

1 Before You Turn on the Computer

This Section provides crucial background information to ensure that your first encounter with BEX is a pleasant one. Because computers are so literal-minded, it's important that you're precise when you communicate with them. Part 1 explains the conventions we use in our manuals to help you communicate clearly with the computer.

Part 2 discusses the minimum equipment you *need* to run BEX. Part 3 discusses some of the equipment you *can* use with BEX. Depending on your preferences and your vision, you can access the computer in various ways: through letters on the computer monitor in various sizes, through various speech devices, and through braille screen access devices. Part 3 also covers regular printers, large print printers, and braille embossers. If you've never used an Apple before, be sure to read Part 4, where we provide fundamental information about the Apple.

The BEX Interface Guide explains how to connect the special devices that BEX supports to your Apple. For the nitty-gritty details about anything mentioned in this Section, please refer to the extensive descriptions in the BEX Interface Guide.

Part 1: Guide to Conventions in the BEX Manuals

Structure

The BEX Manual is divided into three *Levels*, Learner, User, and Master. Each Level is divided into numbered Sections, and each Section is further divided into numbered Parts. When we refer to a Part without mentioning a Section, we are talking about a Part within the current Section. All references to another Section refer to the Section within that Level, except when explicitly stated otherwise.

The Index provides page references for all three Levels. Many topics are covered at all three Levels; while the Learner Level reference may simply

provide a step-by-step sample, the Master Level reference may provide an in-depth understanding of what's happening.

Symbols used in this manual

We use the following symbols to make sure that you know exactly what to type.

This font shows you exactly what keys to press when you're typing at the Apple keyboard. Any spaces shown in this font are significant. Unless we state otherwise, you type any space shown in this font. In the braille edition, this font is transcribed with the Code for Computer Braille Notation. In the audio edition, we frequently spell out this material letter-by-letter, as well as using a distinctive tone of voice.

This font shows exactly what the computer says so you can compare what's on the screen with what's in the manual. In the braille edition, this is also transcribed with the Code for Computer Braille Notation. When the print shows a dialogue between you and BEX, your responses are in bolder type than what the computer prompts. In this case only, we use emphasis markers in the Computer Braille Transcription. What BEX prompts is emphasized; your response is not.

In the audio edition, it's shown by a slightly lower tone of voice.

Some keys have long names, which we abbreviate throughout the manual. For example, the key labelled *Return* is abbreviated <CR>. When you need to press the spacebar once, we show it as <space>. Later on you will encounter other character names inside angle brackets.

Warning! | When we want you to pay special attention to a feature, you see a note like this one.

Echo | Some information only concerns people with certain equipment. The group that it applies to appears on the left, with the note in the main body of the text.

A tale of two twos

The *two* in the Apple II family name has been represented many ways over the years. Originally, the *two* was created from a right bracket next to a left bracket. (And TEXTALKER has a special entry to pronounce this right.) Later

on, Apple used two slashes to represent the *two*; on current Apples, the *two* is shown with two uppercase letter *I*'s. Of course, devices that plug in to the Apple have used even more ways to show the *two*. In the BEX Manual, we use the Roman numeral *II* when talking about Apples. However, whenever the BEX *program* references *two* it uses the Arabic digit 2. This ensures clarity in speech output.

Part 2: Equipment Requirements

A detailed technical description of the Apple computers appears in Section 1 of the Interface Guide. Here's a summary.

- ***BEX Performs Best with 128K Apple II***

BEX is designed to work on a 128K member of the Apple II family. When you have more than 128K of memory, BEX can use this extra memory for *RAM drives*. The Apple IIc and IIgs always have at least 128K of memory. If your Apple does not have 128K of memory, you will encounter a number of limitations as you use BEX; in particular, 128K of memory is required for the Master Level. Appendix 4 discusses BEX in a 64K environment.

The information in Appendix 4 is also relevant if your Apple is the oldest member of the Apple II family, the Apple II Plus. While BEX minimally functions on a Apple II Plus, there are many BEX features that you can't take advantage of with the older machine.

The Apple IIe

To use the full power of BEX, install an *extended 80-column card*, which offers *both* 80-column text display and 64K of memory. Once you've installed the extended 80-column card, you have a 128K Apple. You cannot operate the Master Level without an extended 80-column card.

An *enhanced* Apple IIe is different from a 128K Apple IIe with an extended 80-column card. *Enhanced* means that the main computer chip on the Apple

Ile's motherboard has been changed to the same chip that the Apple IIc uses, the 653#02.

The Apple IIc

While the portable Apple IIc does not have slots for memory expansion cards or interface cards, the Apple IIc right out of the box has 128K memory and an 80-column card. The Apple IIc has two serial ports, and BEX fully supports interfacing to many devices through these ports.

The Apple IIgs

The Apple IIgs comes with 256K memory standard. BEX operates well on the newest member of the Apple II family, with one exception. On other Apples, you can enter text through a six-key, Perkins Brailier-style keyboard at the BEX User Level. However, due to differences in hardware, the six-key braille keyboard mode does not work with the Apple IIgs.

The Apple IIgs has both *slots*, like the Ile, and *ports*, like the IIc. How the Apple IIgs communicates through these slots or ports is determined by the *Control Panel* utility built in to the Apple IIgs. More details on this topic appear in Section 1 of the Interface Guide.

The Apple II Plus

We don't recommend using the Apple II Plus as the principal computer with BEX. BEX *can* minimally function (details in Appendix 4) but there's a lot of frustration ahead. No circuit cards exist to provide an Apple II Plus with the functional equivalent of the memory in a 128K Apple Ile or IIc. This means that the Master Level of BEX is not available on the Apple II Plus. BEX requires 64K of memory in the Apple II Plus to operate at ANY level--you need a language card or 16K RAM card. The Apple II Plus keyboard lacks true upper and lowercase, and some punctuation is missing. BEX allows true upper and lowercase, with or without the shift key mod.

The II Plus keyboard does not have the Open-Apple and Solid-Apple keys that control large print on the screen. The buttons on a joystick or game paddles do function like the Open-Apple and Solid-Apple keys, so if you want large print screen on an Apple II Plus, you need a joystick or game paddles. If you have an Apple II Plus and a 128K Apple, you can use the II

Plus to drive your printer while you edit and review text with the more powerful Apple.

- **Disk Drives**

In the past, Apple II'S always used 5.25 floppy disk drives. Beginning in 1986, Apple has also sold 3.5-inch disk drives, sometimes called microfloppy disk drives. To use BEX, your Apple *must have* at least one 5.25 inch disk drive, because the BEX program disk only boots from 5.25 inch floppy disks.

BEX works best when your Apple has *two* disk drives. You can tell BEX that you only have one disk drive, and BEX then prompts you to switch between the program disk and a data disk as required. However, you will be switching disks *a lot* if you have only one disk drive--more information appears in Appendix 3.

At the Learner and User Levels, BEX is limited to two 5.25 inch floppy disk drives. When you have an Apple IIgs with one 5.25 inch disk drive and one 3.5 inch disk drive, the Learner and User Levels of BEX are a little inconvenient.

At the Master Level, however, you have more disk drive options. BEX can store data on both 5.25 inch and 3.5 inch disks. When you have more than 128K memory in your Apple, BEX can use the additional memory for *RAM drives*. Finally at the Master Level, BEX supports one brand of hard disk system, the *Sider* manufactured by First Class Peripherals. Master Level Section 3 discusses all the possibilities in detail.

Part 3: Other Equipment You Can Use with BEX

None of the equipment described here is *required* when you are using BEX, but it certainly can make your computer system more productive.

- **Printing and Brailleing**

There are a great variety of inkprint printers: dot matrix, letter quality dot matrix, letter quality daisy wheel, laser printers, ink jet printers, and thermal printers. There are also two ways for the Apple to communicate with a printer: serial and parallel. BEX communicates with almost any inkprint printer in a generic fashion. BEX also has special printer drivers for specific brand name printers that allow boldface, superscripting etc.: check Interface Guide Section 4 for the brand names supported. Your computer dealer can supply you with the interface cards and expertise needed to connect an inkprint printer to your Apple. Learner Level Section 5 provides reference grids that help visually impaired people set up their printer output correctly. Interface Guide Section 4 discusses printer interfacing.

Braille embossers

BEX attempts to support every braille embosser manufactured. To generate Grade II, or literary braille, you need to have a translation program that creates the appropriate computer signals for braille embossers to generate braille. BEX translates from print to Grade II and vice versa. BEX has special drivers for braille embossers that need them. In addition, BEX supports *Dipner Dots*, a technique for generating draft-quality braille on a daisy-wheel inkprint printer. Information on Dipner Dots and interfacing braille embossers to your Apple is supplied in the BEX Interface Guide.

Large print printers

BEX creates large print output when you have the right combination of interface card and dot matrix printer. The list of supported printers and interface cards is found in Section 4 of the Interface Guide. BEX has two large print fonts: 14 and 18 point.

Voice device as a printer

It's possible to send formatted output to any voice device. The higher quality speech synthesizers can be recorded as they are printing.

- ***Speech synthesizers***
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There are two basic types of speech devices: *integral* and *serial*. BEX works with both types of devices; the integral type offers more features to blind users.

The Echo and Cricket family

Street Electronics manufactures and supports four integral speech synthesizers: the original Echo II; the Echo Plus; the Echo IIb; and the Cricket. (The Echo II is no longer manufactured.) As far as you are concerned, BEX handles all four devices identically; all references to the *Echo* in this manual apply equally to all four devices. Please note that the *Echo GP* is not on this list; it's a *serial* voice device.

The Echo uses various programs. The TEXTALKER program makes the Apple accessible to blind users. The disk supplied in the box with the Echo Plus or Cricket does not contain TEXTALKER; the disk in the Echo IIb *does* contain TEXTALKER. The BEX program disk (and most other Apple software for blind users) includes TEXTALKER.

TEXTALKER not only allows the Echo to speak any word it encounters, it also provides screen review ability. Screen review lets you randomly examine the contents of the computer screen, so you are not limited to hearing something once and trying to remember it. Because of TEXTALKER'S power, and because the Echo is very reasonably priced, BEX has particularly good support of the Echo's features.

SlotBuster II

Manufactured by RC Systems, the SlotBuster combines speech synthesis with a variety of other functions. You decide what functions you want when you buy the device; they include parallel and serial printer interfaces, a modem port, and a BSR X-10 controller. Because the SlotBuster supports many different functions, it requires more computer sophistication to operate successfully. The BEX program disk contains the SCAT software, which provides the SlotBuster with screen review capabilities slightly superior to TEXTALKER'S. Appendix 2 discusses the SlotBuster II commands.

Serial Voice Devices

At the User Level and Master Level, BEX supports serial voice devices like the Echo GP, DECtalk, Votrax, and others.

- **Screen Display Options**

You can connect either a computer monitor or a TV set to your Apple. If you can't see the screen at all, you only need to connect a voice device; you don't need to connect a monitor to the Apple. Whenever a program interacts with the "screen," it's actually interacting with a part of the Apple that controls the screen. The Apple doesn't know or care if you have a computer monitor or TV set plugged in.

Monitors come in a dizzying array of different sizes and colors; monochrome screens can have white, green, or amber characters. The size of letters on the screen are expressed as some number of *columns*, or how many characters fit on one line. The actual size of the letters depends on the size of the screen. Forty-column letters are much larger on a 24-inch monitor than on a nine-inch monitor, because the line is longer.

BEX can display text with 80, 40, 20, 10 and 5 column sizes. The 20 column screen shows 160 characters at once; the 10 column screen shows 40 characters at once, while the 5 column screen display only shows 10 characters at a time. Section 3, Part 4 explains how you control the speed of large print screen display with the open-Apple (or command) and solid-Apple (or option) keys.

Warning! As the screen display changes, the 5 column characters make large areas of light and dark. This strobe effect may cause seizures in persons who are prone to them. If you use the 5-column display, we strongly urge you to reduce the contrast and brightness of the screen output and test the 5 column display gingerly.

Instead of or in addition to using BEX's large print, you can use a large print screen access device. One example is VTEK'S DP-10, consisting of a circuit card and a large monitor. The circuit card grabs *all* information on the Apple screen and enlarges it.

- **Braille Screen Access Devices**

At all levels, BEX supports many braille devices as printers. As opposed to formatted output to a braille device, it is also possible to use a braille device to gain access to the information on the computer screen. The Learner Level of BEX does not support using a braille screen access device in this fashion. Using a serial braille device, like either VersaBraille, the Braille Display Processor, or the Cranmer Brailier, is supported by BEX's User Level and Master Level, but may not be the most efficient way to use BEX.

Part 4: Foreground Information

In this Part, we briefly discuss some basic features of the Apple computer. If you are familiar with the Apple's keyboard, know what *booting* and *DOS* mean, and understand how to communicate with the Apple through menus, then you can skip the rest of the Section and move to Learner Level Section 2.

Appendix 5 contains names and addresses for publishers of accessible computer materials. In addition to the resources listed there, check out local Apple user groups in your area. You can find where and when they meet by asking at an Apple computer dealer; their members include both newcomers and experienced Apple users eager to help newcomers out.

- ***The Cursor***

This is a special symbol that marks your place. In BEX, the cursor is a square blob of light. When you type characters on the keyboard, they appear at the cursor. You can move the cursor to cover existing text; it changes from a square blob to a reversed picture of the character it's covering. When you use *screen review* software with the Echo, you can have *two* cursors. In addition to the screen cursor, you can control an *audio cursor* that marks where the next text is spoken. The audio cursor is not shown by a blob of light; you can command the Echo to speak the position of the audio cursor.

- ***Apple Keys You Must Know***

Locate these keys on your Apple keyboard so that you can issue commands to the Apple and BEX. Every Apple has a slightly different keyboard layout. Complete keyboard maps for every Apple model are provided in Part 5.

