 to 10 characters, excluding colons (:) and periods (.). Lowercase letters are considered different from uppercase letters, and spaces are considered separate characters (except for spaces at the end of a file name, which are ignored). Examples of valid file names: `Memo/8/12`, `MktMeeting`, `JD%CS317`, `Prices_'82`, and `R Nelson`.

The more descriptive the file name, the easier it will be to remember what's in the file after several days or weeks.

You may append a *drive identifier* or *disc label* to the file name to identify the disc on which the file is stored. For example, `Memo/8/12:D700` and `R Nelson:d701` are references to disc files `Memo/8/12` and `R Nelson` in drives 700 and 701, respectively. `Prices_'82,BY` is a reference to disc file `Prices_'82` on disc `BY`.

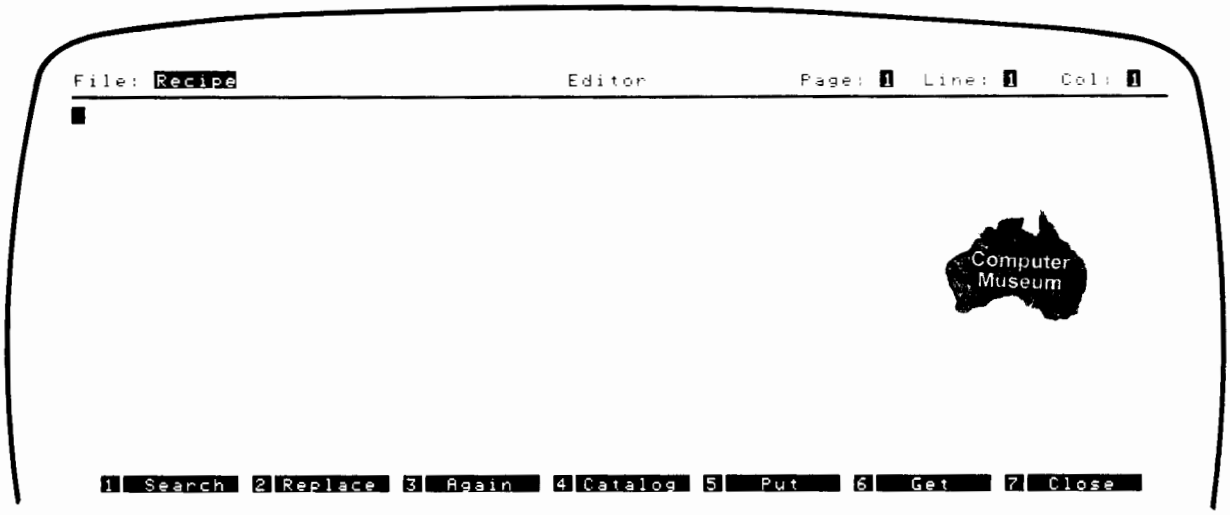
Creating an Editor File

Type Recipe for the file name in the title/feedback window. The BACK SPACE key is useful for correcting typing mistakes.



Specifying the Name of a New File

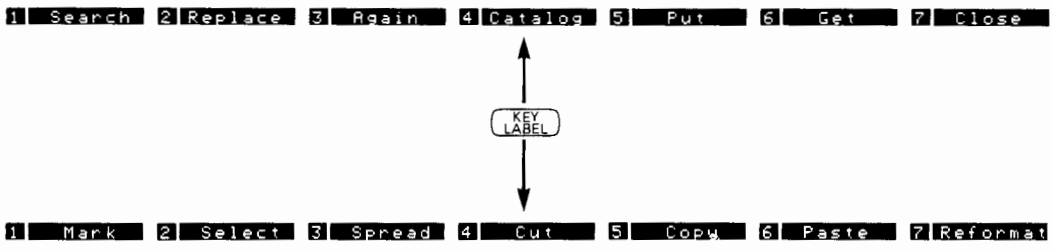
Then press the 2 Create key. The message Creating File... will be displayed as the Editor creates and opens the file. Afterwards, the following display will appear:



The Display Indicates the File Is Empty

The cursor is positioned in the upper left corner of the information window, indicating that the Editor is ready for you to begin typing.

After a file has been created, two sets of special function keys become available. Press the KEY LABEL key, located to the left of the special function keys, to alternate between the two sets:



The Editor Special Function Keys

These two sets of special function keys are discussed in detail in section 2. Pressing [KEY LABEL] while editing the file causes one or the other set of special function keys to become available.

Note in particular that the [7] [Exit] key label has disappeared. Before you can exit the Editor, you must close the file by pressing the [7] [Close] key.

Entering Text

The information window "frames" 21 lines of the file at a time. The page, line, and column coordinates of the cursor are continually displayed at the top right of the screen to indicate your position in the file. When an Editor file is opened, the cursor is positioned at the beginning of the file—page 1, line 1, column 1. Each page is the equivalent of 66 lines of text, numbered 1 to 66. Column coordinates may range from 1 to 80.

The Keyboard

The Editor program causes the computer keyboard to emulate an electric typewriter keyboard; in addition, the program defines a powerful set of cursor control keys located in the upper right corner of the keyboard.

The Typewriter Keys

The typewriter keys include:

- The alphanumeric keys. These are the 46 letter ([A]), digit ([9]), and symbol ([*]) keys, plus the space bar.
- The [SHIFT] key. Use [SHIFT] to display an uppercase letter or to display the character on the upper portion of a key face. For example, [SHIFT] [&] displays &, the ampersand.
- The [END LINE] key. The [END LINE] key serves as an electric typewriter carriage return key. Press [END LINE] to return the cursor to the left margin of the next line. Press [SHIFT] [END LINE] to return the cursor to the right margin of the *previous* line. The Editor features automatic word wrap; typing past the right margin causes the cursor and the current word to be positioned at the beginning of the next line.
- The [CONT] key. The [CONT] key serves as a typewriter tab key. Press [CONT] to tab the cursor to the next tab stop. (Tab stops are initially set every eight columns.) Press [SHIFT] [CONT] to move the cursor to the *previous* tab stop.
- The [CAPS LOCK] key. Press and release [CAPS LOCK] to switch from lowercase to uppercase or from uppercase to lowercase. [CAPS LOCK] affects only the 26 letter keys.
- The [CTRL] (*control*) key. Use [CTRL] in combination with the [SHIFT] key and alphanumeric keys to display special characters. For example, holding down both [CTRL] and [SHIFT] while pressing the [G] key displays Δ, the delta character.

Note: The *control characters* are not standard printable characters and may cause printers to behave unexpectedly. Refer to the owner's manual for the system printer to determine the response of the printer to control characters.

A typing convenience is the repeating output of the keyboard. Holding down an alphanumeric key causes the display character to be repeated after a short delay. A beep sounds when you type the sixth character from the right margin.

It's possible to type faster than the cursor moves. An Editor *key buffer* stores up to 128 keystrokes of information, so that you can type ahead without losing characters.

There are four printable characters that do not appear on the keyboard:

Character	Keystroke	
`	SHIFT RESLT	Located on the numeric keypad to the right of the typewriter keyboard.
{	SHIFT /	
}	SHIFT -	
~	SHIFT *	

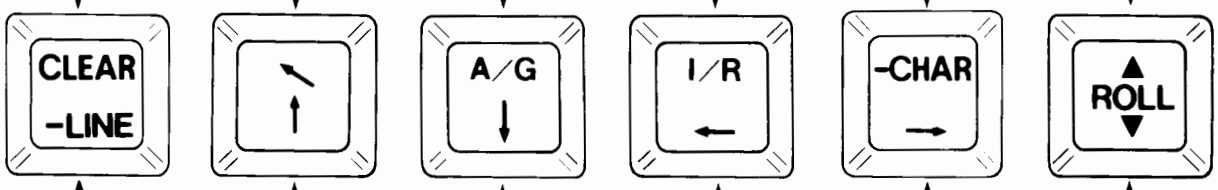
Refer to appendix B for a listing of display characters and corresponding keystrokes.

There may be several ways to type the same character. For example, to type a 1, you may press 1 on the typewriter keyboard, 1 on the numeric keypad, or CTRL and unshifted Q—the effect is the same.

The Editing Keys

The editing keys control cursor movement so that you can type characters anywhere in the information window. The cursor coordinates are updated every time the cursor changes position.

Press the SHIFT key to perform the shifted function of the editing key:



Clear text. Clears a selected area of text.

Home cursor. Moves the cursor to the left margin in the first line of the information window.

Not used.

Insert/ Replace. Turns the insert cursor on and off so that you can type insertions between characters.

Delete character. Deletes the character at the cursor position and left-shifts the rest of the line.

Roll up. Rolls up text towards the end of the file.

Clear line. Clears the current line from the cursor to the end of line.

Cursor up. Moves the cursor to the line above the current line.

Cursor down. Moves the cursor to the line below the current line.

Cursor left. Moves the cursor one position to the left.

Cursor right. Moves the cursor one position to the right.

Roll down. Rolls down text towards the beginning of the file.

The insert cursor is a double-width blinking cursor. Characters typed with the insert cursor in the display are inserted *between* the two characters highlighted by the insert cursor. Press [I/R] once for the insert cursor. Press [I/R] a second time to display the regular cursor.

The [BACK SPACE] key has an unshifted and a shifted function:

- Press [BACK SPACE] to back space the cursor one position and erase the character at that position.
- Press [SHIFT] [BACK SPACE] to back space the cursor one position and erase from cursor to left margin. The cursor is left at the left margin.

The editing keys repeat their functions when they are held down for more than a short interval.

If you press the [↑] key when the cursor is at the top of the information window, the cursor will "wrap around" to the bottom line of the window. Similarly, the [↓], [←], [BACK SPACE], and [→] keys will cause the cursor to wrap when the cursor is at the bottom or at the margins of the information window.

The Editor won't allow you to roll past the beginning or the end of the file. You will be informed of either situation if you press [ROLL ▼] when the cursor is in line 1 of the file or if you press [ROLL ▲] when the cursor is in the last line of the file.

Other Keys

Eight keys are not used by the Editor:

[SHIFT] [A/G]	[SHIFT] [PLST]
[SHIFT] [TEST]	[RUN]
[SHIFT] [INIT]	[PAUSE]
[LIST]	[SHIFT] [STEP]

Pressing one of these keys causes the Editor to beep.

Pressing [SHIFT] [RESET] twice in succession resets the computer.

CAUTION

Do not reset the computer except in an extreme situation. A reset clears display memory, terminates the Editor program, and may cause an opened file to become inaccessible to the Editor.

Moving the Cursor

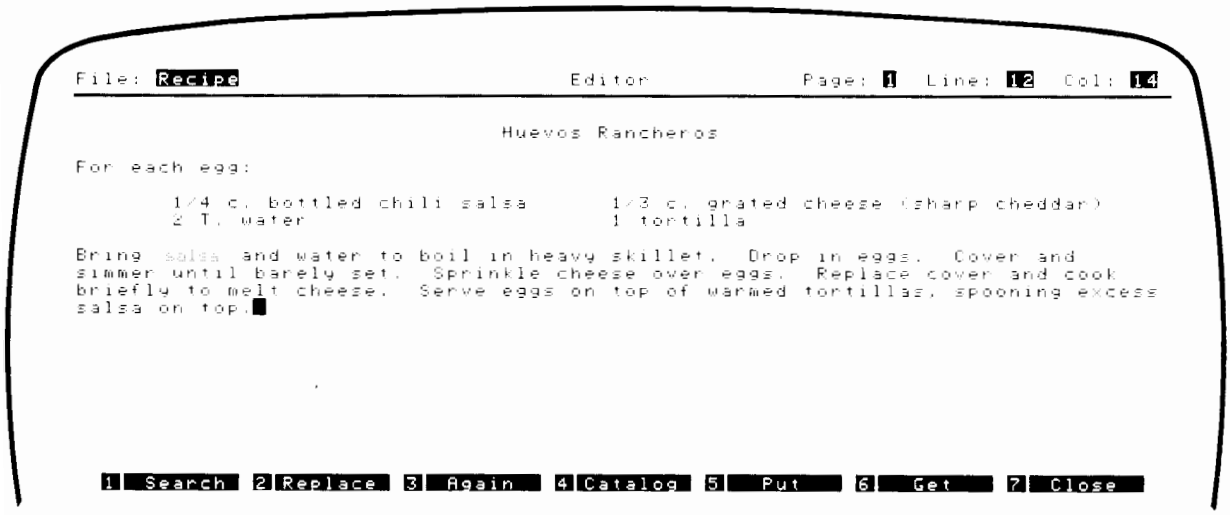
To get acquainted with the screen editing capabilities of the computer, try the following keystrokes:

[→] Press and hold down the right-arrow key until the cursor has traveled across the display and wrapped to the next line.

[↑] Press and hold down the up-arrow key until the cursor has traveled to the top line of the display and wrapped to the bottom.

SHIFT ↖	Press and release SHIFT ↖ to home the cursor to the upper left corner of the current display.
←	Press the left-arrow key once to move the cursor from the home position to the lower right corner of the display.
↓	Press the down-arrow key. The cursor will wrap from bottom to top line in the display.
END LINE	Press the END LINE key to return the cursor to the left margin of the next line.
SHIFT END LINE	Press SHIFT END LINE to return the cursor to the right margin of the preceding line.
CONT	Press and hold down the tab key to tab across the display.
SHIFT CONT	Press and hold down SHIFT CONT to back tab across the display.
SHIFT ↖	Press SHIFT ↖ once more to home the cursor.

Now use the typewriter and editing keys to enter the huevos rancheros recipe:



Sample Recipe

It doesn't matter which set of special function key labels is in the display while you type.

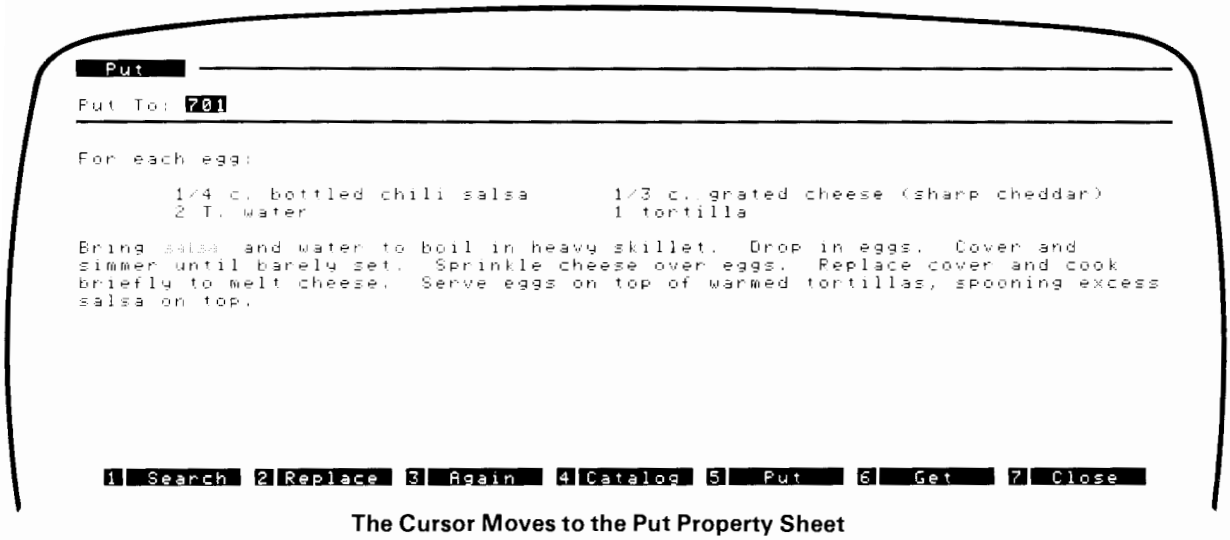
Note that typing past the right margin (column 80) causes the current word to be "wrapped " to the beginning of the next line.

Printing an Editor File

The 5 Put key causes all or part of a file to be output to a selected destination. For this example, the system printer is to be selected by means of the 5 Put key *property sheet*.

Many special function keys, such as 5 Put , have settings that become available when the key is pressed in combination with the SHIFT key. For example, pressing SHIFT 5 Put enables you to check the current output destination and to select another.

Press (SHIFT) 5 **Put** now. (You may first need to press (KEY LABEL) to display the 5 **Put** key label.) The title/feedback window expands downward to display the Put property sheet:



The Cursor Moves to the Put Property Sheet

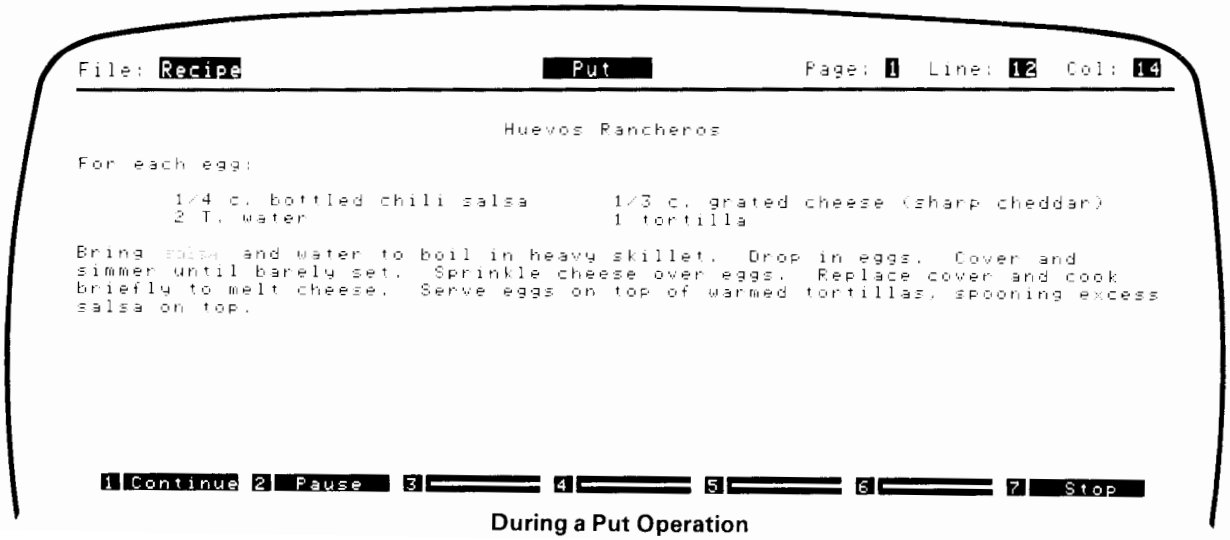
The Put property sheet has a single *field* that sets the output destination. For outputting the file to the system printer, the Put property sheet must show the device address of the printer (for example, 701). Type the correct address in the Put To: field if it's not there already. A 1 or a 2 in the property sheet will cause the file to be listed on the computer display.

When done, make sure the printer is connected, powered, and on line. The Editor is now set to output the file to the selected destination.

Either:

- Press 5 **Put** to print the file, or
- Press (SHIFT) 5 **Put** a second time. The cursor returns to its former position in the information window. Then press 5 **Put**.

While the printer is printing, the heading **Put** is displayed at the top of the screen, and the line number to the right is continually updated—beginning from line 1—to indicate which line is being output:



During a Put Operation

The following special function key labels are displayed at the bottom of the screen:

1 Continue	For continuing the output after a pause.
2 Pause	For pausing the output temporarily.
7 Stop	For stopping a Put operation altogether. The cursor returns to its former position in the information window.

Following a Put operation, the Editor displays `End Of Put Text...` in the title/feedback window and waits for you to press the 1 Continue key. When the cursor returns to the information window, the Editor is ready for additions, deletions, and other revisions to the file.

The 5 Put key may be pressed repeatedly for additional copies of the file.

Closing an Editor File

The 7 Close key closes the file being edited. Pressing 7 Close causes the Editor to update the disc file with the information stored in system memory, to sever the connection between the disc file and the computer, and to return the cursor to the beginning Editor property sheet.

Press 7 Close now to close the `Recipe` file. The message `Closing File...` will be displayed as the disc file is updated. Afterwards, the original Editor display appears and the following options become available:

- Open the file for additional editing. Press the 1 Open key.
- Create and open a new file. Type a new file name in the title/feedback window and press the 2 Create key.
- List the catalog entries of the disc. Press the 4 Catalog key. The entry of the `Recipe` file will appear last in the catalog, indicating that the file is the most recently created file.
- Load and run the Formatter program. Press the 6 Formatr key.
- Exit the Editor. Press the 7 Exit key.

Protecting WORD/80 Files

To protect your investment in the WORD/80 system, you should make a backup copy of the WORD/80 disc as soon as possible and afterwards keep the copy in a safe place. Refer to appendix A, Disc File Manipulations, for more information.

A disc can store many pages of information, representing hours or days of writing. To protect your WORD/80 files, *protect your discs*:

- Return flexible discs to their storage envelopes immediately after removing them from the disc drive.

- Do not store flexible discs in an environment that is outside the range 10° to 52°C (50° to 125°F).
- Do not bend, fold, or emboss flexible discs.
- Keep all discs away from sources of strong magnetic fields, such as permanent magnets, wires carrying heavy currents, transformers, and degaussers (magnetic erasers).
- Refer to the documentation for your disc drive for additional disc care information.

It's highly recommended that you make backup copies of important Editor files and store the copies in a safe environment away from the originals. Note that making copies of Editor files requires two disc drives.

The Editor will read from a disc at least once (at the beginning of an editing session) and will write to the disc at least once (at the end of an editing session). Portions of a file may be copied to and from mass storage several times during an editing session. Some simple precautions are in order:

- Don't switch off the computer or press (SHIFT) (RESET) while editing a file.
- Don't switch off the disc drive or remove the disc while the busy drive light is lit.
- Don't disconnect the system printer while printing a file.
- Always press the 7 Close key to end an editing session. Although the Editor may be left running indefinitely, it's a good idea to close the file before leaving the system for an extended period of time.

The Editor has built-in error recovery routines to handle error conditions, but it's important that the system not be interrupted while the Editor is doing its work.

Editor Summary

This section has introduced the six steps in creating a WORD/80 document:

1. Prepare the system by connecting, powering, and addressing the individual devices.
2. Load and run the Editor program.
3. Create an Editor file using the 2 Create key.
4. Type the document using the typewriter and editing keys.
5. Print the file using the 5 Put key.
6. Close the file using the 7 Close key.

Section 2

Text Editing Operations

This section covers in detail the operations of the WORD/80 Editor.

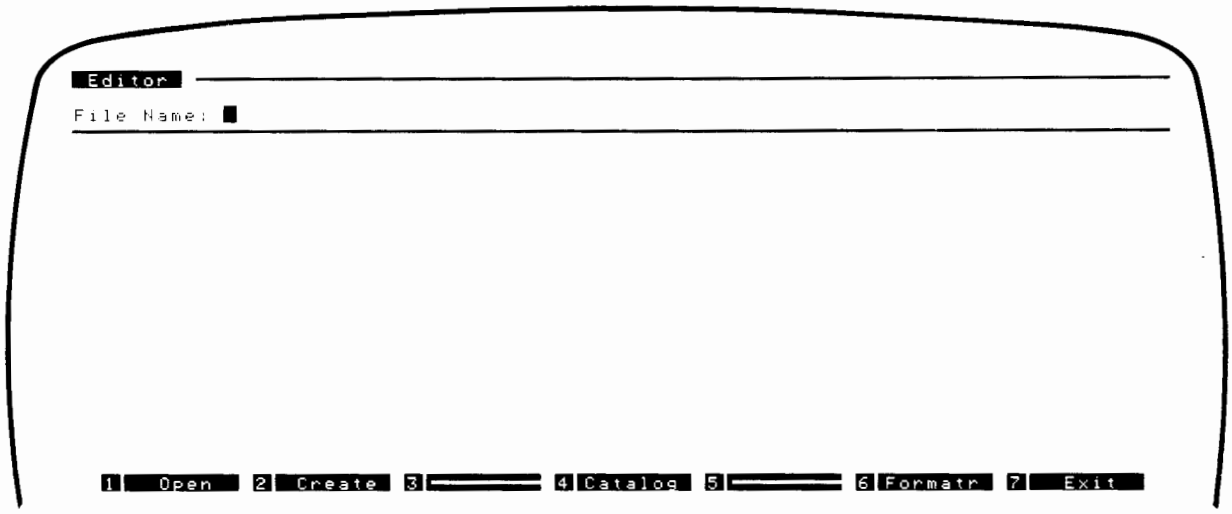
Running the Editor (LOAD, CHAIN)

To run the Editor, insert the WORD/80 disc or a copy of the WORD/80 disc in the currently selected disc drive and either:

- Type `load "Editor"` (END LINE) and press (RUN), or
- Type `chain "Editor"` (END LINE). The `CHAIN` command causes the HP-86/87 to load and immediately execute a program from mass storage.

You may include a drive identifier or disc label to load the WORD/80 Editor from a disc drive other than the currently selected disc drive. Examples: `load "Editor:d701"` (END LINE) and `chain "Editor.Word80"` (END LINE).

After the welcome message, the following display appears:



The Initial Editor Display

The following special function keys are available when the Editor is first run, as well as when a file has just been closed:

1 Open To edit an *existing* Editor file on the disc in the currently selected disc drive or on the disc specified by the drive identifier or disc label. For example, to open an existing file named `Chapter1` on the `Novel` disc drive `D701`, type `Chapter1:d701` or `Chapter1.Novel` in the `File Name:` field and press **1 Open**.

2 Create To create and open an Editor file on the disc in the currently selected disc drive or on the disc specified by the drive identifier or disc label. The new file will inherit all settings—such as margins and tabs—that were in effect when the previous file was closed.

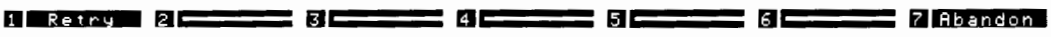
4 Catalog To display the catalog of the disc identified in the Catalog property sheet.

6 Formatr To chain to the Formatter program. The WORD/80 disc may be in any disc drive when you press the **6 Formatr** key. The computer will first search the currently selected disc drive and then, if unsuccessful, search for the disc labeled `Word80`.

7 Exit To exit the Editor program.

The WORD/80 disc need not be present in the disc drive during an editing session. In fact, at this point or at any time the Editor is running, you may remove the WORD/80 disc from the drive and insert another disc in its place. There are, however, two restrictions on removing a disc and replacing it with another during an editing session:

- The disc that is inserted in the drive must be properly formatted. Refer also to Initializing Discs, page 124.
- *You should not remove a disc if the currently opened file resides on that disc.* Otherwise, an error will be reported the next time the Editor attempts to access the disc, and you may be given the following menu:



The Menu After an Unsuccessful Disc Access

In this situation, replace the original disc, close the disc drive door, and press **1 Retry** to override the error. If you press **7 Abandon**, you will exit the Editor without updating the original file.

Leaving the Editor

To leave the Editor, press one of two keys:

- The 6 Formatr key. The Formatter program will be written over the Editor program as the Formatter is loaded into system memory.
- The 7 Exit key. Control of the keyboard and display will return to the HP-86/87 operating system, although the Editor program will remain in system memory. Press (CONT) to restart the Editor with its current settings unchanged. Press (RUN) to restart the Editor with default settings. Or execute a LOAD or CHAIN command to load and run another program from mass storage.

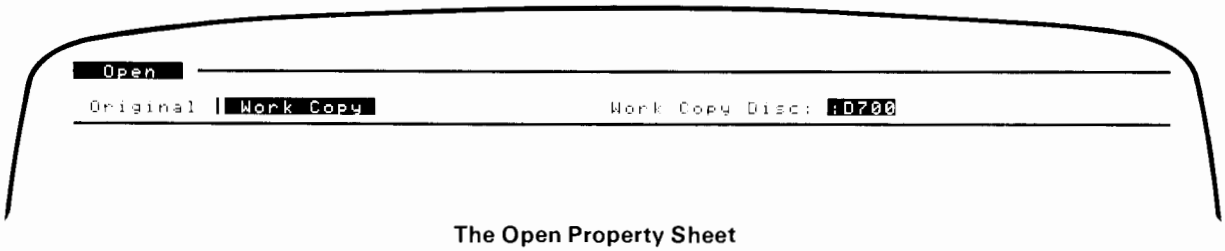
Editing an Existing File

Computer Museum

Normally, the 1 Open key does two things:

- Creates a *work copy* of the specified file on the disc in the currently selected disc drive.
- Opens the work copy for editing. In other words, normally you edit a *copy* of an existing file rather than the original file itself.

Before pressing 1 Open, press (SHIFT) 1 Open to display the Open property sheet:

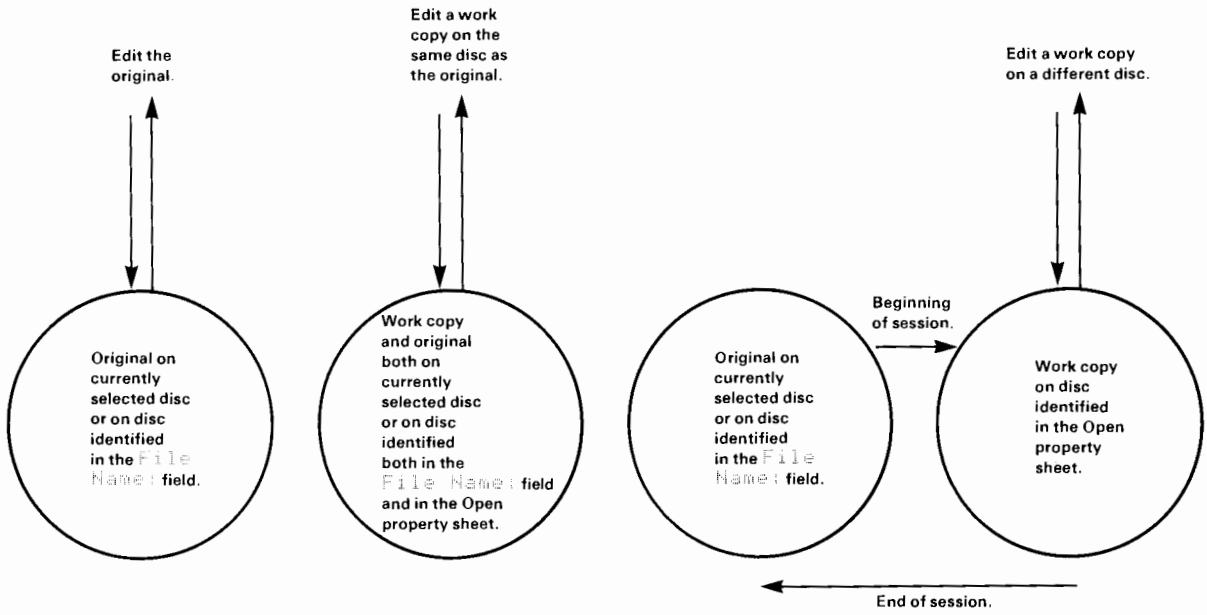


The Open Property Sheet

Use the Open property sheet to change the way the 1 Open key works:

- Press (←) to select the Original setting. Afterwards, pressing 1 Open will open the original file.
- Press (CONT) to tab to the Work Copy Disc: field, enter a drive identifier (for example, :d701) or a disc label (for example, .MyDisc). Afterwards, pressing 1 Open will create and open the work copy file on the specified disc.
- Press (SHIFT) 1 Open a second time to leave the Open property sheet.

Thus, you have three ways of editing an existing file:



1 Open key options.

The advantages of using the work copy file are:

- You can recover the orginal file should you make a serious error while editing the work copy. Refer also to Closing Files, page 66.

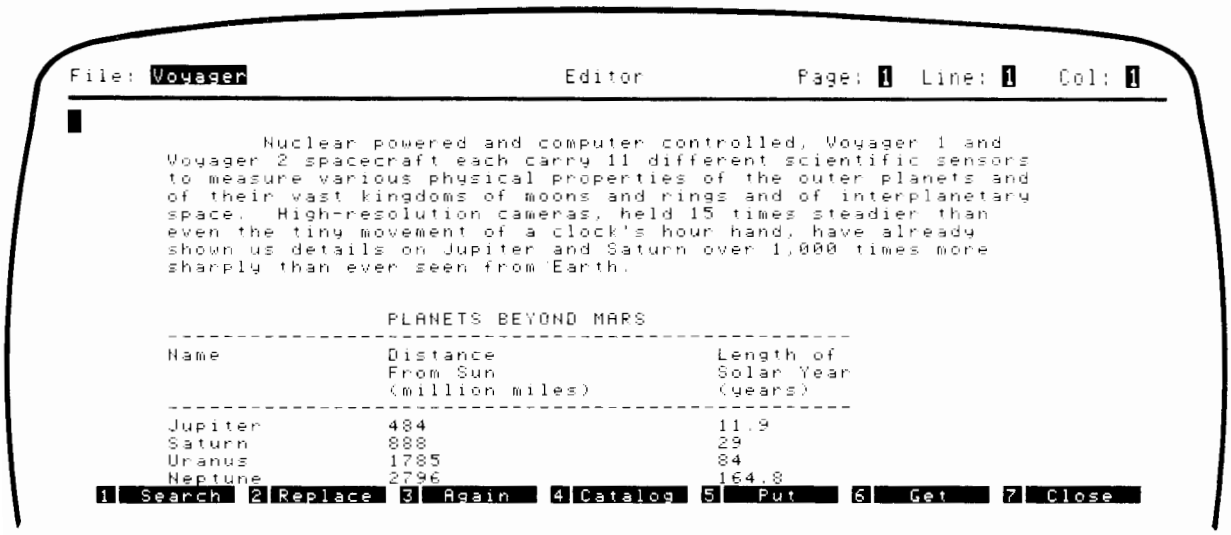
- You may run out of room if you're editing the original file but not if you're editing a work copy (unless, of course, the disc space completely fills). The Editor automatically increases disc space for a file as needed *if* that file is the last file on the disc. The work copy is always created as the last file on a disc.

The advantage of editing the original file is the shorter time required for opening and closing the file. Except when you're making minor changes to an existing file, use the default Work Copy option.

The following examples in this section are performed on a work copy of the Voyager Editor file included on the WORD/80 disc. The WORD/80 disc is assumed to be in drive D700, the currently selected disc drive.

Example: Open the existing Voyager file so that a work copy will be created on the same disc. Type Voyager in the File Name: field, press (SHIFT) 1 Open, and see that the Open property sheet is set to the Work Copy option and to the currently selected drive option (these are the defaults).

Then press 1 Open. The Editor will display Opening File... as it opens the original Voyager file, then Packing Disc... as it packs the disc, and then Making Work Copy... as it copies the original to a new work copy file at the end of the disc.



The Editor Opens the Voyager File for Editing

The Editor and Formatter always pack discs before creating files. Disc packing causes existing disc files to be rerecorded as densely as possible to allow for maximum file expansion of the last file on disc.

The error message Cannot Open File... will appear if for one reason or another the Editor cannot access the original file. The problem may be an incorrectly named file, a nonexisting file, a file on the wrong disc, a non-Editor file, a removed disc, or an open disc drive door. If the Editor can open the file but cannot make a work copy, it displays the message Cannot Make Work Copy.... This error may happen if there is not enough room on the work copy disc, if the disc is removed, or if the disc drive door is open.

When you catalog a disc that has a work copy file, the work copy file will be identified by the name of the original file, preceded by an asterisk (*). For example, the work copy of Voyager will be named *Voyager; the work copy of file *MyWork* will be named **MyWork*. If the file name of the original consists of 10 characters, the work copy will consist of the asterisk plus the first nine characters of the original. For example, the work copy of file 1234567890 will be named *123456789.

When you close the file, the Editor will purge the original file and save the work copy under the same name as the original. That is, the work copy will become the updated disc file.

Editor Special Function Keys and Property Sheets

A variety of Editor operations are controlled by the HP-86/87 special function keys, [k1] through [k7]. After a file has been opened, two sets of special function keys become available:

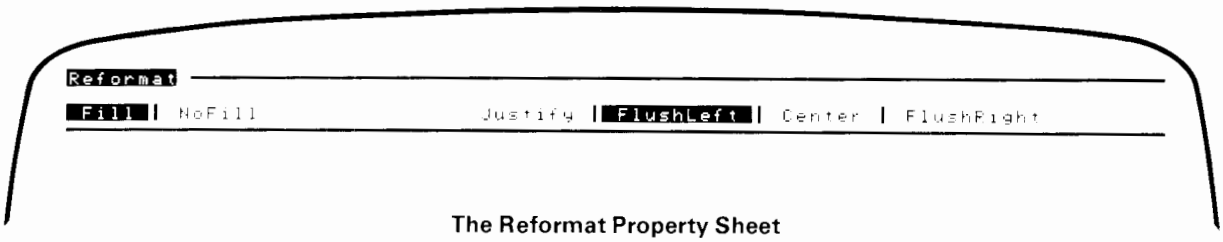
1 Search	*	To search for a string of characters anywhere in the file.
2 Replace	*	To replace one string with another.
3 Again	*	To repeat a pair of operations, the first of which is a Search operation; for example, to repeat a Search and Replace operation or a Search and Cut operation.
4 Catalog	*	To list the catalog entries of a disc.
5 Put	*	To output all or part of the opened file to the system printer, to the display, or to a text file.
6 Get	*	To merge an existing WORD/80 file into the file being edited.
7 Close	*	To close the file begin edited.

Press [KEY LABEL] to alternate between the first set and the second set of special function keys:

1 Mark		To mark the beginning of a block of text.
2 Select	*	To select a block of text by highlighting (inverse video).
3 Spread		To insert blank lines and to spread text apart by the amount of selected blocks.
4 Cut		To cut single lines and to cut selected blocks of text.
5 Copy		To copy a selected block of text into a temporary storage location.
6 Paste		To paste a block of text that has been previously deleted or copied, beginning at the current cursor position.
7 Reformat	*	To reformat a selected block of text; for example, to center the text within the block.

An asterisk (*) indicates the special function key has a property sheet that is accessed by pressing the *shifted* special function key.

Example: Press [KEY LABEL] to display the 7 Reformat key and then press [SHIFT] 7 Reformat to access the Reformat property sheet:



The Reformat Property Sheet

Property sheets are used to specify desired settings before executing special function key commands.

There are several ways to leave a property sheet:

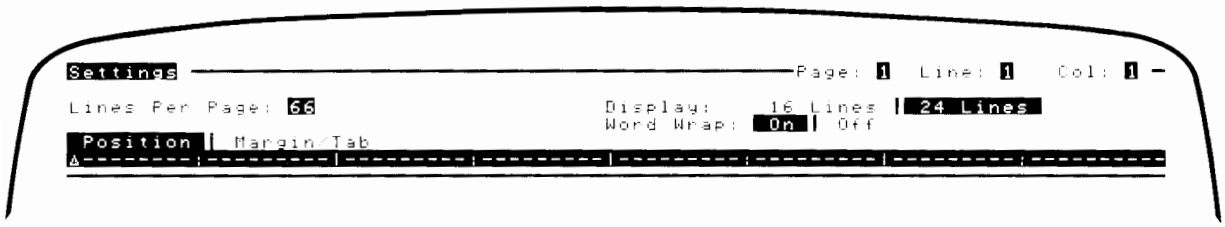
- Press the shifted special function key again. For example, press SHIFT 7 Reformat a second time to remove the Reformat property sheet and to return the cursor to its former position in the information window. The file will not be affected, but the Editor will remember any changes made in the property sheet.
- Press the *unshifted* special function key. This causes the Editor to execute the special function key command and to operate on the file according to the settings in the property sheet. For example, pressing unshifted 7 Reformat causes selected text to be filled and flushed left as specified by the Reformat property sheet.
- Press another special function key. The Editor will either display the property sheet for that function key (shifted) or execute the command for that function key (unshifted). The Editor will display `No Property Sheet For This Command...` if none exists.

The Settings Property Sheet

An additional property sheet is accessed with SHIFT KEY LABEL. The Settings property sheet controls a number of Editor settings:

- The number of lines counted per page of text.
- The number of lines shown in the display.
- Word wrap.
- The cursor position in the file.
- Margin and tab settings.

Example: Press SHIFT KEY LABEL to display the Settings property sheet:



The Settings Property Sheet

Changes made in the Settings property sheet take effect as soon as you leave the Settings property sheet—press SHIFT KEY LABEL a second time.

Property Sheet Fields

Property sheets consist of *fields* that accept either:

- Choices from two or more settings (such as the `Fill | NoFill` field in the Reformat property sheet), or
- Textual information (such as the `Put to:` field in the Put property sheet). These are called *text fields* because they are filled with characters typed from the keyboard.

Editing Property Sheets

Use the following keys to move the cursor within property sheets and to change the settings of individual fields:

Keys to Move the Cursor Among Property Sheet Fields	Cursor Movement	Keys to Select Among Limited Choice Fields	Field Selection	Keys to Edit Text Fields
SHIFT ↖	To the first field in a property sheet.	←	The previous choice.	SHIFT I/R ←
↓, CONT, END LINE	To the next field in a property sheet.	→	The following choice.	→ SHIFT -CHAR BACK SPACE
↑, SHIFT CONT, SHIFT END LINE	To the previous field in a property sheet.			SHIFT BACK SPACE -LINE

The ↓ and ↑ keys cause cursor wraparound at the top and bottom of property sheets. The ← and → keys cause cursor wraparound at the left and right edges of property sheet fields.

The Settings property sheet has one *text* field—the `Lines Per Page:` field. You can change a text field by using the editing keys or simply by typing over the characters already in the field.

Some text fields (for example, the `Catalog Of Disc:` field in the Catalog property sheet) accept limited responses. An error will be reported if inappropriate information (for example, `abc`) is entered in the field. To delete a text field, press -LINE—the Editor will supply a default value when the property sheet is removed (for example, `:D700`).

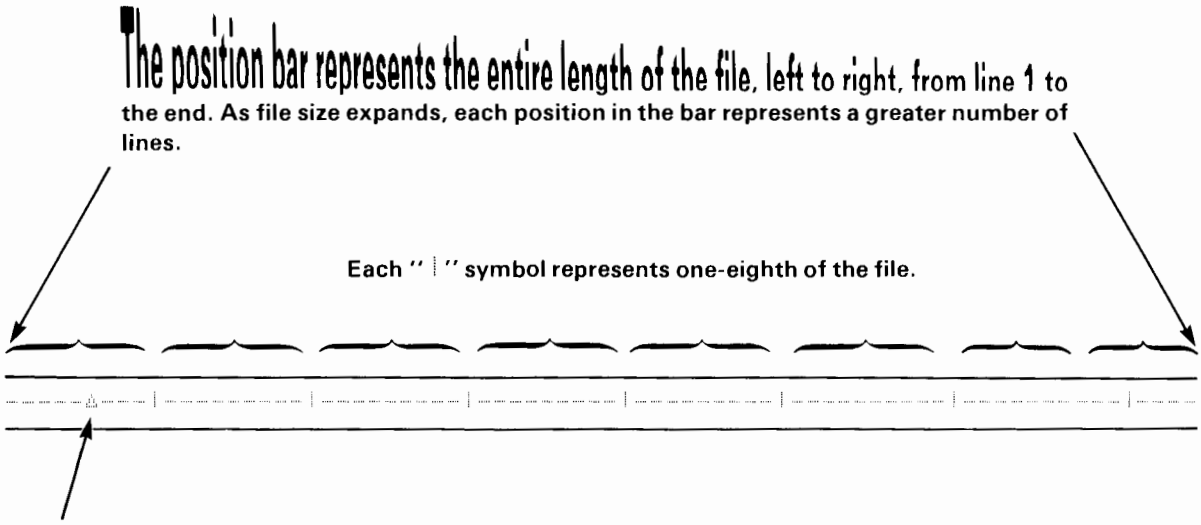
The Editor remembers the final position of the cursor in any property sheet and returns the cursor to the same field when the property sheet is again displayed.

When you close the file (7 **Close**), the settings of all property sheets will be stored with the file. When you subsequently reopen the file (1 **Open**), the fields of all property sheets will be set accordingly.

Postioning Within the File

The *position bar*, located at the bottom of the Settings property sheet, can be used to position a new portion of the file in the information window.

The word "Position" above the bar must be selected (that is, appear highlighted) in order for the position bar to be used.



The △ symbol represents the current position of the cursor in the file.

To change the cursor's position in the file:

- Press the → key or the ← key to move the cursor forward or backward in the file, respectively. The page number and line number in the property sheet are updated as the cursor moves across the position bar, depending on current file size. Note that you can't use the position bar to move the cursor past the end of file.

- Press CONT or SHIFT CONT to tab the cursor to the next " | " mark in the file, forward or backward, respectively.

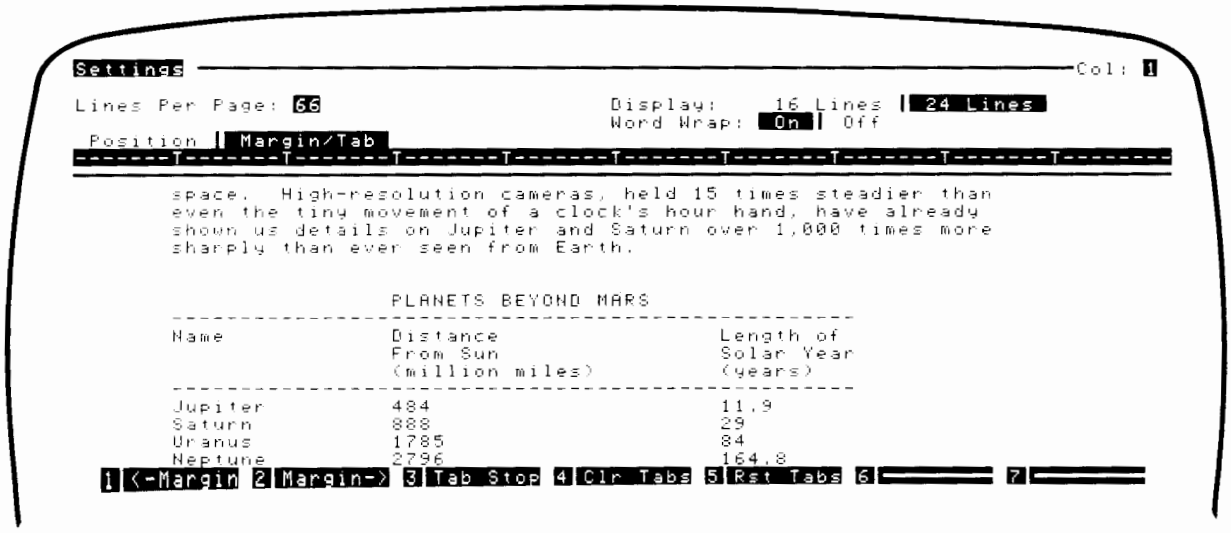
- Press END LINE or SHIFT END LINE to move the cursor to the beginning or to the end of the file, respectively.

When you leave the Editor property sheet, the cursor will be positioned at the page and line selected by the position bar. The position bar has no effect on the column location of the cursor.

Setting Margins and Tabs

The *Margin/Tab bar* in the Editor property sheet shows current locations of left and right margins and of tab stops. The *Margin/Tab menu* is used to set new margins and tabs.

Example: Move the cursor to the Position | Margin/Tab field with the ↑ or ↓ key, select Margin/Tab with the → key, and then display the Margin/Tab bar and menu window with the ↓ key:



The Settings Property Sheet With Margin/Tab Bar and Menu Window

The Col : indicator in the top right corner of the Settings property sheet shows the initial location of the cursor in the Margin/Tab bar, from column 1 through column 80. Each "T" character represents one tab stop.

- Press → or ← to move the cursor one position right or left in the Margin/Tab bar.
- Press CONT or SHIFT CONT to tab the cursor one tab stop to the right or left.
- Press END LINE or SHIFT END LINE to move the cursor to the current left or right margin.

Left and right margins and tab stops are set by moving the cursor to the desired column and pressing the appropriate function key.

Setting Margins: Margins are initially set at columns 1 and 80. Press 1 <-Margin to set the left margin, or 2 Margin-> to set the right margin, at the current cursor position in the Margin/Tab bar. The highlighted area of the Margin/Tab bar indicates current margin settings.

If an attempt is made to cross margins, an error will be reported and the second margin will not be set.

Margins can be reset to column 1 and column 80 by moving the cursor to the left or right margin and by pressing 1 <-Margin or 2 Margin->, respectively.

Example: Move the cursor to column 8 and press 1 <-Margin once to set the left margin at column 8. Then press 1 <-Margin a second time at column 8; the left margin will be reset to column 1.

In the following examples, left and right margins are assumed to be set at columns 8 and 70, respectively. Set the margins at 8 and 70 now, using the cursor movement keys and the special function keys.

Within lines of the information window, cursor movement is restricted by the left and right margin settings. For example, the cursor is allowed to tab only within the bounds of margins. However, the cursor may be moved outside the margins with the ← and → keys.

The end of line in the information window is signaled by a beep when a character is typed at the sixth position from the right margin.

Setting Tabs: Tabs are initially set every eight columns at columns 8, 16, 24, etc. There are three tab special function keys:

3 Tab Stop	Sets a tab stop at the cursor postion if no tab stop is there; otherwise, clears the tab stop at that position.
4 Clr Tabs	Clears all tabs.
5 Rst Tabs	Clears all tabs and then resets tabs at their initial settings, one every eight columns.

When a file is opened, margin and tab settings that were stored with the file take effect immediately.

Disabling and Enabling Word Wrap

Word wrap causes a word that exceeds the right margin to be moved to the beginning of the next line at the left margin. The following lines are "bumped" down one line to allow for the wrapped word. The Editor is initially set to provide word wrap.

To disable word wrap, move the cursor to the `Word Wrap:` field and press → to select `Word Wrap Off`. Word wrap is enabled when ← is pressed to select `Word Wrap On`.

Setting Display Size

The Editor is initially set to display 24 lines from the top to the bottom of the display so that 21 lines are visible at a time in the information window. By selecting `16 Lines` in the `Display:` field of the Settings property sheet, you cause the Editor to display 16 lines so that 13 lines are visible in the information window.

Setting Lines Per Page

The Editor is initially set to count 66 lines per page to provide a page estimate of file size, based on 8½-inch by 11-inch standard-sized printer paper and on 6 printed lines per inch for standard printer spacing. After each 66 lines, the page count in the display increments by one and the line count restarts at line 1. For example, when the cursor is moved to the 67th line of a file, the cursor coordinates will show `Page: 2 Line: 1`.

To change the number of lines counted per page, move the cursor to the `Lines Per Page:` field of the Settings property sheet and type a new value, `0` through `99999`. By entering a zero in the `Lines Per Page:` field or by deleting the `Lines Per Page:` value (press -LINE), you cause the `Page:` indicator above the information window to disappear. The cursor position will be indicated by line and column coordinates only.

Selecting Text

Many Editor operations, such as cutting and pasting, involve selecting *blocks of text*. The most common way to select a block of text involves two steps:

Mark the text. Move the cursor to the first character of the block of text and press the 1 Mark key. The ▒ symbol appears at the cursor location to indicate the start of the block. The text marker does not alter the file itself.

Select the text. Move the cursor to the last character of the block of text and press the 2 Select key. The selected block of text will appear highlighted in the display.

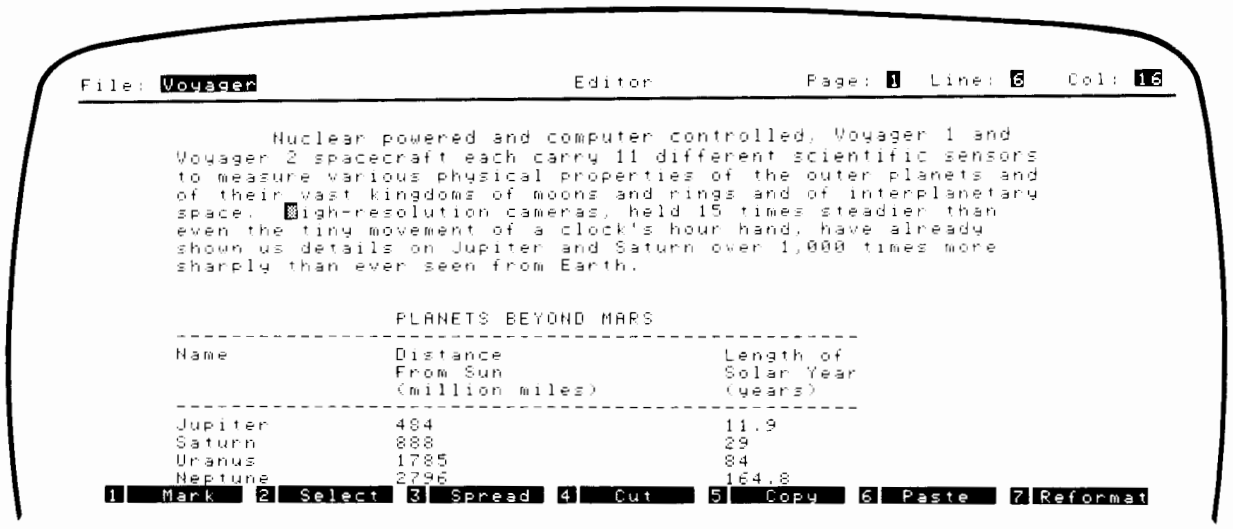
Note that you can select a block of text larger than display size, up to the size of the file itself.

In the following examples, position the text in the display the same way as shown in the manual. (Use the line numbers indicated in the title/feedback window as a guide.) Depending on how carefully you follow the instructions, the line numbers in the examples and in your computer display will agree.

Selecting by Lines

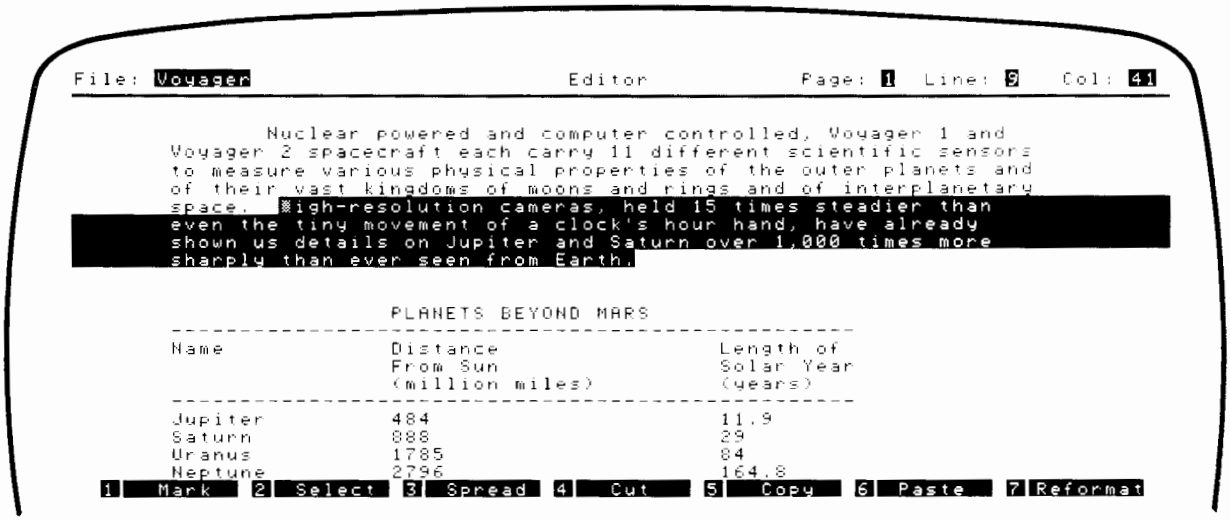
The Editor is initially set to *line selection*.

Example: Select the second sentence from the following paragraph. First press 1 Mark with the cursor at the beginning character of the sentence:



The ▒ Symbol Appears at the "H" Character

Then press 2 Select with the cursor at the ending period of the sentence:



The Selected Sentence Is Highlighted in Inverse Video

Note that *full* lines are selected, from column 1 through column 80. Lines are selected so that Editor deletions, copies, and outputs can extend across margin boundaries.

You may instead press 1 Mark at the *last* character and 2 Select at the *first* character. The defined block of text will appear highlighted.

To *unselect* a selected block of text, press the 2 Select key again or move the cursor forward, backward, up, or down.

The ▒ marker will stay in the file until:

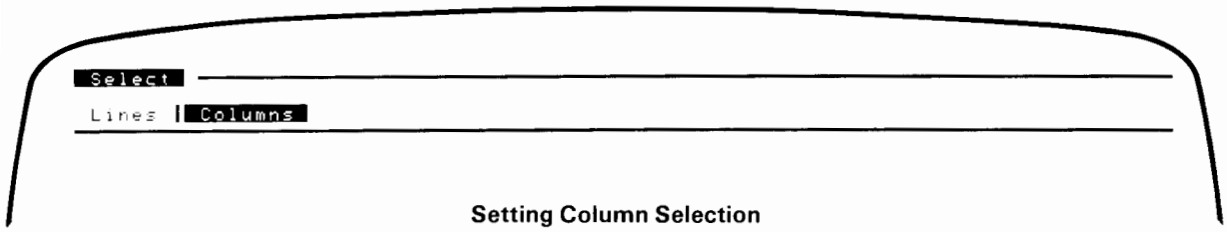
- You *do something* to the selected block of text, as by pressing SHIFT CLEAR, 3 Spread, 4 Cut, 5 Copy, 7 Reformat, 2 Replace, or 5 Put.
- You type over the ▒ symbol. The typed character will replace the marker.
- You press 1 Mark again. If the cursor is at the marker, pressing 1 Mark will turn off the marker. If the cursor is anywhere else in the file, pressing 1 Mark will move the marker to the current cursor location.

The 1 Mark key has no property sheet.

Selecting by Columns

You may also select a block of text by *columns*.

Example: Set the Editor to select text by columns. Press (SHIFT) 2 Select to display the Select property sheet. Press (→) to choose text selection by columns:

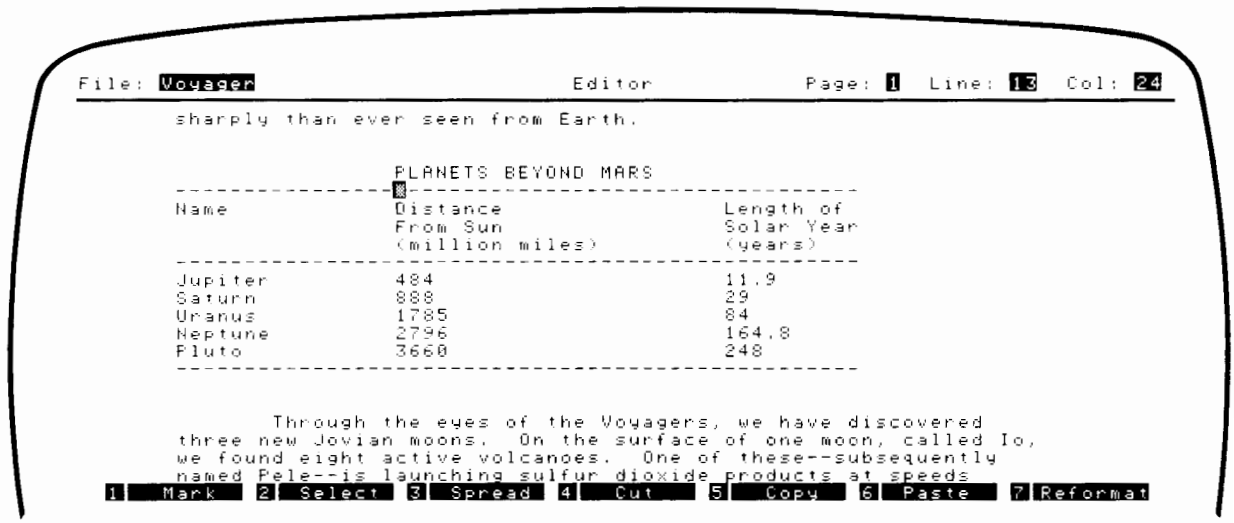


Setting Column Selection

Then press (SHIFT) 2 Select a second time to return the cursor to the information window.

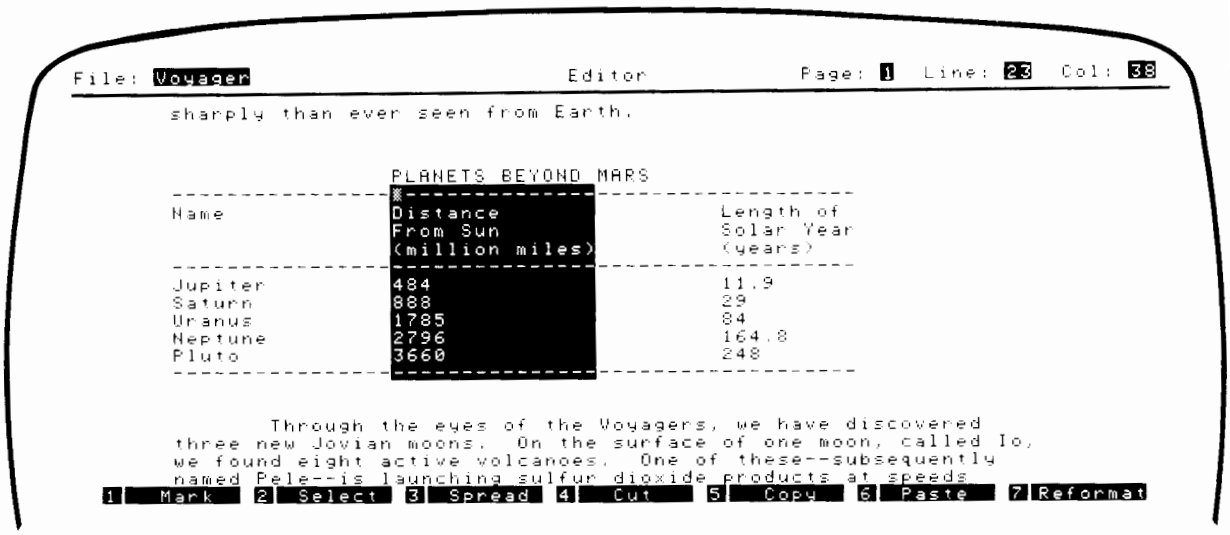
Selecting text by columns causes text to be highlighted as a rectangle, bounded on the left and right by the column positions of the cursor when the text is marked and selected.

Example: With the Editor set to column selection, select the second column of the following table. First press (SHIFT) (ROLL ▲) eight times to roll the table into the information window. Then use the cursor control keys to move the cursor to the top line of the table. Press 1 Mark to mark the heading of the column:



The ▒ Symbol Appears at the Hyphen (—) Directly Above the "□" Character

Move the cursor to the diagonal corner of the column and press 2 Select :



The Selected Columns Appear Highlighted

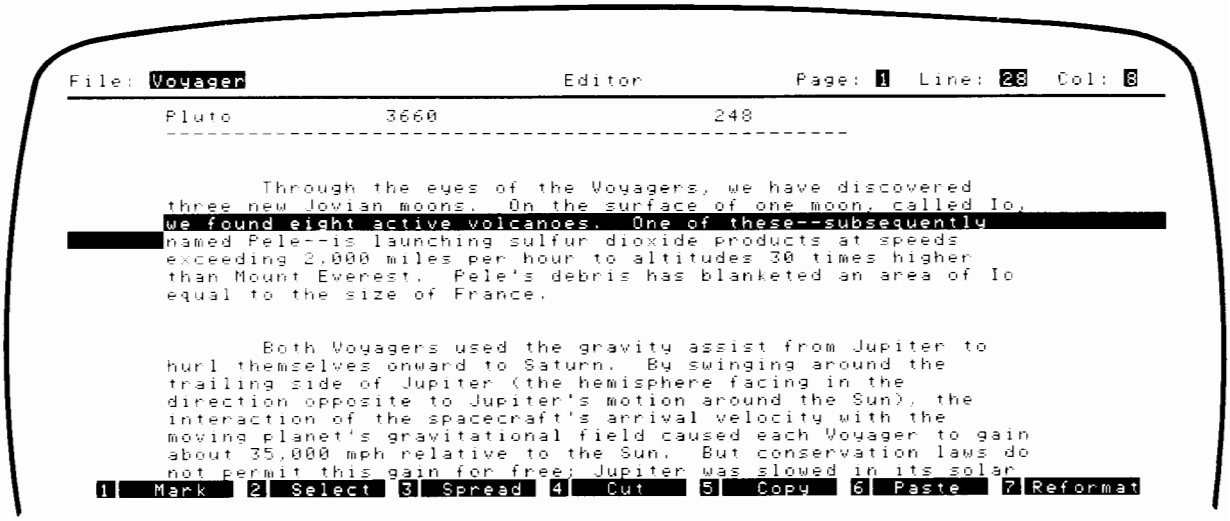
Highlighting will extend from the leftmost column postion through the rightmost column position, from top to bottom of the block. In a column selection, the cursor may set any two diagonal corners of the rectangle.

At this point, the selected text can be spread, cleared, cut, copied, reformatted, or sent to an output destination.

Selecting Single Lines

The normal sequence for selecting text involves pressing 1 Mark , moving the cursor, and pressing 2 Select . You may also press 2 Select by itself to select a single column or line of text. In a line selection, the highlighting will extend from the cursor through the end of line and up to the left margin of the next line.

Example: Select the third line of the following paragraph. First turn off the ▒ marker from the preceding example by pressing 1 Mark twice—once to move the marker to the current cursor location and a second time to turn off the marker. Then set the Editor to line selection (press SHIFT 2 Select, ←, and SHIFT 2 Select). Finally press 2 Select with the cursor at the left margin of the third line.



Highlighting Extends From Cursor Up to the Left Margin of the Next Line

The following keys automatically select a single line (or column) of text if no block of text has been previously selected:

2 Select	7 Reformat
3 Spread	5 Put
4 Cut	SHIFT CLEAR
5 Copy	

Particularly useful are single-line spreads and cuts.

Spreading Text

The 3 Spread key enables you to spread apart lines or columns of text in order to insert text in the opened space. 3 Spread has no property sheet. The steps are:

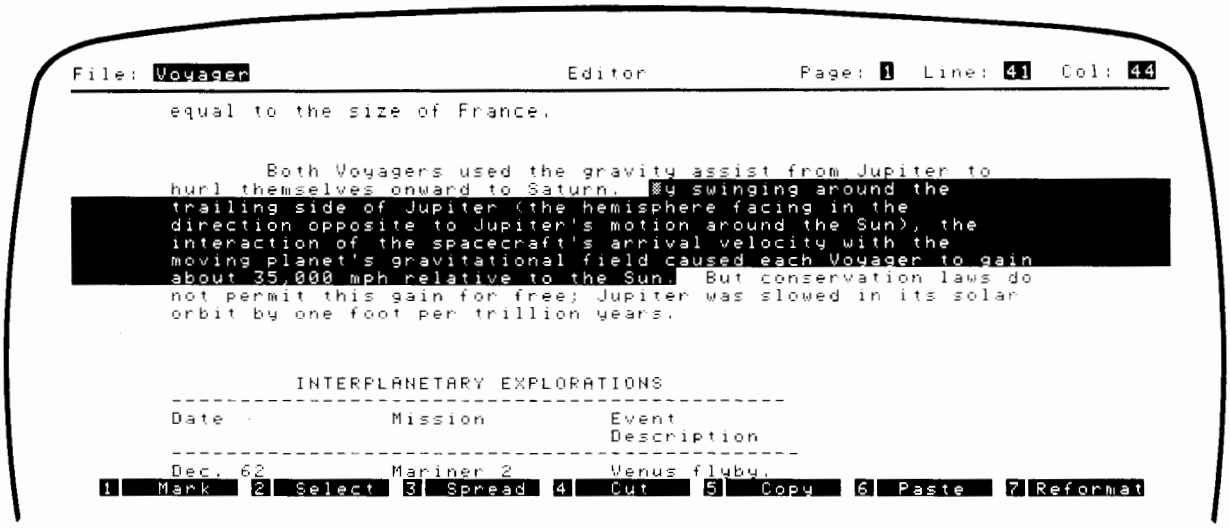
Select a block of text. Position the cursor, press 1 Mark, reposition the cursor, and press 2 Select.

Spread the text. Press the 3 Spread key. The block of text will be moved as a unit below or to the right of the selected area, leaving the selected area free of text.

Spreading by Lines

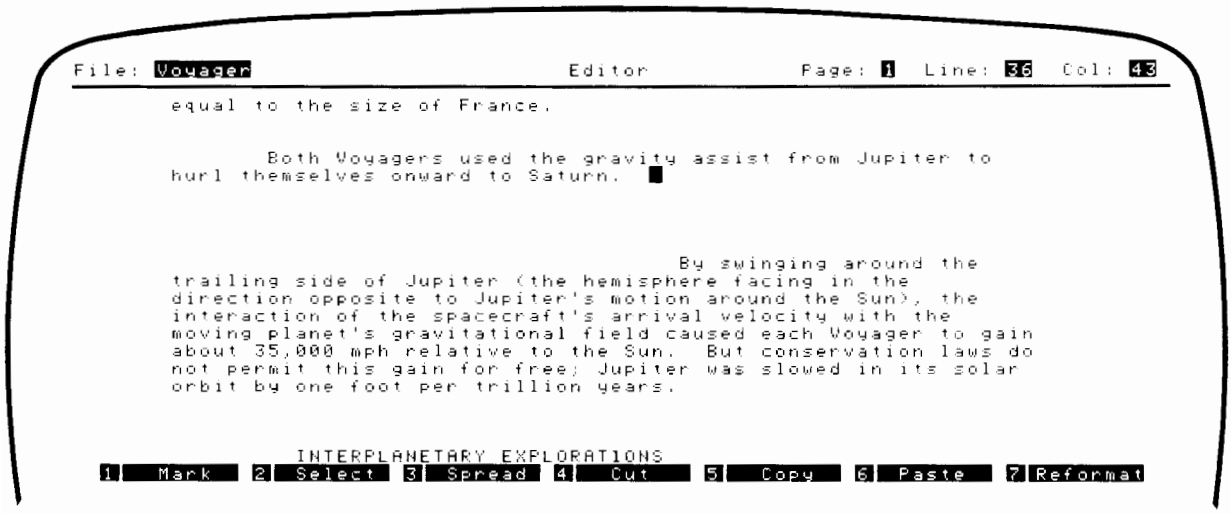
Spreading by lines provides room for text insertions.

Example: Assuming the Editor is set to line selection, select the second sentence of the following paragraph. Press 1 Mark with the cursor at the "B" character, and press 2 Select with the cursor at the ending period of the sentence.



The Second Sentence Is Selected

Now spread the text by the amount of that sentence. Press 3 Spread:



The Display After 3 Spread Is Pressed

The Editor attempts to leave a gap exactly the same size and shape of the selected block. When spreading by lines, the Editor attempts to fit the beginning line of the selected text on the same line as the bottom line of the highlighted area. During a line spread, if the first line would be pushed off the right edge of the display, then `Will Not Fit On This Line...` will be displayed and the first line will be relocated beginning at column 1 of the line following the highlighted area.

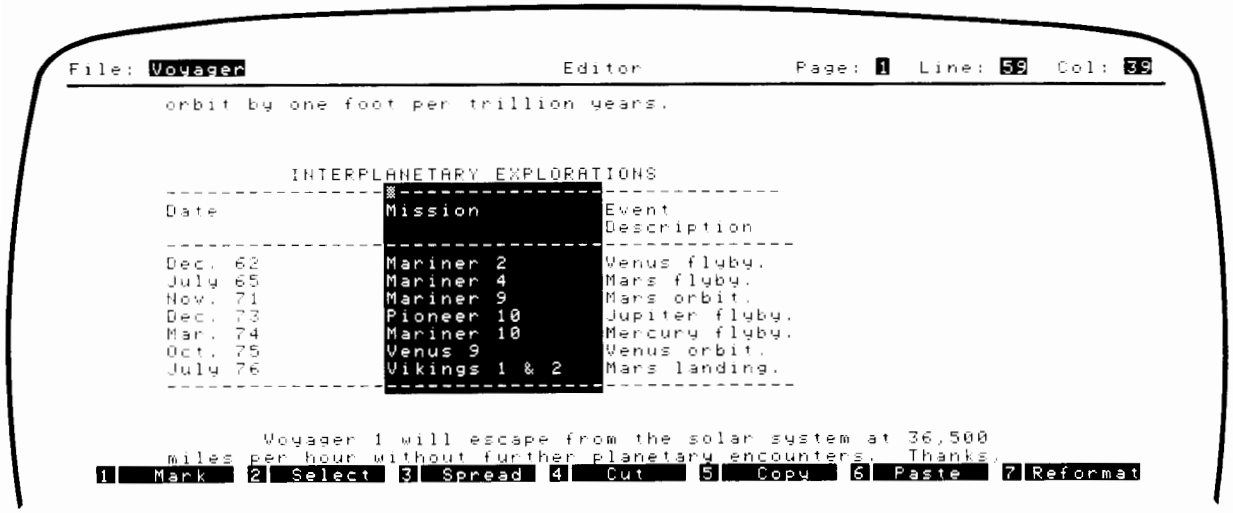
At least as much space will be opened in the file as that of the selected text.

Note: To undo a Spread operation, reselect the spread area of the display, beginning at the cursor position, and press the 4 Cut key. Try it now to close the area that was spread in the previous example.

Spreading by Columns

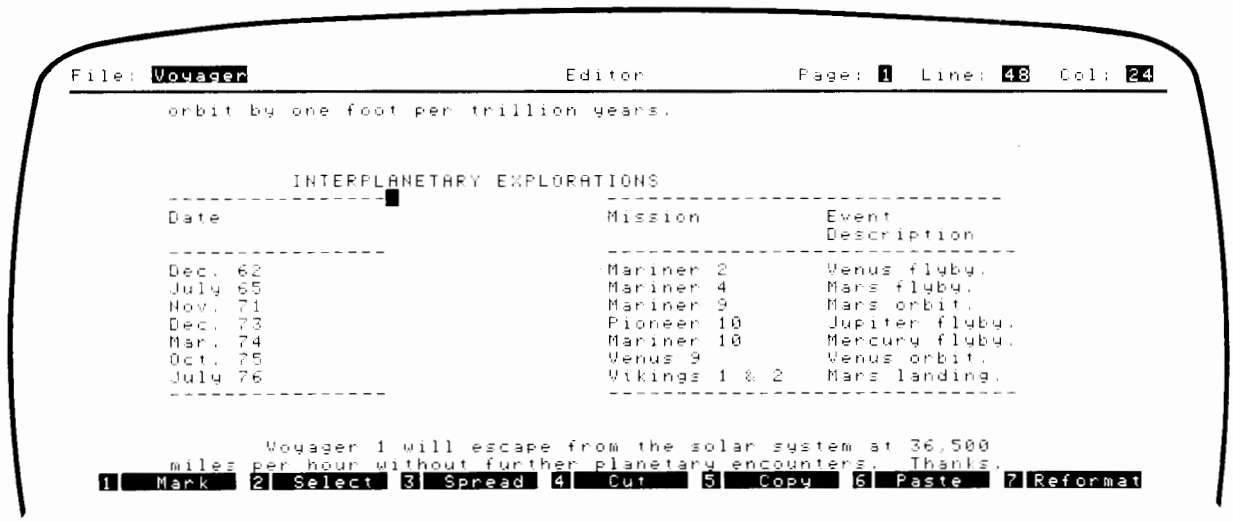
Spreading text by columns results in text being "pushed" to the right to make room for the selected region.

Example: Spread apart the following table by the width of the second column. First set the Editor to column selection with the Select property sheet. Then mark and select the second column with the cursor at the diagonals:



Text is Selected by Columns

Then press 3 Spread:



The Text Is Spread by the Width of the Column Selection

If any line in the selected text can't accommodate the added width—that is, if any text would be pushed past the right edge of the display—then `Column Too Wide...` will be reported, and the spread will be canceled.

Inserting Single Lines

If no text is selected before 3 Spread is pressed, then the text is spread from the cursor up to the left margin of the next line (line selection) or spread by one space (column selection).