- Return - All typewriter or computer keyboards have a key called *return*, *carriage return*, or *enter*. In BEX, the carriage return key tells the Apple to execute commands or instructions. We use the abbreviation <CR> to show when you press the Return key. In print, this appears as less-than symbol, uppercase C, uppercase R, greater-than symbol.
- Control Key - The control key is used like a shift key to add another function to certain keys, creating *control characters*. Enter a *control character* by depressing the control key, then pressing another key, and then releasing the control key. When you need to press more than one key at a time, we join together the names of the keys with hyphens. So control-E means depress the Control key, then press and release the letter E, then release the control key. Many BEX commands are control characters. Some single keys on the Apple keyboard are control characters: for example, <CR> is control-M.
- Open-Apple (or Command) key - This key always has an outline of an Apple on it. On the IIgs, the open-Apple key also has a cloverleaf symbol. Press the open-Apple key to momentarily freeze large print screen display.
- Solid-Apple (or Option) key - This key *either* shows a dark Apple or is labelled *Option*. Press the solid-Apple key to slow large print screen display to a crawl.
- Arrow Keys - These four keys are labelled with arrows pointing in four directions. From right to left, the key order is: up arrow, down arrow, right arrow, left arrow. Use these keys to move the cursor around. In BEX, there are several other ways to move the cursor, but the arrow keys are handy for short trips.
- Shift Key - When you hold down this key and press a letter key, you get an uppercase letter. When you hold down the shift key and press some of the other keys, you get a symbol. For example, shift-4 is the dollar sign.
- Caps Lock - This key is different from a shift lock key on a typewriter. When you click the Caps Lock key down, all letters you type become uppercase. However, all other keys remain unshifted or lowercase. If you

press 4 you get a 4, whether or not your Caps Lock key is down. To enter the dollar sign, you must also hold down either shift key.

- Delete Key - In BEX, this key doesn't delete anything. Instead, it's used as a special character with a number of advanced features, discussed at the User Level and Master Level. When we write about the Delete key character, we use angle brackets: represents the Delete key.
- Escape Key - In the upper left-hand corner of all Apple keyboards, there's a key marked *Esc* for escape. You can press this key to cancel some BEX activities. When we write about the Escape key, we use angle brackets: <ESC> means press the Escape key once.
- Reset Key - The Reset key, in combination with the control key, is used to stop many of BEX's options. We write this as control-Reset. Details on this appear in Section 13.

- ***Booting the Apple***

Some programs are built in to the Apple--when you turn the machine on, they are waiting to be used. One is the programming language called Applesoft BASIC. You may wish to explore programming in BASIC yourself, but you don't have to know a thing about it to use BEX.

More importantly, there's one little routine inside the Apple that lets you get started. When you first turn the Apple on, it knows just enough to look for a disk drive controller card. If it finds one, it says to the card: "OK, start spinning the disk in drive 1 and see if you can find a program to tell me what to do next." When it finds this information it's automatically loaded into the Apple's memory for use until you turn the machine off again.

The Apple is smart enough to pull itself up by its own bootstraps. That's why this process is called *booting* the Apple, or sometimes, booting a disk.

There are two ways to boot the Apple. A *cold boot* means you start with the power off. You insert a disk in drive 1, close the drive door, and turn on the power.

A *warm boot* means that the power is already on. You insert a program disk in drive 1 and close the door. You press three keys for a warm boot in a particular sequence. Press Open-Apple, then Control, then Reset; and then

release these in reverse order: release Reset, then release Control, then release Open-Apple. The disk in drive 1 starts spinning.

If you turn off the power and then immediately turn it back on again, the Apple may not boot correctly. There's a lot of electrical energy that's stored in the Apple, and it takes at least 30 seconds for the energy to dissipate. For a successful cold boot, turn off the power and then wait 30 seconds before turning the power back on again.

- ***What DOS does***

All computers use a *Disk Operating System*, abbreviated *DOS*. (It rhymes with *toss*.) DOS controls how the computer handles information. DOS provides instructions for the computer to use in reading and writing data and programs from disk; interpreting input from the keyboard and other places; and displaying characters on the screen, to printers, to voice devices, to braille devices, etc.

DOS is what the Apple loads into memory when it boots. The DOS on BEX's boot disk is called ProntoDOS, which RDC Inc. licenses from its creator, Tom Weishaar. It's a quicker version of the older Apple operating system called DOS 3.3.

Not every disk has the DOS software on it; if you try to boot a disk that doesn't have DOS, the disk just spins endlessly. Placing DOS on a disk uses some space. BEX lets you prepare disks to store data by initializing them. BEX does not place DOS on these disks, so you have more room for your text.

- ***The BASIC Prompt***

BEX issues DOS commands that tell the Apple to load information from the disk into the Apple's memory. You can also temporarily quit BEX and issue DOS commands. The Apple lets you know that it's ready for DOS or Applesoft BASIC commands with a single] character on the screen; we refer to this character as *the BASIC prompt*. The TEXTALKER software makes the Echo pronounce the right square bracket as *ready*, since the BASIC prompt means the Apple is ready for your commands.

Even if you don't plan on doing any Applesoft BASIC programming, the BASIC prompt is important to recognize. Many times when something unexpected happens in BEX, you recover by crashing the program. Crash is a dramatic word, but don't be frightened: all you do is temporarily stop BEX dead in its tracks. You then receive the BASIC prompt. You depress your Caps Lock key, type RUN <CR> and you're up and running again. Details in Section 13.

Part 5: Keyboard Maps

Throughout this Manual and the following keyboard maps, we use the official, dictionary names for all punctuation characters. Many voice devices use different terms when describing punctuation. The following list shows the seven terms where the Echo's vocabulary deviates from the standard names.

Character	Official Name	Echo Calls It
^	caret	up arrow
&	ampersand	and
*	asterisk	star
_	underbar	underline
	vertical bar	vertical line
-	hyphen	dash
]	right bracket	ready

Apple IIgs

The Apple IIgs has five rows of keys in the main keyboard, plus a numeric keypad on the righthand side. Main keyboard:

- Top row, from left to right: Escape; digit 1 (shift to exclamation point); digit 2 (shift to at-sign); digit 3 (shift to number sign); digit 4 (shift to dollar sign); digit 5 (shift to percent sign); digit 6 (shift to caret); digit seven (shift to ampersand); digit 8 (shift to asterisk); digit 9 (shift to left

- parenthesis); digit zero (shift to right parenthesis); hyphen (shift to underbar); equals sign (shift to plus sign); delete.
- Second row: Tab; Q; W; E; R; T; Y; U; I; O; P; left bracket (shift to left brace); right bracket (shift to right brace); upper half of Return key.
- Home row: Control; A; S; D (has raised dot); E; F; G; H; J; K (has raised dot); L; semicolon (shift to colon); apostrophe (shift to quote mark); bottom half of Return key.
- Fourth row: Shift; Z; X; C; V; B; N; M; comma (shift to less-than sign); period (shift to greater-than sign); slash (shift to question mark); Shift.
- Bottom row: Caps Lock; Option; Open-AppleCommand; grave accent (shift to tilde); spacebar; backslash (shift to vertical bar); left arrow, right arrow, down arrow, up arrow.

The Reset key is a long rectangle parallel and above the 5 and 6 keys; it's labelled with an incised triangle pointing left.

The numeric keypad has five rows: Top row is Clear; equals sign; slash; asterisk. Second row is digits 7; 8; 9; plus sign. Third row is digits 4; 5 (has raised dot); 6; hyphen. Fourth row is digits 1; 2; 3; and top half of Enter key. Bottom row is double-width zero, period, bottom half of Enter key.

Eight keys on the Apple IIgs are single-character control keys. Escape is the same as control-left bracket. Tab is the same as control-I. Both Enter and Return are the same as control-M. Left arrow is the same as control-H. Right arrow is the same as control-U. Up arrow is the same as control-K. Down arrow is the same as control-J. Clear is the same as control-X.

Apple IIe with numeric keypad

The keyboard layout of the Apple IIe changed in 1987. The newest models have numeric keypads; if yours doesn't, see the next map. Apple IIe has five rows of keys in the main keyboard, plus a numeric keypad on the righthand side. Main keyboard:

- Top row, from left to right: Escape; digit 1 (shift to exclamation point); digit 2 (shift to at-sign); digit 3 (shift to number sign); digit 4 (shift to dollar sign); digit 5 (shift to percent sign); digit 6 (shift to caret); digit seven (shift to ampersand); digit 8 (shift to asterisk); digit 9 (shift to left parenthesis); digit zero (shift to right parenthesis); hyphen (shift to underbar); equals sign (shift to plus sign); delete.

- Second row: Tab; Q; W; E; R; T; Y; U; I; O; P; left bracket (shift to left brace); right bracket (shift to right brace); upper half of Return key.
- Home row: Control; A; S; D (has raised dot); E; F; G; H; J; K (has raised dot); L; semicolon (shift to colon); apostrophe (shift to quote mark); bottom half of Return key.
- Fourth row: Shift; Z; X; C; V; B; N; M; comma (shift to less-than sign); period (shift to greater-than sign); slash (shift to question mark); Shift.
- Bottom row: Caps Lock; Option; Open-Apple; grave accent (shift to tilde); spacebar; backslash (shift to vertical bar); left arrow, right arrow, down arrow, up arrow.

The Reset key is a slightly recessed square above the top row, halfway between the Escape and digit 1 keys; it's labelled Reset.

The numeric keypad has five rows: Top row is Escape; equals sign; slash; asterisk. Second row is digits 7; 8; 9; plus sign. Third row is digits 4; 5 (has raised dot); 6; hyphen. Fourth row is digits 1; 2; 3; and top half of Enter key. Bottom row is double-width zero, period, bottom half of Enter key.

Seven keys on the Apple IIe are single-character control keys. Escape is the same as control-left bracket. Tab is the same as control-I. Both Enter and Return are the same as control-M. Left arrow is the same as control-H. Right arrow is the same as control-U. Up arrow is the same as control-K. Down arrow is the same as control-J.

Apple IIc and pre-1987 Apple IIe

The keyboard layout of the Apple IIe changed in 1987. The newest models have numeric keypads; if yours does, see the previous map. Apple IIe and IIc keyboards are identical except for the position of the Reset key. There are five rows of keys:

- Top row, from left to right: Escape; digit 1 (shift to exclamation point); digit 2 (shift to at-sign); digit 3 (shift to number sign); digit 4 (shift to dollar sign); digit 5 (shift to percent sign); digit 6 (shift to caret); digit seven (shift to ampersand); digit 8 (shift to asterisk); digit 9 (shift to left parenthesis); digit zero (shift to right parenthesis); hyphen (shift to underbar); equals sign (shift to plus sign); delete.
- Second row: Tab; Q; W; E; R; T; Y; U; I; O; P; left bracket (shift to left brace); right bracket (shift to right brace); backslash (shift to vertical bar).

- Home row: Control; A; S; D (has raised dot); E; F; G; H; J; K (has raised dot); L; semicolon (shift to colon); apostrophe (shift to quote mark); Return key.
- Fourth row: Shift; Z; X; C; V; B; N; M; comma (shift to less-than sign); period (shift to greater-than sign); slash (shift to question mark); Shift.
- Apple IIe: The Reset key is a lower square with a circular depression, to the right of the Delete key level with the Top row; it's labelled Reset.
- Apple IIc: the Reset key is above the Escape key. Labelled Reset, the key is lower than the other keys, and it's shaped like a parallelogram.
- Six keys on the Apple IIe and IIc keyboards are single-character control keys. Escape is the same as control-left bracket. Tab is the same as control-I. Return is the same as control-M. Left arrow is the same as control-H. Right arrow is the same as control-U. Up arrow is the same as control-K. Down arrow is the same as control-J.

2 An Exploratory Trip through BEX

This Section takes you on a guided tour of the most important BEX functions. The BEX program disk is a *flippy* disk; it contains programs on both sides. One side is labelled *Boot*; it contains the information the Apple needs to get started running BEX, plus the Starting Menu. As we explore the Starting Menu, we show you how to make backup copies of your BEX disks, and other useful tasks.

The other side of the BEX disk is labelled *Main* and contains the bulk of the program: the Main, Second, and Page Menus. In this trip we demonstrate BEX's Editor and Print formatter, found on the Main Menu. We explore some options on the Second and Page Menus as well. Along the way, we provide definitions for words that have special meanings in BEX.

Part 1: Are You Ready to Go?

To take this exploratory trip, you need to set up your Apple system and have the right materials. Gather together your two-sided BEX program disk and

the BEXtras disk. One of the first things we'll do is make backup copies of your BEX disks, so you'll need at least four *high-quality* blank disks.

There are several sources of help for setting up your Apple system. First off, check the Owners Guide that came with your Apple--it does an excellent job of explaining the basics of your computer. (See Appendix 5 for organizations that supply Apple manuals in large print, audio tape, and braille.) The BEX Interface Guide provides details on installing special devices, like voice synthesizers and brailers. Finally, Apple computers are very popular in schools. Chances are excellent that you can find a technically-adept high school student who can set up your system if you are having trouble.

When you have an Echo II, Echo Plus, or Echo IIb, you should install it following the instructions in the Interface Guide. Always turn off the Apple's power when you install or remove a circuit card, or you'll fry your Apple! Make sure that the volume knob on the Echo circuit card is not turned all the way down. Plug the speaker into the jack on the circuit card.

When you have a Cricket, you must plug it into port 2 on the Apple IIc (on the right-hand side). The Cricket must be turned on before you start using BEX. Check to make sure that the Cricket volume knob is not turned all the way down.

When you have an inkprint printer, plug it in to slot or port 1. This exploratory trip assumes that your printer is plugged in to slot or port 1. Section 3 discusses how you tell BEX where to find your printers and brailers.

Part 2: Get Started by Booting Up BEX

Turn off the power to the Apple. Insert the BEX program disk into disk drive 1, with the side labelled *BEX boot* facing up. Turn the Apple on. When everything goes well, the disk drive whirs for around 20 seconds, and then BEX prompts: `Enter configuration:` and beeps. When you have an Echo or Cricket connected properly, then it should also *speak* the `Enter configuration:` prompt.

If you don't get this prompt in 20 seconds, try it again. Turn off the Apple's power and wait for 30 seconds, then go through the same routine. If your Echo or Cricket didn't speak, check to make sure all the connections are secure and the volume knobs are turned up.

If you turn on the power and then start hearing annoying loud blaaats like a submarine diving, it means that you inserted the Main side of BEX instead of the Boot side. You must always start with the Boot side. Turn the Apple off to stop the noise, then flip the disk over, and try again.

Part 3: Get Started with a Supplied Configuration

A configuration is a file on the Boot side of your BEX disk that lists your equipment preferences. BEX can work with many different devices, and the Boot side of BEX contains programs for working with large print printers, large print screen display, the Echo, 16 different brailers, etc. All these programs can't fit in the Apple's memory at once. You supply BEX with a list of your preferences, and BEX makes sure that the appropriate programs are there for you to use.

In Section 3 we describe how you set up a new configuration. We have supplied six configurations that allow most people to get access to the Apple and explore. The supplied configurations are very limited. None of the supplied configurations include a braille embosser. As soon as you've taken the exploratory trip, you should establish a configuration that describes *your* equipment. If none of the supplied configurations matches your situation, read Section 3 to see how to set up your own configuration.

The names of the supplied configurations are each two characters long. To tell BEX to use one of the six existing configurations, you press three keys: a letter, the number of disk drives you have, then the carriage return key.