Example: Insert a blank line before the fifth line in the following paragraph. First choose line selection (press SHIFT 2 Select, ←, and SHIFT 2 Select). Then move the cursor to the left margin of the fifth line:

```
File: Voyager                    Editor          Page: 1  Line: 66  Col: 8

      Mar. 74                        Mariner 10       Mercury flyby.
      Oct. 75                        Venus 9          Venus orbit.
      July 76                        Vikings 1 & 2    Mars landing.
      ----------------               -------------------------------

            Voyager 1 will escape from the solar system at 36,500
      miles per hour without further planetary encounters.  Thanks,
      however, to a favorable lineup of the planets that will not
      occur again until the middle of the twenty-second century,
      Voyager 2 will be able to continue its grand-tour journey to
      remote Uranus and Neptune.  As it passed by Saturn last August,
      Voyager 2 picked up a gravity assist that whipped the little
      spacecraft into a trajectory that will bring it to Uranus on
      January 24, 1986.

            Because of their great distances from Earth, we know
      little about the seventh and eighth planets.  When it reaches
      Uranus and then Neptune, Voyager will find a pair of twin
      gaseous giants, each with a diameter of about 31,500 miles and
1 Mark  2 Select  3 Spread  4 Cut  5 Copy  6 Paste  7 Reformat
```

With Line Selection Set and Cursor Positioned

Press 3 Spread:

```
File: Voyager                    Editor          Page: 1  Line: 66  Col: 8

      Mar. 74                        Mariner 10       Mercury flyby.
      Oct. 75                        Venus 9          Venus orbit.
      July 76                        Vikings 1 & 2    Mars landing.
      ----------------               -------------------------------

            Voyager 1 will escape from the solar system at 36,500
      miles per hour without further planetary encounters.  Thanks,
      however, to a favorable lineup of the planets that will not
      occur again until the middle of the twenty-second century,

      Voyager 2 will be able to continue its grand-tour journey to
      remote Uranus and Neptune.  As it passed by Saturn last August,
      Voyager 2 picked up a gravity assist that whipped the little
      spacecraft into a trajectory that will bring it to Uranus on
      January 24, 1986.

            Because of their great distances from Earth, we know
      little about the seventh and eighth planets.  When it reaches
      Uranus and then Neptune, Voyager will find a pair of twin
1 Mark  2 Select  3 Spread  4 Cut  5 Copy  6 Paste  7 Reformat
```

Pressing 3 Spread Inserts a Blank Line

Press 3 Spread repeatedly at the left margin to insert multiple blank lines. Note default line selections extend up to the left margin of the next line so that lines are properly manipulated.

Deleting Text

Four keys enable you to delete lines or blocks of text:

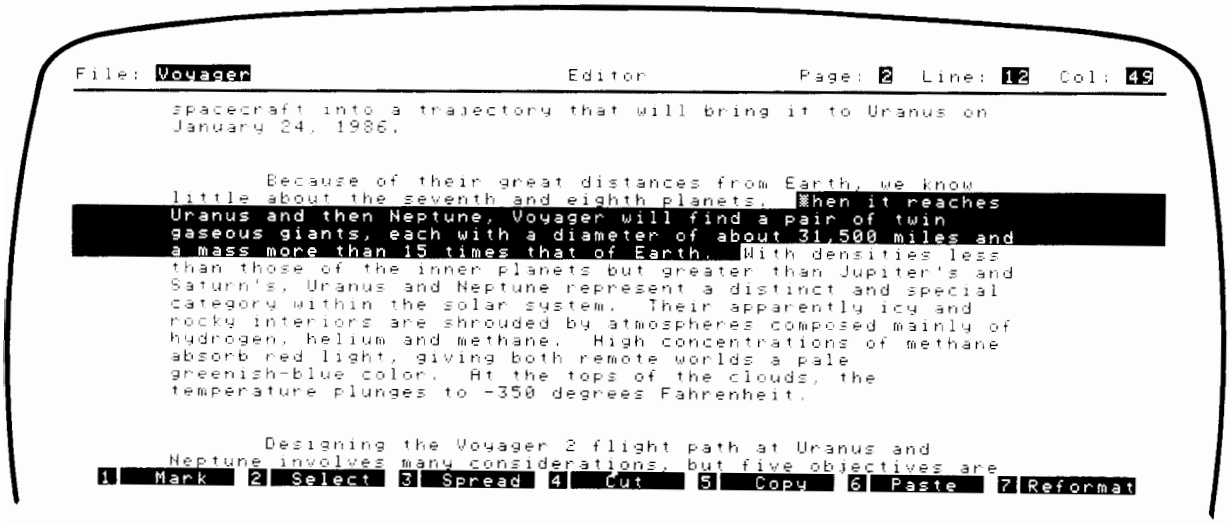
(-LINE) — Deletes from cursor to end of line. Clears at most the characters in one line.

(SHIFT) (BACK SPACE) — Deletes from before the cursor to the left margin. Clears at most the characters in one line. If pressed at the left margin, clears through column 1. If pressed at column 1, clears through the left margin of the *previous* line.

(SHIFT) (CLEAR) — Deletes the selected block of text. If no text is selected, then clears from the cursor up to the left margin of the next line (line selection) or deletes one character at the cursor location (column selection).

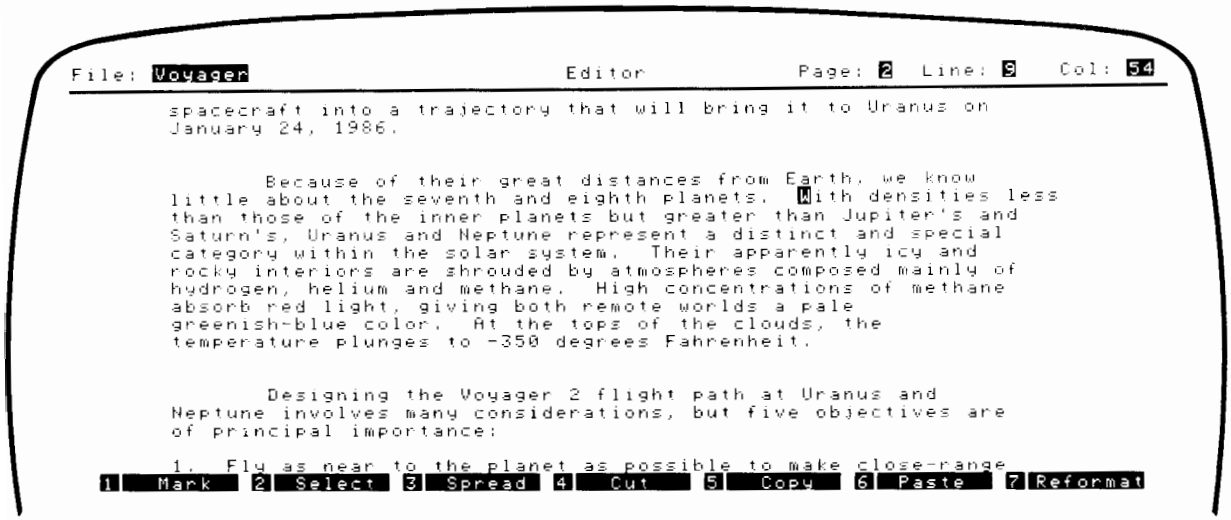
4 Cut — Deletes the selected block of text and closes the resulting space with text that follows. If no text is selected, cuts from cursor up to the left margin of the next line (line selection) or cuts one character at the cursor location (column selection). **4 Cut** has no property sheet.

Example: Assuming line selection, cut the second sentence from the following paragraph. First select the sentence, up to the beginning "W" of the following sentence:



Text To Be Cut Is Selected by Lines

Then press 4 Cut :



The Paragraph Closes Up After 4 Cut Is Pressed

Text that is cut by *columns* is closed by the width of the highlighted area.

To clear or cut *single lines*, press 1 Mark if necessary to turn off the marker, set the Editor to line selection, and press SHIFT CLEAR or 4 Cut , respectively, at the left margin.

Both SHIFT CLEAR and 4 Cut delete selected blocks of text. However, SHIFT CLEAR clears text without closing the resulting gap. Also, *clearing* text will leave the same number of lines in the file; *cutting* text may reduce the total number of lines.

In a line selection cut, if text can't be closed up without exceeding display width, then `Will Not Fit On This Line...` will be reported and the following text will be relocated beginning at column 1 of the next line.

When you press -LINE, SHIFT BACK SPACE, SHIFT CLEAR, or 4 Cut , the deleted text is entered in a *text buffer* in system memory. The text buffer temporarily holds text so that you can *paste* the text at the same location or at a new location in the file.

For example, if you accidentally delete the wrong text, you can quickly recover the lost text. Press the 6 Paste key and the the deleted text will be reinserted, beginning at the cursor location.

Text is held in the text buffer until:

- Another deletion occurs, or
- The 5 Copy key is pressed.

Be careful not to lose what's stored in the text buffer before you paste the text where you want it! Deleting or copying new text will immediately overwrite what's currently in the text buffer. The text buffer is always large enough to hold the text entered into it.

Note that the BACK SPACE and -CHAR keys, which delete single characters, have no effect on the text buffer.

The text buffer is stored with the file when the file is closed.

Copying Text

The 5 Copy key enables you to store a copy of a selected block of text in the text buffer so that you can paste the block of text at another place in the file. The 5 Copy key has no property sheet.

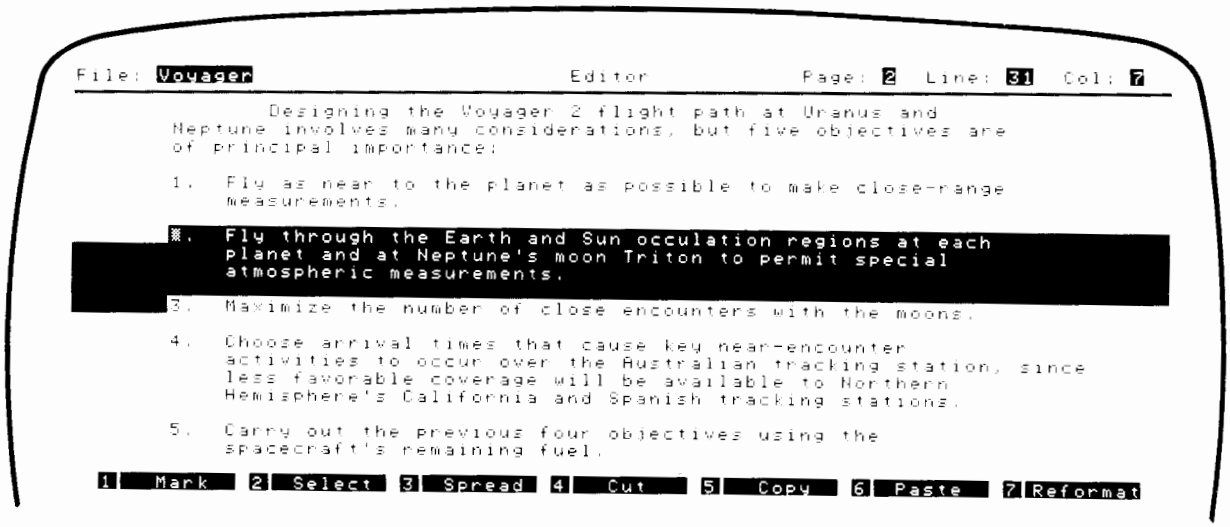
Like the deleting keystrokes, 5 Copy stores text in the text buffer for later use. However, 5 Copy leaves the selected text unchanged.

If no text is selected beforehand, 5 Copy copies from the cursor up to the left margin of the next line (line selection) or copies just the character at the cursor location (column selection).

Pasting Text

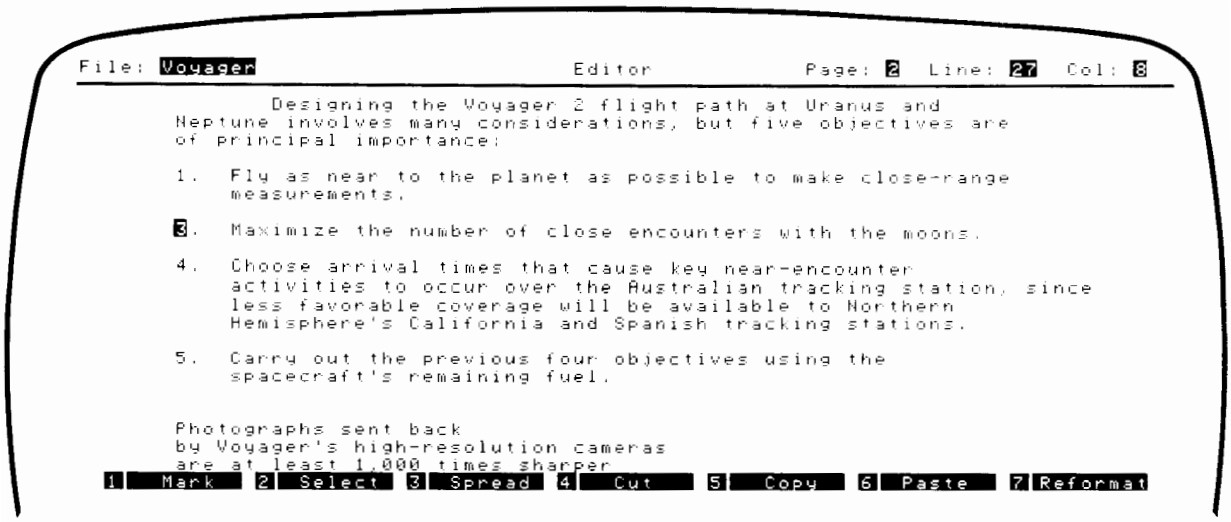
The 6 Paste key inserts a copy of the text buffer in the file, beginning at the current cursor location. The 6 Paste key has no property sheet. The SHIFT CLEAR, 4 Cut , and 5 Copy keys are frequently used in combination with the 6 Paste key.

Example: Cut the second item from the following list and paste it after the fourth item. Set the Editor to line selection, and mark and select the second item:



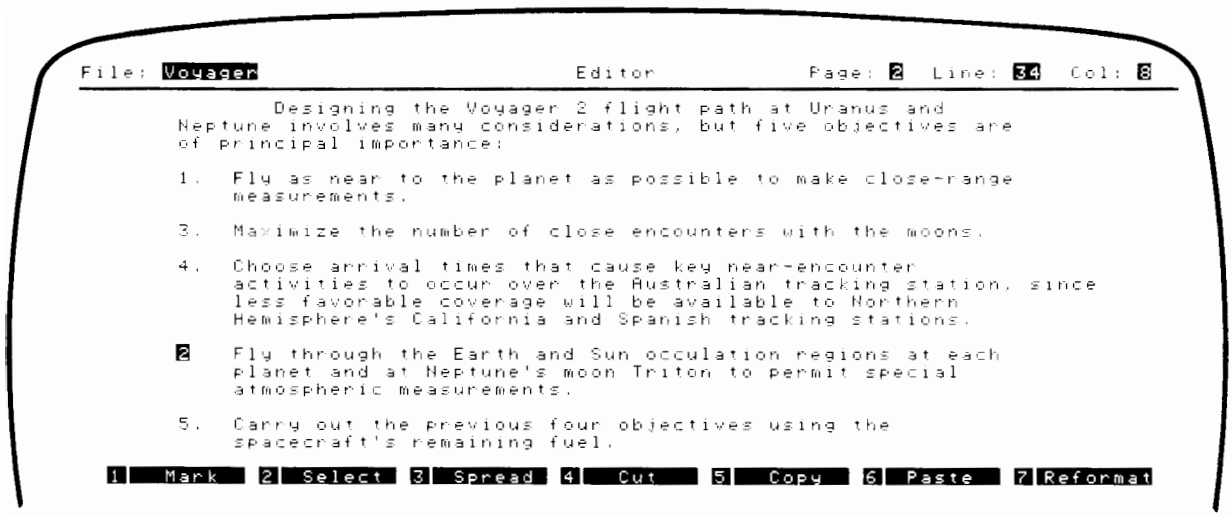
The Selection Ends at the Space to the Left of Margin

The shape of the selected area enables full lines to be cut while preserving the integrity of the remaining lines. Press 4 Cut to cut the selected text:



The Cut Text Is Entered in the Text Buffer

Afterwards, position the cursor at the "5" of the fifth item. Finally, press 6 Paste:



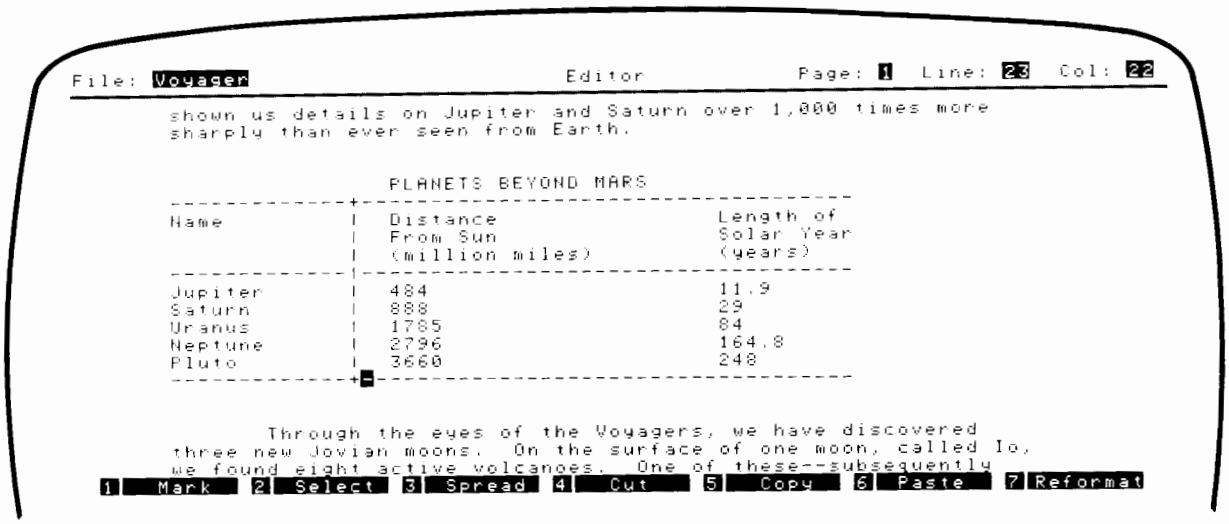
The Previously Cut Text Is Pasted in Place

6 Paste inserts text by bumping the text following the cursor to a new location after the pasted text. In the example, the Paste operation bumped the characters after the cursor to a new line.

Note: To undo a Paste operation, select the same block of text as was pasted, using 1 Mark and 2 Select, and press 4 Cut.

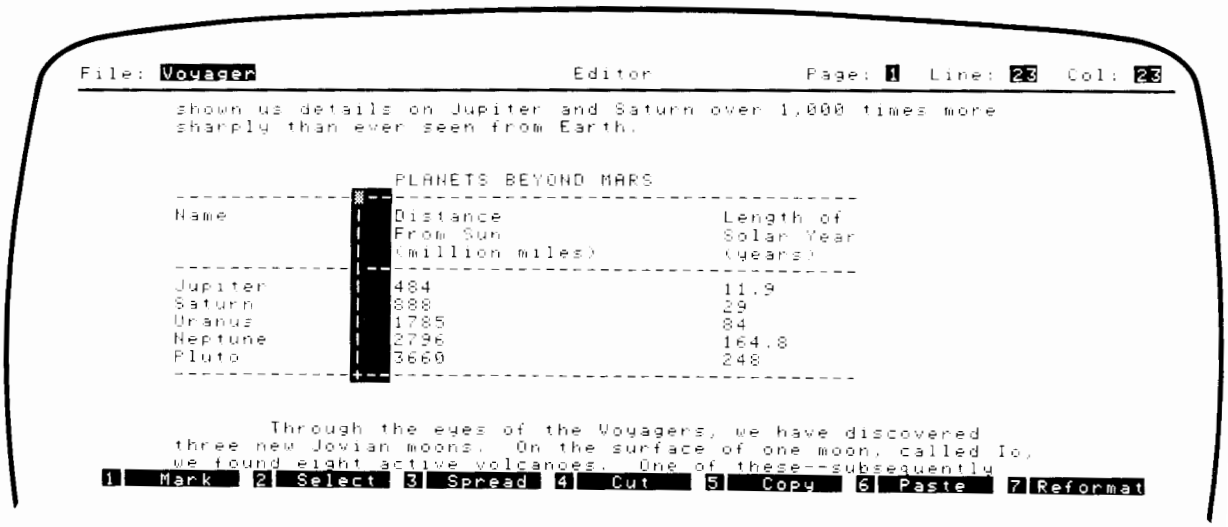
The Editor remembers the "shape" of the deleted or copied text—that is, whether the text in the text buffer was selected by lines or columns. When the text is subsequently pasted, the Editor inserts the text according to its original shape.

Example: Create the outline for a table using the 2 Copy and 6 Paste keys. First set the Editor to column selection with the Select property sheet. Then type a vertical line through the PLANETS BEYOND MARS table using the cursor control keys and the (SHIFT) (+) and (SHIFT) (|) typing keys:



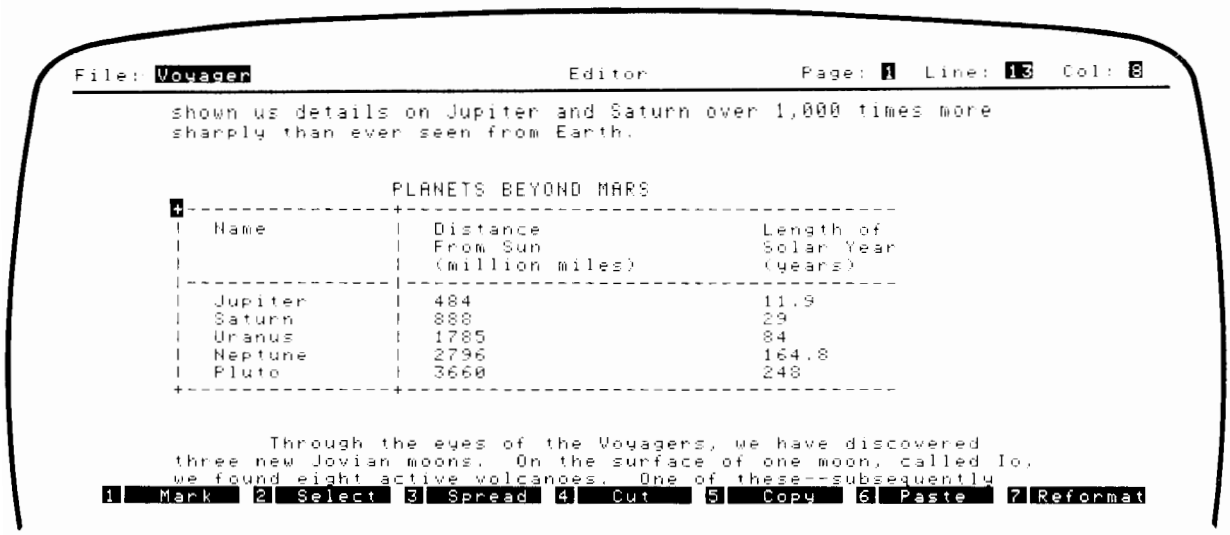
The Vertical Line is Typed With "+" and "|" Characters

Next select a portion of the table by positioning the cursor and using 1 Mark and 2 Select :



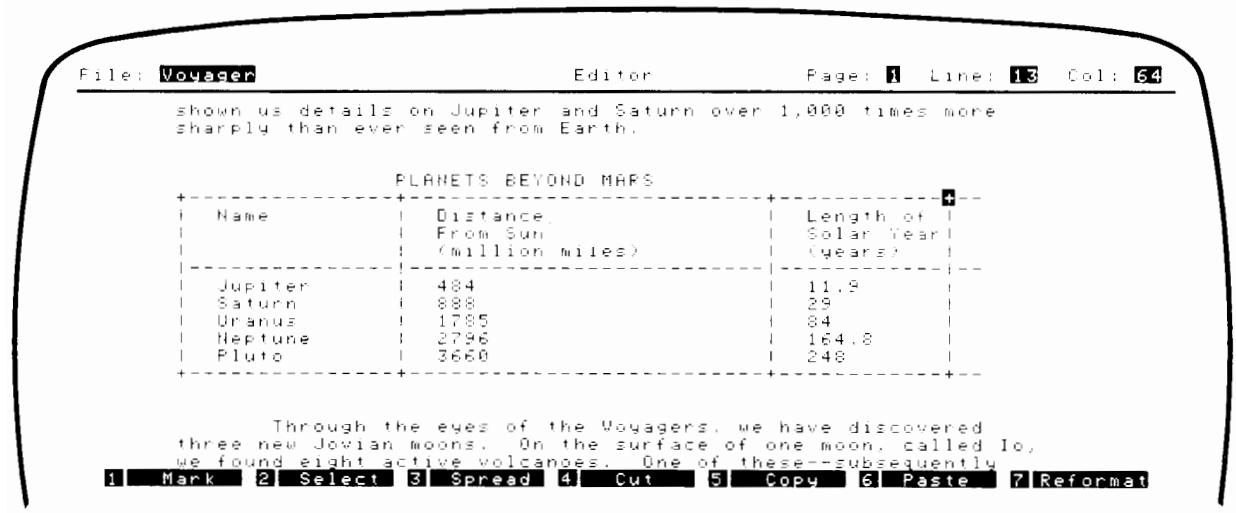
Three Columns of Text Are Selected

Press 5 **Copy** to copy the selected text into the text buffer. Afterwards, press ← to move the cursor to the current left edge of the table. Then press 6 **Paste** to paste the edge there:



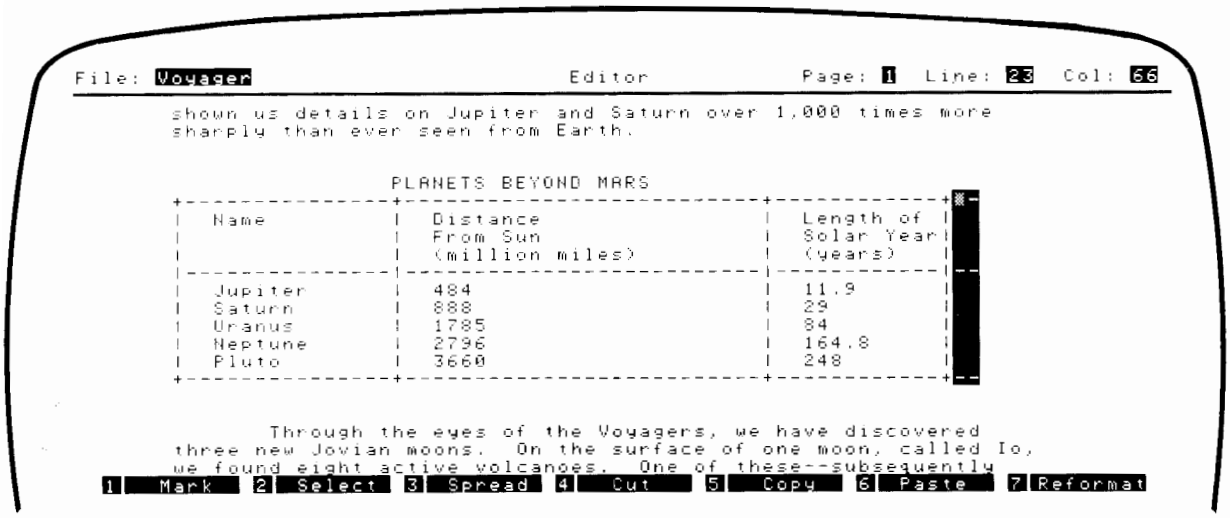
The Text is Pasted in Its Original Shape

Continue in this manner until the table is completely boxed:



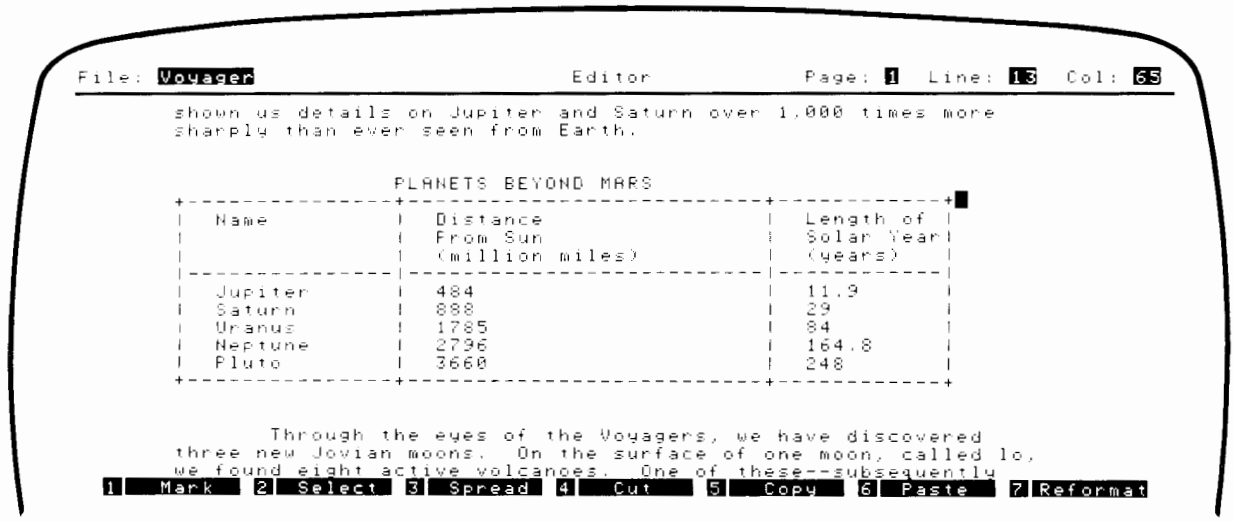
After Completing One Copy and Three Pastes

To clear the trailing portion of the table, select the last two columns:



Two Columns Are To Be Cleared

Finally, press (SHIFT) (CLEAR):



The Cursor Is Left at the Beginning of the Cleared Area

The Editor observes display boundaries during a Paste operation. If text in the Buffer was selected by *columns* and if there is not enough room for the text to move right the width of the entire block, the Editor displays `Column Too Wide...` and cancels the Paste operation.

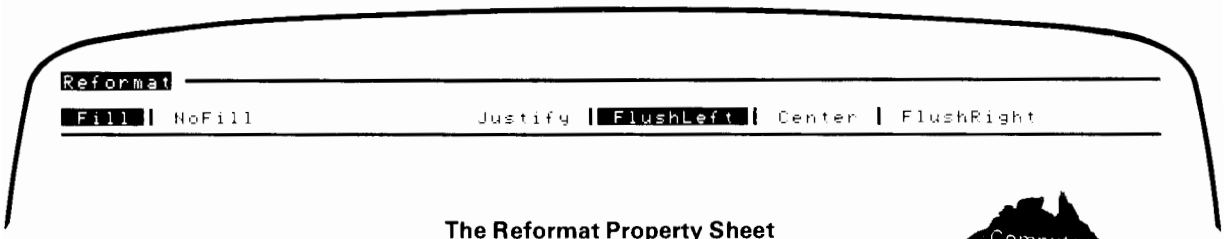
If text in the buffer was selected by *lines* and if the paste would exceed the right edge of the cursor line, the Editor displays `Will Not Fit On This Line...` and pastes the text beginning at column 1 of the next line.

Note that **6 Paste** pastes text without emptying the text buffer. That is, the contents of the text buffer may be pasted repeatedly at different places in the file.

If no text is in the text buffer, then **6 Paste** has no effect.

Filling and Justifying Text

The 7 Reformat key enables you to format selected lines of text. Two fill settings may be used in combination with four justification settings.



The Reformat Property Sheet

Computer Museum

These settings are:

Fill	The initial Editor setting. Each line is filled with words until adding one more word would exceed the right margin. That word is placed at the beginning of the next line.
NoFill	Each line of text is preserved as a separate line.
Justify	Each line is formatted so that the first character of the first word aligns with the left margin, the last character of the last word aligns with the right margin, and words are proportionately separated by blanks.
FlushLeft	The initial Editor setting. The beginning of each line is set at the left margin. Leading blanks are preserved.
Center	Lines are centered between left and right margins.
FlushRight	Lines are set so that the last non-blank character is set at the right margin.

Note that a Reformat operation removes extra blanks between words but leaves two spaces after the following punctuation marks when at the end of the words:

? ! and .

There are three steps in reformatting a selected area of text:

Change the Reformat property sheet to the desired settings. Press (SHIFT) 7 Reformat to display the Reformat property sheet, and use the cursor control keys to select one fill setting and one justification setting.

Select lines or columns of text with 1 Mark and 2 Select. Formatting will be confined to the selected text in the file.

Press the 7 Reformat key. Page and line numbers will be updated as the Editor processes the selected text. The resulting layout will be bounded by left and right margins.

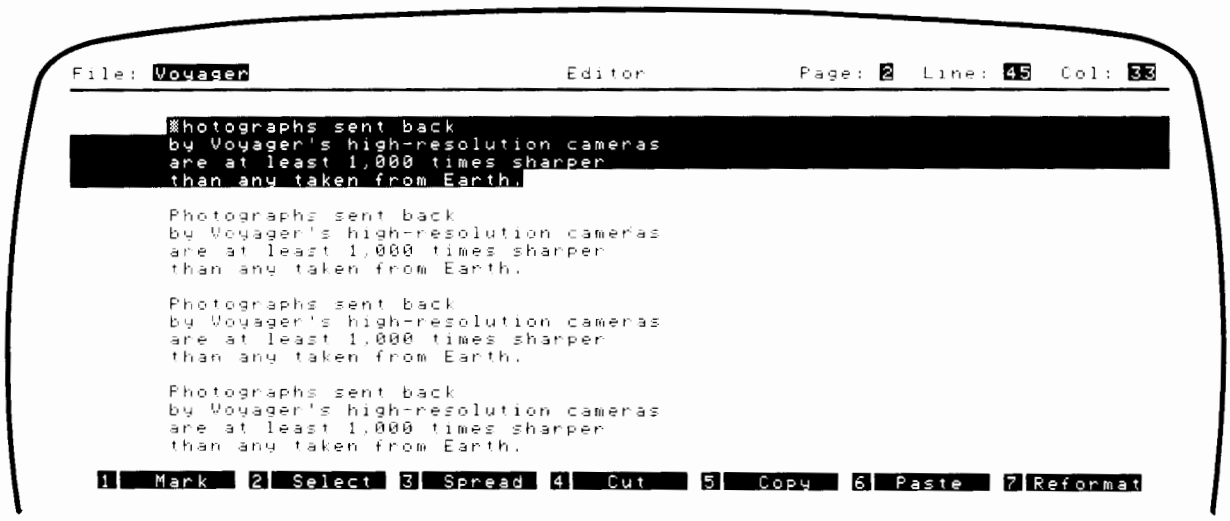
The first two steps may be reversed.

Important: Once the 7 Reformat key has been pressed, there is no way to cancel the Reformat operation. Be certain that the Reformat property sheet has been set correctly and that the proper text has been selected before pressing 7 Reformat.

Reformatting Lines of Text

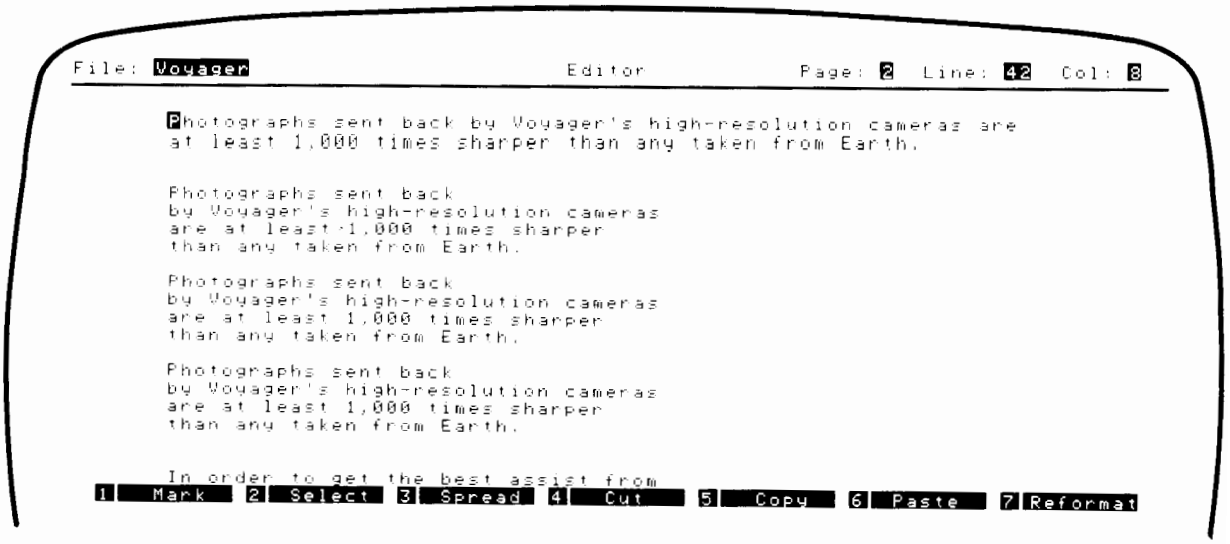
Most commonly, text is reformatted with the Editor set to line selection.

Example: Fill and left-justify the first sentence of the following sentences with margins set at columns 8 and 70. Set the Select property sheet to Lines, and select the first sentence:



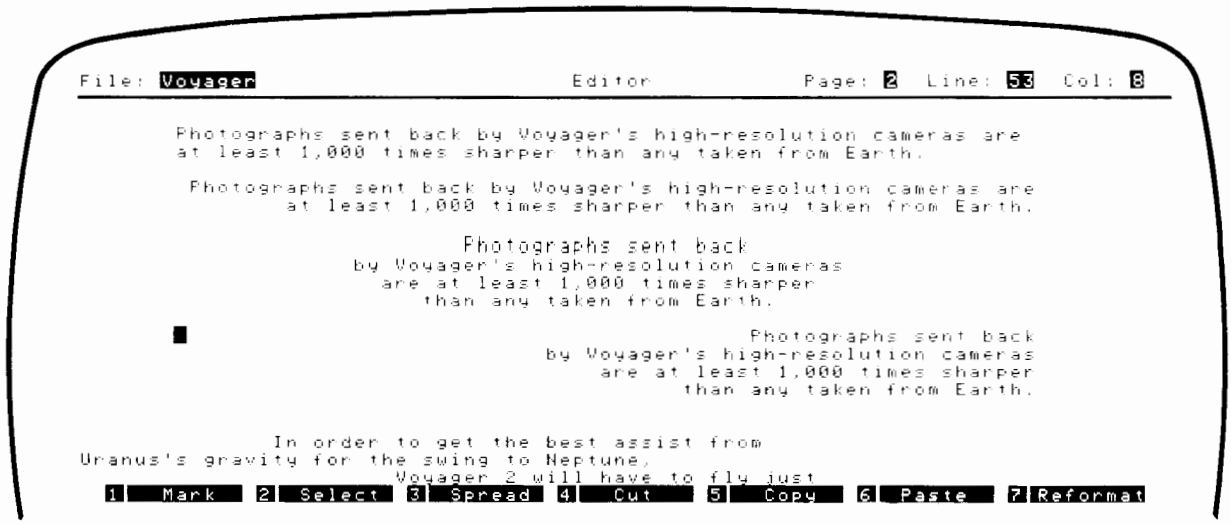
Selected Text Begins at the "P" and Ends at the Period

Assuming the Reformat property sheet is set to Fill and FlushLeft (the initial Editor settings), press 7 Reformat:



The Selected Text Is Filled and Flushed Left

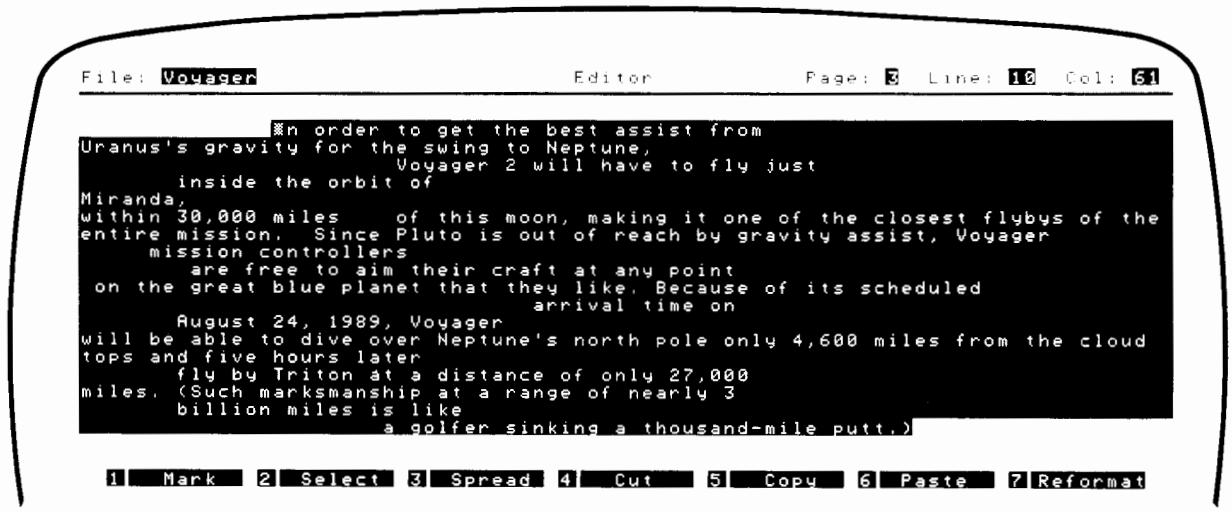
Examples: Reformat the following sentences so that the second sentence is reformatted with Fill and FlushRight, the third sentence with NoFill and Center, and the fourth sentence with NoFill and FlushRight. Press 7 Reformat three times, each time after selecting the text and Reformat options:



NoFill in the Last Two Sentences Causes Lines to Stay Separated

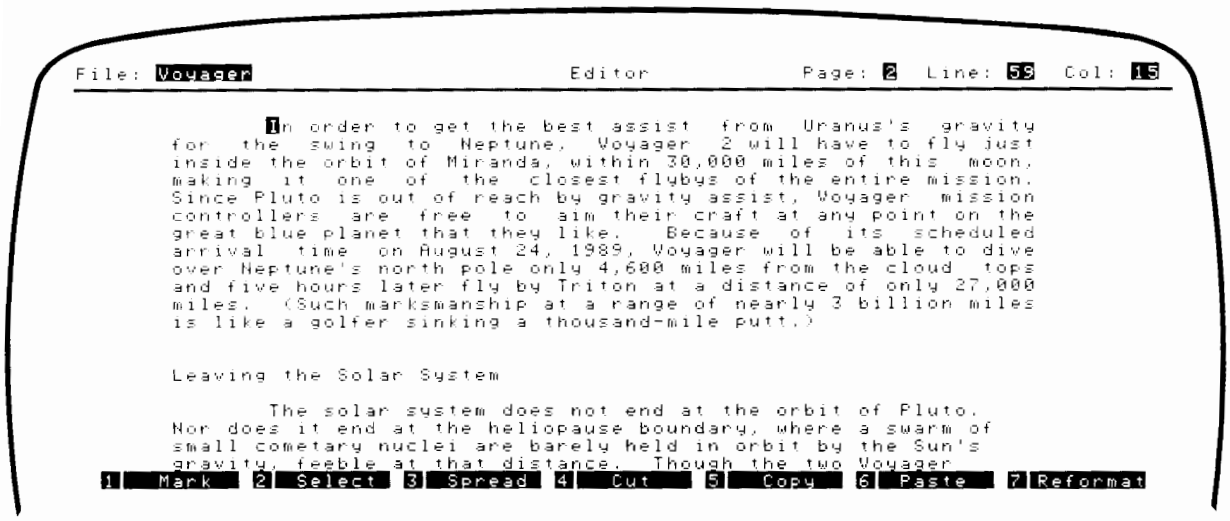
You may reformat arbitrarily large blocks of text.

Example: Reformat the following paragraph so that it is filled and justified. Begin by selection Fill and Justify in the Reformat property sheet. Then select all the lines in the paragraph:



The Selection Extends From the Beginning "I" to the Ending Parenthesis

Finally, press 7 Reformat:



Justify **Causes Text To Align With Left and Right Margins**

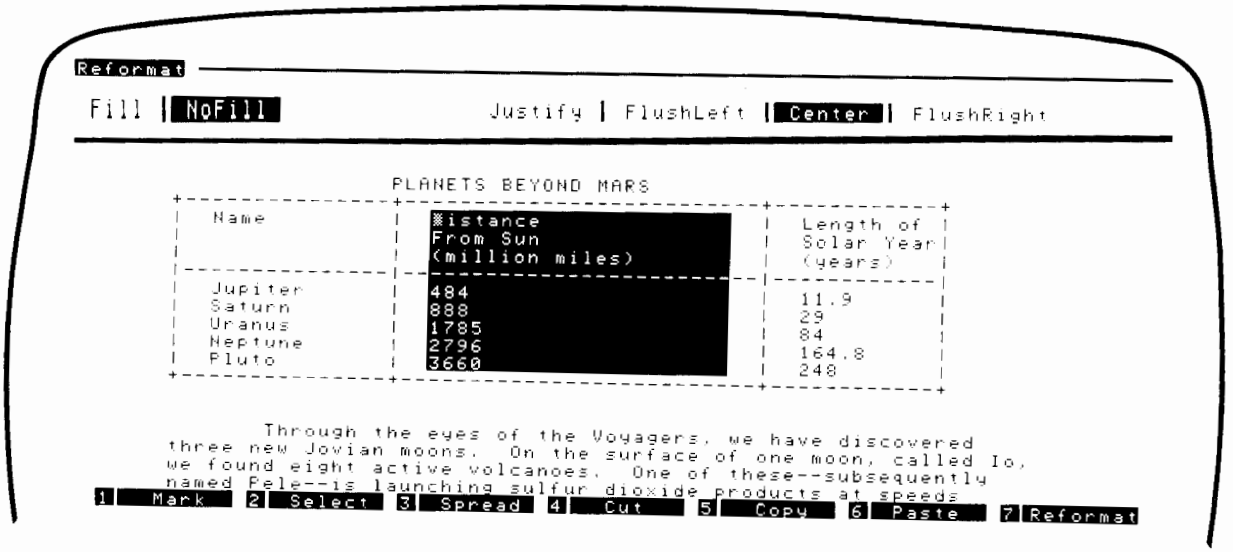
Note that the indentation of the first line is preserved—the Reformat operation doesn't affect any text before or after the selected area.

The time required for reformatting depends on the size of the selected area.

Reformatting Columns of Text

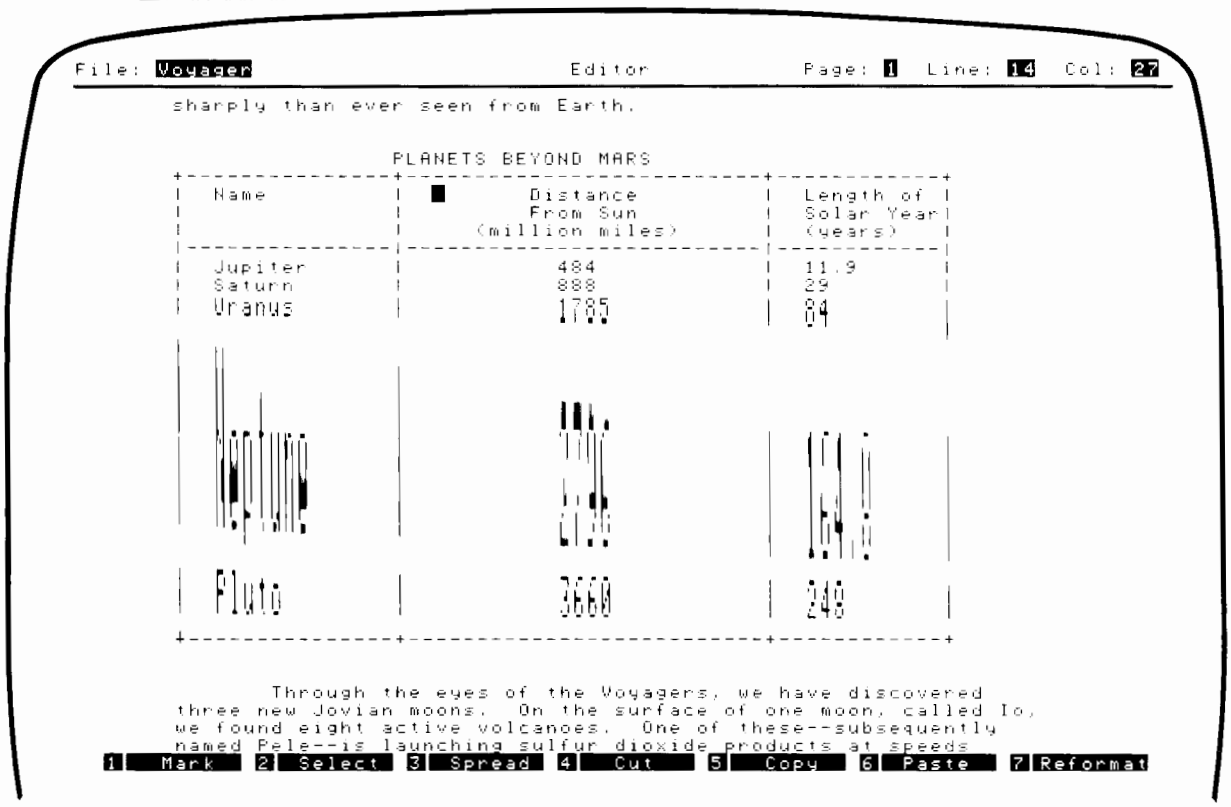
Text selected by columns may also be reformatted in any of eight ways.

Example: Center the heading and entries of the second column of the following table. Set the Editor to column selection, select the area of text, press SHIFT 7 Reformat, and select NoFill and Center in the Reformat property sheet.



The Text and Reformat Settings Are Selected

Then press 7 Reformat:

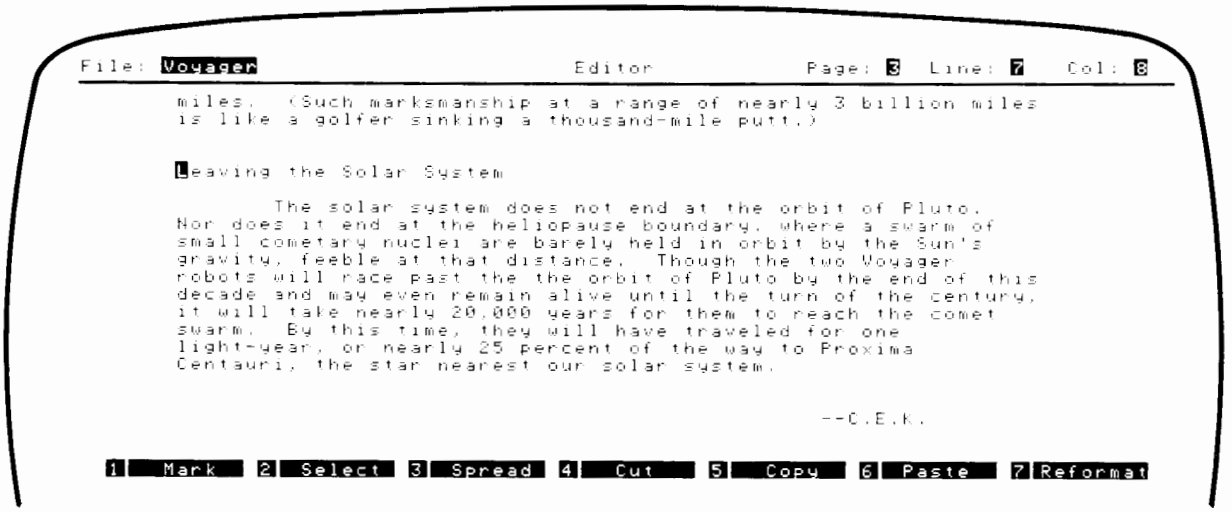


The Column Is Centered

A column selection that is *filled* may cause following text to be bumped down by blank lines, depending on the length of the reformatted column. The Editor preserves the order of words in the column. To reformat only within a selected region, use column selection. To reformat between *margins*, use line selection.

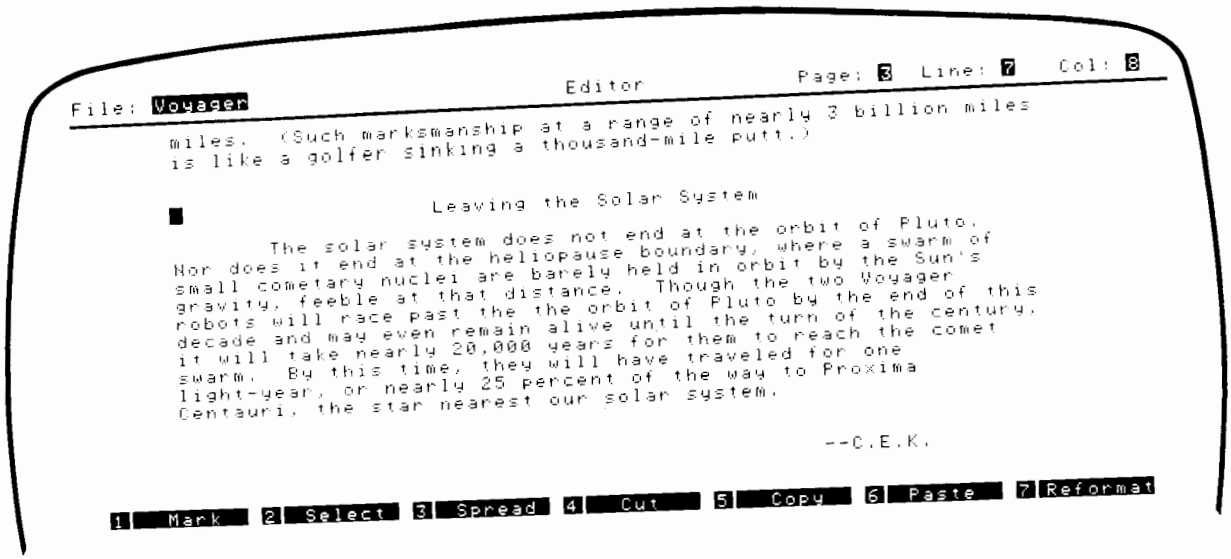
If no text is selected before 7 Reformat is pressed, then text from the cursor up to the beginning of the next left margin will be reformatted in the space between the cursor and the right margin (assuming line selection).

Example: Center the heading of the following paragraph. First set the Select property sheet to Lines, and set the Reformat property sheet to Center. (Fill settings are disregarded in a one-line reformat.) The position the cursor to the left margin of the heading:



Cursor at Left Margin of Paragraph Heading

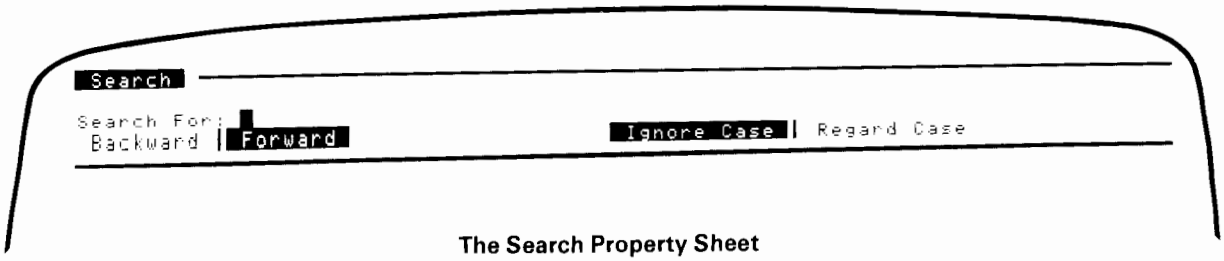
Now press 7 Reformat:



One Line of Text Is Centered Between Margins

Searching for Text

The 1 Search key enables you to search for a string of characters anywhere in a file, forward or backward from the current cursor position.



The Search Property Sheet

To search for a character, word, or phrase:

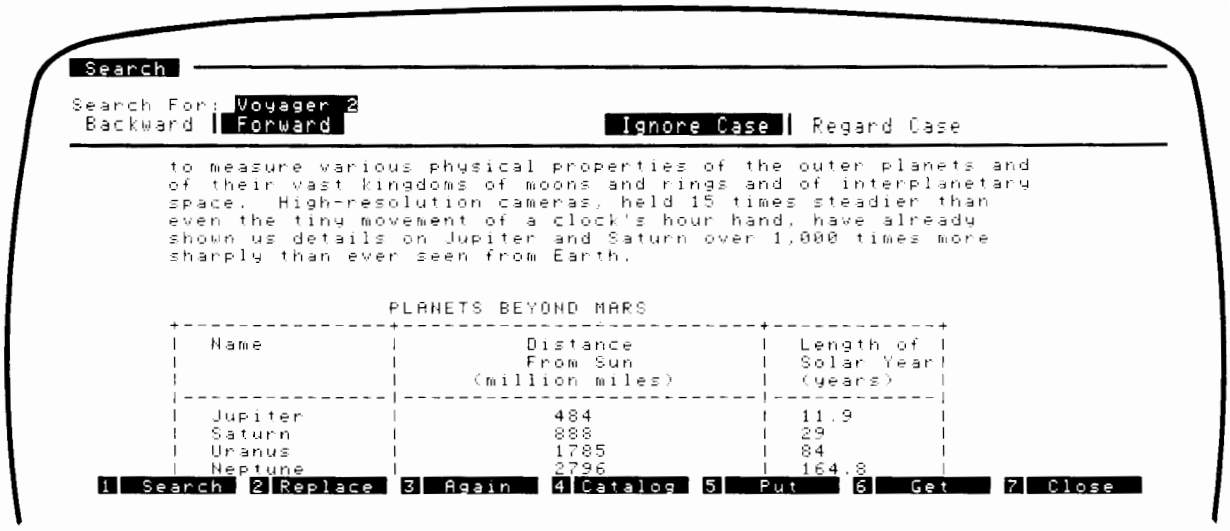
Move the cursor to the position in the file where the search should begin. Use the position bar in the Settings property sheet (SHIFT KEY LABEL) to move the cursor quickly.

Change the Search property sheet to the desired settings. Press SHIFT 1 Search to display the Search property sheet. Specify a search string, 1 to 65 characters in length, and select the direction of search and the case setting.

Press 1 Search . The Search heading will be displayed, and page and line numbers will be updated as the search moves sequentially through the file forward or backward.

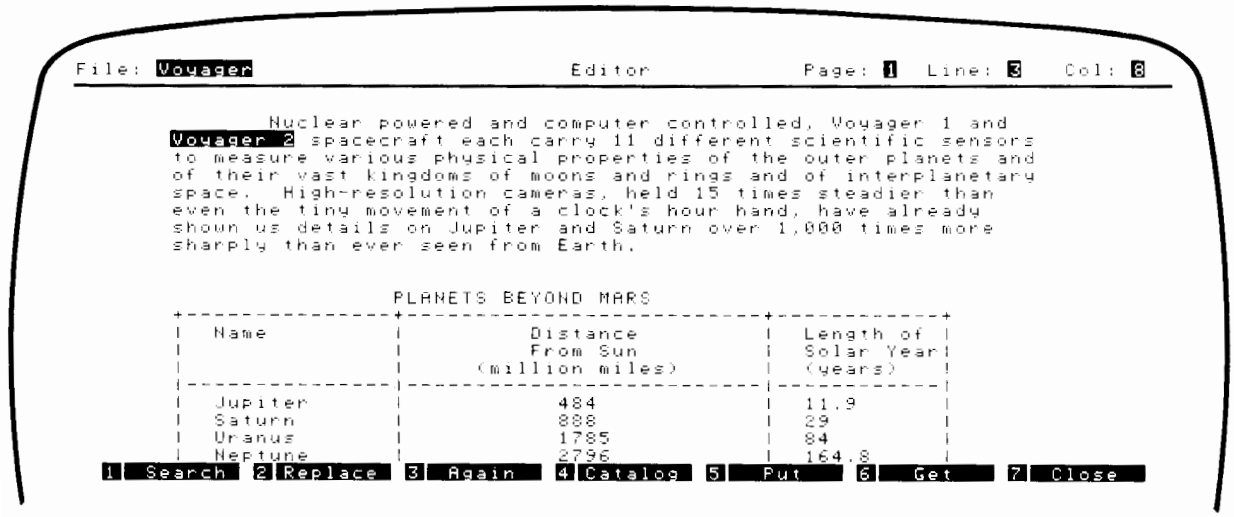
The first two steps may be reversed.

Example. Search for the first occurrence of "Voyager 2" in the file. First move the cursor to line 1, column 1 in the file. Then press (SHIFT) 1 Search and type Voyager 2 in the Search property sheet:



The Search String Contains One Embedded Blank

Afterwards, press 1 Search:



The First Match in the File Is Found

The string in the file will appear highlighted with the cursor positioned at the first character of the string. The initial Editor search settings (Forward and Ignore Case) cause the Editor to search forward from the cursor position and to ignore distinctions between uppercase and lowercase letters. Selecting Regard Case will cause the Editor to skip candidate strings if they do not have the same uppercase and lowercase letters as the specified string. String candidates must have the same leading, embedded, and trailing spaces, if any, as those in the search string.

Note that candidate strings will be considered only if they are contained in *one line* of the file *between margins*. Before a search, set the margins if desired to limit the search to a "vertical window" of the file.

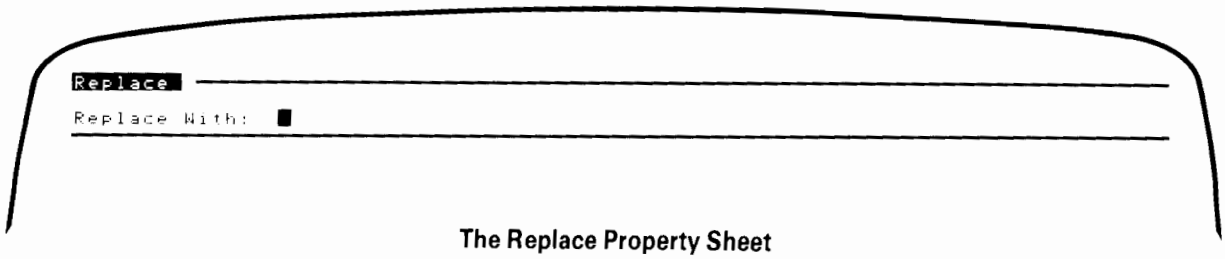
After a match is found, the Editor *selects* the candidate string, which will appear highlighted about one-third of the way down from the top of the display. You can cause the string to be *unselected* by moving the cursor, rolling up or down, or typing any character.

1 Search may be pressed again to cause the search to continue from that point in the file in the same direction. If no match is found, then No Match Found... will be displayed and the cursor will be returned to its original position in the file. You may also cancel a search by pressing the 7 Stop key that becomes available during a search.

The current search string remains set until changed to a new search string in the Search property sheet.

Replacing Text

The 2 Replace key enables you to replace a selected string with a new string.



The Replace Property Sheet

The steps are:

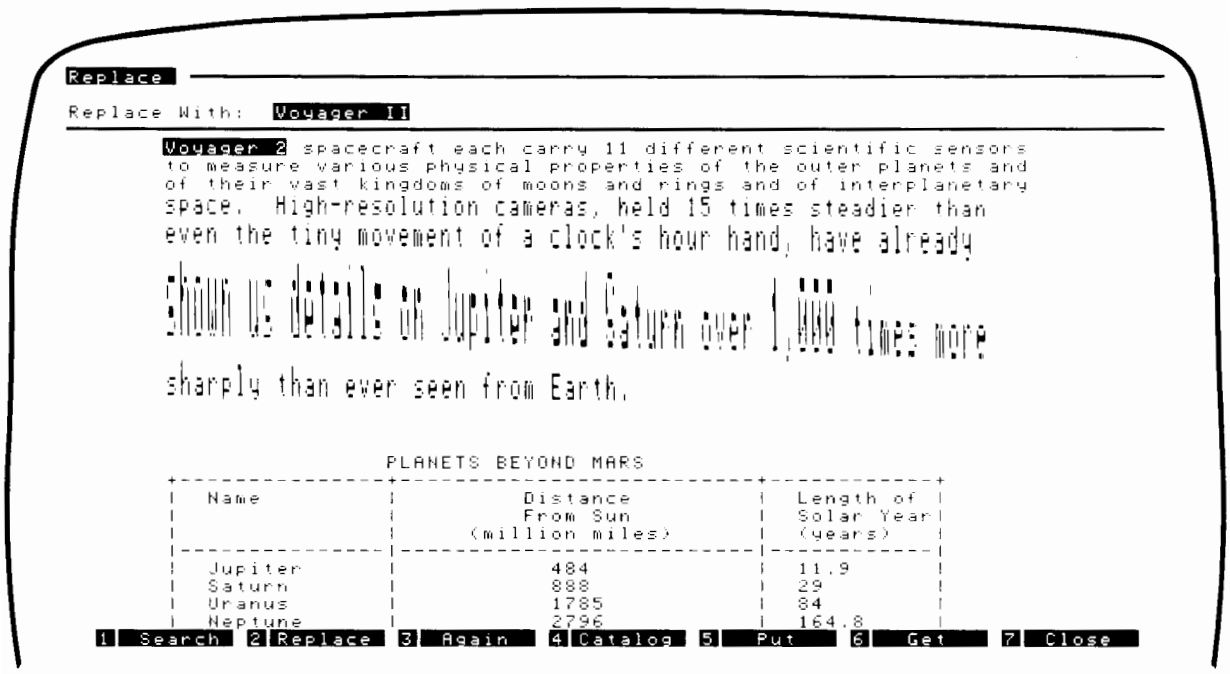
Select the string to be replaced. This may be the string selected from a previous search or a string selected with the 1 Mark and 2 Select keys. The selected string is limited to the length of one line.

Specify the replacement string. Press SHIFT 2 Replace to display the Replace property sheet and type the replacement string in the Replace With: field. The replacement string may consist of zero through 65 characters.

Press the 2 Replace key. The selected text will be replaced by the replacement string. The following text in the line will be closed to the left or pushed to the right, depending on the length of the replacement string.

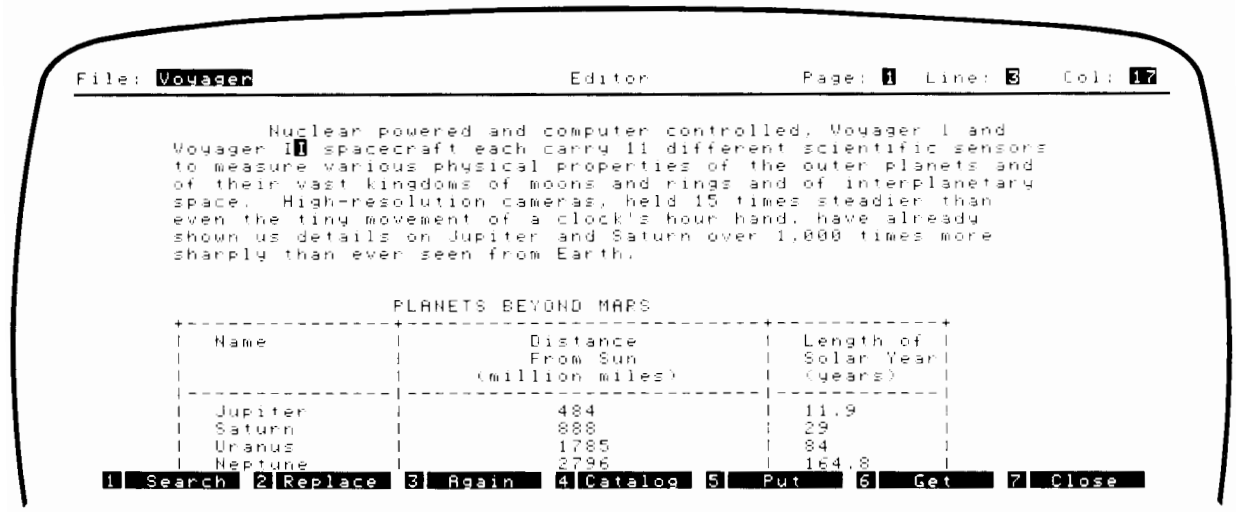
The first two steps may be reversed.

Example: Replace the first occurrence of "Voyager 2" in the file with "Voyager II." Press (SHIFT) 2 **Replace** and type the replacement string:



Any String Less Than 66 Characters May Be Substituted For Another

Then press 2 **Replace**:



Cursor Is Left at the Last Character of the Replacement String

Note also:

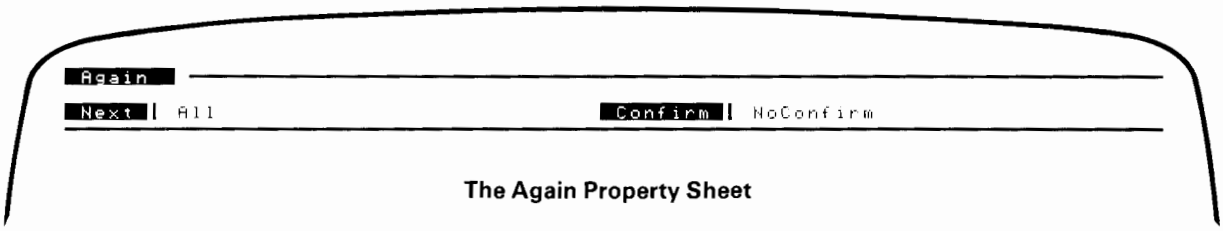
- You can use the Replace property sheet to create *typing aids*. Normally, pressing 2 **Replace** causes the selected text to be replaced by the characters in the Replace With: field. However, if *no* text has been selected, then pressing 2 **Replace** causes the characters in the Replace With: field to be inserted in the file at the cursor location. For example, if Voyager II is typed in the Replace With: field and no text is selected, then pressing 2 **Replace** causes Voyager II to be "typed" in the file.

- A *delete string* operation may be performed by specifying *no* characters in the Replace property sheet (press -LINE with the cursor in the Replace With: field). The selected text will be replaced with *nothing*, in effect, cutting that string from the line.

If adding a replacement string will exceed the width of the display, then Column Too Wide... will be reported and no replacement will occur. Attempting to replace selected text that exceeds one line will cause Select On One Line Only... to be reported, and no replacement will occur.

Search-Plus Operations

The 3 Again key enables *Search-Plus* operations, causing repeated searches for a selected string plus the execution of another operation after a candidate string is found. For example, the 3 Again key enables Search and Replace operations for multiple occurrences of the same string.



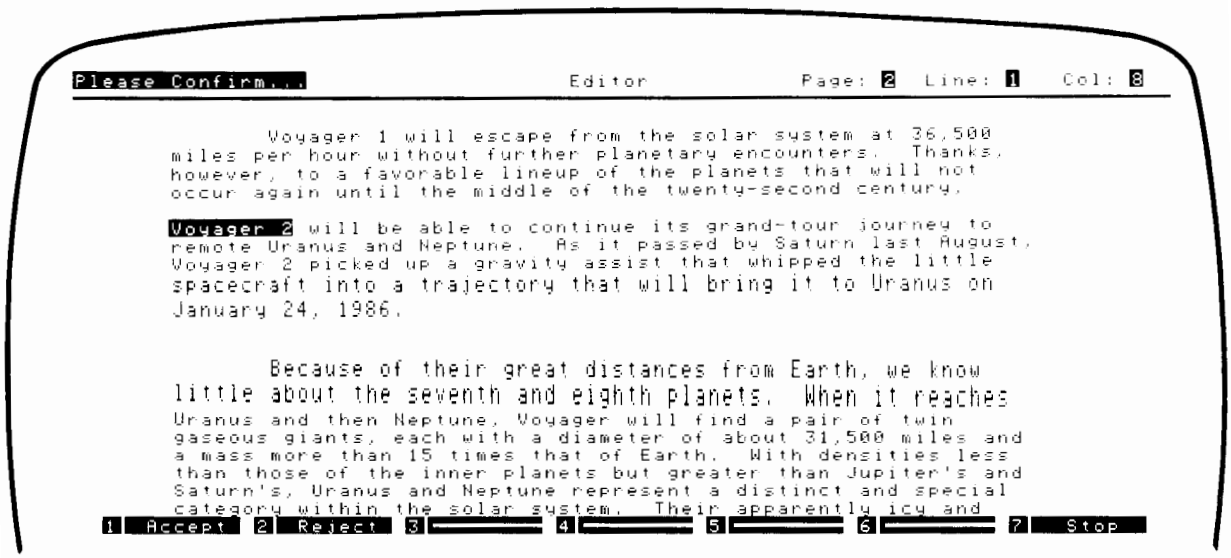
The Again Property Sheet

Initially, the Editor is set to search for the *next* occurrence of a specified string and to wait for you to *confirm* the selection before doing anything to the candidate string.

To perform a Search and Replace operation:

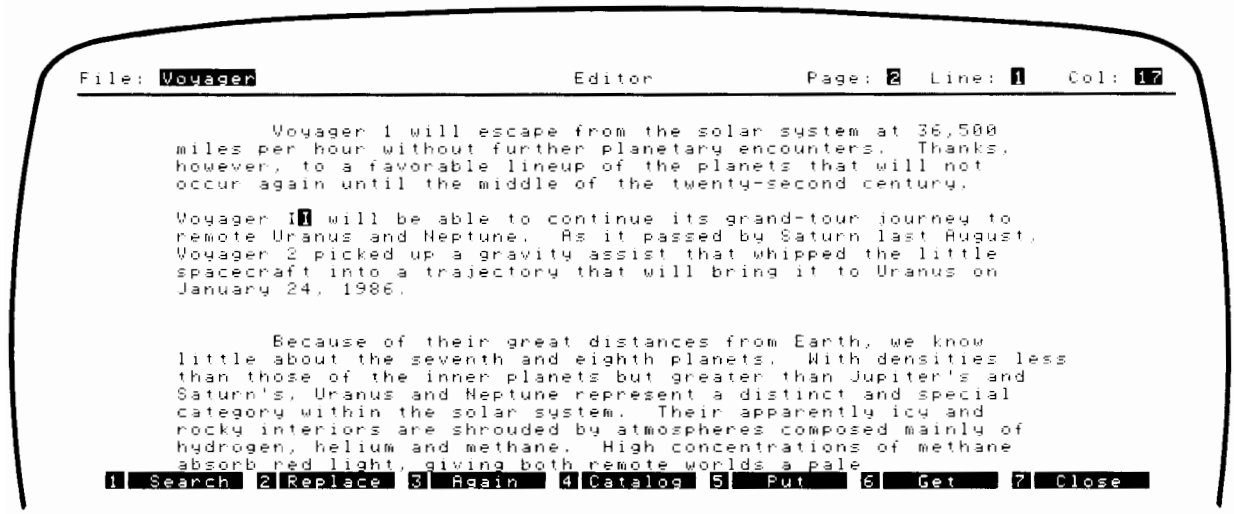
1. Move the cursor to the desired position in the file.
2. Set the search string and the direction of search in the Search property sheet. Then press 1 Search to start the Search operation.
3. When a candidate string is found and selected, replace it by typing the replacement string in the Replace property sheet and by pressing 2 Replace.
4. Press SHIFT 3 Again to select from the Again property sheet settings.
5. Press 3 Again to repeat the Search and Replace operation.

Example: Search for the next occurrence of "Voyager 2" in the file and replace it with "Voyager II." You could press 1 Search to find the string and could then press 2 Replace to replace the string—the Search and Replace property sheets have been set to those values in the preceding examples. However, the Editor has *already* searched for Voyager 2 once and remembers what it did to the selection—it replaced the selection with Voyager II. To repeat the same Search and Replace operation, press SHIFT 3 Again, see that the Next and Confirm options are selected, and press 3 Again:



When the Editor Finds a Candidate, It Waits for Your Confirmation

Press the 1 **Accept** key to accept the replacement:



The Candidate is Replaced with `Voyager II`

You could instead press 2 **Reject** or 7 **Stop** to reject the replacement of a candidate string.

You can replace all occurrences of "`Voyager 2`" with "`Voyager II`" in the file and either confirm each replacement or have them done automatically, according to the settings of the Again property sheet:

`Next`	Causes the Editor to perform a Search-Plus operation for the next occurrence only.
`All`	Causes the Editor to continue the Search-Plus operation until 7 **Stop** is pressed or until the end or the beginning of the file is reached.
`Confirm`	Causes the Editor to prompt for a response after finding a candidate string.
`NoConfirm`	Causes the Editor to operate on the selection as soon as finding a candidate.

After a multiple Search-Plus operation has been stopped by 7 Stop or by the end or beginning of the file, the Editor reports the number of candidate strings found during the entire Search-Plus operation. For example, `Repeated 2 Times...` means that two candidates were found.

Note that you can use virtually any single-keystroke operation as the second part of a Search-Plus operation, including:

2 Replace	(-LINE)
5 Put	(SHIFT) (CLEAR)
6 Get	(SHIFT) (-CHAR)
1 Mark	(↑), (SHIFT) (↖), (↓), (←), (→)
2 Select	(ROLL▼), (SHIFT) (ROLL▲)
3 Spread	(BACK SPACE), (SHIFT) (BACK SPACE)
4 Cut	(CONT), (SHIFT) (CONT)
5 Copy	(END LINE), (SHIFT) (END LINE)
6 Paste	Any character key.
7 Reformat	

In fact, any keystroke that "unselects" the text found in a Search operation can be used in a Search-Plus operation.