When you can see the regular screen, and have

- One disk drive, type: S1 <CR>
- Two disk drives, type: S2 <CR>

When you want Echo or Cricket output, and have

- One disk drive, type: E1 <CR>
- Two disk drives, type: E2 <CR>

When you want 20-column large print screen display, and have

- One disk drive, type: L1 <CR>
- Two disk drives, type: L2 <CR>

After you press <CR>, BEX reads the information in the configuration file on disk. Then, BEX displays its owner's name, zip code, and a six to ten digit serial number. Make note of this information: we'll ask you for it if you call for Technical Support.

*One
Disk
Drive* | Throughout the Exploratory Trip, we provide details on how you use BEX with one disk drive. In the rest of the Manual, however, we assume you have two disk drives. Further details on BEX with a one-drive system are supplied in Appendix 3.

After BEX displays the serialization information, the disk whirs for a moment and BEX announces:

Starting Menu

Enter Option:

You have arrived at the Starting Menu *prompt*. Whenever a computer asks you for information, it's called a *prompt*. Some prompts are like English questions, for example *Do you want to continue?* Other prompts are much shorter. When BEX asks a *yes* or *no* question, it prompts with just the first letter Y or N.

Part 4: Explore the Starting Menu

At all four BEX menus, pressing <CR> gives a list of the available options. Do this now and you see the Starting Menu's options. At all BEX menus, you choose an option by pressing one letter. No <CR> is required or expected after the one letter choice at a menu prompt.

Some BEX options are available at *all* menus, while some are only available at particular menus. We will explore some of the more important options on each of BEX's four menus in this trip.

Controlling large print letters

When you are using the L2 or L1 configuration, BEX makes 20-column letters on the screen. You can control how fast these letters appear with the open-Apple (or Command) and solid-Apple (or Option) keys. Whenever you depress just the open-Apple key (or Command) key, large print scrolling freezes. Release the key to allow scrolling to continue. Whenever you depress just the solid-Apple (or Option) key, large print scrolling slows to a crawl. When you release the key, scrolling resumes. We explore these issues in detail in Section 3, Part 4.

Controlling the Echo

You can issue Echo commands at all BEX menus, including the Starting Menu. We discuss Echo commands in detail in Section 10. The configurations we supplied establish a particular set of Echo parameters: how fast the Echo speaks, what punctuation it pronounces and what punctuation is silent, and how loud it is. It takes some time to get used to the Echo speech.

One Echo command adds a pause between every word; this can make it easier to decipher what the Echo's saying. The *delay* command is three keystrokes: control-E, a number between zero and eight, then D. The Echo starts out at zero, meaning no delay between words. To add a medium-length delay between words, enter control-E 4 D at the menu prompt.

- ***BEX Disk Catalogs and BEX Pages***

Option D - Disk catalog is available at all four BEX menus. When you press D, BEX prompts Which Drive? followed by a number. This number is either 1 or 2. It shows the disk drive where your data is usually read and written. This number is an example of a *default* response. Many times BEX supplies you with a possible choice. You can accept this value by pressing <CR>, or you can change this *default* by typing a different number and pressing <CR>.

Insert your BEXtras disk in drive 2. Press D, then acknowledge the default drive number by pressing <CR>.

One Disk Drive | When you press D, BEX prompts you to swap disks with the Insert data disk prompt. Remove the BEX program from your drive and replace it with the BEXtras disk.

After you press <CR>, BEX reads the disk and presents you with a list of *chapters*. A chapter is BEX's basic unit for text. You edit text in a chapter, one chapter at a time. For most other BEX options, you can work with many chapters at once. BEX uses the chapter's name to organize information on floppy disk.

A chapter is subdivided into *pages*, and each page is stored as one file on the disk. How text is divided between *BEX pages* on disk is completely independent of how many *output pages* the text fills when printed or embossed. To help you remember this independence between pages on disk and pages when printed, we always talk about a *BEX page* or an *output page*. A BEX chapter can contain one character on one page, or up to 112,000 characters on 30 pages. A BEX data disk always contains many more files than BEX chapters.

After BEX presents the list of chapters on the BEXtras disk, BEX prompts: Press space for DOS catalog and pauses. When you press any key *except* <space>, you return to the menu prompt. When you press <space>, you see a list of every file on the BEXtras disk. DOS displays 24 files at a time and pauses to give you a chance to review the names. When there are more than 24 files, you press <space> to see another group of 24 files. Once all the files on disk are listed, BEX automatically brings you back to the Starting Menu prompt.

Caution! | You should not press <space> at the last screen of filenames. When you press <space> at the Starting Menu, you move to the Main Menu. If you pressed <space> at the last screen of filenames, then the Apple would hold on to that character and pass it to BEX at the Starting Menu prompt. Because the Boot side of BEX is still in drive 1, BEX would beep and complain that it can't find a program it needs on disk.

The many filenames you see when you press <space> after a BEX catalog is exactly what you get when you type the DOS command CATALOG <CR> at the BASIC prompt, and that's why it's called a *DOS* catalog. An introduction to the DOS commands is presented in User Level Section 13.

Part 5: Initializing a Data Disk

Before you can save your text on a disk, you must *initialize* the disk. Initializing totally erases any existing data, and establishes magnetic pigeonholes for information storage. Placing an uninitialized disk in the drive is like not inserting any disk at all: BEX can't save data on it.

Prepare a data disk to use as you explore BEX. At the Starting Menu prompt, press I. BEX responds with three irritating beeps and Warning Warning Warning! We want you to be *sure* you want to erase all the information from the disk! BEX then prompts Do you want to proceed? and supplies a *default* yes response, the letter Y.

Whenever BEX asks *yes* or *no* questions, it just uses the first letter--when you supply BEX with a *yes* or *no* response, you only need to type Y or N followed by <CR>.

Your cursor is on top of the Y. When you press <CR>, you accept the default response. If you don't want to proceed, type N <CR> and you return to the menu prompt.

In this case, you *do* want to proceed, so press <CR>. Now BEX tells you to insert the disk in the drive. Insert a blank disk in drive 2 (drive 1 when you only have one disk drive). BEX asks you to press <space>. If you press any other key besides <space>, you return to the Starting Menu prompt. Again, you *do* want to initialize the disk, so press <space>. BEX then starts to initialize the disk. Whenever you initialize a disk, you hear a dramatic sound we call *gronking*. Don't worry--this is normal. After a few gronks, you hear a regular pattern of writing to disk.

If there's something wrong with the disk, then BEX won't be able to initialize it, and tells you so. Please don't try to economize by buying inexpensive

disks. In our experience, it's worthwhile to pay a few extra dimes for a disk you can count on.

One of the next steps on our exploratory trip is making a working, or *backup*, copy of your BEX program disk. The BEX program is *copy-protected*; we only allow you to make three backup copies of your BEX disk. If BEX encountered a problem with a disk while it was copying the BEX master, you would lose one of your backup copies. To ensure that the disks for your backup copies will work, initialize them *first*. The BEX program disk has two sides, so you need to initialize two disks to prepare for making the backup copies. Use option I - Initialize disks now to initialize the two disks for your BEX program.

Flippies and floppies

The Master BEX disk is a *flippy* disk; both sides of the disk have been designed and tested for data storage. If you have flippy disks, you can make your backup copies on one flippy. Some people make a flippy disk from a floppy disk by just cutting another notch in the disk. *We think this is a bad idea.* If you use a paper punch or other tool to cut another notch in a floppy disk, the "new" side may be of very poor quality. If you want flippies and you can't find them at your local computer store, RDC sells flippy disks at a reasonable price.

Many disks are labelled *double density* or *double sided*. These words are often abbreviated to DD or DS. Don't confuse these terms with a *flippy* disk. Double sided means that both sides are certified for storing data. IBM disk drives can read and write from both sides of a disk at once. Apple disk drives can only read from the top side of a disk. Only use flippy disks manufactured with two write-enable notches.

Take care of your disks!

A floppy disk is a very handy item, but is quite vulnerable to damage when handled carelessly. Never touch the exposed surface of a disk. Insert the disk carefully into the drive, without bending or twisting. When a disk isn't in the disk drive, it should be in its paper jacket. Never write on the label of a disk with a ballpoint pen or pencil, as it can damage the surface. Keep your disks in the proper environment: between 50 and 125 degrees Fahrenheit.

We can tell you horror stories about the hours required to retype all the data lost when coffee dribbles onto a floppy disk. Unfortunately, this is one lesson most people learn the hard way. The most important rule for handling disks is *never have your hands on the only copy!* We tell you how to copy disks with BEX in just a few paragraphs. But more important than the technical details is that you should always make copies of any disk you care about. Making copies of your disk is so important that there's a word for it in computer jargon: *backing up*.

Part 6: Copying Disks

One Starting Menu option is C - Copy disks. When you press C, BEX confirms your choice with `Copy disks` and then tells you how the copy function works. BEX assumes that your original disk is in drive 1, and the duplicate disk you create is in drive 2. Once you place the appropriate disks in these drives, you press <CR> to start the copying process.

We practice copying disks with the BEXtras disk. At the start of the trip, you gathered four blank disks. In the previous part, you initialized three of these disks. The fourth disk has not yet been initialized; insert it in drive 2. Place your BEXtras disk in drive 1, and then proceed as follows:

Starting Menu

Enter Option: C

Copy disks.

Copy entire contents of disk in drive 1

on to disk in drive 2.

Press RETURN to begin copy. <CR>

BEX starts out by initializing the disk in drive 2, so you hear the same gronks as when you initialize. Then BEX reads some data from drive 1 and writes it to drive 2. It takes around two minutes to finish the copy; when it's complete BEX returns to the menu prompt.

*One
Disk
Drive*

BEX prompts you to alternate between your *original* disk and the *duplicate* disk you are creating. You must follow these prompts faithfully, or you end up with a mess. Here's a hint: when you remove the original from the drive, place it on the left side of your

computer. When you remove the duplicate, place it on the right side. It's easier to keep track of which disk is which when you always reach left for the original and reach right for the duplicate.

You don't have to initialize every disk before you copy on to it, because Copy disks initializes as its first step. However, we do recommend that you initialize the disks for your BEX backups before you copy on to them, to ensure that you encounter no problems in the middle of copying your Master.

Part 7: How and Why to Copy Your BEX Disks

We hope we've convinced you that a floppy disk is a vulnerable item. We want you to enjoy using BEX for many years to come. If you always used your BEX Master disk, then an accident would mean you couldn't use BEX. To ensure that you always have a working copy, use option C - Copy disks on the Starting Menu to make backups of both sides of your BEX Master disk. Once you do, store the Master disk in a different and safe place, and always use the backup. Don't keep your BEX Master disk and your working backup in the same place. If you kept both Master and backup in the same box, then you would be in deep trouble when the roof leaks on your disk holder. If your backup disk is damaged, you can then make another working copy from the Master.

Backups are for your use only

Because BEX disks receive heavy wear, your Master disk is programmed to allow you to make three backup copies of each side. Any attempt to make further backup copies will be unsuccessful. If you don't make a backup copy and always use your Master BEX disk, you are risking inconvenience if your pet rabbit chews your BEX master disk to pieces. If you do encounter problems with your BEX Master disk, contact the technical support staff at 608-257-8833.

We know that most BEX users are honorable people, and would not consider making a copy of BEX and giving it to someone who hasn't bought the

program. Unfortunately, we have encountered a dishonorable minority who are willing to do just that. This is why BEX is copy-protected.

The BEX program and all its documentation is copyrighted, as well as copy-protected. Our copyright on BEX means that you cannot make copies of BEX to give or sell to another person. You can only use BEX on one computer at a time. Treat BEX like you would treat a book. If you want to read a book at home and at work, you carry the book back and forth. You don't photocopy or thermoform the book and leave one copy at home and one at work.

When you need to use BEX on more than one computer at a time, you should contact RDC about legally obtaining multiple copies of the program. RDC offers special prices for bulk purchases. If you have four computers, do *not* make three backup copies and use them plus your Master disk. If you did, you would be violating our copyright and breaking the law. In addition to the moral problem, there's a practical risk as well--you should never use your Master BEX disk. RDC offers special prices for bulk purchases--contact us for more information.

Since your BEX backup copies will see heavy use, it's important that the disks you copy onto are *high-quality* disks. An easy way to make sure that your disk will work is to initialize it first, using option I - Initialize disks. If there is something wrong with your disk, BEX refuses to initialize it.

Backing up BEX step-by-step

Now that the lecture is over, it's time to make your working backup. Check to make sure your BEX Boot disk is in drive 1; place one of the pre-initialized blank disks in drive 2. Now press C and follow the instructions on the screen. When you press <CR>, BEX makes a loud gronking sound as it identifies your Master disk, and then reminds you to use a high quality disk for your backup. You must enter Y <CR> to start the copying process. Again, it requires around two minutes to finish copying. For a one-drive system, BEX prompts you to swap disks as needed.

When the Boot side copy is complete, you're back at the Starting Menu. Press C again. Remove your master BEX boot side from drive 1, flip it over to the BEX main side, and reinsert it in drive 1. Insert another high-quality, pre-initialized blank disk in drive 2, and go through this procedure again. If you

have floppy disks, you can create a double-sided backup instead of two separate disks.

Once the Main side copy is complete, insert your *backup* BEX Boot disk in drive 1. Put your original BEX Master floppy and BEXtras disk in a safe place in another room.

We have finished exploring the Starting Menu. The other Starting Menu options are discussed in Section 3, Part 1. If you want to take a break, this is a good opportunity. Our next step is moving to the Main side of BEX and seeing what's there.

Part 8: Explore the Main Disk

If you paused at the previous Part, you should get BEX up and running again. Insert the *backup* Boot disk in drive 1 and turn on the power. At the `Enter configuration:` prompt, type one of the six supplied configurations names, and you arrive at the Starting Menu.

The BEX Boot disk contains the configuration programs and the Starting Menu. The rest of BEX is on the Main disk. Remove the Boot disk, find the *backup* of the BEX Main disk, insert it in drive 1, and press `<space>`. BEX announces:

Main Menu

Enter Option:

and you've arrived at the Main Menu program.

When you want to move from the Main Menu back to the Starting Menu, you use the same procedure. At the Main Menu, insert the Boot side in drive 1 and press `<space>`.

What's on the Main Menu

When you press `<CR>` for the list of BEX options, there are ten items on the list. S and Z let you move to other menus. D and # let you examine disk information. Four options form the heart of the Main Menu. Option E - Editor is where you type and correct text; we explore it soon in Part 11. When

you want to send your text to a printer or braille, you use option P - Print chapters; we show you how this works in Part 12. Option G - Grade 2 translator changes inkprint text into contracted grade 2 braille. A step-by-step sample of using this feature appears in Section 7. Finally, option R - Replace characters lets you alter your text in systematic ways. It's described in Section 12.

- ***Moving Around on the Main Disk***

Each of the three menus on the Main disk is accessible from every other. Press S and you move to the Second Menu. Press Z and you "zip" to the Page Menu. At both the Second and Page Menus, press J to "jump" back to the Main Menu. When you are already at the Main Menu and press J, BEX just repeats the menu prompt.

Some options are available at all menus. You can always get the list of options by pressing <CR>. You can always find out how much room is left on a disk by pressing the number sign. Pressing D always performs a Disk catalog, the list of BEX chapters. Finally, you can use control-E to send Echo commands.

Typing Your Part of the Dialogue so BEX Understands

When you communicate with BEX at a menu, every *letter* you type is interpreted as uppercase. It doesn't matter whether you use the shift key or depress the Caps Lock key. Of course, when you want to type a shifted character like the question mark in your chapter name, then you'd better use the shift key!

When you type your responses in the computer dialogue, you can't type very fast. The E1 and E2 configurations are set to Most punctuation, so the Echo speaks every key your press at menus except <CR>. When you are reading the screen, make sure that every letter you type appears there.

Part 9: Copying chapters

You are about to edit and modify an chapter named QUANDARY on your BEXtras disk. We use this same chapter as a sample throughout the Learner Level. To ensure that you have an original version of this chapter, you make a copy of it first with option C - Copy chapters on the Second Menu.

Make sure your BEX Main side is in drive 1, then press S. At all BEX Menus, you press a single letter to choose an option. BEX reads the Second Menu program from disk and presents the Second Menu prompt. Insert your BEXtras disk in drive 2; in drive 1, place the data disk you initialized earlier. You specify the chapter named QUANDARY on the disk in drive 2, and copy it to a chapter named MY QUANDARY on the disk in drive 1. Here's how this dialogue goes:

Second Menu

Enter Option: C

Copy chapters

Drive number or chapter name:

BEX allows you to specify chapters in two ways. You can type in the complete chapter name, when you know it. Or, you can *scan* a disk for chapters--we demonstrate this in the next Part. You know the chapter name, so you proceed as follows:

Drive number or chapter name: QUANDARY <CR>

Target chapter name:

The *target chapter* is what BEX calls the copy you are creating. Many BEX options allows you to create modified copies of chapters, so you will become very familiar with the `Target chapter name:` prompt.

You want to write the copy on the disk in drive 1. BEX always looks at the disk in drive 2 unless you tell it otherwise. To signal BEX to write the MY QUANDARY chapter on drive 1, you *precede* the chapter name with the digit 1, like so:

Target chapter name: 1MY QUANDARY <CR>

After you provide BEX with the target chapter name, it copies the text in the chapter from drive 2 to drive 1. When it's finished, it announces `Chapter QUANDARY done` and returns to the menu prompt. (Note that BEX uses the original, or *source* chapter name to tell you when it's finished.)

- **Copying chapters on a One-Drive System**

Copy chapters on the Second Menu allows you to copy between two disks.

The dialogue goes like this:

Second Menu

Enter Option: C

Copy chapters

Insert data disk

Drive number or chapter name: QUANDARY <CR>

Target chapter name: MY QUANDARY <CR>

You don't have to precede the chapter name MY QUANDARY with the digit 1, because BEX knows that you only have one disk drive. All data is always read from and written to drive 1. The dialog continues:

Copy to another disk? Y <CR>

Insert source disk

You then insert the BEXtras disk in your drive. When ready, press any key.

BEX continues:

Insert destination disk

Insert the initialized disk in the drive; when ready, press any key.

Insert source disk

and so forth. It requires five disk swaps to copy the QUANDARY chapter.

BEX can't tell the difference between the source and target disks. When BEX prompts to insert the source and destination disks, you must faithfully insert the correct disk.

Part 10: Exploring the Editor

Once you have made a working copy of the QUANDARY chapter, it's time to experiment with the Editor. The Editor is on the Main Menu. Insert your BEX Main disk in drive 1, then press J.

- ***Word Processor vs. Typewriter: Some Important Differences***

When you type on a typewriter, you use the spacebar, the return key, and the tab key to manually control where every character appears. You have to press the return key at the end of each line to move to the next line and return the carriage to the left margin. Unless you have a fancy electronic typewriter, you can't go back to change a line once you've advanced to the next line. If you want to fix a mistake, you have to use correction fluid or dusty white plastic slips. If you're visually impaired, there's no simple way for you to review what you've written. On the other hand, you can use a word processor or text editor like BEX, and have a lot more fun.

Typing text in the Editor is quite different from typing on a typewriter. First and foremost, when you make a mistake, it's easy to correct it. If you spell one word wrong, you can just fix that one word without having to retype an entire line or an entire page. That's because you don't manually format every line. Instead of using the return and tab keys to control where your text appears on the sheet, you use format indicators and format commands. These are characters you type in your text. The format indicator and format command characters control what happens when you send the text out of the Apple to a printer, braille, or voice device. As you explore an existing chapter, you'll notice several strange combinations of dollar signs, numbers, and letters. These are the format indicators and commands, described in detail in Section 6.

- ***Editing the MY QUANDARY Chapter***

You are now at the Main Menu. To start using the Editor, press E, and BEX confirms your choice. Insert the disk with the MY QUANDARY chapter in drive 2. Instead of specifying this chapter by name, let's use the *scanning* feature. Here's how it goes:

Main Menu

Enter Option: E

Editor

Drive number or chapter name: 2 <CR>

There are 1 chapters

1 MY QUANDARY

Chapter number:

When you enter a disk drive number followed by <CR>, BEX reads the disk in that drive and presents a numbered list of every chapter on the disk. In

this case, there is only one chapter, so it's numbered 1. BEX now prompts you to enter the number of the chapter you want to edit. If you just press <CR> at this `Chapter number :` prompt, you return to the Main Menu prompt. More details about scanning disks and selecting chapters from numbered lists appear in Section 11. To start editing the MY QUANDARY chapter, proceed like this:

```
Chapter number: 1 <CR>
```

```
There are 4 pages
```

```
Edit on page 1 <CR>
```

Once you supply the chapter number, BEX pauses a moment, reads the disk, and discovers how many pages the MY QUANDARY chapter contains. In this case, MY QUANDARY has four pages; BEX supplies you with a default value for where you want to start editing by prompting: `Edit on page 1`

You can start editing on any of the four pages. The beginning seems as good a place as any, so accept the default by pressing <CR>.

BEX now reads the disk file that contains the text of page 1. BEX copies this information to a particular place in the Apple's memory called the *page buffer*. When you use the Editor, you are always working in the page buffer. To store a lasting edition of your text, you copy it from the page buffer to your data disk. This happens automatically when you move between pages or quit the Editor.

Once BEX has copied the text of page 1 to the page buffer, BEX announces `page 1` and you have arrived in the Editor. At the upper left hand corner of the screen, there's the little rectangular cursor. The character the cursor covers appears as a dark shape within a light square.

The cursor marks your place in the text. BEX has many commands that let you move the cursor: some move silently, and some talk as they move. As you type each letter, it appears at the cursor and the cursor moves over one to the right.

Using Editor commands

There are many Editor commands, but we'll just introduce a few here. Detailed explanations of several more Editor commands are in Section 4 of

the Learner Level, as well as a summary that appears in the Quick Reference Card. All Editor commands start with a control character, so it's important to know how to enter them correctly. You enter a control character by depressing the control key, then pressing a character, then releasing both control key and letter key. We show the combination of the control key and the other character by joining them with a hyphen. There are some control characters which are also separate keys on the Apple.

You can move one word at a time using control-G and control-R. Control-G goes ahead one word and talks. Control-R reverses one word and talks. When you don't have a voice device, then control-G and control-R move your cursor silently.

A *word* in BEX is a group of characters without a space or <CR> in it. Control-G and control-R move word-by-word, so your cursor always moves from the space or <CR> that defines the start of the word to the space or <CR> that defines the end of the word. When your cursor is in the middle of a word and you type control-G, your voice device only pronounces that portion of the word in front of your cursor. Control-R acts differently; when your cursor is in the middle of a word and you type control-R, the entire word is spoken.

Try using control-G now: you hear "dollar sign, dollar sign, d" then a low boop. (When you don't have a voice device, your cursor moves and you hear the boop.) Whenever BEX finishes executing an Editor command, you hear the low boop. The first four words in the MY QUANDARY chapter are some of those format commands we mentioned earlier. Don't worry about what they mean right now.

Keep entering control-G. The first few real words are spoken in a high-pitched voice--that's because they are all uppercase words. Use the left and right arrow keys to move character by character in these words, and the Echo says *cap Very, cap I, cap S* and so forth. You can always use the arrow keys to find out the exact character. The Echo always pronounces the character when you land on it with the left or right arrow key.

Continue using control-G: the next words are spoken with a slightly lower pitch which indicates that they have an initial uppercase letter. Words that are all lowercase are spoken at the Echo's normal pitch. You can use the up and down arrow keys to move up and down lines on the screen. The up and

down arrow keys are silent, except for the boop to indicate the execution of the command.

The keyboard buffer

When you are a fast typist, or when you use a large print screen display, you may hear little clicks from the Apple speaker as you type. BEX stores all the characters you type in a special place in memory called the *keyboard buffer*. BEX feeds each character from the keyboard buffer to the screen or to the Echo at a pace it can handle. Every time BEX hands over another character to the screen or Echo, you hear a click. Both the text you type and the commands you enter are stored in the keyboard buffer.

The keys on Apple II keyboards have an *auto-repeat* feature. When you hold down a key for more than a half-second, the character automatically repeats. For sighted users, don't hold down the left and right arrow keys to move your cursor forward several words. If you do this, the keyboard buffer stores more move-one-character commands than you expect, and your cursor overshoots. Use control-G and control-R instead.

The auto-repeat feature also affects voice output users. Try holding down control-G for a few seconds. For the first few words, the Echo barely speaks the start of one word before it starts saying the start of the next word. After the first few strange-sounding words, the Echo returns to normal. Whenever the Echo receives a command, it acts on it *immediately*. If the Echo happens to be talking when it gets a command, it shuts up. That's what's happening for the first few words. As you become familiar with the Apple, you will grow to love this any-keystroke-silences-speech feature. It means you don't have to listen to the Echo saying familiar prompts.

The Paragraph Indicator

BEX uses a special combination of characters to indicate the beginning of a paragraph. It's always four keystrokes long: space, dollar sign, lowercase *p*, space. Because you must type the initial and final spaces for the paragraph indicator to work, we always show the paragraph indicator as (\$p). Don't type the parentheses; they are just there to emphasize the initial and final space.

The Editor has a number of commands oriented around the paragraph indicator. You can move your cursor forward silently to the next paragraph (\$p) indicator by issuing the Editor command control-A control-P. To help you remember the command, think of *advancing a paragraph*. After you press control-A control-P, press control-G. The voice says *dollar sign people*. Control-A control-P places your cursor on the initial space that defines the paragraph (\$p) indicator.

Page 1 of the MY QUANDARY chapter has many paragraphs: enter control-A control-P five times and your cursor is at the beginning of the fifth paragraph. Try using control-R to Reverse your cursor back word-by-word. To return to the first character in the page, enter control-Z <space>. To help you remember this command, think of *zooming* back to the beginning. To advance to the last character of the page, enter control-A <space>.

Announcing All Keystrokes

If you are unfamiliar with the Apple keyboard, you can ask BEX to talk every key you press. Depress the control key, then press the letter *S*, then release the control key. Now press the letter *A*. You have just issued the Editor command control-S A which tells BEX to announce all keystrokes. Because the Echo stops talking every time it gets a new keystroke, you have to type fairly slowly to hear every key you type.

Many commands consist of a series of keystrokes, like control-S A. For easier reading, we put a space between the *S* and the *A*. *Do not type this spaces*. For some commands, you *do* press the spacebar; we write this as <space>.

When you don't want to hear every keystroke announced, you turn off this feature by pressing Control-S A again. When the same command turns something on and off, it's called a *toggle*. In the Editor, there are a variety of toggled commands like Control-S A. These commands change how you interact with the computer: we refer to these as *environmental* commands.

MovingBetween Pages

Each BEX chapter is made up of smaller units called *BEX pages*. As mentioned earlier, a BEX page is just a collection of characters stored as one file on disk. A BEX page is independent of an *output page*. Now that you've explored page 1, let's move to another BEX page and practice typing text.

Whenever you move between BEX pages, the text in the page buffer is copied back to disk. Any changes you have made in the text are now saved to disk. Enter control-P 4 <space>. BEX pauses to write the page buffer to the disk file for page 1, then reads the disk file for page 4 and copies that to the page buffer. When this process is complete, BEX announces Page 4 and your cursor is at the start of that text.

- ***Typing in text***

Move your cursor to the end of the page by pressing control-A <space>. Whenever you start to type in the Editor, it's a good idea to check that the Caps Lock key (in the lower righthand corner of the Apple keyboard) is not clicked down. When this key is clicked down, every letter you type is uppercase. Most of the time, you want to type lowercase letters, and use the shift key to get uppercase letters.

Once you're sure the Caps Lock is up, type a paragraph indicator by pressing <space>, dollar sign (shift of digit 4), *p*, <space>. Now type your name, followed by the phrase *edited this chapter on* followed by today's date. To hear what you have just typed, you can move your cursor back to the paragraph (\$p) indicator by pressing control-Z control-P. You've already seen that control-A control-P advances your cursor to the next paragraph. Just like control-A advances, control-Z zooms you back.

Your cursor is on the first <space> of the paragraph (\$p) indicator. Press control-O and the Echo speaks what you just typed. The control-O command speaks all the text starting at your cursor forward to the end of the page. When your cursor lands on the end of the page, BEX boops once.

- ***Leaving the Editor Safely***

When you are ready to quit the Editor, press control-Q. This one command copies your current page buffer to disk and returns you to the Main Menu. Using control-Q is vital: if you don't enter control-Q, any changes you've made in the most recent page aren't saved to disk. Practice leaving and returning to the MY QUANDARY chapter. If you want to take a break, now

is a good time to do it. Remove your BEX disk and data disk from the disk drives and turn off the power.

Part 11: Exploring Option P - Print chapters

If you paused at the previous Part, you should get BEX up and running again. Insert the *backup* Boot disk in drive 1 and turn on the power. At the `Enter configuration:` prompt, type one of the six supplied configurations names, and you arrive at the Starting Menu. Remove the Boot side and insert the *backup* Main side in drive 1, then press `<space>`.