To summarize, set the search string and press 1 Search. When a candidate string is found, execute another operation, for example, a Put operation. After the second operation is performed, the Editor remembers the Search-Plus sequence. Press 3 Again to search for the next occurrence of a candidate string and to perform the same keystroke operation.

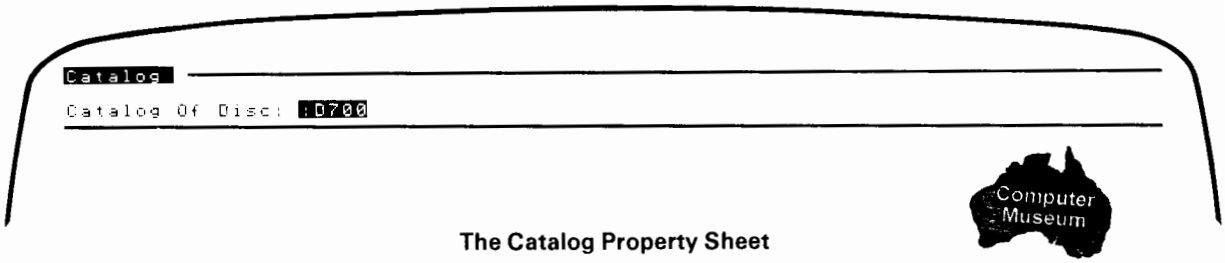
You can also use the 3 Again key to search repeatedly for occurrences of a string after having found just one occurrence.

Example: Find all occurrences of the string "`Jupiter`" in the file. First move the cursor to the beginning of the file. Type `Jupiter` in the Search property sheet, and press 1 Search to find the first occurrence. Then set the Again property sheet to `All` and `NoConfirm`. Afterwards, press 3 Again.

The Editor will find each occurrence of "`Jupiter`" and will pause momentarily with the string highlighted. To stop at a particular occurrence, press the 7 Stop key. That portion of the file will be left in the information window, and you can now continue editing.

Cataloging Discs

The 4 Catalog key enables you to view the catalog of a selected disc.



The Catalog Property Sheet

The Catalog property sheet sets the disc that will be accessed when the 4 Catalog key is pressed. Initially, the Catalog property sheet displays the drive identifier of the currently selected disc drive.

Specifying either a *drive identifier* or a *disc label* in the Catalog property sheet causes the Editor to access that disc when 4 Catalog is pressed. For example, to list the catalog entries of the disc labeled MyDisc in drive D701, press (SHIFT) 4 Catalog to display the Catalog property sheet, type .Mydisc, :D701, or :d701 in the Catalog Of Disc: field, and then press the unshifted 4 Catalog key.

The Editor displays the Catalog heading, the drive identifier, the disc label, and a double column of catalog entries.

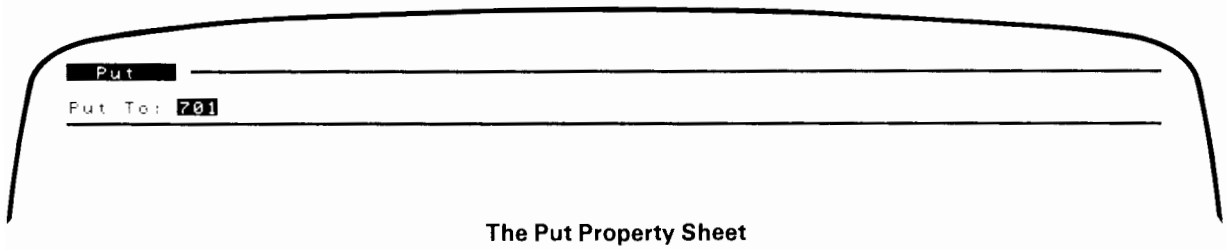
During a Catalog operation:

- The 7 Stop key stops the listing and returns text and cursor to the information window.
- The 2 Pause key pauses the listing.
- The 1 Continue key continues the listing.

The Editor will automatically pause if the information window fills with file entries.

Outputting Files

The 5 Put key enables you to output all or part of a file to one of three destinations: to the printer, to the display screen, or to *another text file*.



The Put Property Sheet

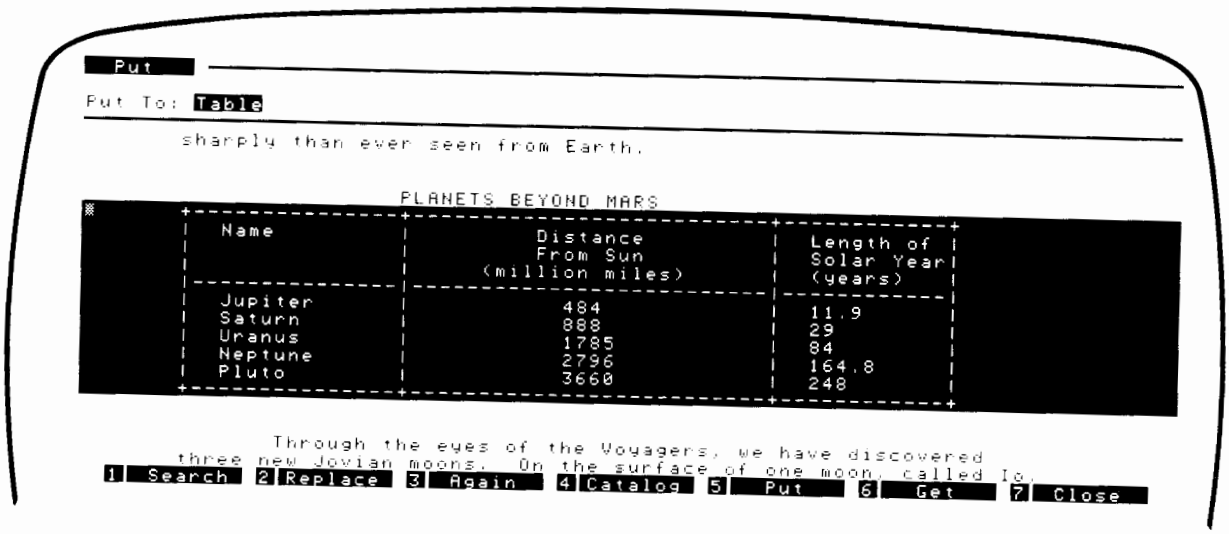
The output destination is set by the Put To: field:

- For output to the system printer, enter the device address of the printer (for example, 701).
- For output to the display, enter a 2 for continuous scrolling or a 1 for a pause after each 13 or 21 lines of the file (depending on a display size of 16 or 24 lines, respectively).
- For output to a disc text file, enter a file name and, optionally, a drive identifier or disc label.

Initially, the Editor is set to output to the current PRINTER IS device.

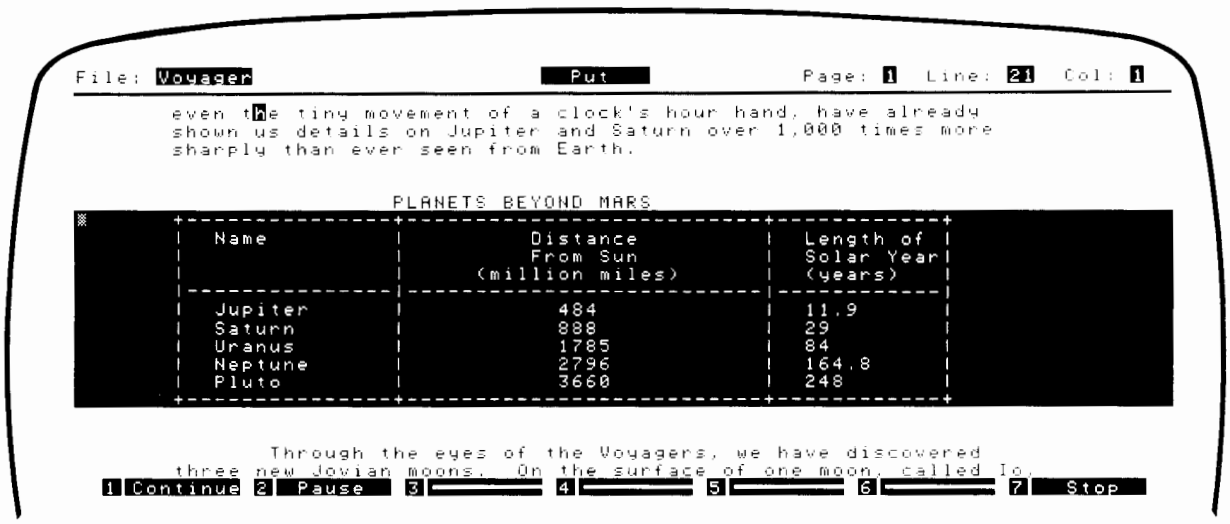
Pressing 5 Put alone causes the Editor to output from the beginning of the file until the end of file is reached or until you press the 2 Pause or 7 Stop key. If a *block* of text has been selected, then the Editor will output only that block of text. Page and line numbers will be updated as the output continues.

Example: Output the following table to a new text file, Table, on the disc in the currently selected disc drive. First select the text of the table by lines. The press (SHIFT) 5 Put and type Table in the Put To: field:



Ready to Write the Selected Text to File Table

Then press 5 Put :



You May Pause, Continue, or Stop a Put Operation

Check the disc catalog afterwards to verify the existence of the Table file. Outputting a file to a disc is useful for creating backup copies of opened files and for saving frequently used pieces of text, such as "boilerplate" forms. Later, an ouptut file may be read into another opened file with the 6 Get key.

There are several things to keep in mind while using the 5 Put key:

- The output file may be created on either the currently selected disc or the disc specified in the Put To: field. For example, specifying Table:d701 will create the output file on the disc in drive D701.
- An output file will be created as the *last* file on disc. To avoid limiting the size of the currently opened file, output to another disc.
- The output file (for example, Table) is created as a *text file* (256-byte records) and not as an *Editor file* (1683-byte records). *Text files may not be directly edited*. You must use the 6 Get key to access existing text files.
- *Leading spaces* should not be used in the PUT To: field. For example, if you enter *space* 1 and press 5 Put , the Editor will write to a text file named " 1" on the currently selected disc rather than to the display.
- A file name in the Put property sheet causes the Editor to purge any file of the same name before creating the new output file. Use the 4 Catalog key to check catalog entries of the output disc for duplicate names before writing to that disc.

A disc output operation causes the disc to be packed before the file is actually created and stored on disc.

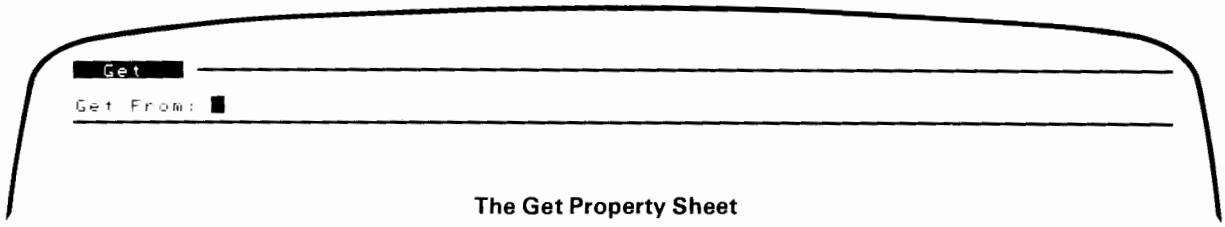
CAUTION

If you are using a single disc drive, then do *not* attempt to output to a disc other than the disc on which the currently opened file resides. Such action may cause the Editor to abandon the currently opened file.

If you are using an HP-86 with *no printer connected* then do *not* use 701 in the Put To: field. Such action will cause the computer to "freeze" and may require you to reset or switch off the computer.

Reading from Files

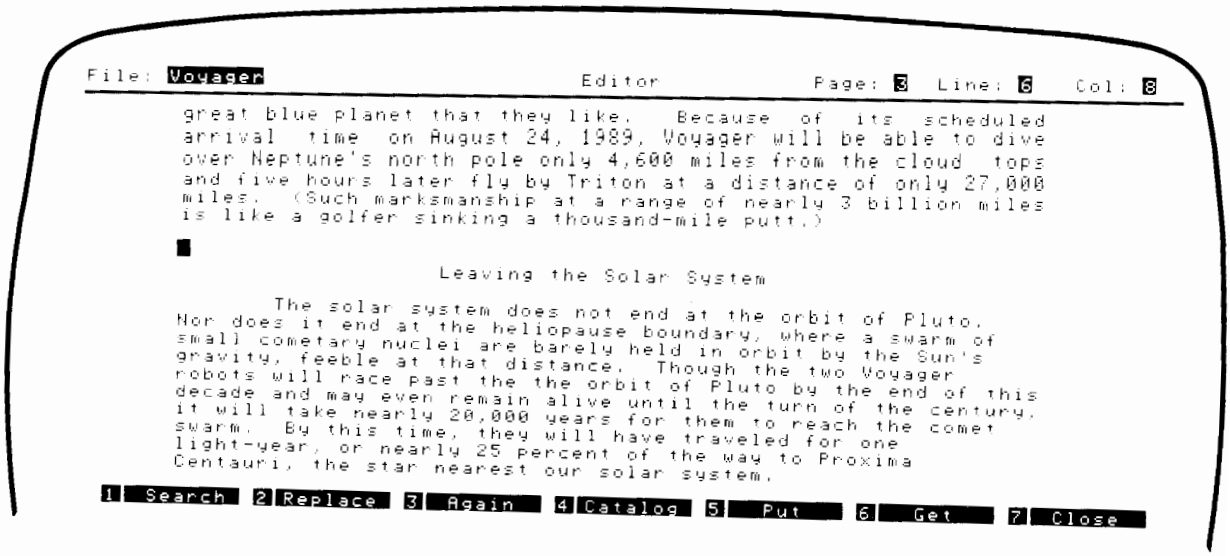
The 6 Get key enables you to read, or copy, a text or Editor file into the opened file.



The Get Property Sheet

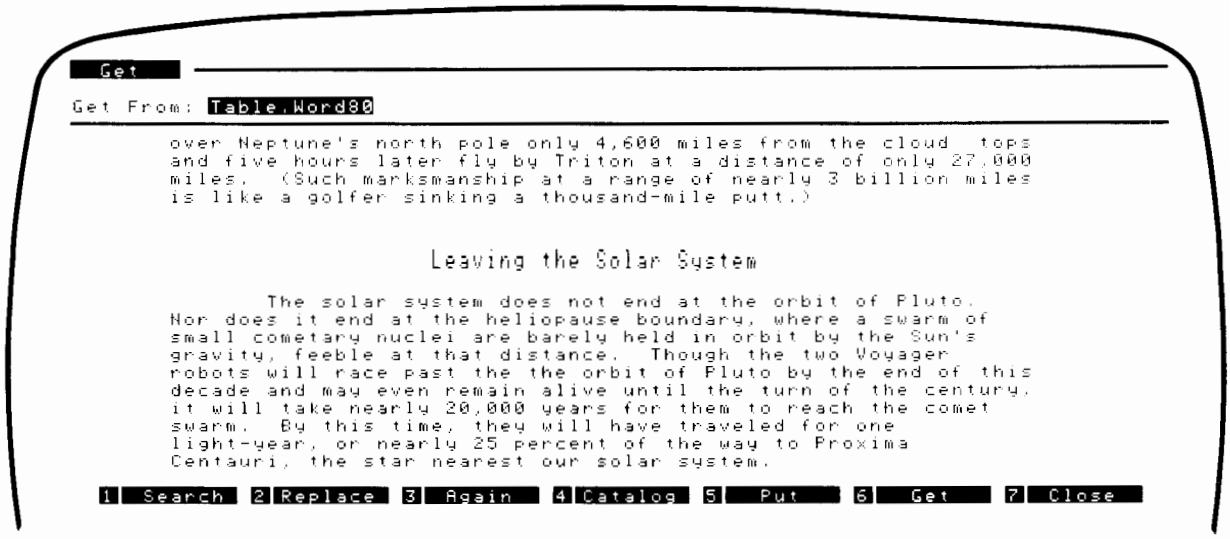
The Get property sheet selects the file that will be read when the 6 Get key is pressed. A file name alone causes the currently selected disc drive to be accessed. Include a drive identifier or disc label after the file name to select a file from another disc.

Example: Read the Table file from the WORD/80 disc into the opened Voyager file and insert the text between the following paragraphs. First position the cursor to the left margin where the insertion is to occur:



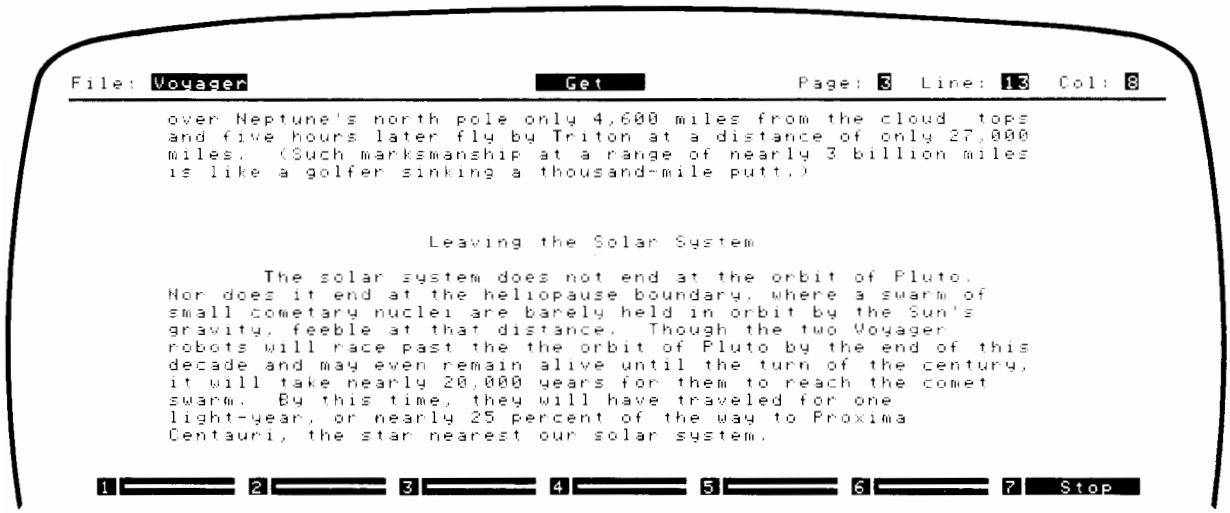
The Text From the File Will Be Inserted Beginning From the Cursor

Then press SHIFT 6 **Get** and specify the disc file in the Get From: field:



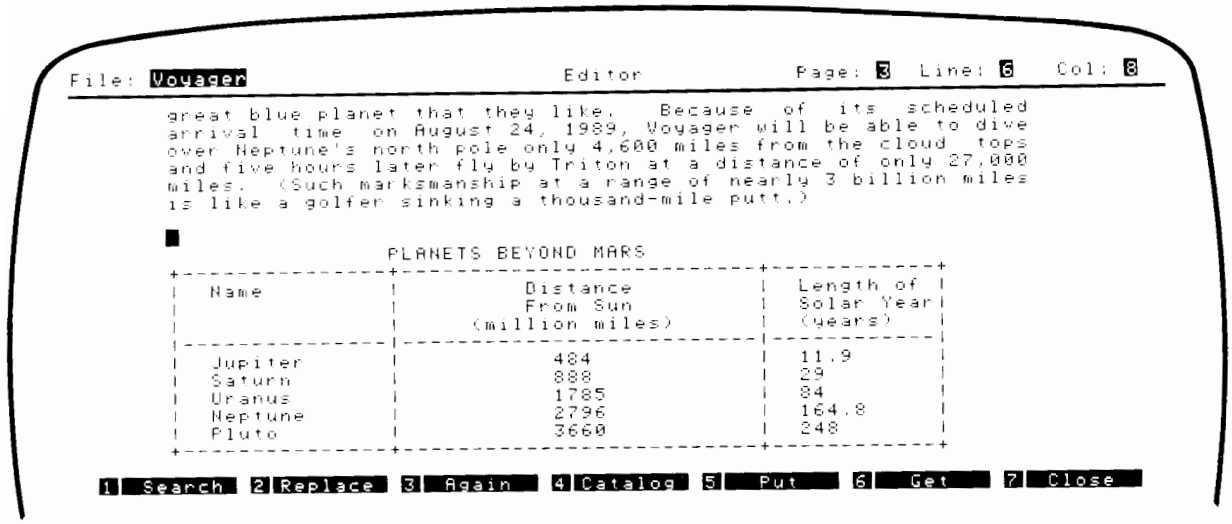
Typing a File Name and Disc Label in the Get Property Sheet

Finally, press 6 **Get**:



The Get Title/Feedback and Menu Windows Appear

During a Get operation, page and line numbers are updated to indicate where in the opened file the lines are being added. Press 7 **Stop** to stop a Get operation at the indicated line number of the opened file.



The Table File Has Been Read Into the Opened File

The lines of the text or Editor file from line 1 are inserted into the opened file beginning at the cursor line. All lines from the text or Editor file appear flushed left against column 1 of the opened file, with leading blanks preserved.

CAUTION

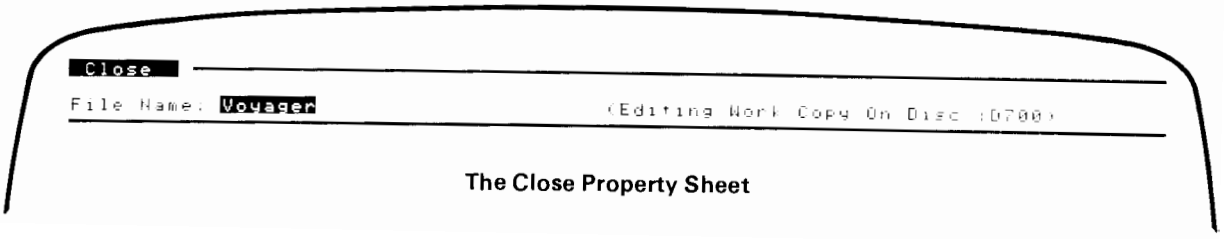
If you are using a single disc drive, then do *not* attempt to read from a disc other than the disc on which the currently opened file resides. Such action may cause the Editor to abandon the currently opened file.

The Get file may be any file created by the Editor, by the Formatter, or by the HP-83/85 Text Editing Pac. In fact, *any* data file consisting of sequentially recorded character strings can be read into an opened file. Note that lines in text files that exceed 80 characters in width will be truncated to 80 characters when read. The HP-83/85 Text Editing Pac can create files with lines as long as 96 characters.

Note that the 6 Get key may enable you to read a WORD/80 file that cannot be accessed with the 1 Open key, as may be the case if the Editor has been accidentally reset during an earlier editing session.

Closing Files

The 7 Close key is used to update the original Editor file and to prepare the Editor to open another Editor file.



The Close Property Sheet

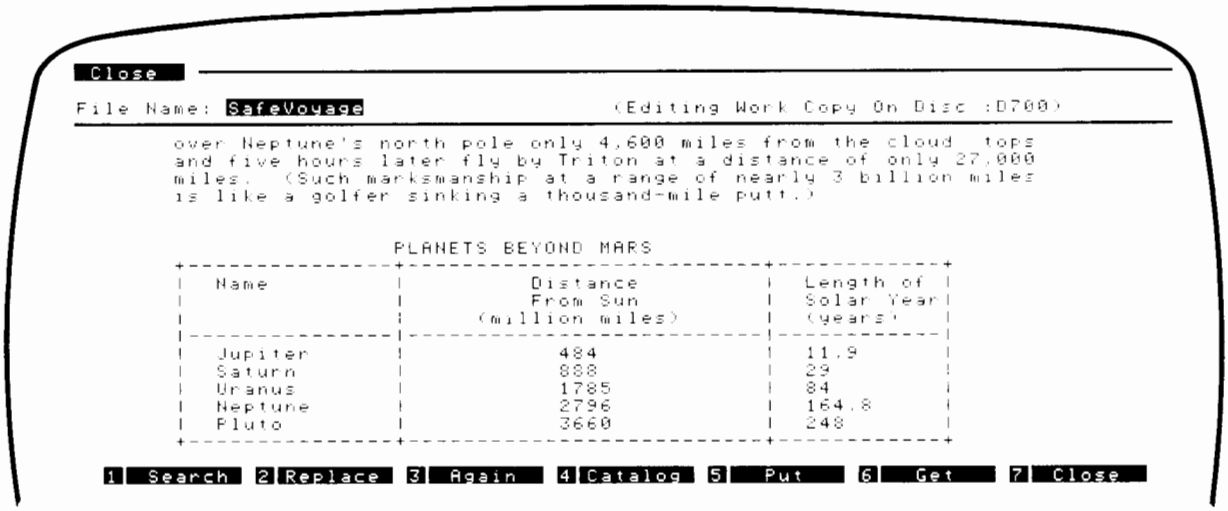
The Close property sheet shows the file name of the currently opened file. The drive identifier or disc label will also be displayed in the File Name: field if either was specified when the file was opened.

The Close property sheet also indicates whether you are editing the original file or a work copy file. If a work copy file, the drive identifier or disc label will be displayed.

When you press 7 Close, the file will be updated on the original disc unless the file is too large for the original disc; if so, the Editor will close the file on the work copy disc.

If you are editing a work copy and wish to leave the original file *intact* with no changes made to it, then enter a new file name in the Close property sheet—with or without a drive identifier or disc label—before pressing 7 Close. The edited version of the file will be saved under the specified file name on the currently selected disc or on the specified disc.

Example: Save both the original Voyager file and the work copy file renamed to SafeVoyage. First press (SHIFT) 7 Close to display the Close property sheet. Then type the new file name for the work copy file:



To Save the Work Copy as SafeVoyage on the Disc in Drive D700

Then press 7 Close. The Editor will report Closing File..., and both original and work copy files will be saved on the selected disc or discs. If you had *deleted* the File Name: field in the Close property sheet ((-LINE)), the work copy would have been saved under *Voyager on the disc indicated in the Close property sheet.

Be sure that one or both discs are inserted in the drives before pressing 7 Close; otherwise, the Editor will report a disc error and will wait for you to press 1 Continue before trying again to close the file.

CAUTION

If you are using a single disc drive, then do *not* attempt to close to any disc except the disc on which the currently opened file resides. Such action may cause the Editor to abandon the currently opened file.

It's a good idea to update the original file occasionally during a lengthy editing session. Set a mark in the file by pressing 1 Mark, press 7 Close to update the file, and afterwards press 1 Open to continue editing. The Editor will reopen the file at the marked location. All settings in effect when the file is closed will take effect when the file is reopened.

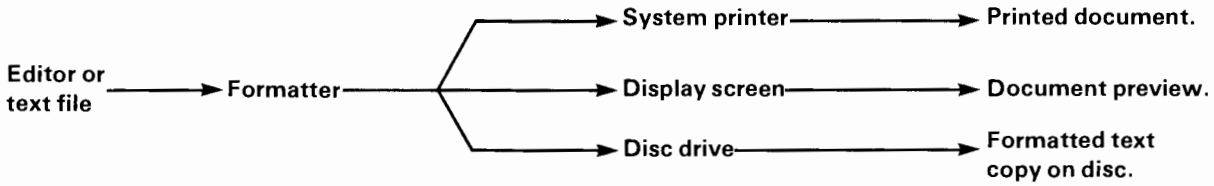
Always use the 7 Close key to end an editing session.

Section 3

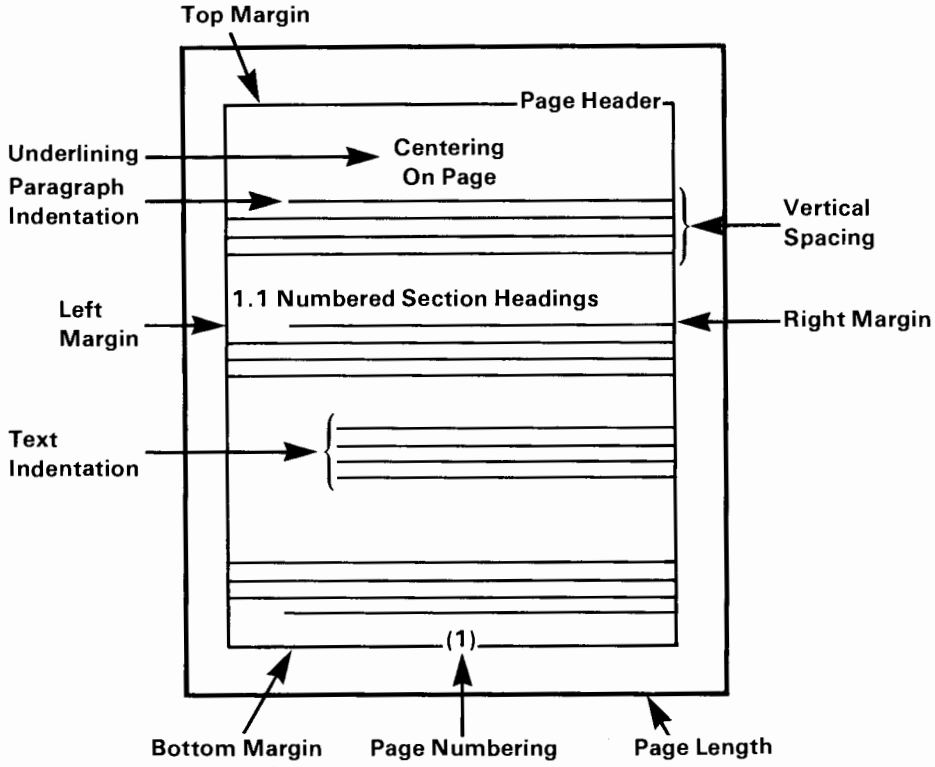
Text Formatting Operations

Introduction

After the Editor is exited, the Formatter is used to output Editor and text files to one of three destinations:



The reason for using the Formatter is to enhance the finished appearance of the document. A typical formatted page consists of:



Once the program is loaded and running, the Formatter enables you to choose from various output, format, and page layout options. Once the printing of the WORD/80 file begins, the Formatter controls the system until the entire document has been output.

Using the Formatter

Text formatting is accomplished in two ways:

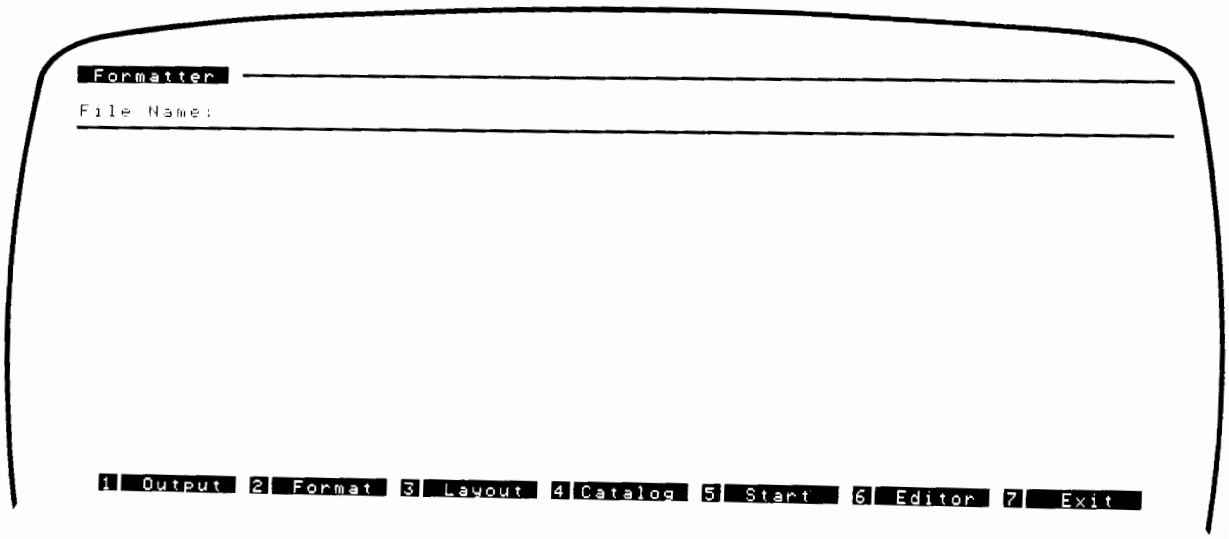
- By *embedding* Formatter commands in the document while still editing the file. The embedded commands will be executed as the Formatter prints the file.
- By selecting formatting options with the Formatter special function keys. When the 5 Start key is pressed, the document will be printed according to the selected options.

After finishing an editing session, press the 7 Close key to close the file on disc, and press the 6 Formatr key to chain to the Formatter program. The WORD/80 disc may be inserted in any disc drive when the 6 Formatr key is pressed.

Optionally, you may start the Formatter after exiting the Editor:

- Type `load "Formatter.Word80"` (END LINE).
- Press (RUN).

After the welcome message, the following display appears:



The Initial Formatter Display

At this point, you may replace the WORD/80 disc with another disc.

The Formatter operates on one WORD/80 file at a time, called the *source file*. The source file name, and optionally a drive identifier or disc label, is entered in the `File Name:` field. For example, entering `MemoToTom` selects the `MemoToTom` file from the currently selected drive, and entering `MemoToSue:d701` selects the `MemoToSue` file from drive `D701`.

Text Formatting With the Special Function Keys

Seven special function keys control the operation of the Formatter:

1 Output * Sets the destination of the formatted output.

2 Format * Sets formatting or no formatting, vertical spacing, fill and justify modes, and display size (for output to the information window).

3 Layout * Sets the left, right, top, and bottom margins, and page length for the printer.

4 Catalog * Displays the catalog entries of the currently selected disc or of the specified disc.

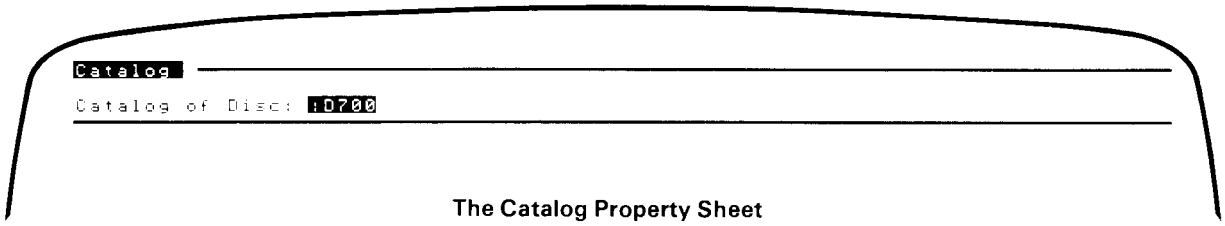
5 Start Starts the printing of the source file. The source file must be on the disc in the currently selected drive or on the disc specified in the File Name: field.

6 Editor Causes the Formatter to chain to the Editor program. The computer will first search the currently selected disc drive and then, if unsuccessful, search for the disc labeled Word80.

7 Exit Causes the Formatter to stop running, and returns control of the keyboard and display to the HP-86/87 operating system. The Formatter program remains in system memory; press (CONT) to restart the Formatter with its current settings unchanged.

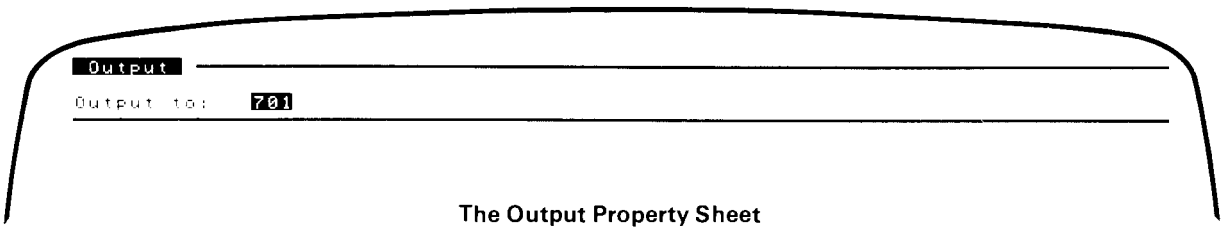
An asterisk (*) indicates the special function key has a corresponding property sheet used to select Formatter options.

Example: Press **4 Catalog** alone to display the catalog of the currently selected disc. Press (SHIFT) **4 Catalog** to move the cursor to the Catalog property sheet:



The Catalog Property Sheet

Change the Catalog property sheet to change the way the **4 Catalog** key works. The cursor control keys operate the same for the Formatter as for the Editor. Other property sheets are displayed by pressing the shifted (or unshifted) **1 Output**, **2 Format**, and **3 Layout** keys:



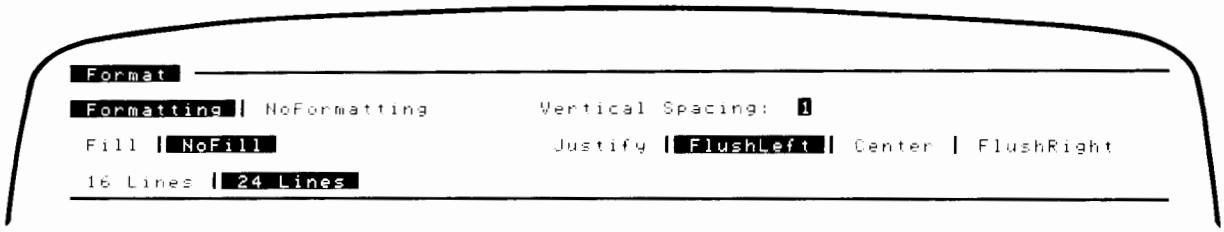
The Output Property Sheet

When the Formatter is first run, the Output property sheet will display the current PRINTER IS address. A 1 or 2 in the Output to: field causes output to be directed to the computer display. A 1 causes the Formatter to pause after filling one information window; a 2 causes continuous scrolling.

If the Output to: field is filled with an integer greater than 2 (with no leading or embedded blanks), the Formatter will assume a printer with that device address has been selected. Throughout this section, examples are shown printed on an HP 82905B Printer, whose output address has been set to 701.

Other entries in the Output to: field will cause the Formatter to pack the disc and create a *text* file by that name when 5 Start is pressed. A text file is a 256-bytes/record DATA file that consists of sequentially recorded strings of characters. A text file may not be accessed directly with the Editor. To edit a file created by the Formatter, open or create another Editor file using the Editor 1 Open or 2 Create key; then read the text file into the opened file using the 6 Get key. Note that the Formatter may format both Editor and text files.