If you have moved to another menu, press J to "jump" back to the Main Menu. You can use option P - Print to send formatted text to inkprint printers, braille embossers, large print printers, and voice devices. You tell BEX which chapters to print and which printer to send it to, and BEX does the rest.

Here's a sample dialogue when you print the QUANDARY chapter. Insert your BEXtras disk in drive 2.

Main Menu

Enter Option: P

Print

Drive number or chapter name: QUANDARY `<CR>`

Which printer:

For each configuration, BEX lets you define up to four printers, assigning each one a number. Section 3 explains how you define a printer when you establish a configuration. When BEX prompts `Which printer:` you can always type `? <CR>` to see your choices. The supplied configurations all contain *two* printers. Here's what you get:

Which printer: ? `<CR>`

1 - Printer in slot 1 (72 by 58)

2 - Printer in slot 3 (72 by 58)

S = Screen output

Add +V for voice output

Which printer:

We defined printer number 1 as an inkprint printer plugged in to slot 1. We defined printer number 2 as a *Review class* printer. A Review class printer is a good way for both sighted and blind people to proofread their text before its committed to paper. It works will in combination with the Echo's *screen review* feature. We take a quick look at this feature in a minute. Section 5 discusses the Review class printer in detail. None of the supplied configurations include a braille embosser. When you want to braille materials, you must establish a configuration that includes an embosser-- details in Section 3.

The number attached to a printer depends on how you define it in your configuration. Printer number 1 is 1 because we defined it first in our configuration, not because it's plugged in to slot 1.

In addition to the numbered printers, you have two other choices, S and ingV. When you enter S <CR> at the `Which printer:` prompt, BEX prints the chapter *silently* to the screen. What size letters appear on the screen depends on your configuration. For the supplied configurations S1, S2, E1, and E2, BEX prints to the 40-column screen. For L1 and L2, BEX prints to the 20-column screen.

When you want the Echo to speak every line as it's printed, add the two characters *plus sign*, letter V, to whatever printer you have chosen. For example, to print to the screen with Echo voice, enter S+V <CR> at the `Which printer:` prompt.

BEX formats as it prints

No matter which choice you make, BEX formats your text when printing it. Every paragraph (\$p) indicator is executed with two <CR>s and a paragraph indent of five spaces. BEX automatically breaks each line as required: the number of characters that fit on a line change depending on which printer you specify. Printer 1 is defined with 72 characters on each line; printer 2 also allows 72 characters on the line. The 40-column screen can fit 40 characters, and the 20-column screen can fit 20 characters on the line. When you want to make BEX stop printing before the end of the text, press <ESC>.

Because BEX takes care of breaking text into lines, you don't have to worry about ending every line with <CR>, like you would on a typewriter. In

Sections 5 and 6, we explain how BEX adjusts the format of your text so it's correct in both print and braille.

Printing to the screen

When you tell BEX to print to the screen, each screen's worth of data is one *output* page. The QUANDARY chapter contains a format command that numbers pages. When you print to the screen, BEX centers the word *Page* plus a number on the last line of each screen. When the screen is full of characters, the display stops and you hear a boop. Press <space> to get the next page of text.

How many characters fit on one line of the screen depends on your configuration. When you are using L1 or L2, then the limit is 20 characters wide and ten lines down. With any of the other supplied configurations, it's 40 characters wide by 24 lines down.

Printing to a Review class printer

The Review class printer is a special way of printing to the screen, that lets you define a bigger page size than the screen allows. It's useful for people who can see the 80-column screen or who can hear the Echo. Printer number 2 is defined as a Review class printer 72 characters wide by 58 lines down.

Print the QUANDARY chapter to printer number 2. BEX displays the first 24 lines of the page, making a low click as it shows each line, then stops.

When you have an Echo, try this: when the clicks stop, press control-L. The Echo says *Review*, because control-L turns on the Echo's *screen review* mode. Now press B and the Echo starts speaking all the text on the second line of the screen. You can press the up and down arrows to read line by line. With a Review class printer, BEX puts a line-number on the left edge of the screen so you can tell where text appears on the page when printed. To exit from screen review mode, press <ESC> *once*.

Caution! | If you press <ESC> twice, you would stop the printing and return to the Main Menu. One <ESC> tells the Echo to exit screen review; the next <ESC> tells BEX to cancel printing.

To see more of the page, press down arrow. Each 58-line page is displayed in three parts. To see the next page, press <space>.

Printing to the Echo

There are two ways to get Echo output when printing: you can add the Echo to other printers, or you can print to the Echo alone. To add Echo to another printer, add the two characters *plus sign*, letter *V* to your choice. When you enter `1+V <CR>` the Echo speaks each line as it's sent to the inkprint printer. You hear a slight pause at the end of each line. There's a longer pause for the blank line and five-space indent at each paragraph. When you enter `S+V <CR>` the Echo speaks each line as it's sent to the screen. Since the number of characters that fit on the line is different for printer 1 and the screen, the pause that signals the line's end appears at different places depending on whether you add the Echo to the screen or printer 1.

When you enter just `+V` the text is printed to the Echo alone. The Echo pauses slightly around every 120 characters to catch its breath. The Echo's pronunciation of underlined text depends on the Echo's punctuation mode. The supplied E1 and E2 configurations use Most punctuation, so you hear letter, underline, letter, underline, letter, etc. You can change to Some punctuation with the Echo command control-E S. Then underlined words are spelled out letter for letter.

Printing to an inkprint printer

Printer 1 is defined with a maximum of 72 characters per line. We defined printer 1 as an inkprint printer with continuous feed paper; BEX assumes that you don't have to pause at each page and insert a fresh sheet of paper. If your printer requires this *pause on form feed*, don't print QUANDARY to printer 1!

Part 12: Highlights of the Second Menu

Press S at the Main Menu or Page Menu, and you move to the Second Menu. Some Second Menu options are familiar, because they are available at all four BEX menus: option D - Disk catalog; option # - Free sectors on disk; and

control-E for Echo commands. The unique Second Menu options are described in detail in Section 11; here are some highlights.

We have already demonstrated using option C - Copy chapters. Option N - Name change for chapters lets you change a chapter's name without making a copy. Option M - Merge chapters allows you to make one larger chapter from several smaller ones. Option K - Kill chapters permanently erases one or more chapters from disk. Option R - Read textfile to chapter copies information that's stored as a *textfile* on disk to a BEX chapter.

Part 13: Highlights of the Page Menu

Press Z at the Main Menu or Second Menu, and you "zip" to the Page Menu. The Page Menu allows you to manipulate pages within a chapter. All Page Menu options affect just one chapter. Option C - Change current chapter lets you specify which chapter you want to work with.

Insert your BEXtras disk in your data drive and press W. Option W - Whole disk catalog provides you with more information about a disk than you see with option D - Disk catalog. For each chapter on disk, Whole disk catalog shows the name, number of pages, and number of characters in each chapter.

Option F - File list gives you similarly detailed information about an individual chapter. Press F and BEX confirms your choice then prompts for the chapter you want to examine. Just like copying and editing, BEX announces `Drive number or chapter name:` and waits for you to type a name or scan the drive. Enter `2 <CR>` and BEX presents a numbered list of all the chapters on the BEXtras disk. Choose the QUANDARY chapter by entering its number and pressing `<CR>`. BEX presents a list of the contents of each page file. In Sections 11 and 12, we demonstrate other options on the Page Menu.

*One
Disk
Drive*

Unlike the Second and Main Menus, BEX can fit all the Page Menu programs into memory at once. As soon as you arrive at the Page Menu, BEX prompts you to insert a data disk. Place your BEXtras disk in the drive and press W for a Whole disk catalog. To obtain a

file list of the QUANDARY chapter, press F. When BEX prompts Drive number or chapter name: enter 1 <CR> to scan the disk for chapter names.

Bon voyage!

We hope you've enjoyed your exploratory trip through BEX. You've learned a lot of important BEX concepts that you will use daily. You have *booted* BEX, supplied a *configuration* name, and reached the Starting Menu. You have made a backup copy of your BEX disk, so you know that your BEX Master disk is safe. You've switched disks and reached the Main side of BEX, and moved around between the Main, Second, and Page Menus. You know how to copy chapters as well as copy disks, and you've been introduced to the *target chapter* concept. You've seen how you can specify a chapter by name, or by scanning a disk. You've played around a little in the Editor, and had a quick experience with BEX's Print option. We hope this is the start of a productive relationship with your computer. Enjoy your journey!

3 The Configuration Process

BEX works with many input and output devices. In fact, BEX takes complete control of what are called the *input/output routines* for the Apple. (User Level Section 2 provides details.) In order for the Apple to interpret incoming information and to structure outgoing information, you must introduce yourself, the devices you're working with, and your preferences. The Boot side of BEX contains programs for working with many different brailers, various large print printers, and speech synthesizers, but *all* the programs can't fit in the Apple's memory at once. When you define a configuration, you're telling BEX which parts of the program you want to use, so BEX can load the appropriate ones in memory.

Part 1: Getting Ready

Two Starting Menu options can help you prepare for setting up your first configuration. Boot BEX and specify one of the six supplied configuration

names when BEX prompts `Enter configuration:` and beeps. (Section 2, Part 3 gives details on this.) Then try out these two options.

Option W - What is in this computer

This option allows you to find out about the insides of your Apple without opening the cover. Press `W` and BEX tells you the name of the configuration you're currently using, the model of your computer, and what's in each of the slots. Most of this information is also available to you as you establish your own configuration: when BEX prompts for a slot number, you can press `<CR>` alone to find out what interface cards are in which slots.

Option V - View a configuration

This option displays the equipment preferences defined by a particular configuration. You can look at all configurations on the disk; use option `W` - What is in this computer to find out the name of the *current* configuration. After you press `V`, BEX scans the Boot side for configuration files, and supplies a numbered list of configuration names.

Enter the number or name that corresponds to the configuration name you entered when you booted BEX, and then press `<CR>`. These configurations include a *generic* inkprint printer in slot 1, and a *Review class* printer in slot 3. Please note that these configurations do not include a braille embosser. You must set up your own configuration when you want to braille material.

Since we established the six supplied configurations on the Apple IIe computers at RDC, what's displayed reflects our equipment. This means that even if you have an Apple IIc or IIgs, the supplied configurations state that you have an Apple IIe.

Part 2: Overview of Establishing a New Configuration

Every time you boot BEX, `Enter configuration:` is the first prompt you encounter. In Section 2, you responded with the name of a supplied configuration. To establish up a new configuration, you enter one of three punctuation marks that signal which level you wish to configure at. For the

Learner Level, the punctuation is period, so enter . <CR> at the first prompt.

When you have properly installed an integral voice device in your Apple, BEX recognizes that it's there. When BEX notices an Echo or Cricket, it loads the TEXTALKER software that makes these voice devices speak. When BEX notices a SlotBuster, BEX loads the SCAT software that makes it speak. You know whether BEX has recognized your voice device when BEX talks the first `Enter configuration:` prompt.

After you enter . <CR> BEX asks you a series of questions. The Caps Lock key must be depressed or the Apple ignores your answers. You just type Y or N to respond to a *yes* or *no* question. You must finish every response by pressing <CR>. When you press <CR> alone to any of the questions, BEX responds with an explanation of what the question means, and what kind of answer you must give.

At the Learner Level, the configuration questions address four issues:

- If and how you want to use the Echo, Cricket, or SlotBuster speech synthesizers
- What size letters you want on the screen
- What printers or brailers you want to use
- How many disk drives you have

After you supply answers to all these questions, BEX prompts: `Enter configuration name:`

Use your initials or a short phrase that describes the devices you've specified. The next time you boot BEX, you type this name followed by <CR> at the `Enter configuration:` prompt.

You *cannot* edit the information in a configuration. But you *can* have several configurations on one disk; the only limit is the space on the disk. Generally, you establish one or two configurations which are your favorites. You don't have to describe every device you own in one configuration. You only go through the configuration process to establish a new configuration. Once it's established, you just type the configuration name at the `Enter configuration:` prompt and you proceed directly to the Starting Menu.

Each configuration question has at least two possible answers, so describing exactly what BEX says for all the possible combinations would require a separate manual. Help is available with every configuration question: when you don't understand what BEX wants to know, press <CR> alone to obtain a summary of your choices. To establish a new configuration at the Learner Level, enter . <CR> at the Enter configuration: prompt.

Part 3: Voice Questions

BEX only asks these questions when it recognizes an Echo, Cricket, or SlotBuster, installed in your Apple. When you don't have a voice device, you jump ahead to the screen display questions.

Do you want the voice off now?

When you answer Y <CR> then the voice won't speak *during the configuration process*. If you're a sighted person establishing a configuration for a blind person, you can answer N <CR> to the first question and still configure BEX with speech. However, you won't be able to hear some of the on-line help voice samples.

The Echo output during the configuration process uses fast speech. If you're having difficulty understanding the Echo, you can change this to slow speech by issuing an Echo command. After BEX has asked a question and is waiting for you to respond, press control-E E. All subsequent questions use slow speech. For the SlotBuster, press control-E 1 S to set speech at the slowest rate.

When you have an Echo or SlotBuster installed in your Apple, but BEX doesn't ask this question, check to make sure you've installed the circuit card correctly. Turn off the Apple, and remove the circuit card. Gently but firmly reinstall the card. Make sure that the volume knob on the card is not turned down all the way, and that the connection for the external speaker is secure. Then reboot BEX. If you still don't get speech, see the device's manual for further troubleshooting hints.

Ninety percent of the time, when a Cricket doesn't speak the first configuration question, it's very simple to fix. Turn off the power to the Apple. The Cricket cable must be plugged into port 2, and the power to the Cricket must be on *before* BEX boots. (You will encounter troubles if you plug the Cricket and the Apple into the same powerstrip, and power on the two devices simultaneously.)

Do you want Echo (or Cricket or SlotBuster) speech?

When you answer N <CR> you jump to the screen display questions. When you answer Y <CR> BEX asks further questions. For the SlotBuster, BEX asks just one question: Establish an automatic set-up sequence for your voice device? Consult the SlotBuster manual for the commands you want to send to the SlotBuster. After BEX asks this question, it temporarily changes the SlotBuster's command character to control-Q. This allows you to type in a set-up sequence with control-E. As soon as you press to end the set-up sequence, BEX changes the command character back to control-E.

For the Echo and Cricket, BEX asks individual question about the speed, pitch, punctuation, and volume. The first question is Do you want fast speech? Press <CR> to get a sample of fast and slow speech. The next prompt is Set the Echo parameters? One of the reasons the Echo is useful is that it has many parameters that you can change to personalize the voice. Your answers to the next three questions establish the default values for the Echo's pitch, punctuation mode, and volume. You can change these values at all BEX menus and in the Editor if you want to. When you finish setting the Echo parameters, you move to the next section.

Part 4: Screen Display Questions

BEX can display letters in five sizes, measured in *columns* or how many characters fit on one screen line. The smallest screen display is 80 columns; the largest is five columns.

40 column screen is the default. Do you need a different screen display?

The large print sizes are 20, 10, and 5 column: when you wish to have large print screen display, answer Y <CR> to this question. Then enter the number of columns you wish to see. Unlike scrolling with the Apple's regular print--40 or 80 column--screen, you can control how fast letters appear with BEX's large print.

As introduced in Section 2, Part 4, when you press the solid-Apple (or Option) key alone, large print scrolling slows to a crawl. When you press the open-Apple (or Command) key alone, large print scrolling freezes. You can also change the scrolling rate, or how fast the letters appear on the screen. BEX starts out at the fastest speed. Solid-Apple-number (or Option-number) controls the speed of scrolling; 1 is slowest and 9 is fastest. You can only change the rate *during* scrolling; you *cannot* change the rate when BEX is waiting for input. To initiate scrolling, press <CR> at any menu prompt. Now, as the characters scroll by, depress the solid-Apple (or Option) key. Press and release a digit between 1 and 9, then release the solid-Apple (or Option) key.

Warning!

The Large Print screen display, especially 10- and 5-column, can generate a strobe-like effect when used in conjunction with certain video display monitors, which may cause seizures in person who are prone to them. Since the visually handicapped population has a demonstrably higher incidence of neurological conditions which may conceivably be adversely affected or aggravated by this strobe effect, you may wish to carefully examine the manner in which the software functions in conjunction with your particular monitor. Raised Dot Computing, Inc. makes no representation and assumes no liability with the above-mentioned condition. You may wish to consult a physician with regard to your own particular situation.

When you depend solely on voice output, press N <CR> to accept the default response to the screen display question. When you do, the next question is Do you want HI-RES screen in the Editor? HI-RES screen displays 40 characters on a line, and separates each line of text with open space to make it easier for a person with no vision impairment to read the screen. HI-RES screen display refreshes slightly more slowly, so if

you are depending solely on voice, answer this question with N <CR> By the way, you don't have to use a computer monitor when you're relying solely on voice output.

Part 5: Printer Questions

This is the lengthiest part of the configuration process. You define up to four *printers* which can be either inkprint, braille, or serial voice devices. You can specify four different devices, or up to four different sets of parameters for the same device. When you want to specify less than four, then enter zero for the next slot number. For example, to describe only one printer, enter a zero for the second printer's slot number.

BEX labels each printer description with a number from 1 to 4. The first printer you configure is always 1, the second is always 2, and so forth. When you are ready to print something, you use this printer number to reference the information you've provided in your configuration. The printer number does not refer to the slot where the printer interface is plugged in. When it comes time to print, BEX asks you for the printer number. When BEX prompts `Which printer:` you can enter ? <CR> to get a summary of the information you provide here in your configuration.

Remember, if you are uncertain how to answer a question, enter <CR> alone and you receive instructions on what BEX needs to know. In addition to the on-line help, more information about printers is provided in the BEX Interface Guide and in the manual that came with your printer.

For each printer, you are asked a series of questions. There are some questions that are asked for all types of printer, and some which are specific to particular printer *classes*. BEX tailors the output differently depending on the printer's class.

Enter printer slot:

You must tell BEX the number of the slot that your printer interface card is plugged into, otherwise BEX won't know where to send information to be

printed. When you want to specify less than four printers, enter 0 <CR> at this question.

When you configure a Review class printer or a braille previewer, you must answer 3 <CR> to this question. (These printers use the 80-column card in your Apple; although it is not actually plugged in to slot 3, the Apple thinks of the 80-column card as being plugged in there. When you don't have an 80-column card, BEX won't let you configure this way.)

Enter printer class:

While there are seven printer classes, at the Learner Level we focus on four basic classes. Information about class V - Voice device and class P - Paperless braille is provided in the User Level. Information on the class S - Specific printers appears at the Master Level. Details about the class A - Apple LaserWriter PostScript driver can be obtained by contacting RDC.

Class G - Generic inkprint printer

As the name implies, a generic printer is a "one size fits almost everybody" inkprint printer. It can be dot-matrix or daisy wheel.

Class B - Braille embossers

None of the supplied configurations include a braille embosser. When you want to create braille output with BEX, you must define a braille embosser in your configuration. All braille embossers are class B printers. You won't get well-formatted braille if you define a *brailer* as anything but a class B printer.

Class L - Large print printer

BEX can make large print output on some dot-matrix printers when you have the appropriate interface card. In addition to the on-line explanations in the configuration process, there are details about interfacing in the BEX Interface Guide. You must have both a supported printer and a supported interface card for a class L printer to work.

Class R - Review class printers

A Review class printer is a special way of printing to the 80-column screen that lets you proofread your text exactly as it would be printed to a real

printer. The supplied configurations all include a class R printer--check out Section 2, Part 11 for an example of its use. Because class R printers use the 80-column card, you must answer 3 <CR> to the previous `Enter printer slot:` questions for a Review class printer. If you don't, BEX gives you another chance to do it right.

`Enter printer (or brailleur) code:`

You are asked this question for large print printers and braille embossers. Press <CR> alone for the list of codes. After you enter the code that corresponds to your device, BEX confirms the choice; you have another chance to enter the code if you picked the wrong one.

RDC tries to support as many braille embossers as possible. These include manufactured brailleurs, like the Cranmer, VersaPoint, MBOSS-1, and Thiel; and *homebrew* brailleing methods, like *Dipner Dots*. Much more detail on these is available in the BEX Interface Guide.

Brailleur codes 1 and 2 are *braille previewers*. These are braille equivalents of the Review class printer (so they must be configured in slot 3). The braille previewers allow you to proofread braille material on the screen that looks exactly like what's sent to a braille embosser.

`Enter carriage width:`

This question is asked for generic, large print, Review class printers as well as braille embossers. The *carriage width* defines the maximum number of characters BEX prints on each line. Press <CR> alone at this prompt for commonly-used values, which vary greatly depending on the printer class. Learner Level Section 5 provides extensive advice for making nice-looking print output.

`Enter form length:`

This question is asked for generic, large print, and Review class printers as well as braille embossers. *Form length* defines the maximum number of lines BEX prints on each page. Again, you can press <CR> for suggested values.

`Do you want pause after form feed?`

This question is asked for large print and generic inkprint printers. How you answer depends on how you feed paper into your printer. When your printer uses continuous-feed paper, you answer N <CR> If your printer uses single sheets of paper instead of tractor feed paper, you do want pause on form feed, so you answer Y <CR> to this question. When you tell BEX to print to this printer number, BEX pauses after each page and waits for you to insert a fresh piece of paper and press <space>.

Do you want auto line feed?

This question is asked for generic inkprint printers. Your answer controls BEX's behavior at the end of each line of printed output. Always start out answering N <CR> because most printers and printer interface cards take care of linefeed themselves. When your printer prints all the text for a page on just one line, and the only time you hear the paper advancing is at a new page, reconfigure. When you answer Y <CR> BEX generates both a carriage return and a linefeed command for each new line.

Part 6: Finishing Up the Configuration Questions

Enter number of disk drives

At the Learner Level, BEX only works with one or two 5.25-inch disk drives, so there are only two possible answers to this question. When you enter 1 <CR> BEX prompts you to switch between program disk and data disk. Please consult Appendix 3 for information on using a one-drive system.

At the Master Level, you can configure up to eight disk drives, choosing among 5.25-inch and 3.5-inch disk drives, RAM drives, and the Sider hard disk.

Enter a name for this configuration:

Once you have answered all the questions, you get to name your configuration. Configuration names follow two simple rules: The first character must be a letter, and the name cannot exceed ten characters in length. Choose a name you can easily remember. When the name you choose

already exists on the Boot side of BEX, then the new information overwrites the old.

After you type the name, finish with <CR>. Now that you have established your own configuration, enter its name at the `Enter configuration:` prompt when you first boot BEX. If you can't remember the name, you can type `? <CR>` at BEX's first prompt, and BEX lists all the existing configurations.

The only limit to the number of configurations is the space available on disk. You can define several configurations to describe various combinations of equipment and screen display. When both a sighted and blind person are using the same Apple, each can define a configuration that meets their needs.

Part 7: Sample Questions and Answers for Printer Section

To provide you with a feel for all the possibilities, here's one way you could answer the printer questions. This text is just a sample--you must answer the questions as appropriate for your equipment.

This sample assumes you have a 128K Apple IIe with an extended 80-column card. You have a VersaPoint embosser connected to an interface card in slot 4 and an ImageWriter printer connected to an interface card in slot 1. You configure the VersaPoint as printer number 1. You configure the ImageWriter *twice*: as printer number 2, the ImageWriter is a large print printer; as printer number 3, it's a generic inkprint printer. Printer number 4 is a Review class printer. Since you use printer 4 to proofread material before it's sent to printer number 3, printers 3 and 4 have the same carriage width and form length. Note that the printer numbers refer to the order they are defined in, not to the slot where the device is hooked up.

PRINTER SECTION

Printer ONE Description

Enter printer slot: 4 <CR>

Enter printer class: B <CR>

Enter Braille code: 9 <CR>

That means Personal Braille.

Is that what you want? N <CR>
Enter Braille code: 10 <CR>
That means T S I VersaPoint.
Is that what you want? Y <CR>
Enter carriage width: 41 <CR>
Enter form length: 225 <CR>
A typical value here is 25
Enter form length: 25 <CR>
Printer TWO Description
Enter printer slot: 1 <CR>
Enter printer class: L <CR>
Enter Large Print printer code: 1 <CR>
Enter font size: 14 <CR>
Enter line spacing: <CR>
Line spacing is measured from
baseline to baseline.
A typical value here is 21.
Enter line spacing: 18 <CR>
Enter extra spacing between characters: 0 <CR>
Enter carriage width: 53 <CR>
Enter form length: 37 <CR>
Do you want pause after form feed? N <CR>
Printer THREE Description
Enter printer slot: 1 <CR>
Enter printer class: G <CR>
Enter carriage width: 72 <CR>
Enter form length: 58 <CR>
Do you want pause after form feed? N <CR>
Do you want auto linefeed? N <CR>
Printer FOUR Description
Enter printer slot: 1 <CR>
Enter printer class: R <CR>
CANCELED
REQUIRES 80 COLUMN CARD, SPECIFY SLOT 3
Enter printer slot: 3 <CR>
Enter printer class: R <CR>
Enter carriage width: 72 <CR>
Enter form length: 58 <CR>

This sample demonstrates some of the error-checking BEX does as you establish a new configuration. When configuring printer 1, you entered 9 instead of 10. Since BEX confirms your choice, you have an opportunity to cancel the 9 and re-enter 10.

When configuring printer 2, you were unsure about the meaning of *line spacing*. You press <CR> and you get some advice about what to enter. You happened to have seen a sample of 14-point BEX large print, and you prefer less space between the lines than the default. BEX uses the answer you give to this question to calculate the suggested value for form length.

For printer 4, you specified slot 1, then a Review class printer. That combination doesn't work, because the Review class printer uses the 80-column card in slot 3. BEX gave you another chance.

Part 8: Configuration Error Messages

If you answer the configuration questions with strange values, you may get strange output. For example, if you give an inkprint printer a carriage width of 5, you'll get very short lines. The following problems could interfere with getting to the Starting Menu at all.

BEX tries to diagnose errors that interfere with saving a configuration on the disk. Here are error messages and how to cope with them:

- REMOVE WRITE PROTECT TAB - Do not cover the notch on the left side of the floppy disk. BEX must write the configuration on your program disk.
- DISK FULL - You won't be able to save the configuration until you delete some files. Boot with an existing configuration and then use option K - Kill configurations on the Starting Menu to make room to write a new configuration.
- NAME MUST START WITH A CAPITAL LETTER - Make sure the Caps Lock key is down. A proper configuration name must start with an uppercase letter.
- CONFIGURATION FILE IS LOCKED - Sometime in the past you locked the configuration file. You are now trying to save a new

configuration under the same name. Try using a different configuration name. Don't lock configuration files.

- BAD DISK, UNABLE TO WRITE - The drive door is not closed, or the disk is not seated correctly in the drive, or something is seriously wrong with your disk.
- BOOT DISK IS MISSING OR DAMAGED - The configuration file has successfully been saved, but now the Starting Menu program cannot be loaded. You may have inserted the wrong disk, or you may have a bad copy of the BEX disk.

4 The Editor

A word processing program allows you to prepare written material efficiently. You can review your text before you print it, so that you know that your final output is the way you want. You can save the text you write to disk and reprint it again whenever you want. You can make minor modifications to an existing text without having to retype the whole thing.

The part of BEX where you do all these things is called the *Editor*. Use the Editor to write, review, add, delete and correct text, and enter format information.

In this Section, we introduce some basic word processing concepts. You'll learn how to move around in the Editor, and how to delete and insert text.

Part 1: Editing a New Chapter

In Section 2, we explored the Editor by examining an existing chapter. The Editor is at the Main menu; press E to use the Editor. BEX confirms your choice, then asks for the drive number or chapter name you wish to use:

Main Menu

Enter Option: E <CR>

Editor

Drive number or chapter name:

There are two ways to edit an existing chapter: When you know its name, type the name, followed by <CR>. Or you can enter a drive number followed by <CR>. BEX then presents a numbered list of chapters, and asks you to choose one chapter from the list by number.

The first step in creating a new chapter is to tell BEX the name of the chapter you wish to create. You type a name, and finish with <CR>. You can add a drive number to the beginning of the name when you want the chapter saved on a drive other than the default data drive. After you type the name and press <CR>, BEX scans the disk drive to see if that name is on it. If it is not, BEX asks you if you want to start a new chapter, and supplies the Y default answer. Since you do want to start a new chapter, press <CR> to accept the default answer.

Part 2: Rules for Chapter Names

A BEX chapter name cannot exceed 25 characters. If you try to enter a name that's too long, BEX tells you so and complains with a low boop. The first character of a chapter name must be a letter, but you can use numerals, spaces and some punctuation in the rest of the name if you want to. There are 4 punctuation characters you must never use in a chapter name: period, comma, semicolon, or colon. If you use one of these four, BEX won't be able to recognize the disk file as a chapter. When you are entering the chapter name, every letter is interpreted as uppercase, whether or not you use the shift or Caps Lock key.