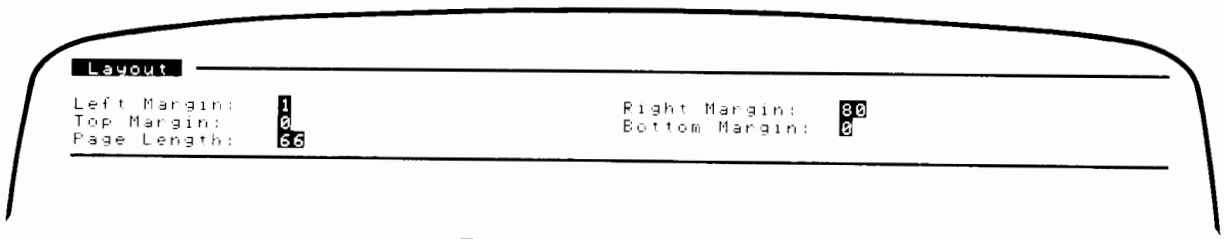
The Formatter is initially set to format the source file according to the settings in the Format property sheet:



The Format Property Sheet

To print a file *as is*, select the NoFormatting option with the ↵ key. The NoFormatting option causes the Formatter to ignore all other property sheet settings and to *print* embedded commands in the source file rather than to execute the embedded commands.

The Layout property sheet controls margin settings and printer page length:



The Layout Property Sheet

To leave a Formatter property sheet, press the same special function key a second time, press another special function key, or press a *shifted* special function key.

The Formatter is initially set to print as follows:

Special Function Key	Property Sheet Options	Default Setting	Equivalent Embedded Command
1 Output	Output to:	Current printer address (for example, 701)	———
2 Format	Formatting | NoFormatting	Formatting	———
	Vertical Spacing	1	.VS 1
	Fill | NoFill	NoFill	.NF
	Justify | FlushLeft | Center | FlushRight	FlushLeft	.JL
	16 Lines | 24 Lines	24 Lines (for output to the display)	———
3 Layout	Left Margin:	1	.LM 1
	Right Margin:	80	.RM 80
	Top Margin:	0	.TM 0
	Bottom Margin:	0	.BM 0
	Page Length:	66	.PL 66

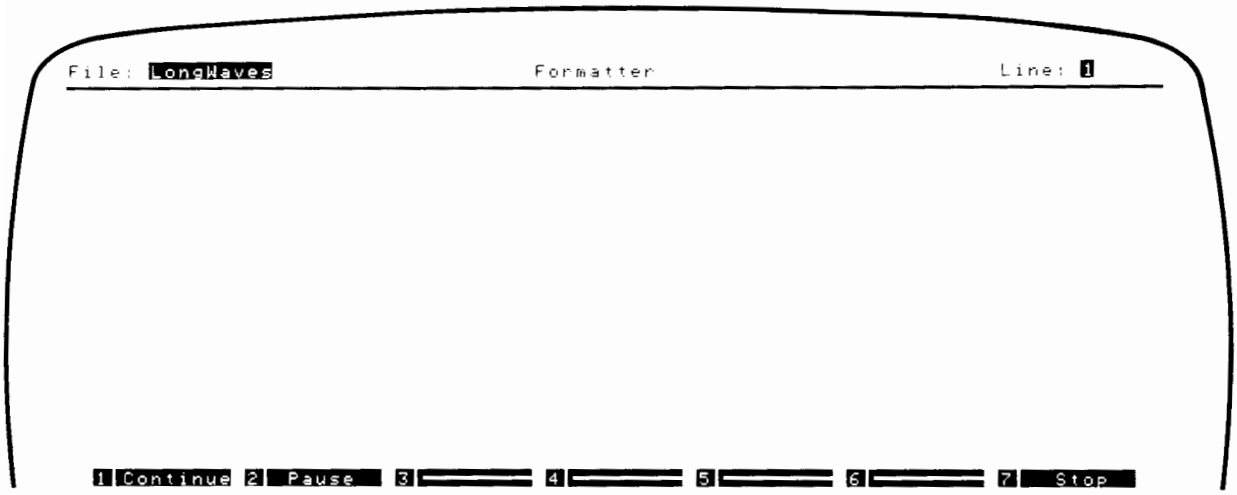
To select new settings, use the editing and typewriter keys to change the property sheets.

Example: Set the Formatter to print a document filled and left-justified. Press 2 Format to display the Format property sheet, and select the Fill and FlushLeft options.

Example: Set the Formatter to print a document with the right margin at column 72. Press 3 Layout to display the Layout property sheet, press CONT once to tab the cursor to the Right Margin: field, and type 72.

Pressing 5 Start causes the Formatter to access the specified source file and begin its work.

Example:



Indicates the Formatter Is Processing Line 1 of the LONGWAVES File From the Currently Selected Disc.

Before outputting to the system printer, be certain that the top of form is set so that page breaks occur correctly. Note that the Formatter will pack a disc before outputting a file to that disc (but not before reading from a source file).

Line numbers of the source file, beginning from line 1, are displayed as the lines are sequentially processed.

The following special function keys are available during a formatting operation:

1 Continue To continue the formatting after 2 Pause has been pressed or after the Formatter has output one display screen of formatted text with the Output to: field set to 1.

2 Pause To pause the formatting so that you can change printer ribbon, examine the output, etc.

7 Stop To terminate the formatting and return to the initial Formatter display.

The rest of the keyboard will be disabled during a formatting operation, except for the SHIFT RESET keystroke. Pressing SHIFT RESET twice in succession resets the computer.

CAUTION

Do not reset the computer except in an extreme situation. A reset clears display memory, terminates the Formatter program, and may cause an opened output file to become inaccessible to the Formatter *and* the Editor. (A reset has no effect on the source file.)

An initial Formatter setting (for example, the right margin setting) remains in effect for the duration of the formatting or until an embedded command in the source file is executed to change the setting.

When the end of file is reached or the **7 Stop** key is pressed, the Formatter closes the source file and returns control to the keyboard so that you can select another source file or chain to the Editor. Formatter property sheet settings are remembered until the Formatter is exited and the (RUN) key is pressed, or a LOAD or CHAIN command is executed.

Text Formatting With Embedded Commands

An *embedded command* is a Formatter instruction that is typed (that is, embedded) right in the source Editor file. When the file is printed, the command itself is not printed but is used to control the printing of the text that follows.

Example: The Underline command causes subsequent words to be underlined. If you type the following in your source file—

```
.UN
Please reply at your earliest convenience.
```

—then the .UN command will cause the text to be printed as—

Please reply at your earliest convenience.

Embedded commands consist of:

- The *command character*, initially a period (.). More than one embedded command may appear in the same line of the source file, but the control character of the first embedded command *must be typed in column 1*.
- The two-letter name for the command, such as UN, typed in lowercase or uppercase letters after the control character. Spaces are not allowed anywhere among the first three characters.
- Text or numbers that may be supplied for the command.

Embedded commands take effect as soon as executed; most commands stay in effect until canceled or replaced by a subsequent command. For example, the Underline command causes subsequent text to be underlined until a Normal Printing (.NO) command is executed.

Embedded commands are often used in combination, one after another.

Example: The Justify Right command causes lines to be printed flush against the right margin. The Odd-Page Header command causes text to be output at the top of odd-numbered pages. Together, the two commands cause odd-numbered pages to be printed with right-justified headings:

```
.JR
.OH "--A Plan for Distribution--"
```

Printed at the top of odd-numbered pages as:

```
                                        --A Plan for Distribution--
```

Furthermore, the Justify Right command is dependent on the location of the right margin, which may be set by the Right Margin command, and the Odd-Page Header command is dependent on the location of the top margin, which may be set by the Top Margin command.

Formatter Command Overview

The following is an overview of Formatter embedded commands, organized by function:

Page Formatting:

.PL	Page Length	Use these at the beginning of the source file to set the page layout for the entire document.
.TM	Top Margin	
.LM	Left Margin	
.RM	Right Margin	
.BM	Bottom Margin	
.OH	Odd-Page Header	Precede these with Justify Left, Justify Right, or Justify Center commands for positioning on the page.
.EH	Even-Page Header	
.OF	Odd-Page Footer	
.EF	Even-Page Footer	
.BP	Begin Page	Use to cause a page break at a particular point in the document.
.TP	Test Page	

Paragraph Formatting:

.PP	Paragraph	Four paragraph formats are available. The .IP and .QP commands cause the entire paragraph to be indented relative to the left margin or to the left and right margins.
.LP	Left Paragraph	
.IP	Indented Paragraph	
.QP	Quoted Paragraph	
.SE	Section	For section headings.
.IN	Indent	Indentation is relative to the left margin setting.
.TI	Temporary Indent	

Line Formatting:

.VS	Vertical Spacing	Default is single-spacing.
.NF	No Fill	One of these is in effect at a time. Default is No Fill.
.FI	Fill	
.JU	Justify	One of these is in effect a time. Default is Justify Left. Use in combination with No Fill and Fill.
.JL	Justify Left	
.JC	Justify Center	
.JR	Justify Right	
.BR	Break	Applicable during Fill mode only.

Printer Control:

.UN	Underline	Underline and Boldface are disabled by the Normal Printing command.
.BO	Boldface	
.NO	Normal Printing	
.CS	Character String	For defining spelling aids and printer control codes.
.CD	Character String Delete	

Formatter Control:

.SP	Space	For reserving blocks of space.
.FG	Figure	
.PS	Pause	To pause the Formatter.
.CC	Command Character	These set special Formatter characters.
.EC	Escape Character	
.MC	Multiple Command Character	
.DS	Display Start	To disable and enable text formatting.
.DE	Display End	
.CO	Comment	For putting nonprinting comments in the source file.
.IS	Ignore Start	The Formatter ignores (that is, doesn't print) the text bracketed by these commands.
.IE	Ignore End	
.DG	Dump Graphics	Requires a Plotter ROM (HP Part No. 00087-15002).
.NX	Next File	Allow the printing of two or more files automatically.
.RD	Read File	
.TC	Table of Contents	Causes the Formatter to build a Table of Contents text file consisting of section headings.

Formatter Command Syntax

Embedded commands must be entered with the correct *syntax* in order for the Formatter to interpret the commands properly. Most commands operate on one or more *parameters*—that is, on textual information, on numbers, or on both. For example, `.LM 15` means "set the left margin at column 15"; the `.LM` command takes one parameter. The following guidelines are used to describe the syntax of embedded commands and their parameters.

`dot matrix` Items in `dot matrix` type are the two-letter names of the commands. Formatter commands may be typed in lowercase or uppercase letters with no spaces between letters.

italic Items in *italic type* are the parameters. When a *file name* parameter is required in a command (as in the Read File command), the *file name* may also include a *drive identifier* or *disc label*.

_ The underscore is used to connect the parts of single parameters, as in *number_of_lines*.

[ ] Items enclosed within brackets are optional parameters. *Nested* brackets indicate that parameters must be supplied in order, from highest to deepest level. For example, `.PP` [*number_of_spaces* [*number_of_lines*]] indicates that both parameters are optional but that the *number_of_spaces* must be supplied if the *number_of_lines* is to be specified in the Paragraph command.

Use one or more *spaces* to separate one parameter from another. Maximum length of the complete command line with embedded commands, parameters, and spaces is 80 characters.

Numeric parameters must be *integers*, whose range may depend on other Formatter settings. For example, it's not possible to have the Formatter indent farther than the right margin!

Formatter Control Characters

The following characters have special meaning for the Formatter:

. A period serves as the first character of embedded commands. Use the Command Character command to specify a new command character.

space One or more spaces are used to separate command from parameter, and parameter from parameter.

" " ' ' Quotation marks are used to enclose text parameters having internal spaces, as does `"--A Plan for Distribution--"`. You may use either double or single quotation marks, as long as they match at the beginning and end of text. Text without internal spacing need not be quoted. Otherwise, a space will be interpreted as a parameter separator.

; A semicolon is used to join two or more embedded commands in the same line. Spacing on either side of the semicolon is unimportant. Use the Multiple Command command to specify a new multiple command character.

A number sign references the current page number. When # appears in a header command (`.EH` or `.OH`) or a footer command (`.EF` or `.OF`), the page number is printed in its place. For example, `.EF 2-#` causes 2-4 to be printed as the even-page footer at the bottom of page 4.

`+` A plus sign before a numeric parameter causes that value to be added to the current setting. For example, `.BM +3` means "increase the size of the bottom margin by three lines."

`-` A minus sign before a numeric parameter causes that value to be subtracted from the current setting. For example, `.IN -5` means "decrease the size of the current indentation by five spaces."

`\` The Formatter escape character, initially the back slash, is used to set off an instruction within text or within another instruction. For example, if `M` is defined in a Character String command to spell `Mississippi`, then `\M\` appearing in subsequent text will cause `Mississippi` to be printed. Use the Escape Character command to specify a new escape character.

`b+, b-` Enclosed within a pair of escape characters, `b+` turns on boldface print and `b-` turns off boldface print.

`u+, u-` Enclosed within a pair of escape characters, `u+` turns on underlining and `u-` turns off underlining.

`:` A colon is used in Character String definitions to specify the number of spaces that should be reserved for the definition, useful when the Formatter is filling and justifying lines. For example, `.CS beep \7:0\` causes the Formatter to reserve zero spaces for the definition of `\beep\`. If no colon is used, then the Formatter reserves as many spaces for the definition as actual characters (1 in the `beep` example and 11 in the `Mississippi` example).

Formatter Messages

An incorrectly typed or a misconstructed command will cause the Formatter to beep, to display a message, and usually, to wait for a special function key response.

Example:

```
.JL
.XX Nonsense
```

Formatter message displayed as:

`Unknown Command .XX At Line` *nn* `Of` *source file* `. . .`

where *nn* is the line number and *source file* is the name of the file you're formatting.

If the 1 Continue key is pressed, printed as:

```
.XX Nonsense
```

If the Formatter cannot find a disc file while executing a Dump Graphics, Next File, Read File, or Table of Contents command, you will also be prompted for a special function key response. Pressing the available [6] [Skip] key will cause the Formatter to skip that command and continue formatting.

Out-of-range numeric parameters (such as a left margin past the left edge of the paper) and incongruous settings (such as a top margin greater than page length) may cause unexpected results.

Formatter Commands

The following paragraphs, arranged alphabetically, describe the operation of individual Formatter commands. Unless otherwise indicated, the examples use Formatter default settings, for example, left margin at column 1. Default settings remain in effect until changed by a special function key selection or by an embedded command executed in the source file.

Note that a number of embedded commands appear frequently in the examples, such as the .FI (Fill) command. Such commands are used to indicate the state of the Formatter at a given point in the document and are not intended to suggest a formatting style. Section 4, Applications, demonstrates the use of Formatter commands in two sample documents.

.BM [*number_of_lines*] (Bottom Margin)

The Bottom Margin command sets the bottom margin of a page—that is, the number of blank lines that will be output after the last line of text on a page.

Example:

```
.BM 6
Six lines will be output after the last line on this and subsequent pages.
```

If a footer (.EF or .OF) is printed, the blank lines will be output after the footer. If the *number_of_lines* is not specified in the command, or if Formatter defaults are used, the bottom margin is set to 0.

.BO [*text*] (Boldface)

The Boldface command causes subsequent text to be double-printed. If text is included in the command line, then only that text is affected; otherwise, the command applies to all further text until a Normal Printing command is encountered.

Examples:

```
.LM 7; .RM 72
.JL ; .NF
.BO "Print in boldface"
.FI
.BO
The rest of text will be double-printed
.NO
until the Normal Printing command is encountered.
```

Printed as:

Print in boldface
The rest of text will be double-printed until the Normal Printing command is encountered.

To print individual words or phrases in boldface, use \b+\ before the word or phrase and \b-\ after the word or phrase.

Example:

```
You may choose to emphasize only \b+\one or two\b-\ words in a sentence.
```

Printed as:

You may choose to emphasize only **one or two** words in a sentence.

The delimiter, \, must be the current escape character. After \b+\, double-printing will continue until either \b-\ or a Normal Printing (.NO) command is encountered.

.BP [*page_number*] (Begin Page)

The Begin Page command causes a break in text and causes a new page to begin at this point in the document.

Example:

```
This will be the last line of text printed on the current page.
.BP
This will be the first line of text at the top of the next page.
```

If a *page_number* is given, it becomes the new page number; otherwise, the current page number is incremented by one.

Example:

```
Start a new page and number it 5.
.BP 5
```

Use the .BP command to force a page break, as when you want to position text at the top of a page. In other instances, the Formatter takes care of page advances automatically, according to current bottom margin and page length settings.

.BR (Break)

The Break command forces the text that follows to be printed at the beginning of a new line.

Example:

```
.LM 1; .RM 80
.JL ; .FI
In fill mode, lines
are completely "filled" with
words
.BR
unless forced
to break
before
the end of line.
```

Printed as:

```
In fill mode, lines are completely "filled" with words
unless forced to break before the end of line.
```

The following commands also cause a break during text fill operations:

.BP Begin Page
.DE Display End
.DG Dump Graphics
.DS Display Start
.EC Escape Character
.FG Figure
.IN Indent
.IP Indented Paragraph
.IS Ignore Start
.JC Justify Center
.JL Justify Left
.JR Justify Right
.JU Justify
.LM Left Margin
.LP Left Paragraph
.NF No Fill
.NX Next File
.RM Right Margin
.PP Paragraph
.QP Quoted Paragraph
.RD Read File
.SE Section
.SP Space
.TI Temporary Indent
.TP Test Page

A blank in column 1 of any line will also cause a break.

.CC [*character*] (Command Character)

The Command Character command sets the current command character, initially the period (.).

Example:

```
.CC @
@BM 2
```

The new command character, like the period, must appear in column 1 at the beginning of a command line. If no character appears after .CC command, the command resets the period as the command character.

Example:

```
@CC
```

Resets the period as command character.

.CD *abbreviation* (Character String Delete)

The Character String Delete command deletes the most recent definition of a character string.

Example:

```
.NF; .JC
.CS HP "Hewlett-Packard" ;              .CO Defines \HP\ to print Hewlett-Packard.
\HP\ makes computers.
.CS HP "Personal Computer Division"; .CO Redefines \HP\.
The \HP\ made this computer.
.CD HP;                                 .CO Deletes most recent definition of \HP\.
\HP\ orginated in a Palo Alto garage.
```

Printed as:

```
Hewlett-Packard makes computers.
The Personal Computer Division made this computer.
Hewlett-Packard orginated in a Palo Alto garage.
```

Each Character String definition requires about five bytes of system memory, plus one byte for each character in the abbreviation part and for each character in the definition part. Total system memory reserved for Character String definitions is about 4,000 bytes. A .CD command reclaims the memory formerly required for that definition.

.CO [*text*] (Comment)

The Comment command enables you to place a comment in the source file without having the comment printed.

Example:

```
.JL ; .FI
This text will be printed,
.CO
.CO Thirty days hath September,
.CO April, June, and November...
.CO
as will this.
```

Printed as:

```
This text will be printed, as will this.
```

Note that text in a comment line need not be quoted. Don't type another command in the same line after a Comment command because the Formatter will regard it as part of the comment text and not execute it.

.CS *abbreviation definition* (Character String)

The Character String command has two uses:

- To create spelling aids.
- To create printer control codes.

The .CS command binds the abbreviation to the definition; subsequently, when the abbreviation appears in the text enclosed within escape characters, the Formatter will print the definition rather than the abbreviation.

Example:

```
.CS poly "polyurethane capstan"
.JL
The assembly consists of a direct-current motor with a \poly\.
```

Printed as:

```
The assembly consists of a direct-current motor with a polyurethane capstan.
```

Separate the abbreviation from the definition by one or more spaces; use quotation marks to enclose any parameter having internal spaces. Case and spacing must agree with the spelling in the Command String abbreviation when the abbreviation is typed in sebsequent text.

Using the Editor and a series of Character String commands, you can create a "personal dictionary" file consisting of spelling aids, and have the Formatter read that file before processing the current source file.

The Character String command is also used to create printer control codes. Each printable character corresponds to a decimal code from 32 (the space) through 126 (~, the tilde). Characters whose decimal codes are 0 through 31 and 127 are known as *control characters* and may be used to control external printers. A printer control definition often consists of the *decimal code* of a display character instead of the character itself, enclosed within current escape characters.

Example:

```
.CS FF \12\ ; .CO "12" is the decimal code of the Form Feed character.
Now we can cause a form feed on many printers by entering \FF\ in
the text.
```

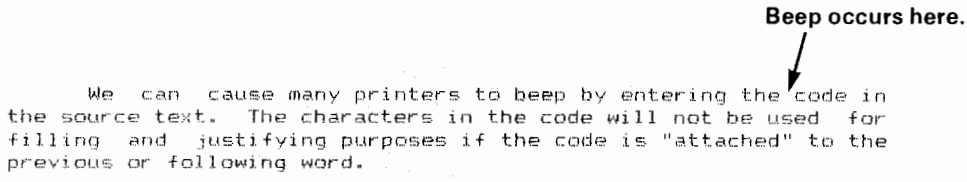
Refer to appendix A for the decimal codes of display characters.

A decimal code may be included in the *text* of a source file if the decimal code is set off by a pair of escape characters. Also, a colon (:) may be used as part of a character string to specify the number of printable characters needed for the string when the Formatter is filling and justifying.

Example:

```
.LM 7; .RM 72
.JU ; .FI
      We can cause many printers to beep by entering the \7:0\code
in the source text.  The characters in the code will not be
used for filling and justifying purposes if the code is "attached" to
the previous or following word.
```

Printed as:



A Character String definition may consist of decimal codes, text, and other Character String references.

Examples:

```
.CS wide-40 \27:0\ &k1S:0 ;      .CO Defines "wide-40" as an "escape sequence."
.CS normal-80 \27:0\ "&k0S":0 ;  .CO Quotes optional if no embedded blanks.
.CS esc \27:0\ ;                 .CO Defines "esc" as escape character.
.CS narrow-132 \esc\ &k2S:0
.LM ; .NF ; .JL
\wide-40\For expanded printing.
\narrow-132\For compressed printing.
\normal-80\For regular printing.
```

Printed on the HP 82905B Printer as:

```
For expanded printing.
For compressed printing.
For regular printing.
```

The Character String definitions above are defined as having no printable characters because the decimal codes, text, and Character String reference (esc) are assigned lengths of zero. If the text is enclosed within quotation marks (as is "&k0S"), the number of printable characters must be specified immediately after the quoted text.

Several Formatter printer files are included on the WORD/80 disc that may be read by the Formatter to control specific printers.

Example:

```
.RD HP82905B.Word80
.JL ; .NF
\?\C\o'\mo est\a'\s, t\u'\?
```

Printed on the HP 82905B Printer as:

```
¿Cómo estás, tú?
```

If the Formatter attempts to access a nonexistent Character String definition while printing, the Formatter will simply print the abbreviation as it appears in the source text. An error will be reported if an undefined character string is referenced in the definition of another character string.

Note that the beginning character of the *abbreviation* in a Character String command may not be a digit (0 - 9) or the current Formatter escape character.

.DE (Display End)

The Display End command is used after the Display Start command to cause text formatting to begin again, according to the settings that were in effect when the Display Start command was executed.

Example:

```
.JC ; .FI
Centered and
filled output.
.DS
Left-justified
and no fill.
.DE
Return to centered
and filled output.
```

Printed as:

```
                    Centered and filled output.

Left-justified
and no fill.

                  Return to centered and filled output.
```

The left and right margins, vertical spacing, fill, and justify settings that were in effect when the Display Start command was executed will be restored when the Formatter encounters the Display End command. The Display End command causes a break in text.

.DG *file_name* [*number_of_lines* [*lower_bound* [*upper_bound* [*rotate* [*printer_type*]]]]] (Dump Graphics)

The Dump Graphics command enables you to print, dot by dot, graphics displays in your documents, including diagrams and charts. The Dump Graphics command requires the Plotter ROM for the HP-86/87 and a Hewlett-Packard graphics printer, such as the HP 82905B Printer.

Refer to:

- The *HP-86/87 Operating and BASIC Programming Manual*, Storing and Retrieving Programs and Graphics, for information regarding graphics (GRAF) files and the GSTORE command.
- The *Plotter ROM Owner's Manual* for information regarding the DUMP GRAPHICS command.
- The documentation for the printer for information regarding its graphics capability.

Place a Dump Graphics Formatter command in the source file where you want the graphics file to be printed.

Example:

```
.DG Signature
.CO Causes the "Signature" graphics file to be printed at this point.
```

The *file_name* must name a graphics file previously stored with an HP-86/87 GSTORE command. The GRAF file must be on the disc in the currently selected drive or on the disc identified after the *file_name*.

The defaults for the .DG command are designed for the HP 82905B Printer and are—in order—22, 0, 0, 0, and 0. The *number_of_lines* tells the Formatter how many lines to allow for the page length of the graphics display, beginning from the top of the graphics display and based on the number of vertical dots printed in one line. The HP 82905A Printer and the HP 82905B Printer require 22 lines for a complete graphics display. You may need to experiment to set the appropriate number of lines for the printer, especially if printing only a portion of the display.

The optional *lower_bound* and *upper_bound* parameters control what portion of the graphics display is printed; if the parameters are omitted or are equal, the entire display will be printed. The bounds may range from 0 to 239. The *rotate* parameter should be 0 so that the display will be printed horizontally. The *printer_type* parameter specifies the type of graphics printer being used. For example, the HP 82905A Printer has a *printer_type* of −1.

Example:

```
.DG Fig/1 22 0 0 0 -1
.CO Causes all of GRAF file "Fig/1" to be printed on the HP 82905A Printer.
```

The Dump Graphics command causes a break in text.

The Formatter will do a Test Page before printing the display to keep the entire display on the same page. A GRAF file will be displayed on the computer display as it is being printed.

.DS (Display Start)

The Display Start command can be used to display groups of lines, such as lists and tables, that are already formatted.

Example:

```
.LM 7; .RM 72
.FI; .JU
The following table gives a schedule
for the first day of the conference:
.DS

.JC 1; .BO "First Day Schedule"

        9:00-10:30      Seminar 1A              Room 201
                        Seminar 2A              Room 151

        10:30-10:45     Break

        10:45-12:00     Seminar 1B              Room 201
                        Seminar 2B              Room 151

        12:00-13:30     Lunch

        13:30-15:00     Group Discussion        Room 201

.DE
Participants are cordially invited to the dinner reception
following Friday's meetings.
```

Printed as:

The following table gives a schedule for the first day of the conference:

First Day Schedule

9:00-10:30	Seminar 1A	Room 201
	Seminar 2A	Room 151
10:30-10:45	Break	
10:45-12:00	Seminar 1B	Room 201
	Seminar 2B	Room 151
12:00-13:30	Lunch	
13:30-15:00	Group Discussion	Room 201

Participants are cordially invited to the dinner reception following Friday's meetings.

A Display Start command causes a break in text and causes the Formatter to save the vertical spacing setting, the left and right margin settings, and the fill and justify settings and to start formatting subsequent text according to:

- Vertical spacing set to 1.
- No fill.
- Left justify.
- Current left and right margins.

Any Formatter command appearing after a Display Start command (except another .DS command) will be processed normally. When the Formatter encounters the Display End command, former vertical spacing, margin, fill, and justify settings will be restored.

.EC [*character*] (Escape Character)

The Escape Character command causes a break in text and sets the current escape character, initially the back slash (\).

Example:

```
.EC ^ ; .CO       The escape character is now the circumflex (^).
.CS o onomatopoeia
"Buzz" is an instance of ^o^.
```

Printed as:

```
"Buzz" is an instance of onomatopoeia.
```

To reset the escape character to the back slash, omit the parameter in a subsequent .EC command.

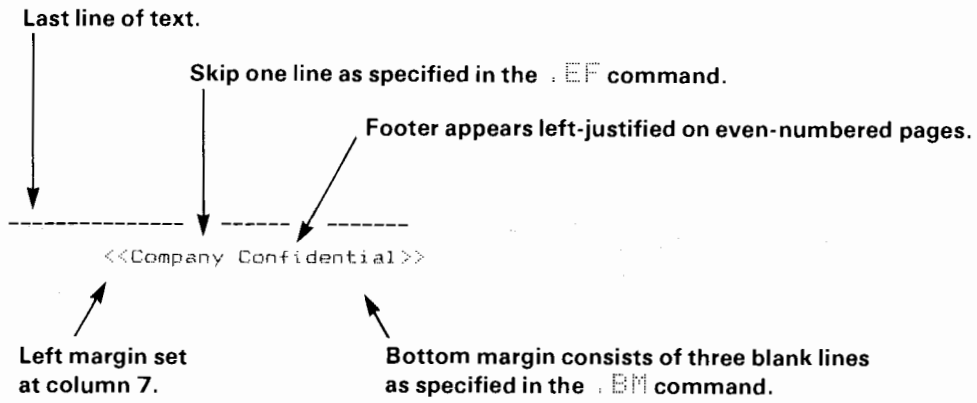
.EF *text* [*number_of_lines*] (Even-Page Footer)

The Even-Page Footer command causes the specified text to be printed at the bottom of even-numbered pages, separated from the last line of text by the specified *number_of_lines*.

Example:

```
.LM 7; .BM 3; .JL
.EF "<<Company Confidential>>" 1
```

Printed as:



If the *number_of_lines* isn't specified, the current value is used, initially 2.

Include the # symbol anywhere in the quoted or unquoted Even-Page Footer text to print the page number.

Example:

```
.JC ; .EF (#)
```

Printed at the bottom of page 2 as:

(2)

Footers and headers retain certain characteristics from the time they are set, including:

- The type of justification (for example, center-justified).
- The left and right margin settings.
- Underline or no underline, including \u+\ and \u-\ for underlining selected characters in the footer or header.
- Boldface or no boldface, including \b+\ and \b-\ for double-printing selected characters in the footer or header.

In other words, although the justification, margins, etc. may change during the formatting, the footer or header will be printed according to the settings that were in effect at the time the footer or header command was executed.

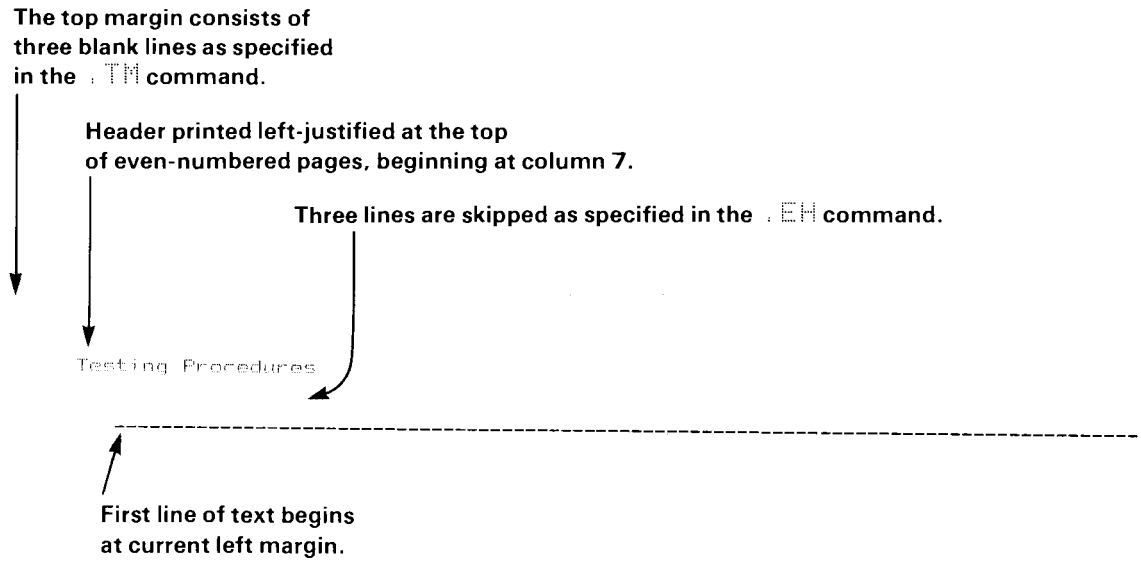
.EH *text* [*number_of_lines*] (Even-Page Header)

The Even-Page Header command causes the specified text to be printed at the top of even-numbered pages, separated from the first line of text by the specified *number_of_lines*.

Example:

```
.TM 3; .LM 7
.JL ; .EH "Testing Procedures" 3
.LM 10
```

Printed as:



If the *number_of_lines* isn't specified, the current value is used, initially 2.

.FG *number_of_lines* (Figure)

The Figure command reserves space for figures and diagrams that you intend to add to the document after printing it. The Figure command causes a break in text and causes the *number_of_lines* to be output as an unbroken block of space.

Example:

```
.FG 15; .CO Outputs 15 blank lines.
```

The Formatter checks the remaining space on the current page; if insufficient for the entire block of lines, then a page advance occurs and the specified *number_of_lines* is output at the beginning of the new page.

Note that a .FG command will cause the Formatter to output at most one empty document page with header and footer, if any.

.FI [*number_of_lines*] (Fill)

The Fill command causes subsequent output lines to be completely "filled" with words. Filling begins from the current left margin and continues to the right until adding another word would exceed the right margin.

Example:

```
.LM 8; .RM 72
.FI ; .JL
     This is a common
way of
presenting
text--using
a "ragged right" margin.  Output
appears flush to the left margin, although  line indents are preserved.
```

Printed as:

```
     This is a common way of presenting text--using a "ragged
right" margin.  Output appears flush to the left margin, although
line indents are preserved.
```

If the *number_of_lines* is specified, then only that many lines of source text will be affected. If no number is specified, the Formatter continues to fill lines until encountering a .NF command or .DS command.

Lines must be contiguous to be filled; that is, lines separated by one or more blank lines will not be joined. Also, any line of text that begins with a blank in column 1 will cause a break during a fill operation.

Note that while the Formatter is filling and justifying lines, the filling occurs before the line is justified.

.IE (Ignore End)

The Ignore End command causes a break in text and the formatting of following text. After an Ignore Start command, the Formatter ignores all subsequent text *and* embedded commands until it encounters the Ignore End command, which must be positioned beginning at *column 1*.

.IN [*number_of_columns*] (Indent)

The Indent command causes a break in text and sets the indentation of subsequent text relative to the current left margin.

Example:

```
.LM 8; .JL; .NF
Reasons for equipment purchase:
.IN 3
a. Shorter lead times.
b. Faster correction cycles.
```

Printed as:

```
Reasons for equipment purchase:
   a. Shorter lead times.
   b. Faster correction cycles.
```

If no parameter is specified, .IN resets the indentation to 0.

Note: The Indent command in effect creates a new left margin that remains in effect until replaced by another Indent command.

You may find it useful to specify a *relative* indentation (for example, .IN +5 to increase the current indentation by five columns).

.IP [*text* [*number_of_columns* [*number_of_lines*]]] (Indented Paragraph)

The Indented Paragraph command causes a break in text and causes the beginning of a new paragraph such that the paragraph is labeled on the first line with the specified text, indented by the specified *number_of_columns*, and separated from the preceding line by the specified *number_of_lines*.

Examples:

```
.LM 8 ;.JL ; .FI
End of the old paragraph.
.IP "Growth of Ideas:" 20 1
Out of a certain dissatisfaction or restlessness,
new ideas are born.

We tend to listen to,
if not respect, the malcontents.
.IP "Social Changes:"
Society continues on its present course until
the forceful injection of new ideas.
.LP
```

Printed as:

```
End of the old paragraph.

Growth of Ideas:    Out of a certain dissatisfaction or
                    restlessness, new ideas are born.

                    We tend to listen to, if not respect, the
                    malcontents.

Social Changes:     Society continues on its present course until
                    the forceful injection of new ideas.
```

If the *number_of_columns* or *number_of_lines* is not specified, then current values will be used, initially 5 columns and 2 lines.

If the *text* is not specified, then the null string (no characters) will be printed for the paragraph label.

Note: The Indented Paragraph command in effect creates a new left margin that remains in effect until a .PP command, a .QP command, an .LP command, an .SE command, or another .IP command is executed.

.IS (Ignore Start)

The Ignore Start command causes a break in text and causes the Formatter to stop printing subsequent text and to skip all Formatter commands except the Ignore End command.

Example:

```
.LM ; .JL ; .FI
Print this text.
.IS
Ignore this text.
.UN "Ignore this command."
.IE
Start printing again.
```

Printed as:

```
Print this text.
Start printing again.
```

The Ignore Start and Ignore End commands are useful for bracketing portions of a document that you do not wish printed, such as multi-line comments.

.JC [*number_of_lines*] (Justify Center)

The Justify Center command causes a break in text and causes subsequent text to be centered between the current left and right margins.

Example:

```
.JC 1
Center just this line.
```

Printed as:

```
                    Center just this line.
```

The *number_of_lines* sets the number of source text lines following the command that are centered. If no number is specified, the Formatter continues to center lines until encountering a .JL command, a .JR command, a .JU command, or a .DS command.

The Justify Center command often appears after a No Fill command so that *individual* source file lines will be centered.

.JL [*number_of_lines*] (Justify Left)

The Justify Left command causes a break in text and causes subsequent text to be output flush to the left margin. The Formatter is initially set to left-justify text.

Example:

```
.JL ; .NF
            Print this text as is, preserving leading blanks.
     The setting stays in effect indefinitely.
```

Printed as:

```
            Print this text as is, preserving leading blanks.
     The setting stays in effect indefinitely.
```

The *number_of_lines* sets the number of source text lines that are left-justified. If no number is specified, the Formatter continues to left-justify text until encountering a .JC command, a .JR command, or a .JU command.

.JR [*number_of_lines*] (Justify Right)

The Justify Right command causes a break in text and causes subsequent text to be output flush against the right margin.

Example:

```
.JR ; .RM 80 ; .NF
Put this line and
this line flush against the right margin.
```

Printed as:

```
                                                  Put this line and
                                  this line flush against the right margin.
```

Text that is right-justified and filled will appear with a "ragged left" margin. Trailing blanks are disregarded during a right-justify operation. The *number_of_lines* sets the number of source lines that are right-justified. If no number is specified, the Formatter will continue to right-justify text until encountering a .JC command, a .JL command, a .JU command, or a .DS command.

.JU [*number_of_lines*] (Justify)

The Justify command causes a break in text and causes subsequent lines to be aligned with *both* left and right margins. Lines are "padded" with blanks between words so that the first character of the first word appears at the left margin and the last character of the last word appears at the right margin.

Example:

```
.LM 15 ; .RM 65
.JU ; .FI
      Justify and Fill commands, used      together,
cause text from consecutive lines
to be formatted attractively
on the page.
```

Printed as:

```
      Justify and Fill  commands,  used  together,
cause  text  from consecutive lines to be formatted
attractively on the page.
```

The *number_of_lines* sets the number of text lines that are justified. If no number is specified, the Formatter continues to justify lines until encountering a .JC command, a .JL command, a .JR command, or a .DS command.