Part 3: Chapters and Pages

A BEX chapter is made up of pages. A *page* is an arbitrary division in the Editor: it can contain from zero to 4096 characters. Each page is stored as one file on your data disk. When you start a new chapter, you always start on page 1.

A BEX chapter can contain up to 30 pages. These *pages* do not refer to the number of physical print or braille pages when a document is printed or embossed. An average sheet of braille contains around 1000 characters, and an average sheet of double-spaced inkprint text contains around 2000 characters. From this you can see that a single BEX page can contain enough text to fill several output pages.

Part 4: How Data is Organized

As you use BEX, you'll work with data organized in five ways: as a BEX *chapter*, within a chapter as *pages*; within a page as *paragraphs*; within a paragraph as *words*, and within a *word* as *characters*. Before we get any further, we'd better define our terms.

- ***The Basic Unit: the Character***

A *character* can be any lowercase and uppercase letter; the digits 0 through 9; punctuation like comma, period, percent sign, parenthesis, and the space character. These characters are what your printer or braille prints. A character can also be a *control character*. Instead of being printed, a *control character* controls the behavior of a printer or a computer. A few of the keys on the Apple keyboard are control characters. The first one you learned is the *carriage return*, also known as control-M or simply *return*. That's the key we refer to as: <CR>.

To move around in the Editor, you issue commands that consist of control characters and other characters in combination. For example, to move your cursor ahead by 2000 characters, you enter control-A 2000 <space>.

You can also include a control character as an item in your text. A control character controls the behavior of your printer when it's sent out of the Apple. For example, you can type <CR> in your text. Every time a printer or embosser encounters a <CR> in the text it's receiving, it moves the printhead to the beginning of the next line.

Hint! You don't have to type a <CR> at the end of every line in BEX. BEX automatically inserts <CR>s when needed as it's printing.

You can insert a <CR> when you want to force a new line. When you do type a <CR> in your text, it's actually there. The screen shows it (with the letters C and R or a checkerboard pattern) and the Echo says "return."

- ***Larger Units: Words, Lines, and Paragraphs***

The basic unit is a character. The next size up is a *word*. BEX has a pretty crude definition for a word: any series of characters that's bounded on each side by a space or a <CR>. That means that a *word* also includes letters with touching punctuation, such as a period, colon, or comma. For example, suppose you have this sentence in your text:

"I<space>love<space>margarine!"

BEX considers this sentence to have three words.

How many characters fit on a screen line can vary from five characters (in G or F screen mode) to 80 characters (in W mode). You tell BEX how many characters you want on a line when you print, and you can print the same information with many different formats. At the User Level, we explain the line preview feature, where you can examine how material will look when it's printed without leaving the Editor.

The next division is the *paragraph*. BEX uses a special indicator to mark the beginning of a paragraph: space, dollar sign, lowercase *p* space. To emphasize that the paragraph indicator is always four keystrokes long, we show it as (\$p) throughout this manual. (By the way, this is the same symbol that the VersaBraille uses to mark a paragraph.) To start a new paragraph in your text, you type in those four characters. When your text is printed, BEX executes the paragraph indicator as appropriate for print or braille format, so the (\$p) doesn't appear in your output. A paragraph can contain one word or thousands of words: you define a paragraph by where you place the (\$p) indicator.

We've already described *chapters* and *pages*, so now you're ready to dive in to the Editor.

Part 5: Starting a New Chapter

When you type a name at the Editor prompt, BEX checks to see if it already exists on the disk. When you add the digit 1 before the chapter name, BEX checks drive 1; otherwise, BEX assumes you want the default drive 2. When the name isn't on the disk, BEX asks `Want to start a new chapter?` and then supplies a default `Y` answer. Press `<CR>` to accept the default, and BEX pauses for a moment to save the name to disk, then announces the first page. This means you're in the Editor. In Section 2, Part 11 we described the cursor, which marks your place in the text.

The keyboard buffer

Since you've just started a new chapter, there is no text, so start typing. As you type each letter, it appears at the cursor and the cursor moves over one to the right. BEX stores all the characters you type in a special place in memory called the *keyboard buffer*. Both the text you type and the commands you enter are stored in the keyboard buffer.

If you are a fast typist, or if you have a large print screen display, you hear little clicks from the Apple speaker as you type. This is the sound of characters being fed from the keyboard buffer to the screen, and to the Echo if you are in control-S A mode, which announces every keystroke. Take care when you type: when you hold down a key for more than a half-second, the character automatically repeats. Don't hold down the left and right arrow keys to move your cursor forward several words. When you release the key, the keyboard buffer has stored more move-one-character commands than you expect, and your cursor overshoots. Use control-G and control-R instead.

Uppercase and lowercase letters

The Editor recognizes the difference between uppercase and lowercase letters, unlike at the menu prompts. When you have the Caps Lock key depressed, release it when you enter the Editor. Use the shift key to get uppercase letters.

How characters appear on the screen

How many characters fit on each line of the screen depends on the screen mode you've chosen in your configuration. BEX fills each line on the screen with characters, so part of one word may appear at the end of one line and the rest of it at the beginning of the next line. Don't let this disconcert you--when you send the text out of the Apple to a printer, embosser, or voice device, your text is properly formatted. At the User Level, you'll learn how to change the screen display inside the Editor.

- ***Formatting Your Text***

When you want to start a new paragraph, type the paragraph indicator: (\$p). Those four characters appear on the screen, and when you print your chapter, there will be a new paragraph wherever you entered the paragraph (\$p) indicator. BEX has many commands that are oriented around the (\$p) indicator, so it's a good idea to use it often.

When you want to force a new line, you have a choice: you can either enter <CR> or use the *new-line indicator*: space, dollar sign, lowercase l, space (\$l). The <CR> and the (\$l) have the same effect: BEX forces the printer or embosser to start a new line.

We discuss many other format commands in Section 6: how to center, underline, and use tabs, and to instruct BEX how to execute the paragraph (\$p) indicator.

Part 6: Entering Editor Commands

All Editor commands start with control characters. Hold down the control key, then press the specified letter, then release the control key. After BEX executes any Editor command, the Apple speaker makes a low boop. If you enter a command BEX doesn't recognize, the speaker makes a high beep.

Some Editor commands consist of several control characters in a row; in this situation, you hold down the control key, press the specified letters, then release the control key. We show a single-letter control command as: control-

G. (This advances your cursor one word and speaks it.) Although we show the letter g in uppercase, you don't need to depress the shift key to enter the control-G command. An example of a two-letter control command is control-A control-P. (For easier reading, we show a space between the two characters, but do not press the spacebar between control-A and control-P.) This advances your cursor to the next (\$p).

BEX is quite picky when it comes to entering commands properly. All characters in a command must be entered as control characters, unless otherwise specified. When they are not, the command will not work properly. Control-A P won't advance your cursor to the next paragraph; it advances your cursor to the end of the page.

Other Editor commands start with a control character and are followed by one or more plain letters. An example is control-S A, which toggles off and on the speaking of all keystrokes. Again, you don't press the spacebar between the control-S and the A, and you don't need to use the shift key.

Part 7: Moving Around in the Editor

There are many ways to move around in BEX's Editor: some commands simply move the cursor, and other commands move the cursor and also speak. There is very little duplication between movement-only and movement-with-output commands; we recommend that even BEX users who only use the screen investigate all the commands.

- ***Silent Cursor Movement***

The up arrow moves the cursor up one line on the screen. If you press the up arrow when you are on the top line of the screen, then the screen display changes to show previous text. When you press the up arrow when you are on the very first screen line of the page, your cursor moves to character position 0. Like the <CR> key, the up arrow key is a single-key control character: entering control-K is the same as pressing the up arrow.

The down arrow does exactly the same thing as the up arrow, but in the opposite direction. Control-J is the equivalent to pressing the down arrow key.

Advancing the cursor

Control-A starts many editor commands which advance the cursor forward through your text: how far you advance depends on the subsequent characters you type.

- Control-A <space> - advances the cursor to the last character of the page
- Control-A # <space> - advances the cursor # number of characters. If you don't enter a number, you advance to the end of the page
- Control-A control-P - advances the cursor forward to the initial space of the next paragraph (\$p) indicator

Zooming back the cursor

There is an equal and opposite set of commands that zoom back the cursor. They all begin with control-Z in place of control-A.

- Control-Z <space> - zooms back the cursor to the first character of the page
- Control-Z # <space> - zooms back the cursor # number of characters. If you don't enter a number, you zoom back to the beginning of the page
- Control-Z control-P - zooms back the cursor to the initial space of the previous paragraph (\$p) indicator

You can begin to see the patterns in these cursor movement commands. The first control character determines the direction you move: control-A advances forward, and control-Z zooms backward. Then, you can type some numbers to determine how far you move. Finally, there's a unit character: control-P stands for the paragraph unit, while <space> stands for the character unit. At the User Level, we discuss a number of other units you can use as you move your cursor.

- ***Moving to Specific Characters: Locating Text***
-

Use control-L to locate text from your current cursor in two directions. Start out with control-L, then type the exact characters you wish to locate. You can type in a string that's up to 35 characters long. Your search string can contain any character that is in your chapter.

Control-L is very picky: you must type in the search string exactly as it appears in your text. This includes uppercase and lowercase letters, and punctuation. As you are typing in the characters you wish to locate, you can use the left arrow key to fix typing errors.

When you are finished typing the search string, use the movement commands to search in a specific direction. Press control-A to locate the string ahead of the current cursor position. Press control-Z to search text previous to the current cursor position.

When BEX executes the locate command, it moves your cursor to the first character of your search string, and makes the Apple speaker boop. When you want to find another occurrence of the same string, simply enter control-L control-A or control-L control-Z again. You do not need to type the search string again. The locate command remembers the characters until you enter a different search string.

When BEX can't find an occurrence of your string, you get one high error beep and your cursor stays where it is.

- ***Talking Cursor Movement***

Even if you don't use speech with BEX, these commands still move your cursor as described. What we describe here for the Echo is generally true for the SlotBuster. Check your SlotBuster manual for further information.

The left arrow key, control-H, and the right arrow key, control-U move you one character at a time to the left or right; we refer to this movement as *arrowing*. When you arrow to a character, the Echo pronounces the character your cursor lands on, regardless of punctuation mode. BEX gives the Echo a special vocabulary that's only used for arrowing, which is slightly different from TEXTALKER'S vocabulary. The special vocabulary lets the Echo pronounce all control characters, and makes it say *escape* instead of *control-left brace*; *right bracket* instead of *ready*; *ampersand* instead of *and*, etc. When you

try to arrow past the last character on the page, you get the high error beep. When your cursor is at character position 0 and you press left arrow, you hear that character announced even though your cursor can't move further left.

Talking words

You can make the Echo speak one word at a time by using control-G and control-R. Control-G goes forward a word and speaks it. Control-R reverses a word and speaks it.

In Part 4, we defined a *word* as any series of characters that doesn't contain a space or a <CR>. When your cursor is in the middle of a word and you enter control-G, the Echo only speaks the characters from your cursor to the next space or <CR>. When your cursor is in the middle of a word and you enter control-R, the Echo speaks the entire word (forwards, not backwards!)

Talking sentences

These two commands are handy for reviewing portions of text with the Echo. After the Echo starts speaking, you can shut it up and stop the cursor by pressing <space>.

Control-T talks the next sentence. Press <space> to turn off control-T, and your cursor stops after the word you heard when you pressed the spacebar. To start speech and cursor movement, enter control-T again.

Control-O is the "output a bunch" command: it outputs to the end of the current page and moves the cursor there. As you listen to text with control-O, you can use <space> to stop output and cursor movement at any point. Pressing <space> turns off control-O; to hear more text, enter control-O again.

Using control-O and <space> is very handy for proofreading. BEX pauses slightly between each word to check to see if you've pressed <space>. At the User Level, you learn how to modify the Editor environment to eliminate these pauses if you wish. (If you don't have an Echo, control-O just moves the cursor forward to the end of the current page.)

Part 8: Moving from Page to Page

Each BEX *page* can hold 4096 characters, but you don't need to fill up each one. The page is an arbitrary division, and need not refer to a particular output page.

You can move to a new page whenever you want. Enter control-P # <space> to move to a specific page number. For example, to move from page 1 to page 2, enter control-P 2 <space>. The disk drive whirs as the characters in page 1 are saved, and you're at character position 0 on page 2. To move back to page 1, enter control-P 1 <space>. The characters you've typed in page 2 are saved to disk, and then the characters on disk in page 1 are copied into the page buffer.

Control-P 0 saves your current page to disk, and puts you at character position 0 of the same page. When you are working for a long time on one page, use this command as a quick method of saving your data.

Control-P <space> cancels your page move. When you have accidentally entered control-P or when you have changed your mind, press <space> and your cursor stays in the same position as when you entered control-P.

Control-C control-P cuts the page at the current cursor, leaving you at character position 0 of the second page you've just created. A paragraph is usually a logical place to divide a page. If you want to, though, you could enter control-C control-P right in the middle of a word. When your chapter is printed, that word will output fine. The *page* is an arbitrary division; you decide what relationship each page has to your final output.

You can use any of these commands except control-P 0 to create more pages. BEX automatically renumbers your pages. Suppose you have a six-page chapter, and you're on page 4. There are 3600 characters in the page, and your cursor is at position 2000. You enter control-C control-P. Page 4 now has 2000 characters. The text between your cursor and the old end of page 4 becomes page 5, with 1600 characters. Your cursor is at position 0 of the new page 5. Old pages 5 and 6 automatically become pages 6 and 7. Every time you move between pages, you save the former page to disk.

BEX creates pages sequentially. It will not let you create pages out of order. For example, when you have a three page chapter and you enter control-P 20 <space> you move to the beginning of page 4.

- ***When to Move to a New Page***

As a rule of thumb, move to a new page when you have 3300 characters in your current page. For all screen sizes except 5-column, the number of characters in the current page are displayed on the status line on the bottom of the screen. Enter control-W C for speech output of your current cursor position and the number of characters in your current page. (See Part 11, Status Information for details.)

- ***Every Key Beeps for a Full Page***

When you type along for quite a while, you may suddenly find yourself getting a beep every time you press a key. This means that you filled up your page; you have 4096 characters in it.

Don't panic, it's easy to fix. Enter control-Z 2000 <space>. This zooms your cursor back approximately halfway through your page. Now enter control-A control-P. This advances your cursor to the next paragraph. Enter control-C control-P and you cut your page in two.

Part 9: Inserting Text

BEX offers two different ways to insert new text into existing text. You can type in text directly from the keyboard, or insert text from the clipboard. At the Learner Level, you can only insert text from the keyboard. The clipboard is really a lot of fun; you'll learn how to use it at the User Level.