.LM [*column*] (Left Margin)

The Left Margin command causes a break in text and sets the left margin at the specified column.

Example:

```
.LM
.JL
Initially, the left margin is set at column 1.
.LM 7
The new margin is set as soon as a Left Margin command is executed.
```

Printed as:

```
Initially, the left margin is set at column 1.
      The new margin is set as soon as a Left Margin command is
      executed.
```

If no column is specified, the left margin is reset to column 1.

You may find it useful to specify a *relative* left margin (for example, .LM -5 to set the left margin five spaces to the *left* of the current left margin).

.LP [*number_of_lines*] (Left Paragraph)

The Left Paragraph command causes a break in text and the beginning of a new paragraph, flush against the left margin or against the currently indented column if an .IN command has been executed. The *number_of_lines* sets the spacing between the first line of the paragraph and the preceding line of text.

Example:

```
.LM 7 ; .JL
End of this line.
.LP 2
Beginning of new paragraph against the left margin.
```

Printed as:

```
End of this line.

Beginning of new paragraph against the left margin.
```

If the *number_of_lines* isn't specified, the current value is used, initially 2 lines. Only the first line of the paragraph is affected by the vertical offset. A Left Paragraph command by itself causes no indentation.

.MC [*character*] (Multiple Command Character)

The Multiple Command Character command sets the character you use to join Formatter commands in the same line.

Example:

```
.MC *
.BP * .CO The asterisk is now the Multiple Command Character.
```

Any number of commands may appear in the same line, limited only by the line length. Spacing before and after the Multiple Command Character is unimportant. To reset the semicolon as Multiple Command character, type .MC command with no character afterwards.

Do not include any Formatter commands in the same line *after* an .MC command. The Formatter is unable to recognize the new .MC character until the next line.

.NF [*number_of_lines*] (No Fill)

The No Fill command causes a break in text and causes subsequent lines to be output without being filled with words between the left and right margins.

Example:

```
.LM 1; .JL
.NF
        Leave    spacing as is.
           Keep lines separate.
```

Printed as:

```
Leave    spacing as is.
   Keep lines separate.
```

The Formatter is initially set to No Fill. The *number_of_lines* sets the number of subsequent source file lines affected by the command. If no number is specified, the Formatter will not fill text until encountering a .FI command.

.NO [*text*] (Normal Printing)

The Normal Printing command causes text to be printed without underlining and without boldface.

Example:

```
.LM ; .JL ; .FI
.UN
Underline these words,
.NO
but don't underline these.
```

Printed as:

Underline these words, but don't underline these.

Use the Normal Printing command to cancel previous Underline or Boldface commands. If text is appended to the .NO command, only that text will be affected.

.NX *file_name* (Next File)

The Next File command causes a break in text and causes the Formatter to stop formatting the current source file and to begin formatting the specified file.

Example:

```
The end of this file.  Start a new page and print the next file.
.BP
.NX CHAP3
This sentence won't be printed.
```

The file must reside on the disc in the currently selected drive or on the disc identified after the *file_name*. Case and spacing of the *file_name* and disc label are important.

.OF *text* [*number_of_lines*] (Odd-Page Footer)

The Odd-Page Footer command causes the specified text to be printed at the bottom margin of odd-numbered pages, separated from the last line of text by the specified *number_of_lines*. If no number is specified, the current value is used, initially 2.

.OH *text* [*number_of_lines*] (Odd-Page Header)

The Odd-Page Header command causes the specified text to be printed at the top margin of odd-numbered pages, separated from the first line of text on the page by the specified *number_of_lines*. If no number is specified, the current value is used, initially 2.

.PL [*number_of_lines*] (Page Length)

The Page Length command sets the number of lines on a physical page. Standard printer paper is 8½ inches by 11 inches; standard printed output is 6 lines per inch. Initially, the Formatter is set to 66 lines per page.

Example:

```
.PL 33
```

Reset the page length to 66 by entering a Page Length command without specifying a parameter value.

The formula for determining the number of lines of text that will be printed per page is:

number of lines = page length − (top margin + bottom margin) − (lines for header + lines for footer)

.PP [*number_of_spaces* [*number_of_lines*]] (Paragraph)

The Paragraph command causes a break in text and the beginning of a new paragraph, such that the first line of the paragraph is indented by the specified *number_of_spaces* and separated from the preceding text by the specified *number_of_lines*.

Example:

```
.LM 7 ; .RM 72; .JL ; .FI
End of the old paragraph.
.PP 7 1
Beginning of the new paragraph.  Only the first line of the
paragraph will be indented.
```

Printed as:

```
End of the old paragraph.

       Beginning of the new paragraph.  Only the first line of the
paragraph will be indented.
```

Note that a Paragraph command causes a break in the text, regardless of line fill. If parameters are not supplied, current values will be used, initially 5 spaces for indentation and 2 lines for vertical spacing.

.PS [*text*] (Pause)

The Pause command causes the Formatter to beep, to pause, and to display the text—if any—in a highlighted, blinking line at the top of the title/feedback window.

Example:

```
.PS "Change printer wheel!"
```

If no text is specified, then the message Paused . . . will be displayed in the title/feedback window.

The Pause command is useful in drawing attention to a particular location in the source file while the file is being formatted. Press the 1 Continue key at this point to continue the formatting.

.QP [*left_indent* [*right_indent* [*number_of_lines*]]] (Quoted Paragraph)

The Quoted Paragraph command causes a break in text and the beginning of a new paragraph, such that the *entire* paragraph is indented from *both* left and right margins and separated from the preceding text by the specified *number_of_lines*.

Example:

```
.LM 7 ; .RM 68 ; .JL ; .FI
End of the old paragraph.  The Quoted Paragraph
command causes a break in text being filled.
.QP 10 10 1; .JU
Beginning of the new paragraph.  Indents are relative to the left
and right margins.
In this case, text begins at column 17 and extends to column 58.
.LP
```

Printed as:

End of the old paragraph. The Quoted Paragraph command causes a break in text being filled.

Beginning of the new paragraph. Indents are relative to the left and right margins. In this case, text begins at column 17 and extends to column 58.

Note: In effect, the Quoted Paragraph command creates new left and right margins that remain in effect until the command is canceled by an .IP command, an .LP command, a .PP command, an .SE command, or another Quoted Paragraph command.

If parameters are omitted, then current values are used, initially 5, 5, and 2.

.RD *file_name* (Read File)

The Read File command causes a break in text and causes the Formatter to begin formatting the specified file. Upon reaching the end of the named file, the Formatter resumes formatting the original file at the point after the Read File command.

Example:

```
.LM ; .RM ; .JL
Print this line.
.RD HP82905B
.RD INTRO
.RD CHAP1
.RD CHAP2
.RD CHAP3:d701
Resume on this line.
```

This example causes the Formatter to process files HP82905B, INTRO, CHAP1, CHAP2, and CHAP3, in that order, in each case returning to the current file at the line following the current Read File command. The Formatter accesses the currently selected disc unless the *file_name* includes a drive identifier or disc label to specify a different disc. Case and spacing of the *file_name* and disc label are important.

The .RD command should appear at the end of a line or on a separate line because commands following a .RD command on the same line will not be executed.

.RM [*column*] (Right Margin)

The Right Margin command causes a break in text and sets the right margin at the specified column, initially 80. If the column isn't specified, the right margin is reset to 80.

Although 80 columns per line is the normal line length limitation, you may specify a value greater than 80 (but less than 161), depending on the number of characters per line that your printer is set to print.

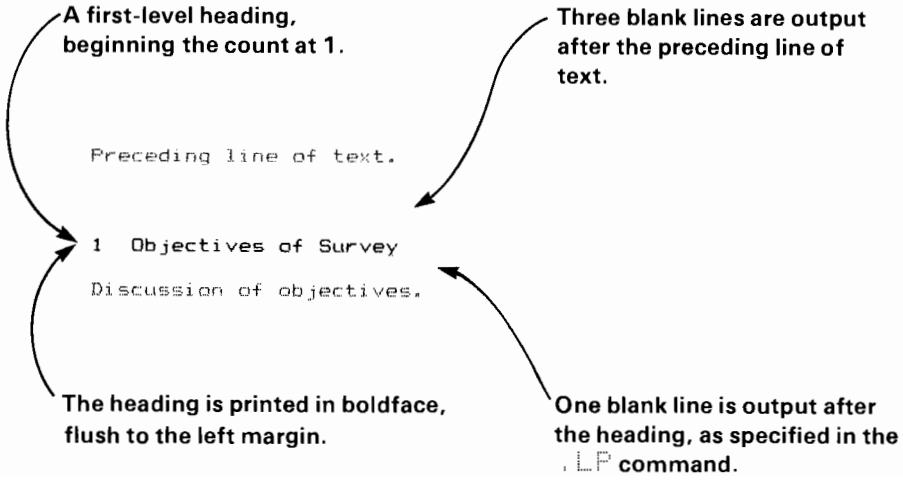
.SE [*level_number* [*new_value*]] *text* [*number_of_lines*] (Section)

The Section command causes a break in text and a numbered or unnumbered section heading to be printed in boldface at the current left margin. The *level_number* indicates the depth of organization (ten or more levels are possible, depending on margin settings). The organization is indicated by the number of fields in the printed heading—1 (level 1), 1.1 (level 2), 1.1.1 (level 3), 1.1.1.1 (level 4), etc.

Example:

```
.LM 8; .JL ; .FI
Preceding line of text.
.SE 1 1 "Objectives of Survey" 3
.LP 1
Discussion of objectives.
```

Printed as:



The *number_of_lines* sets the number of blank lines that are output between the preceding line of text and section heading. The Formatter remembers the current value at each level and automatically updates level values as it prints new section headings. Specifying a *new_value* causes the Formatter to substitute that value for the heading *at that level* and to begin the count from the *new_value*.

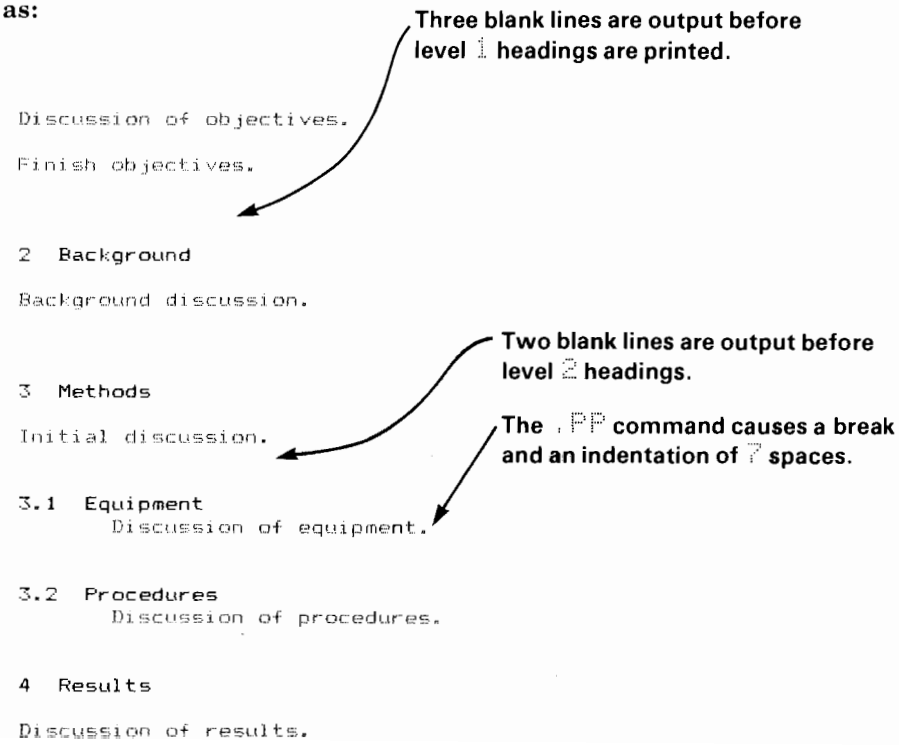
Two spaces will be left after the section number, and the text will be double-printed exactly as typed. After the *new_value* of the section level has been set, use the following form of the Section command for headings at the same level:

.SE *level_number text*

Examples, based on the preceding settings:

```
Finish objectives.
.SE 1 "Background"
.LP
Background discussion.
.SE 1 "Methods"
.LP
Initial discussion.
.SE 2 1 "Equipment" 2
.PP 7 0
Discussion of equipment.
.SE 2 "Procedures"
.PP
Discussion of procedures.
.SE 1 "Results"
.LP
Discussion of results.
```

Printed as:



The following form of the Section command causes a heading to be double-printed with no numbering. The *number_of_lines* sets the number of blank lines that are output between the preceding line of text and the section heading:

.SE *text* [*number_of_lines*]

If no lines are specified, the value of the most recent Section command will be used.

Example:

```
Finish results.
.SE "Conclusions of Survey" 3
```

Printed as:

Finish results.

Conclusions of Survey

By placing a .TC (Table of Contents) command at the beginning of the source file, you cause the Formatter to create a Table of Contents text file that consists of section headings and corresponding page numbers.

.SP [*number_of_lines*] (Space)

The Space command causes a break in text and causes the specified number of blank lines to be output. At most, one empty document page (with header and footer, if any) will be output.

If the *number_of_lines* isn't specified, one blank line is output. Unlike the Figure command, the Space command doesn't ensure that the lines are output as a block on a single page. If more lines are specified than remain on the current page, then the command simply causes a page break.

.TC [*file_name*] (Table of Contents)

The Table of Contents command causes a Table of Contents text file to be created for the formatted document. Each subsequent .SE (Section) command after a Table of Contents command will result in an entry in the Table of Contents file that consists of the section *heading* and *page number*.

Assuming the appropriate page numbers, the Table of Contents file for the Section command examples (pages 103 and 104) would be written to a disc as follows:

```
.BP;.LM 1u;.NF
.JC;.EH 'Table of Contents' 1
.OH 'Table of Contents' 1
.OF '' 0;.EF '' 0
.JL;.VS 1
1  Objectives of Survey ..... 1
2  Background ..... 1
3  Methods ..... 1
3.1  Equipment ..... 1
3.2  Procedures ..... 1
4  Results ..... 1
Conclusions of Survey ..... 1
```

Note the embedded commands that will always be written at the beginning of the Table of Contents file. If output is directed to the computer display or to the system printer, the Formatter will automatically format and print the Table of Contents file after formatting the document itself.

You may instead edit the Table of Contents file before printing it. Run the Editor, create a new Editor file, and read the Table of Contents file into the new file using the 5 Get key.

If no *file_name* is included in the .TC command, the Formatter will create a file named Tbl/Cnts. If no drive identifier or disc label is included in the command, the file will be created on the disc in the currently selected disc drive.

The Formatter will purge an existing Table of Contents file before creating a new one.

The Formatter can only output to one file on a disc at a time. If you are formatting to a file on disc, ensure that the Table of Contents file is created on a disc different from the disc where the Formatter output file is written. Otherwise, an error will be reported and no Table of Contents file will be created. If limited to one disc drive, first route Formatter output to the computer display or system printer while the Table of Contents file is created on disc. Then format the source file a second time, this time routing Formatter output to the disc. Although the Formatter will report that it is unable to create the Table of Contents file this time, it will format the file normally to the disc without changing the Table of Contents file from the first pass.

.TI [*number_of_spaces*] (Temporary Indent)

The Temporary Indent command causes a break in text and causes the following output line to be indented by the specified *number_of_spaces*, relative to the left margin.

Example:

```
.LM 1; .JL ;.NF
This text is left justified, beginning at column 1.
.IN 5
The Indent command causes text to be indented indefinitely.
.TI 10
This and only this line will be indented 10 spaces.
This line reverts to 5-space indentation.
.IN
```

Printed as:

```
This text is left justified, beginning at column 1.
     The Indent command causes text to be indented indefinitely.
          This and only this line will be indented 10 spaces.
     This line reverts to 5-space indentation.
```

If the *number_of_spaces* isn't specified, the current value is used, initially 0 spaces.

.TM [*number_of_lines*] (Top Margin)

The Top Margin command sets the number of blank lines that are output before the first line of text is printed on a new page, or before the header is printed on a new page (if an Even-Page Header or Odd-Page Header command is in effect).

Example:

```
.LM 1; .RM 76 ; .JL ; .FI
.TM 2
.BP
Top margin is set and a new page begun.  This is the first line,
assuming no header.
```

Printed as:

Two blank lines are output at the top of page.

```
Top margin is set and a new page begun.  This is the first line, assuming no
header.
```

If the *number_of_lines* isn't specified, the top margin is reset to 0.

.TP *number_of_lines* (Test Page)

The Test Page command causes a break in text and causes the Formatter to check the remaining space on the current page and to begin a new page if the remaining space is less than the specified *number_of_lines*.

Example:

```
.TP 30
.JC 1
\b+\Results\b-\
```

This example causes the Formatter to begin a new page if the number of remaining lines on the current page—not including the lines reserved for the footer and the bottom margin—is less than 30.

Use the Test Page command to ensure that a fixed-sized block of lines, such as a table, will appear unbroken on a single page.

.UN [*text*] (Underline)

The Underline command causes subsequent text to be underlined. If text is included in the command, then only that text is affected. Otherwise, the command applies to all further text until a Normal Printing command is encountered.

Example:

```
.JC ; .NF
.UN "Survey Tabulation"
.JL ;.FI
Execute a Fill command to
.UN
underline words
.NO
mixed in the middle of lines.
```

Printed as:

```
                    Survey Tabulation
Execute a Fill command to underline words mixed in the middle of lines.
```

Note that underlining occurs for non-blank characters only. To underline individual words and phrases, you can use \U+\ before the word or phrase and \U-\ after the word or phrase.

Example:

```
A \u+\quicker\u-\ way to underline.
```

Printed as:

The delimiter, \, must be the current escape character. After \U+\, underlining will continue until either \U-\ or a Normal Printing command is encountered.

.VS [*number_of_lines*] (Vertical Spacing)

The Vertical Spacing command sets the spacing between lines of output text. A value of 1 (the initial value) causes single-spacing, a value of 2 causes double-spacing, etc.

Example:

```
.LM 5; .RM 75
.JL ; .FI
.VS 2
.IP "Huck Finn:" 12 1
If I'd 'a' knowed what a trouble it was to
make a book I wouldn't 'a' tackled it,
and ain't a-going to no more.  But I reckon
I got to light out for the territory
ahead of the rest, because
Aunt Sally she's going to adopt me
and sivilize me, and I can't stand it.
I been there before.
```

Printed as:

```
Huck Finn:  If I'd 'a' knowed what a trouble it was to make a book I
            wouldn't 'a' tackled it, and ain't a-going to no more.  But
            I reckon I got to light out for the territory ahead of the
            rest, because Aunt Sally she's going to adopt me and
            sivilize me, and I can't stand it.  I been there before.
```

The Vertical Spacing command has no effect on spacing between headers and text, footers and text, new paragraphs and preceding text, section headings and preceding text, etc. If the *number_of_lines* isn't specified, vertical spacing is reset to 1.

Notes

Applications

This section illustrates the use of the WORD/80 Formatter to format two documents created and stored on disc with the Editor.

Printing a Form Letter

To create a form letter, output a section of commonly used text to a master disc from the Editor using the 1 Mark, 2 Select, and 5 Put keys. Later, read the disc file into a new Editor file using the 6 Get key, and customize the text by adding the address, date, salutation, etc.

Source Editor File

The .RD (Read File) embedded command at the beginning of the following Editor file causes the Formatter to access the HP 2601A Printer file on the WORD/80 disc. The HP2601A file in turn defines a number of control strings (for example, \B+\ and \U+\) so that the document can be printed with specific printer enhancements (for example, shadow printing and continuous underlining). Refer also to appendix C, Formatter Printer Files.

```
.CO Subscription Letter--Top of file.
.TM 7; .BM 7; .LM 12; .RM 74; .VS 1;    .CO Set margins and spacing.
.RD HP2601A.Word80                  ;   .CO File with printer options.
.JC
.SP 5 ;                                 .CO Print heading with "shadow."
\s+\HARPER'S\s-\

Two Park Avenue, New York, N.Y. 10016
.JR ; .OH "-#-" 3 ;                     .CO Page numbers at top.
.JR ; .EH "-#-" 3
.CS H \u+\\b+\Harper's\b-\\u-\;         .CO Typing aid, using HP 2601A Printer
.CO                                         control codes.  Note that u+, u-,
.CO                                         b+, b- have been redefined by the
.CO                                         HP2601A file.  (Normally, it's
.CO                                         not possible to include both u+
.CO                                         and b+ in the same .CS definition.)
.JL ; .FI
.SP 4
Dear Reader:
.PP 5 1
Last year 20% of \H\ readers
wrote an article or book, 44% gave public speeches, 14% sat on corporate
boards. Some 4% ran for office, and 30% traveled abroad for
pleasure.  Lively crew.
.PP
Here we're playing a pretty well-founded hunch.  We think
you're a doer--a literate, involved citizen who goes places
and stirs up things, talks back to the talking heads on TV, holds strong
```

```
opinions but revises them regularly, enjoys reading something meatier than
picture captions and cartoon balloons...
.PP
So what?
.PP
So we're betting you'll be a natural
reader--a happy, regular reader--if we can just get you started.
.QP 7 7 1
To help that thought along, I am respectfully
putting the best bargain subscription \H\ can manage
under your nose right now:  a \s+\free\s-\ test issue to
begin, credit and refund available, a very good price--the works.
.PP
To begin with, \H\ as I'm sure you know, has a
pedigree that no other American publication can match: 132 years
of continuous, useful service.  Through those years,
the magazine's editors and
writers have made rich contributions to the intellectual, cultural, and
political life of our nation.
We can drop such names as Mark Twain and Bret Harte by the yard, clear
up to Tom Wolfe and Annie Dillard and George Plimpton
and Joel Agee.
.PP
If you haven't seen \H\ lately, it's as stimulating as
ever--but we've changed, just as you have and the world has in recent months.
Constant change, to keep up with the times and a bit ahead, has been
true of \H\ since 1850, come to think of it.
See for yourself.
.QP
Sign and return the enclosed card, noting that it offers you
a no-money-at-all guarantee if your first issue doesn't stimulate,
irritate, amuse, and--all told--please you to no end.
.PP
We're betting, of course, that you will be or have been in the habit of
making speeches or writing articles or books, or traveling abroad, or sitting
on a board of directors, or maybe running for office, like lots of
our present subscribers.  And when called upon to do any or all of
the above, we're betting you'll find some of your best ideas were formed
over a \H\. See. Today. We'll even pay your postage.
.SP 2
.IN 40
Cordially,
.SP 4
Publisher
.IN
.SP 4
Enclosures
```

Printer Output

The form letter was printed using an HP 2601A Printer and HP 82939A Serial Interface.

HARPER'S

Two Park Avenue, New York, N.Y. 10016

Dear Reader:

Last year 20% of Harper's readers wrote an article or book, 44% gave public speeches, 14% sat on corporate boards. Some 4% ran for office, and 30% traveled abroad for pleasure. Lively crew.

Here we're playing a pretty well-founded hunch. We think you're a doer--a literate, involved citizen who goes places and stirs up things, talks back to the talking heads on TV, holds strong opinions but revises them regularly, enjoys reading something meatier than picture captions and cartoon balloons...

So what?

So we're betting you'll be a natural reader--a happy, regular reader--if we can just get you started.

To help that thought along, I am respectfully putting the best bargain subscription Harper's can manage under your nose right now: a free test issue to begin, credit and refund available, a very good price--the works.

To begin with, Harper's as I'm sure you know, has a pedigree that no other American publication can match: 132 years of continuous, useful service. Through those years, the magazine's editors and writers have made rich contributions to the intellectual, cultural, and political life of our nation. We can drop such names as Mark Twain and Bret Harte by the yard, clear up to Tom Wolfe and Annie Dillard and George Plimpton and Joel Agee.

If you haven't seen Harper's lately, it's as stimulating as ever--but we've changed, just as you have and the world has in recent months. Constant change, to keep up with the times and a bit ahead, has been true of Harper's since 1850, come to think of it. See for yourself.

Sign and return the enclosed card, noting that it offers you a no-money-at-all guarantee if your first issue doesn't stimulate, irritate, amuse, and--all told--please you to no end.

We're betting, of course, that you will be or have been in the habit of making speeches or writing articles or books, or traveling abroad, or sitting on a board of directors, or maybe running for office, like lots of our present subscribers. And when called upon to do any or all of the above, we're betting you'll find some of your best ideas were formed over a Harper's. See. Today. We'll even pay your postage.

Cordially,

Publisher

Enclosures

Printing a Report

Using the capabilities of a Plotter ROM and a Hewlett-Packard graphics printer, the WORD/80 Formatter can print a document containing one or more illustrations.

The .DG (Dump Graphics) Formatter command embedded in the following Editor file causes the Formatter to access and print the ILLUS graphics disc file. Before the Formatter is run, an HP-86/87 BASIC program is used to create and store the ILLUS graphics file.

Source Editor File

```
.CO     Copyright 1982 IEEE.  Reprinted, with permission, from "The Evidence for
.CO     Long Waves" by Alan K. Graham, IEEE SPECTRUM, March 1982.
.CO         ---> LongWaves: Top of file.  Start Table of Contents file. <---
.TC LW-TOC
.CO         ---> Define HP 82905B Printer escape sequences. <---
.CS esc \27:0\
.CS wide-40 \esc\ &k1S:0
.CS normal-80 \esc\ &k0S:0
.CO \wide-40\ sets printer to double-wide; \normal-80\ sets printer to normal.
.CO         ---> Set vertical margins and spacing. <---
.TM 4; .BM 4; .VS 2
.CO
.CO         ---> Set margins and printer for double-wide printing. <---
.CO         ---> Center and print title in boldface. <---
.LM 1 ; .RM 40
\wide-40\
.JC 1; .BO "The Evidence for Long Waves"
\normal-80\
.CO
.CO         ---> Set standard margins.  <---
.LM 7; .RM 73
.CO
.CO         ---> Set headers, footers, justify, and fill. <---
.JR ; .OH "The Evidence for Long Waves"
.JL ; .EH "The Evidence for Long Waves"
.JC ; .OF "(#)"  ; .EF "(#)"
.JU ; .FI
.CO
.CO         ---> Set Level One heading and paragraph format. <---
.SE 1 1 "Introduction" 3
.PP 7 1
.CO
.CO         ---> Begin text. <---
Technology is often regarded as if it were an unchanging, inexorable
process.  That may be true from one year to the next.
But from decade to decade, the pace of technological progress
can change dramatically [see illustration].
.PP
\u+\Basic innovation\u-\ is defined as innovation that creates new
industries or transforms existing ones.
There were very sharp peaks or surges of basic innovation around
the 1760s, the 1830s, the 1880s, and the 1930s.
In other words, the progress of technology is not at all smooth;
it proceeds in cycles of about 50 years' duration.
.CO
.CO         ---> Dump ILLUS file <---
.DG "ILLUS"
```

```
.SE 1 "Another Surge?" ; .PP
The illustration     suggests that another surge of innovation may
begin over the next 10 years and that the predecessors of those innovations
exist \u+\right now\u-\
as laboratory prototypes or highly specialized, limited-application
technologies.  (This is called the
\u+\invention stage\u-\.)
For example, of the eleven basic innovations of the 1920s and 1930s listed
below,  eight had reached the invention stage by 1920.
.CO
.CO        ---> Make sure 18 lines are free; copy display; set new margins. <---
.TP 18 ; .DS; .LM 1; .RM 80


.BO
                              Technological Surges

.NO; .UN
          1820-30                  1870-80                    1930-40
.NO

       Telegraph                Incandescent light        Fluorescent light
       Insulated wire           Telephone                 Television
       Steam locomotive         Refrigeration             Catalytic refining
       Rolled rail              Electric locomotive       Diesel locomotive
       Bicycle                  Aluminum                  Automatic transmission
       Portland cement          Anesthetics               Power steering
       Photography              Antitoxins                Penicillin
       Pharmaceutical           Rayon                     Nylon
         production             Chemical fertilizer       Jet engine
                                Gasoline motor            Radar
                                                          Plexiglas

.CO        ---> End display copy.  Margins are reset. <---
.DE
.PP
Statistics imply that in 1981 most of the
next-wave basic innovations became working
inventions, half started development, and a decision to market
was made on fewer than a quarter, but very few
were commercially available.
.SE 1 "Fifty-Year Change Cycles"  ; .PP
Innovation is but one of several arenas where a 50-year cycle is revealed.
Studies and simulation modeling at MIT suggest that long waves originate
from the dynamics of physical capital formation--at the peak of a long
wave, a variety of mechanisms have encouraged the overbuilding of plant,
equipment, and infrastructure.
Demand for these capital goods falls and the economy enters
a depression.
Eventually, accumulated depreciation creates a need for new
building, which sets the stage for a period of expansion (and
innovation), peaking, and again depression.
.SE 1 "Wide-Ranging Effects" ; .PP
As might be imagined, the effects radiate throughout the
economy; statistical evidence suggest 50-year cycles not only in innovation,
but in capital intensity of production, unemployment, prices,
interest rates, energy sources, and even political attitudes.

.JR 1
--A.K.G.
```

Graphics Program Listing

The graphics display printed in the document is created by entering and executing the following BASIC program:

```
10 REM This is program DRAW, which draws a graph illustrating
20 REM the evidence for Long Waves, or cycles of innovation.
30 DIM A(25)
40 GRAPHALL
50 CSIZE 5
60 GCLEAR
70 LOCATE 50,150,24,90
80 SCALE 1750,1990,0,22
90 LAXES 50,2,1750,0
100 DATA 3,3,6,1,1,1,1,2,7,7,4,5,7,8,20,10,.05,2,7,21,8,5
110 year=1745
120 PEN UP
130 READ A(1)
140 MOVE year,A(1)
150 FOR I=2 TO 22
160 year=year+10
170 READ A(I)
180 DRAW year,A(I)
190 NEXT I
200 PEN UP
210 MOVE 1700,5.5
220 DRAW 1965,5.5
230 LABEL "Mean"
240 PEN UP
250 MOVE 1700,.5
260 DRAW 1965,11
270 LABEL "Trend"
280 MOVE 1825,-7.5
290 LABEL "Calendar Year"
300 MOVE 1765,24
310 LABEL "Frequency of basic innovations"
320 MOVE 1835,22
330 LABEL "per decade"
340 GSTORE "ILLUS"
350 ALPHA
360 DISP USING "4/"
370 DISP "Display copied to disc!"
380 END
```

The HP-86/87 GSTORE statement (line 340) stores the current graphics display on the disc in the currently selected disc drive as a type GRAF file. No Plotter ROM is necessary to create a graphics display or to store it as a disc file.

Printer Output

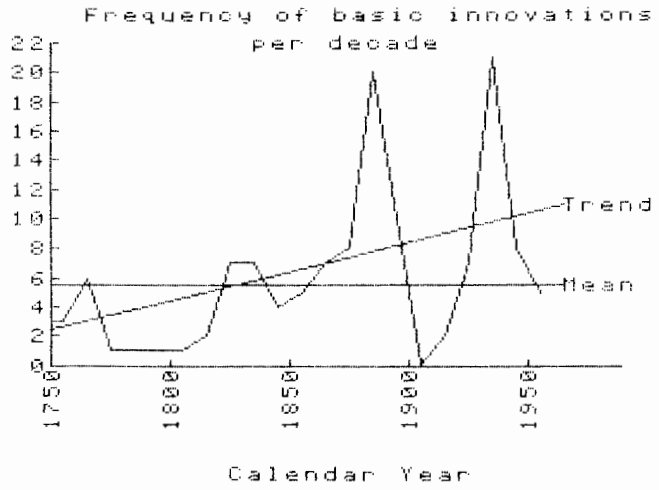
The report, consisting of source file and graphics file, was printed with an HP 82905B Printer.

The Evidence for Long Waves

1 Introduction

Technology is often regarded as if it were an unchanging, inexorable process. That may be true from one year to the next. But from decade to decade, the pace of technological progress can change dramatically [see illustration].

Basic innovation is defined as innovation that creates new industries or transforms existing ones. There were very sharp peaks or surges of basic innovation around the 1760s, the 1830s, the 1880s, and the 1930s. In other words, the progress of technology is not at all smooth; it proceeds in cycles of about 50 years' duration.



The Evidence for Long Waves

2 Another Surge?

The illustration suggests that another surge of innovation may begin over the next 10 years and that the predecessors of those innovations exist right now as laboratory prototypes or highly specialized, limited-application technologies. (This is called the invention stage.) For example, of the eleven basic innovations of the 1920s and 1930s listed below, eight had reached the invention stage by 1920.

Technological Surges

1820-30	1870-80	1930-40
Telegraph	Incandescent light	Fluorescent light
Insulated wire	Telephone	Television
Steam locomotive	Refrigeration	Catalytic refining
Rolled rail	Electric locomotive	Diesel locomotive
Bicycle	Aluminum	Automatic transmission
Portland cement	Anesthetics	Power steering
Photography	Antitoxins	Penicillin
Pharmaceutical production	Rayon	Nylon
	Chemical fertilizer	Jet engine
	Gasoline motor	Radar
		Plexiglas

Statistics imply that in 1981 most of the next-wave basic innovations became working inventions, half started development, and a decision to market was made on fewer than a quarter, but very few were commercially available.

3 Fifty-Year Change Cycles

Innovation is but one of several arenas where a 50-year cycle is revealed. Studies and simulation modeling at MIT suggest that long waves originate from the dynamics of physical capital formation--at the peak of a long wave, a variety of mechanisms have encouraged the overbuilding of plant, equipment, and infrastructure. Demand for these capital goods falls and the economy enters a depression. Eventually, accumulated depreciation creates a need for new building, which sets the stage for a period of expansion (and innovation), peaking, and again depression.

4 Wide-Ranging Effects

As might be imagined, the effects radiate throughout the economy; statistical evidence suggest 50-year cycles not only in innovation, but in capital intensity of production, unemployment, prices, interest rates, energy sources, and even political attitudes.

--A.K.G.

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2 Another Surge? 2
3 Fifty-Year Change Cycles 3
4 Wide-Ranging Effects 3

Notes

Appendix A

Disc File Manipulations

The WORD/80 Editor enables you to create, open, catalog, merge, output, and close disc files. When you exit the Editor, a simple set of HP-86/87 commands enables you to select disc drives, to initialize, name, catalog, copy, and pack discs, and to copy, rename, purge, secure, and unsecure individual files.

Note that you can exit the Editor, perform any mass storage operations, and then press the [CONT] key to continue without losing any information in the property sheets.

Following are brief descriptions of the HP-86/87 mass storage commands. Refer to the *HP-86/87 Operating and BASIC Programming Manual*, Mass Storage Operations, Part IV, for more information.

DOT MATRIX type indicates the characters you type from the keyboard, in uppercase or lowercase letters. *Italic type* indicates the parameters, or information, you supply to the command. When a *file name* parameter is required by a command, the *file name* may also include a *drive identifier* or *disc label*. Note that file names, drive identifiers, and disc labels must be enclosed within quotation marks in HP-86/87 commands.

Selecting Disc Drives (MASS STORAGE IS)

The current disc drive is set by switching on the HP-86/87, by resetting the HP-86/87, or by executing the MASS STORAGE IS command.

```
MASS STORAGE IS ":drive identifier"
MASS STORAGE IS ":disc label"
```

Examples:

`mass storage is ":d701"`	Sets drive D701.
`mass storage is ":Ben"`	Sets drive with disc Ben.

When the Editor is first run, the drive identifier of the currently selected disc drive will appear in the Open and Catalog property sheets. If 2 Create or 1 Open is pressed with just the file name in the Editor property sheet, the file on the currently selected disc will be created or opened.

After a file is opened, the currently selected disc drive will be accessed during a Get operation or a Put operation if just the file name is entered in the Get or Put property sheet.

> **Note:** If you forget which disc drive is the currently selected drive during an editing session, delete the Catalog Of Disc: field in the Catalog property sheet ([-LINE]) and press [END LINE]. The drive identifier will appear in the Catalog Of Disc: field.

Initializing Discs (INITIALIZE)

A new disc must be initialized before it can be used. Use the INITIALIZE command to prepare a disc for storing WORD/80 programs and files.

```
INITIALIZE["disc label"[," :drive identifier" or "  .old disc label"]]
```

Examples:

`INITIALIZE`	Initializes the disc in currently selected drive. No label is given to the disc.
`INITIALIZE "Empty"`	Initializes the disc in currently selected drive and labels it `Empty`.
`INITIALIZE "7/82", ":d701"`	Initializes the disc in drive `D701` and labels it `7/82`. Note that you must specify a disc label to initialize a disc not in the currently selected drive.

Important: Disc initialization completely erases information previously stored on the disc. Be sure that nothing of value resides on the disc to be initialized, that the right disc is inserted in the right drive, and that the INITIALIZE command is typed properly before pressing END LINE.

Naming Discs (VOLUME IS)

The `VOLUME IS` command enables you to name a disc or to change the existing name of a disc.

```
VOLUME " :drive identifier" or "  .old disc label"  IS  "new disc label"
```

Examples:

`volume ":d701" is "Word80"`	Names the disc in drive `D701` `Word80`.
`volume ".BJY" is "BTY"`	Renames disc `BJY` to `BTY`. Note that the *new disc label* is not preceded by a period.

Disc labels may consist of one to six characters. Case and spacing are important, except that trailing spaces are ignored.

Use the `VOLUME IS` command as in the first example when making a backup copy of the WORD/80 disc. The reason is that both the Editor and the Formatter will initially search for the disc labeled `Word80` *if* the disc is not inserted in the currently selected disc drive.

To avoid misdirected disc accesses while running the Editor and Formatter, ensure that the discs in the available disc drives have *unique* volume labels.

Cataloging Discs (CAT)

To catalog a disc while running the Editor or Formatter, press the **4 Catalog** key. To catalog a disc before or after running the Editor or Formatter, use the CAT command.

```
CAT[" :drive identifier" or " .disc label"]
```

Examples:

`cat`	Catalogs the currently selected disc.
`cat ":d701"`	Catalogs the disc in drive D701.
`cat ".MyDisc"`	Catalogs the disc named MyDisc.

WORD/80 files are indicated in disc catalogs by the word DATA in the Type column. Editor files that may be directly edited consist of 1683-byte records; output text files created with the **5 Put** key or the Formatter will consist of 256-byte records.

Packing Discs (PACK)

Use the PACK command to remove gaps (NULL files) left on a disc when individual files are purged.

```
PACK[" :drive identifier" or " .disc label"]
```

Examples:

`pack`	Packs the disc in currently selected drive.
`pack ":d701"`	Packs the disc in drive D701.

The Editor packs a disc whenever creating a file (either an Editor file or a text file) or whenever opening a file with the work copy option. The Formatter packs a disc whenever creating an output file or a Table of Contents file.

The time required for packing a disc depends on the number and size of files on the disc and on the number, size, and position of NULL (previously purged) files on the disc.

Copying Discs and Files (COPY)

Use the COPY command to make copies of entire discs or of individual files.

```
COPY " :drive identifier 1" or " .disc label 1" TO " :drive identifier 2" or " .disc label 2"

COPY "file name 1" TO "file name 2"
```

Examples:

`copy ":d700" to ":d701"`	Copies the entire contents of the disc in drive D700 to the end of files on the disc in drive D701.
`copy ",OLD" to ":d701"`	Copies the entire contents of the OLD disc to the end of files on disc in drive D701.
`copy "First" to "Second"`	Copies file First on currently selected disc to new file Second on same disc.
`copy "6/5/Memo" to "6/5/Memo:d701"`	Copies file 6/5/Memo from currently selected disc to new file 6/5/Memo on disc in drive D701.
`copy "Letter:d700" to "LetterA:d701"`	Copies the Letter file from disc in drive D700 to the new LetterA file on disc in drive D701.

Note that duplicate file names on discs are not allowed.

Renaming Files (RENAME)

Use the RENAME command to rename individual files.

```
RENAME "file name 1" TO "file name 2"
```

Examples:

`rename "OldFile" to "NewFile"`	Renames the file on the currently selected disc.
`rename "OldFile:d701" to "NewFile"`	Renames the file on the disc in drive D701.

Purging Files (PURGE)

Use the PURGE command to purge unwanted files.

```
PURGE "file name" [,0]
```

Examples:

`purge "OutDated"`	Purges the OutDated file on the currently selected disc.
`purge "DoneWith:d701"`	Purges the DoneWith file on disc in drive D701.
`purge "OldFile",0`	Purges the OldFile on the currently selected disc and *all subsequent files* on that disc.

Note that appending a zero to the PURGE command causes all files including and following the named file to be purged. *Don't purge files until you're certain you won't be needing them.* A purged file is irrecoverable.

Purging a file opens a gap in the disc catalog, indicated by a NULL file type. Packing a disc removes NULL files from the catalog.

Securing Files (SECURE, UNSECURE)

Use the SECURE command to limit access to WORD/80 files.

```
SECURE "file name", "one or two characters", 2 or 3
```

Examples:

`secure "Barbara","x",2`	Write-protects file Barbara on the currently selected disc. That is, the file can be opened but not edited in any way.
`secure "Barbara","y",3`	Removes the file name from the catalog of the currently selected disc.
`secure "Hank:d701","z",3`	Removes the file name from the catalog of the disc in drive D701.

A type 2 secured file will cause the Editor to report an error when attempting to close the file, and the editing session will have to be abandoned, with no changes made to the original and work copy files.

The name of a type 3 secured file will not appear in the disc catalog. Only users who know the file name in advance will be able to open the file.

You can secure a file both ways by executing two SECURE commands on that file.

To remove the security from a file, use the UNSECURE command.

```
UNSECURE "file name", "one or two characters", 2 or 3
```

Examples:

`unsecure "Barbara","a",2`	Removes the write-protection from the Barbara file on the currently selected disc.
`unsecure "Hank:d701","b",3`	Restores the Hank file name to the catalog of the disc in drive D701.

Use the same number, 2 or 3, in an UNSECURE command as that used in the SECURE command. Any one or two characters may be typed after the file name.

Notes

Appendix B

HP-86/87 Character Set

Latch the (CAPS LOCK) key to lock the keyboard in lowercase so that unshifted letter keys (for example, (A)) display lowercase letters (for example, a). You may instead type FLIP (END LINE) before running the Editor program or Formatter program.

Display Character	ASCII Mnemonic	Decimal Code	WORD/80 Keystroke
⌂	NULL	0	(@) sc
¿	SOH	1	(A) sc
X̄	STX	2	(B) sc
N̄	ETX	3	(C) sc
α	EOT	4	(D) sc
β	ENQ	5	(E) sc
Σ	ACK	6	(F) sc
Δ	BEL	7	(G) sc
←	BS	8	(H) sc
σ	HT	9	(I) sc
↑	LF	10	(J) sc
λ	VT	11	(K) sc
μ	FF	12	(L) sc
	CR*	13	(M) sc
⊤	SO	14	(N) sc
π	SI	15	(O) sc
Θ	DLE	16	(P) sc
Æ	DC1	17	(Q) sc
æ	DC2	18	(R) sc
Ä	DC3	19	(S) sc
ä	DC4	20	(T) sc
Ä	NAK	21	(U) sc
ä	SYN	22	(V) sc
Ö	ETB	23	(W) sc
ö	CAN	24	(X) sc
Ü	EM	25	(Y) sc
ü	SUB	26	(Z) sc
⊢	ESC	27	([) sc
|	FS	28	(\) c
—	GS	29	(]) sc
£	RS	30	(↑) sc
+	US	31	(-) sc

Display Character	Decimal Code	WORD/80 Keystroke
space	32	space bar
!	33	(!) s
"	34	(") s
#	35	(#) s
$	36	($) s
%	37	(%) s
&	38	(&) s
'	39	(')
(	40	(() s
)	41	(()) s
*	42	(*) s
+	43	(+) s
,	44	(,)
-	45	(-)
.	46	(.)
/	47	(/)
0	48	(0)
1	49	(1)
2	50	(2)
3	51	(3)
4	52	(4)
5	53	(5)
6	54	(6)
7	55	(7)
8	56	(8)
9	57	(9)
:	58	(:) s
;	59	(;)
<	60	(<) s
=	61	(=)
>	62	(>) s
?	63	(?) s

* The CR (carriage return) character, although not displayed by the HP-86/87, may be entered in an Editor file.

s Indicates that (SHIFT) is held down while the letter or symbol key is pressed.

sc Indicates that both (SHIFT) and (CTRL) are held down while the letter or symbol key is pressed. Note that the 33 *control characters* (decimal codes 0 through 31 and 127) will be interpreted differently by printers than by the HP-86/87 display.

Display Character	Decimal Code	WORD/80 Keystroke
@	64	@ s
A	65	S s
B	66	B s
C	67	C s
D	68	D s
E	69	E s
F	70	E s
G	71	G s
H	72	H s
I	73	I s
J	74	J s
K	75	K s
L	76	L s
M	77	M s
N	78	N s
O	79	O s
P	80	P s
Q	81	Q s
R	82	R s
S	83	S s
T	84	T s
U	85	U s
V	86	V s
W	87	W s
X	88	X s
Y	89	Y s
Z	90	Z s
[	91	[s
\	92	\
]	93	] s
^	94	^ s
_	95	_ s

Display Character	Decimal Code	WORD/80 Keystroke
`	96	RESLT s
a	97	A
b	98	B
c	99	C
d	100	D
e	101	E
f	102	F
g	103	G
h	104	H
i	105	I
j	106	J
k	107	K
l	108	L
m	109	M
n	110	N
o	111	O
p	112	P
q	113	Q
r	114	R
s	115	S
t	116	T
u	117	U
v	118	V
w	119	W
x	120	X
y	121	Y
z	122	Z
{	123	/ s†
|	124	| s
}	125	- s†
~	126	* s†
▒ (DEL)	127	+ s†

† On the numeric keypad.

Appendix C

Formatter Printer Files

The WORD/80 disc includes three Formatter printer files written for specific system printers. These files make available a number of Character String abbreviations that enable you to access alternate character sets, to print compressed or expanded characters, to vary the number of lines printed per inch, etc.

To use the control codes for your printer, place a .RD (Read File) command near the beginning of the source file.

Example:

```
.LM 7; .RM 75; .JL ; .FI
 RD HP82905B.Word80
.TM 3; .BM 3
```

The above Read File command causes the Formatter to access the WORD/80 disc and to process the HP82905B file before formatting the rest of the source file. The contents of the printer file will not be printed as the file is read; instead, the Character String definitions for that printer will be stored in system memory.

Afterwards, an escaped abbreviation appearing in the source file will cause the corresponding printer action to occur. For example, after file HP82905B is read, if \L- appears in the source text, the HP 82905B Printer will be instructed to print an English pound sign (£). Be sure to spell the file name in the .RD command correctly, with no embedded blanks.

To edit a Formatter printer file, you should create a new, temporary Editor file, read the Formatter printer file into the Editor file using the 6 Get key, and overwrite the original Formatter printer file using the 5 Put key when you've finished editing the file.

The HP 82905A Printer File

```
.co File name: HP82905A - Defines character strings for the HP 82905A Printer.
.cs esc                 \27:0\              ;.co  ASCII escape character
.cs so                  \14:0\              ;.co  shift-out
.cs si                  \15:0\              ;.co  shift-in
.cs normal-80           \18:0\              ;.co  80 columns/line
.cs wide-40             \14:0\              ;.co  40 columns/line
.cs narrow-132          \15:0\              ;.co 132 columns/line
.cs medium-66           \15:0\ \14:0\       ;.co  66 columns/line
.cs wide-48             \esc\ M:0 \14:0\    ;.co  48 columns/line
.cs narrow-96           \esc\ M:0           ;.co  96 columns/line
.is                                         ;.co  ignore start comments

       The following character string  definitions  need
       to  be  edited to tailor the printer for specific
       document  formats.   The  editing  is  relatively
       simple and usually consists of changing a numeric
       parameter in an escape sequence.

       Vertical Line Spacing.
       Sets vertical line spacing to: 6,8,9,12,18,24,36,72.

       Examples:
           6 lines/inch: .cs VertSpacing  \esc\ 2:0
           8 lines/inch: .cs VertSpacing  \esc\ 0:0
          12 lines/inch: .cs VertSpacing  \esc\ A:0 \6:0\

       Afterwards, include the character string  in  the
       source  text  as \VertSpacing\.  (Since the third
       example would set the printer  for  half-spacing,
       one might want to rename the new character string
       to 'HalfSpacing'.)

.ie                                         ;.co  ignore end comments
.cs VertSpacing     \esc\ 2:0
.is
       Form(Text) Length in inches.
       Sets length of form within page.  \esc\ C+0+M:0   where 1<=M<=22

       Example:
          11 inches/form: .cs FormLength  \esc\ C:0 \0:0\ \11:0\
.ie
.cs FormLength          \esc\  C:0 \0:0\ \11:0\
.is
       Page Length.
       Sets the length of the page, in lines. (Default is 66)
       \esc\ C+n where 1<=n<=127 & n=# of lines.

       Example:
          66 lines/page: .cs PageLength   \esc\ C:0 \66:0\
.ie
.cs PageLength          \esc\  C:0 \66:0\
.is
       Graphics Byte Count.
       Sets the number of bytes of graphic data that the
       printer  expects  to follow.  Format ESC K + n1 +
       n2 or ESC L +n1 + n2 where  n1  and  n2  are  the
       number  of  data  bytes.   n1  is eight low order
       bits.  n2 is high.
.ie
.cs GraphicCount50      \esc\ K:0 \50:0\ \0:0\ ;.co  50 bytes to printer
.cs GraphicCount256     \esc\ K:0 \0:0\ \1:0\  ;.co 256 bytes to printer
```

Appendix C

Formatter Printer Files

The WORD/80 disc includes three Formatter printer files written for specific system printers. These files make available a number of Character String abbreviations that enable you to access alternate character sets, to print compressed or expanded characters, to vary the number of lines printed per inch, etc.

To use the control codes for your printer, place a .RD (Read File) command near the beginning of the source file.

Example:

```
.LM 7; .RM 75; .JL ; .FI
 RD HP82905B.Word80
.TM 3; .BM 3
```

The above Read File command causes the Formatter to access the WORD/80 disc and to process the HP82905B file before formatting the rest of the source file. The contents of the printer file will not be printed as the file is read; instead, the Character String definitions for that printer will be stored in system memory.

Afterwards, an escaped abbreviation appearing in the source file will cause the corresponding printer action to occur. For example, after file HP82905B is read, if \L- appears in the source text, the HP 82905B Printer will be instructed to print an English pound sign (£). Be sure to spell the file name in the .RD command correctly, with no embedded blanks.

To edit a Formatter printer file, you should create a new, temporary Editor file, read the Formatter printer file into the Editor file using the 6 Get key, and overwrite the original Formatter printer file using the 5 Put key when you've finished editing the file.

The HP 82905A Printer File

```
.co File name: HP82905A - Defines character strings for the HP 82905A Printer.
.cs esc                 \27:0\              ;.co  ASCII escape character
.cs so                  \14:0\              ;.co  shift-out
.cs si                  \15:0\              ;.co  shift-in
.cs normal-80           \18:0\              ;.co  80 columns/line
.cs wide-40             \14:0\              ;.co  40 columns/line
.cs narrow-132          \15:0\              ;.co 132 columns/line
.cs medium-66           \15:0\ \14:0\       ;.co  66 columns/line
.cs wide-48             \esc\ M:0 \14:0\    ;.co  48 columns/line
.cs narrow-96           \esc\ M:0           ;.co  96 columns/line
.is                                         ;.co  ignore start comments

       The following character string  definitions  need
       to  be  edited to tailor the printer for specific
       document  formats.  The  editing  is  relatively
       simple and usually consists of changing a numeric
       parameter in an escape sequence.

       Vertical Line Spacing.
       Sets vertical line spacing to: 6,8,9,12,18,24,36,72.

       Examples:
           6 lines/inch: .cs VertSpacing  \esc\ 2:0
           8 lines/inch: .cs VertSpacing  \esc\ 0:0
          12 lines/inch: .cs VertSpacing  \esc\ A:0 \6:0\

       Afterwards, include the character string  in  the
       source  text  as \VertSpacing\.  (Since the third
       example would set the printer  for  half-spacing,
       one might want to rename the new character string
       to 'HalfSpacing'.)

.ie                                         ;.co  ignore end comments
.cs VertSpacing     \esc\ 2:0
.is
       Form(Text) Length in inches.
       Sets length of form within page.  \esc\ C+0+M:0   where 1<=M<=22

       Example:
          11 inches/form: .cs FormLength  \esc\ C:0 \0:0\ \11:0\
.ie
.cs FormLength          \esc\  C:0 \0:0\ \11:0\
.is
       Page Length.
       Sets the length of the page, in lines. (Default is 66)
       \esc\ C+n where 1<=n<=127 & n=# of lines.

       Example:
          66 lines/page: .cs PageLength   \esc\ C:0 \66:0\
.ie
.cs PageLength
.is                     \esc\  C:0 \66:0\
       Graphics Byte Count.
       Sets the number of bytes of graphic data that the
       printer  expects  to follow.  Format ESC K + n1 +
       n2 or ESC L +n1 + n2 where  n1  and  n2  are  the
       number  of  data  bytes.   n1  is eight low order
       bits.  n2 is high.
.ie
.cs GraphicCount50      \esc\ K:0 \50:0\ \0:0\ ;.co  50 bytes to printer
.cs GraphicCount256     \esc\ K:0 \0:0\ \1:0\  ;.co 256 bytes to printer
```

The HP 82905B Printer File

The HP 82905B printer file defines both alternate characters and printer control codes.

HP 82905B Printer Alternate Characters

After a .RD HP82905B command in the source file, type the specified characters from the following table to print the alternate character. The escape character is assumed to be the back slash (\).

Source File Characters	Printed Character	Source File Characters	Printed Character
\'<\	´	\'>\	`
\^\	^	\"\	¨
\^^\	~	\L=\	£
\-^\	¯	\deg\	°
\c,\	ç	\N-\	Ñ
\n-\	ñ	\!\	¡
\?\	¿	\OX\	¤
\L-\	£	\sect\	§
\a^\	â	\e^\	ê
\o^\	ô	\u^\	û
\a'\	á	\e'\	é
\o'\	ó	\u'\	ú
\'a\	à	\'e\	è
\A.\	Å	\i^\	î
\O/\	Ø	\AE\	Æ
\a.\	å	\i'\	í
\o/\	ø	\ae\	æ
\A"\	Ä	\'i\	ì
\O"\	Ö	\U"\	Ü
\E'\	É	\I"\	ï
\ss\	ß		

HP82905B File Listing

```
.co File name: HP82905B - Defines character strings for the HP 82905B Printer.
.cs esc                  \27:0\              ;.co  ASCII escape
.cs so                   \14:0\              ;.co  shift-out
.cs si                   \15:0\              ;.co  shift-in
.cs reset                \esc\ E:0           ;.co  reset printer to power-on state
.cs normal-80            \esc\ &k0S:0        ;.co  80  columns/line
.cs wide-40              \esc\ &k1S:0        ;.co  40  columns/line
.cs narrow-132           \esc\ &k2S:0        ;.co 132  columns/line
.cs medium-66            \esc\ &k3S:0        ;.co  66  columns/line
.cs bold-80              \esc\ &k9S:0        ;.co  80  columns/line
.is                                          ;.co  ignore start comments

        The following character string  definitions  need
        to  be  edited to tailor the printer for specific
        document  formats.  The  editing  is  relatively
        simple and usually consists of changing a numeric
        parameter in an escape sequence.

        Vertical Line Spacing.
        Sets vertical line spacing to: 6,8,9,12,18,24,36,72.

        Examples:
           6 lines/inch: .cs VertSpacing  \esc\ &l:0  6:0  D:0
          12 lines/inch: .cs VertSpacing  \esc\ &l:0 12:0  D:0

        Afterwards, include the character string  in  the
        output   text   as   \VertSpacing\.   (Since this
        example would set the printer for half-  spacing,
        one might want to rename the new character string
        to 'HalfSpacing'.)

.ie                                          ;.co ignore end comments
.cs VertSpacing          \esc\ &l:0      6:0     D:0
.is
        Text Length.
        Sets the length of a form within a page.

        Example:
          54 lines/form: .cs TextLength  \esc\ &l:0  54:0   F:0
.ie
.cs TextLength           \esc\ &l:0     54:0     F:0
.is
        Page Length.
        Sets the length of the page. (Default is 66)

        Example:
          66 lines/page: .cs PageLength  \esc\ &l:0   66:0  P:0
.ie
.cs PageLength           \esc\ &l:0      66:0     P:0
.is
        Automatic Perforation Skip.
.ie
.cs PageFeedOn           \esc\ &l:0       1:0     L:0
.cs PageFeedOff          \esc\ &l:0       0:0     L:0
.is
        Graphics Byte Count.
        Sets the number of bytes of graphic data that
        the printer expects to follow.
```

```
.ie
.cs GraphicCount        \esc\ *b:0      00:0      G:0
.is
        Definitions for the HP 82905B alternate characters.
.ie
.cs     "'<"      \so\ \40\ \si\          ; .cs    "'a"      \so\ \72\ \si\
.cs     "'>"      \so\ \41\ \si\          ; .cs    "'e"      \so\ \73\ \si\
.cs     "^"       \so\ \42\ \si\          ; .cs    "'o"      \so\ \74\ \si\
.cs     '"'       \so\ \43\ \si\          ; .cs    "'u"      \so\ \75\ \si\
.cs     "^^"      \so\ \44\ \si\          ; .cs    'a"'      \so\ \76\ \si\
.cs     "L="      \so\ \47\ \si\          ; .cs    'e"'      \so\ \77\ \si\
.cs     "-^"      \so\ \48\ \si\          ; .cs    'o"'      \so\ \78\ \si\
.cs     "deg"     \so\ \51\ \si\          ; .cs    'u"'      \so\ \79\ \si\
.cs     "c,"      \so\ \53\ \si\          ; .cs    "A."      \so\ \80\ \si\
.cs     "N-"      \so\ \54\ \si\          ; .cs    "i^"      \so\ \81\ \si\
.cs     "n-"      \so\ \55\ \si\          ; .cs    "O/"      \so\ \82\ \si\
.cs     "!"       \so\ \56\ \si\          ; .cs    "AE"      \so\ \83\ \si\
.cs     "?"       \so\ \57\ \si\          ; .cs    "a."      \so\ \84\ \si\
.cs     "OX"      \so\ \58\ \si\          ; .cs    "i'"      \so\ \85\ \si\
.cs     "L-"      \so\ \59\ \si\          ; .cs    "o/"      \so\ \86\ \si\
.cs     "sect"    \so\ \61\ \si\          ; .cs    "ae"      \so\ \87\ \si\
.cs     "a^"      \so\ \64\ \si\          ; .cs    'A"'      \so\ \88\ \si\
.cs     "e^"      \so\ \65\ \si\          ; .cs    "'i"      \so\ \89\ \si\
.cs     "o^"      \so\ \66\ \si\          ; .cs    'O"'      \so\ \90\ \si\
.cs     "u^"      \so\ \67\ \si\          ; .cs    'U"'      \so\ \91\ \si\
.cs     "a'"      \so\ \68\ \si\          ; .cs    "E'"      \so\ \92\ \si\
.cs     "e'"      \so\ \69\ \si\          ; .cs    'I"'      \so\ \93\ \si\
.cs     "o'"      \so\ \70\ \si\          ; .cs    "ss"      \so\ \94\ \si\
.cs     "u'"      \so\ \71\ \si\
```

HP 2601A Printer File

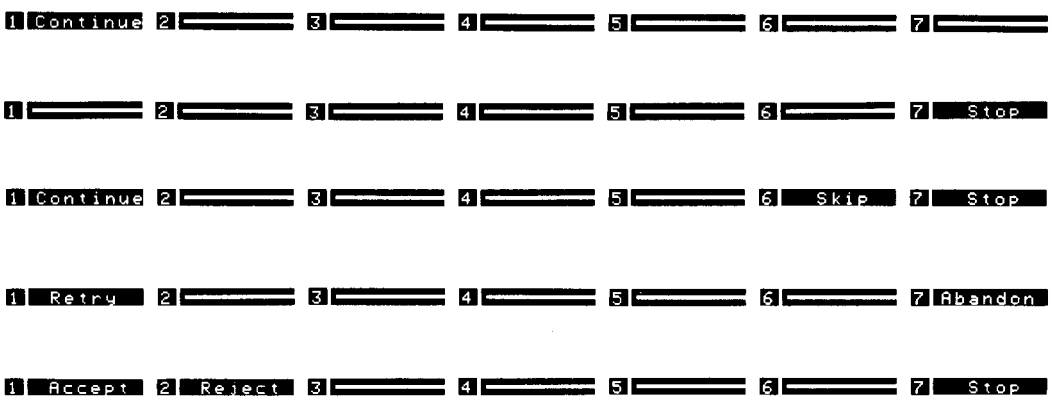
```
.co File name: HP2601A - Defines character strings for the HP 2601A Printer.
.cs cr                  \13:0\          ;.co    carriage return
.cs esc                 \27:0\          ;.co    ASCII escape
.cs so                  \14:0\          ;.co    shift-out
.cs si                  \15:0\          ;.co    shift-in
.cs sl                  \47:1\          ;.co    slash character (/)
.cs bsl                 \92:1\          ;.co    back slash (\)
.cs lf                  \10:0\          ;.co    line feed
.cs reset               \esc\\cr\P:0    ;.co    reset printer to power-on state
.is                                     ;.co    ignore start comments

      The following character string definitions cover most of the
      HP 2601A Printer features that are useful with WORD/80.

.ie                                     ;.co    ignore end comments
.cs -linefeed           \esc\\lf\       ;.co    negative line feed
.cs red                 \esc\A:0        ;.co    print in secondary color
.cs black               \esc\B:0        ;.co    print in primary color
.cs -half-lf            \esc\D:0        ;.co    negative half line feed
.cs half-lf             \esc\U:0        ;.co    half line feed
.cs ebp                 \esc\\sl:0\     ;.co    enable auto backward print
.cs dbp                 \esc\\bsl:0\    ;.co    disable auto back print
.cs u+                  \esc\E:0        ;.co    auto underscore on
.cs u-                  \esc\R:0        ;.co    auto underscore off
.cs b+                  \esc\O:0        ;.co    bold print on
.cs b-                  \esc\&:0        ;.co    bold or shadow print off
.cs s+                  \esc\W:0        ;.co    shadow print on
.cs s-                  \esc\&:0        ;.co    shadow or bold print off
.co The \reset\ is necessary to cancel previous settings.
\reset\
```

Appendix D

WORD/80 Messages

Editor and Formatter messages appear in the top line of the title/feedback window and are usually accompanied by a short beep to draw your attention.

Most messages are displayed for a few seconds and then disappear. However, if the message requires a response, then one of the following menus will become available:



The message and menu will stay in the display until you press one of the special function keys.

The following tables list Editor and Formatter messages, their meanings, and possible corrections for error conditions. A *file name* in a message may include the drive identifier or the disc label if you've previously appended a drive identifier or disc label to the file name. In the following list, *ERRN* is an HP-86/87 error identification number; refer to the appendices of the *HP-86/87 Operating and BASIC Programming Manual* for a list of system error messages.

Editor Messages

Editor Message and Condition

`At Beginning Of File`
Attempt to roll down (ROLL▼) past the beginning of file.

`At End Of File`
Attempt to roll up (SHIFT ROLL▲) past the end of file.

`Cannot Access Catalog`
Displayed after **4 Catalog** is pressed if the disc cannot be accessed. May be caused by an incorrect drive identifier or disc label in the Catalog property sheet or by an open disc drive door.

`Cannot Access Remainder Of Catalog`
Indicates the disc has become inaccessible during a Catalog operation; for example, the disc drive door has been opened after **4 Catalog** is pressed.

`Cannot Chain To EdProg.Word80` (or `FmtProg.Word80`) (w)
The Editor cannot access the WORD/80 disc, or the `EdProg` program (or the `FmtProg` program) cannot be found on the disc.

`Cannot Close Put File -- Some Lines May Be Lost` (w)
After outputting text to a disc file, the Editor cannot finish the Put operation completely. Some lines at the end of the selected block of text may not be written to the output file.

`Cannot Copy To` *file name* `-- Left On` *drive identifier* (or *disc label*) (w)
Reported if the Editor cannot update the original file after you've pressed **7 Close** with the work copy file on a separate disc. The updated version will be left on the specified disc under the name of the original file.

`Cannot Create File`
Displayed after **2 Create** is pressed if the Editor cannot create the disc file. Check the drive identifier or the disc label after the file name. The disc drive door may be open, the disc may be write-protected, or the disc may be full.

`Cannot Create Work Copy` (w)
Displayed after **1 Open** is pressed if the work copy disc is inaccessible or full.

`Cannot Open File` (w)
Displayed after **1 Open** is pressed if the specified file doesn't exist on the accessed disc, if the file is of the wrong type (must be a 1683 bytes/record `DATA` file created by the Editor), if the disc drive door is open, if the disc is write-protected. etc.

`Cannot Purge` *file name* (w)
The Editor cannot purge the original file after you've ended a work copy editing session.

`Cannot Read File` (w)
Displayed after **1 Open** is pressed if the Editor cannot interpret the contents of the specified file. The file may have been damaged.

(w) Indicates that the Editor *waits* for a special function key response.

Editor Message and Condition

Cannot Rename *file name* To *file name* (w)

The Editor cannot update the name of the work copy file. May be caused by an illegal file name in the Close property sheet.

Closing File

Confirms that 7 Close has pressed.

Attempt to paste or spread columns of text that would push text past the right edge of the display. The column Paste or Spread operation is canceled.

Copying File To Destination

If the work copy file is on a disc different from the original file disc, of if the Close File Name: field has been changed, this message is displayed after 7 Close is pressed to indicate the status of the Close operation.

Creating File

Confirms that 2 Create has been pressed.

Creating Put File

Displayed before the Editor begins outputting to a disc file.

Disc Error No. *ERRN* -- Please Check (w)

The disc drive was not ready when the Editor attempted to access the disc due to an open drive door, to a disconnected drive unit, or to the printer being switched on just as the disc access occurred. Correct the problem and press 1 Continue.

End Of Catalog(w)

During a Catalog operation, indicates no more files are on the disc.

End of Put Text(w)

Indicates a Put operation has been completed.

Error *ERRN* While Chaining(w)

The Editor was unable to chain to the Formatter program when 6 Formatr was pressed.

File Already Exists(w)

Displayed after 2 Create is pressed if a file by that name already exists on the disc.

File Getting Full -- Text Not Held After This Paste

The disc space for the file is almost full. The text being held in the text buffer may be pasted one more time in the file before the text buffer will be erased. Refer also to "No More Room In File."

Get Error No. *ERRN* -- Some Lines Not Read (w)

An error occurred during a Get operation. The source disc file may be defective. Only those lines up to this point have been read into the opened file.

Making Work Copy

Displayed after 1 Open is pressed while the Editor creates a work copy of the original file.

Editor Message and Condition

Missing Binary Program
One or all of the binary programs (Bin15, BIN24, BIN25, BIN43) cannot be loaded into system memory when the Editor is first run. All of the binary programs must be present on an accessible disc labeled Word80 or on the disc in the currently selected disc drive.

Need A File Name
You pressed 1 Open, 2 Create, or 6 Get without first specifying a file name.

No More Room In File
The Editor cannot extend the opened file further, either because the file is not the last one on disc or because the disc is full. If the file is not the last one on disc, close the file (press 7 Close) and then open a work copy of the file (press SHIFT 1 Open, select Work Copy, and press 1 Open). If the disc is full, close the file, copy the file to a disc with more room using the HP-86/87 COPY command, and open the new file.

No Property Sheet For This Command
The shifted special function key just pressed has no property sheet.

Not A Valid Disc Name
The specified name is not a valid drive identifier or disc label.

Opening File
Confirms that 1 Open has been pressed.

Opening Get File
Displayed before the Editor reads from a file when 6 Get is pressed.

Out Of Disc Space To Put Text -- Some Lines Not Written(w)
The destination disc during a Put operation has filled. The Put operation is stopped at that point. The output file will contain only those lines written to it before disc space completely filled.

Packing *drive identifier* (or *disc label*)
Displayed before the Editor creates a file, opens a work copy file, closes a file to another disc, or puts to a disc file.

Paused(w)
Appears after 2 Pause is pressed, after the information window fills during a Catalog operation, or after the information window fills during a Put operation to destination 1.

Please Wait
Displayed whenever the Editor reads from or writes to a disc.

Put Error No. *ERRN* -- Some Lines Not Written(w)
A Put operation to an output disc file has been interrupted, due, for example, to the opening of the disc drive door or to switching on the printer. Only those lines output up to this point will be contained in the output file.

Editor Message and Condition

Recovery Completed -- Saved Under *file name*(W)

Indicates that the opened file has been completely saved after a System Error. Afterwards, create a new file and read the named file into the new file using the 6 Get key.

Select First

Attempt to spread, cut, clear, copy, reformat, or output a block of text after pressing 1 Mark but before pressing 7 Select.

Sorry -- Cannot Recover Session(W)

Indicates that the Editor was unable to save the file being edited after a System Error, whether the work copy file or the original file. The work copy file or the original file may be inaccessible to future editing sessions.

Stopped(W)

Confirms that 7 Stop has been pressed.

System Error No. *ERRN* At Line *xx*(W)

The Editor encountered a serious problem during the editing session, possibly resulting from a defective disc file. The Editor will try to save all of the currently opened file before exiting. The number *xx* is the line number of the Editor program in which the error occurred.

Trying To Recover Edit Session

Displayed if the Editor has experienced a System Error. Indicates that the Editor is trying to save the latest version of the opened file.

Unknown Put Device

Attempt to output to a device whose select code is unknown, as for example, specifying *801* as the device address of a printer whose device address is actually 701.

Will Not Fit On This Line

Attempt to cut or paste a block of text when matching ends of lines do not fit on the same line. The text will be relocated at the next line of the file.

Formatter Messages

A *command* in a Formatter message refers to an incorrectly entered embedded command in the source file.

Formatter Message and Condition

Bad .CS Definition(W)

The definition part of a Character String command is syntactically incorrect.

Bad .CS Name(W)

The abbreviation in a Character String command is incorrect. The beginning character of an abbreviation cannot be the current Formatter escape character or a digit.

Bad DUMP GRAPHICS Parameter(W)

A .DG command was entered in the source file with one or more inappropriate parameters.

(W) Indicates that the Formatter *waits* for a special function key response.

Formatter Message and Condition

Bad Output Selection

The Output property sheet selection was improper. An invalid printer address or disc file may have been specified.

Bad Parameter For *command* (w)

An illegal parameter is specified in an embedded command. For example, an attempt is made to change the Multiple Command Character to be the same as the Command Character.

Cannot Access Directory

Attempt to catalog a disc was unsuccessful. Check the drive identifier or disc label in the Catalog property sheet. The disc drive door may be open.

Cannot Access Remainder Of Directory

The disc drive requires attention. The drive door may have been opened during a Catalog operation.

Cannot Chain To FmtProg.Word80 (or EdProg.Word80) (w)

The Formatter cannot access the WORD/80 disc, or the FmtProg program (or the EdProg program) cannot be found on the disc.

Cannot Create (Open or Read) *file name* (w)

The Formatter cannot access the specified file in a Dump Graphics, Next File, or Read File command. The disc may be in the wrong drive, the file may be the wrong type, or a duplicate file name may be specified. The Formatter skips the command after 1 Continue is pressed.

Cannot Put Table Of Contents On Same Disc As Output (w)

The Formatter cannot build the Table of Contents file on the same disc as the output disc. Specify a different output disc in the Output property sheet and press 5 Start again.

Cannot Read More Than 6 Files Deep, Skipping *file name* (w)

A file has read one file with the Read File command, which has read a second, which has read a third, etc., past six levels. The seventh nested file will be ignored.

.CS Storage Is Full (w)

Not enough room in system memory to store the current Character String definition. This and subsequent definitions will be ignored. Each Character String command requires about five bytes of memory, plus one byte for each character in the abbreviation and for each character in the definition. Total system memory reserved for Character String definitions is about 4,000 bytes.

.CS String Too Long (w)

An attempt was made to define a Character String that was longer than 80 characters.

Disc Error No. *ERRN* -- Please Check

An error occurred during a disc access. May indicate a problem with the disc drive or cable, a worn-out disc, or a damaged file.

DUMP GRAPHICS Error (w)

No Plotter ROM or appropriate printer device address can be found during the execution of a .DG command.

Formatter Message and Condition

End Of Catalog(w)
After a Catalog operation, indicates that there are no more files on the disc.

Error Closing *file name*(w)
The Formatter cannot finish outputting to the specified disc file. Some lines of text may be lost from the output file.

Error *ERRN* Packing *drive identifier*(w)
An error occurred while the Formatter was packing a disc before creating an output file or Table of Contents file. The error may indicate that some or all of the information on the disc is no longer accessible.

Error *ERRN* Printing To *file name*(w)
An error occurred while printing a line to the output file or printer.

Error Reassigning Mass Storage
The Formatter cannot access the currently selected disc drive after a Catalog operation.

Extra Parameter For *command*(w)
An embedded command has text or extra information following the last meaningful parameter.

File name Is Not A Graphics File(w)
The specified file in a .DG command is not a type GRAF file.

Formatting Completed
Indicates the Formatter has finished processing the source file. The source file will be closed, and the initial Formatter display will appear. If the Output To: field specified 1 or 2 (the information window), the Formatter will pause after displaying this message.

Looking For *file name*(w)
The Formatter cannot find a necessary file or disc, as may happen when 5 Start is pressed or when a .DG, .DR, or .NX embedded command is executed. Insert the appropriate disc in the disc drive and press 1 Continue to cause the Formatter to try again. Press 6 Skip to cause the Formatter to skip the Dump Graphics, Read File, or Next File command.

Missing Binary Program
One or all of the binary programs (BIN15, BIN24, BIN25, BIN43) cannot be loaded into system memory when the Formatter is first run. All of the binary programs must be present on an accessible disc labeled Word80 or on the disc in the currently selected disc drive.

Need A File Name
Attempt to start the Formatter without supplying a file name in the File Name: field.

Need A Number [For *command*](w)
Alphabetic information has been entered in a Formatter property sheet or embedded command where numeric information is required.

Need Parameter For *command*(w)
A parameter is missing for an embedded command that requires a parameter.

No More Room In Output File(w)
During output to a disc file, disc space has completely filled. After the 1 Continue key is pressed, the Formatter will close the source and output files and will stop formatting.

Formatter Message and Condition

No More Room In Table Of Contents File(w)
The Table of Contents file filled up the available space on the disc. No more Table of Contents entries will be processed, but the partial Table of Contents file will be preserved.

Number Too Big [For *command*](w)
A number was specified in a property sheet or embedded command that was too large. In a property sheet the original value will be restored. In an embedded command the largest reasonable value will be used after the 1 Continue key is pressed.

Number Too Small [For *command*](w)
A number was specified in a property sheet or embedded command that was too large. In a property sheet the original value will be restored. In an embedded command the smallest reasonable value will be used after the 1 Continue key is pressed.

Output Disc Is Full(w)
The Formatter cannot create an output file on the currently selected or specified disc because of insufficient disc space.

Packing *drive identifier* (or *disc label*)
Displayed before the Formatter begins writing to a disc output file or Table of Contents file. Disc packing occurs to allow for maximum file expansion on the disc.

Paused
Confirms that the 2 Pause key has been pressed. Press 1 Continue to continue the formatting.

Please Wait
Displayed when an operation will consume more than a few seconds.

Stopped(w)
Confirms that the 7 Stop key has been pressed. Formatting of the current document will be stopped, and the initial Formatter display will reappear.

System Error No. *ERRN* At Line *xx*(w)
Indicates a serious Formatter problem at line *xx* of the Formatter program. After 1 Continue is pressed, the Formatter will exit.

Table Of Contents Disc Is Full(w)
The Formatter cannot create a Table of Contents file due to insufficient disc space. No Table of Contents entries will be listed.

Too Many Characters, Data Lost(w)
Attempt to process a line of information that is too long—that is, more than 200 characters. May be caused by specifying too many Character String abbreviations in one line. The Formatter will continue at the next line of the source file, but the results will be unpredictable.

Undefined Character String Referenced
A reference was made in a .CS command to a nonexisting or deleted Character String abbreviation.

Unknown Command(w)
A Command Character was encountered but was followed by unidentifiable text. Pressing 1 Continue continues the formatting; the unknown command will be printed as literal text. Pressing 7 Stop stops the formatting.

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