Overwrite vs. insert

Whenever you position your cursor in the middle of some text and then start typing, the new characters overwrite the existing characters, deleting them. You can insert and delete text by issuing Editor commands.

● ***Insert Text from the Keyboard***

When you insert text, the new characters appear at the cursor position. Before you start inserting, place your cursor exactly where you want the new text to appear. The insert places the new text between your cursor and the character or space immediately before it.

Signal the start of the keyboard insert by entering control-I. There's a Tab key on your keyboard which is actually a control-I key, so you can just press Tab to start the keyboard insert. After you press Tab all the characters from the character under your cursor to the end of the screen turn into the underbar character. Don't worry, the text that just disappeared is still in your chapter; the underbars make it easier for sighted BEX users to know when they are inserting. When you type beyond the end of the screen, your text scrolls up, placing the line your cursor is on in the middle of the screen. The rest of the screen contains underbar characters. Type along merrily: every character you type is inserted in the text immediately *before* the character your cursor was on when you entered Tab.

When you're ready to complete the insert, enter control-N. The Null command control-N refreshes the screen, and the inserted text takes its rightful place, with your cursor at the same character it was when you entered control-I.

For example, you have the word *fanciful* in your text, and you want to insert quotation marks around it. Use the locate command to move to the word: press control-L then enter `f an` then locate forward with control-A. When you hear the low boop and the cursor position number, your cursor is on the letter *from*. Press Tab, press the quote, then enter control-N. Now enter control-G; your cursor moves to the space after the letter *l*. Press Tab, press the quote, then enter control-N. You can arrow over the word to check if you've entered the quotation marks correctly.

Another example adds words to a phrase. Suppose you have: `It ' s a beautiful day` and you want to add the words *bright and* between *a* and *beautiful*. Position your cursor at the `<space>` boundary between *a* and *beautiful*, then press Tab to begin inserting. Type

<space>bright<space>and then press control-N to exit the insert mode.

Exiting insert

Actually, you don't *have* to use control-N to complete the insert. Every control character completes the insert, with the exception of three: control-M or <CR>, control-H or left arrow, and control-C. These exceptions allow you to insert carriage returns and control characters into your text, and let you use the left arrow to back up and make minor corrections in the text you're inserting.

You can use the right arrow key to leave or complete the insert. The right arrow key is actually control-U, so it qualifies as a control character. After you press control-I, any Editor command you enter accomplishes two functions: because Editor commands are all control characters, you complete the insert and then execute the Editor command. For example, when you are in insert and type control-Z control-G you exit insert and the Echo speaks the next word.

Part 10: Deleting Text

You use control-D to begin all delete commands. Similar to the cursor move commands control-A and control-Z, you can combine control-D with a *unit character* to delete text by characters, words, and paragraphs.

Deleting characters

Control-D <space> deletes one character. Control-D 17 <space> deletes 17 characters. When the number that follows control-D has more than 4 digits, BEX boops and deletes only one character. If you enter control-D by mistake, you can enter zero <space> to cancel the command.

Deleting words

Control-D # control-W deletes # number of words. Entering control-D control-W with no number deletes one word. BEX defines a word to be the

characters in between two spaces or <CR>s. When your cursor is on the space or <CR> that defines the start of a word, control-D control-W deletes that character and all the characters up to but not including the next space or <CR>. When your cursor is on any character in a word, then control-D control-W deletes the entire word, from the previous space or <CR>. Control-D 5 control-W deletes five words, starting with the space or <CR> that defines the first word and up to the last character of the fifth word. When you enter a large number, for example, control-D 2000 control-W you can delete the rest of the page.

Deleting paragraphs

Control-D control-P deletes all the characters from the cursor position up to the initial space of the next paragraph (\$p) indicator. Control-D control-P deletes one paragraph.

- ***Un-Deleting***

There comes a time in your life when you regret a deletion. Because of how BEX is designed, there are a number of approaches that allow you to recover information you deleted by mistake.

When you are editing an existing chapter and you delete something by mistake, it's easy to return to your original text. When you edit an existing chapter, you copy the information from the page file on disk to the page buffer. The changes you make in the page buffer (including deleting characters) are not saved on disk until you move to another page or quit with control-Q. To not save the changes you've made, simply "crash" out of the Editor with Control-Reset. The next time you edit that chapter, you copy the original text from the page file to the page buffer: your original text will be back in your chapter.

When you regret deleting text that has not yet been saved to disk, you may be able to use the RUN 999 procedure to recover your data. Details on RUN 999 are in Section 13.

- ***Deleting Blocks of Text***

The deletion commands work well when you know how many units you wish to delete. The editor also has a special, invisible pointer called the *block marker* that you can use to make deleting text easier. At the User Level, you'll discover other uses for the *block marker* as you find out about the clipboard.

Block marker commands

- Control-B S - block set: set the block marker at current cursor position. You have only one marker set at any one time. Every time you enter control-B S, the old marker is erased as the current marker is set. Since the marker is an invisible pointer, erasing it does not alter your text. To prevent BEX from becoming confused about where the marker is located, the marker is automatically erased every time you change the length of the text by executing any delete or insert command.
- Control-B L - block locate: move to the block marker. When the block marker is behind your current cursor, your cursor moves back. When the block marker is ahead of your current cursor, your cursor moves forward.
- Control-B D - block delete: delete the text from the marker forward up to but not including the character your cursor covers.

There are two ways to find out where your marker is set:

- Control-W B - gives screen and Echo output of marker position
- Control-B L - moves your cursor to the marker; if you don't have a marker set, BEX beeps three times

Using the block delete

It's easy to block delete large portions of text. Position your cursor at the end of the text you want to keep, then enter control-B S to set the block marker. Advance your cursor with any of the Editor movement commands. For Echo users, control-O is useful if you want to delete more than a sentence. When you hear the word that ends the text you wish to delete, press <space>. Now, enter control-B D and all the text between the block marker and your cursor disappears. *The character your cursor covers is not deleted.* Set the block marker again with control-B S, and enter control-O again to start speech and cursor movement.

Hint! | You don't have to cancel a block marker before you establish a new

marker. Every time you press control-B S the old marker is erased and the new marker is set.

When you decide that you don't want to delete some of the text in the block, and you've already entered control-B, press <space> to cancel the block command. You may then reset the block marker where you want it.

Block related error beeps

As you use control-B commands, you can receive two kinds of error beeps. A single high error beep signals that you've entered a command sequence BEX doesn't recognize. For example, if you entered control-B F, you would hear one high beep.

Three high beeps can indicate two kinds of marker error. If you place your cursor *before* the marker and then enter control-B D, BEX complains with three beeps. Your cursor must be after the block marker is set in your text. When you enter a command that requires a set marker, but no marker is set, you also get three beeps. Either you neglected to set the marker, or you executed an insert or delete command and your marker was erased. This can happen with control-B D or control-B L.

Part 11: Status Information

The bottom line on the screen displays the current cursor position, the *size* of the page (or total characters in current page), and the current page number. The line above this shows the letters that correspond to the control character of the Editor commands as you execute them. In 5-column screen, the display only shows the current cursor and total page size.

For more details and Echo output about your status, use the "Where am I?" command, control-W. When you enter control-W, the Echo announces the character under your cursor and then the text temporarily disappears. You're presented with a question mark prompt on an otherwise blank screen. You can now enter one of these four characters: B, C, P, or A:

- Control-W B - gives you block marker information. It gives you the word `marker` followed by its current position.
- Control-W C - gives you character information. It tells your current cursor position and total characters in the page.
- Control-W P - gives you page information. It gives you the current page number and the number of pages in the chapter.
- Control-W A - gives you all information. It gives you information about all three of the above items in that order.

You can press any of the letters B, C, P or A as many times as you need to get information. After you digest the control-W information, press any key *except* B, C, P or A to return to data entry.

Part 12: Quitting The Editor

Enter control-Q to quit the Editor and save your current page to disk. Enter control-Reset to quit the Editor and abandon any changes you have made to the current page. If you enter control-Reset and then think, "Gee, I wish I had saved that page," you have one chance to save the changes you made: depress the Caps Lock key, type `RUN 999 <CR>` and follow the prompts. See Section 13 for details.

Part 13: Changing the Environment in the Editor

There are many ways to customize the editor's environment--we introduce three basic commands at the Learner Level. At the User Level you'll learn how to change the screen mode while in the Editor, and how to use the braille keyboard.

Most of these commands start out with control-S for *set environment*. Most of these commands are *toggled*: the first time you enter the command, you turn the mode or feature on, and the next time you enter the command, you turn the feature off. When you change the environment, that change lasts until

you toggle it off by entering the command again, or until you turn off the computer.

- ***Announce All Keystrokes***

Control-S A makes the Echo announce every key you press. You hear all your Editor commands announced, and every key you press as you type in text. When the Echo is announcing every keystroke, you have to type very slowly. This is a toggled mode: enter control-S A again to return to normal. In announcing keystrokes, BEX uses the special vocabulary described under Talking Cursor Movement in Part 7: to minimize confusion, arrow keys (and their corresponding control characters) are announced as *up*, *down*, *left*, and *right*.

- ***The Lock Out Changes Command***

Control-S L disables all Editor commands that alter your text, and makes every keystroke a control character. While you are in this mode, you may use any of the Editor motion commands, but you cannot alter your text in any way. You cannot add, delete, or edit text while in this mode. For example, after you enter control-S L, pressing just the letter O executes control-O to move your cursor forward and speak. Entering Z <space> zooms your cursor back to the start of the page. Pressing a plain L starts the Locate command, but you must enter control-A or control-Z after you enter your search string to start cursor movement. When you enter any "unsafe" command that could change your text, like control-D for deletion or Tab for insertion, BEX gives the high error beep. Toggle out of this mode by entering control-S L again.

- ***Send Echo Commands within the Editor***

Almost all of the Echo commands are available within the Editor. (A full explanation of Echo commands is in Section 10.) You can't use control-L to enter line review, but there are many other ways to review your text with

BEX's editor commands. You can use the spacebar to silence the Echo after entering control-T or control-O.

To send any other command to the Echo, use the same syntax as at a BEX menu: control-E followed by the appropriate plain letters. For example, enter control-E 12 V to set the volume medium loud.

Control-E also sends commands to the SlotBuster. Refer to your SlotBuster manual for details about SlotBuster commands.

Part 14: Troubleshooting -- Editor Problems

Even if BEX seems to be behaving abnormally, you can almost always save your data.

- Problem: My keyboard just beeps when I press any key.
- Cause: You have a full page. Check the size display on the screen's bottom line or enter control-W C. Probably your size equals 4096. Cut your page with control-C control-P. See Part 8 for further help.
- Problem: My keyboard beeps when I press some keys, but not others. For example, the letters *O* and *L* and *W* don't beep, but *I* and *D* do.
- Cause: You are in "Lock out changes" mode. The letters that beep correspond to control characters that would change your text. Enter control-S L - to toggle out of this mode.
- Problem: I certainly didn't enter <CR> between each word, but when I use control-T, or control-O to review text, the Echo says "return" after every word.
- Cause: You have set the Echo to All punctuation mode with control-E A. The "return" you hear is *not* actually *in* your chapter. For now, change the Echo's punctuation mode: Some punctuation is set by control-E S; Most is set by control-E M. At the User Level, you'll learn where those phantom "returns" come from, and how to change the Editor environment so you won't hear them.
- Problem: When I move to a new page or try to quit, the disk drive whirs, but then stops, and BEX prompts: Cannot write to disk. Insert another data disk in drive 1 and press any key.

- Probable causes: Disk drives can be fussy. A wide range of things can cause a `Cannot write to disk` error. Most are easy to avoid. Check to see if you have a write-protect tab on your disk; if so, remove it. Problems occur if the drive door is open, or if the disk is seated incorrectly in its sleeve or in the drive. Even if the disk is in the drive correctly, you can't write on it if it's full or if it's not initialized. A disk can only contain 30 BEX chapters, so you can get this message even if the disk has free sectors remaining.
- Solutions: Remove any write-protect tabs on your disk. Find a good disk with some room on it. If you don't have an initialized disk lying around, there is just enough room on your program disk for a one-page chapter. Once you insert a good disk in drive 1, press any key. BEX automatically saves the page buffer that didn't get on disk in a one-page chapter named `SAVE` on drive 1. Merge this `SAVE` chapter with your other text as soon as you clear room on your disk.
- Problem: I edited an existing chapter and I don't like what I did.
- Solution: When you edit an existing chapter, you copy the information from the page file on disk to the page buffer. The changes you make in the page buffer (including deleted characters) are not saved on disk until you move to another page or quit with control-Q. To not save the changes you've made, simply "crash" out of the Editor with Control-Reset. More details in Section 13.
- Problem: I was editing text that I had not yet saved to disk, and I deleted text that I wanted to save.
- Solution: You *may* be able to get the text back. Depress the Caps Lock key. Enter Control-Reset to "crash" out of the Editor. Type `RUN 999 <CR>` at the BASIC prompt. More details in Section 13.
- Problem: I type control-Q but the disk does not whir and I don't get the `Quit the Editor` message.
- Cause: This is caused by "generalized weirdness": Failure of Apple Disk Operating System, usually due to spark or stray voltage. This is a RARE occurrence!
- Solution: Try to crash out of the Editor and use the `RUN 999` routine described above. This may not work. The absolute worst thing that can happen is that you lose the current page.

5 Printing Chapters

There are literally hundreds of printers on the market. Since every printer is slightly different, we can't tell you exactly how to set up yours. However, in Part 3 we provide you with a generic procedure to assist you in setting up the proper margin commands for your printer.

Part 1: The Formatter

BEX internally structures output one line at a time before sending the line of text to the printer. We call the part of the program that builds up the lines of text the *formatter*

The formatter uses the *format indicators* and *format commands* you type in your text to organize the information going to the printer. (Section 6 explores these in detail). BEX's formatter tailors its output differently for print and braille devices. The formatter knows, for example, that paragraphs are formatted and pages are numbered differently for print and braille documents.

The formatter builds a line of text according to the commands you have given it. When you establish a left margin of five characters, the formatter watches for each new line. At the start of a new line, it sends out five spaces to create your left margin. It counts each line as it goes along, comparing the current line number to the form length. If your form length is 25 lines, for example, it sends out a form feed command after printing line 25, and your printer moves to the top of a new page.

You can print the same text to different carriage widths without making any changes. The formatter automatically places soft <CR>s where needed, creating lines of the right lengths without further instructions from you. You provide the formatter with two basic dimensions when you configure: form length and carriage width. BEX's formatter uses the carriage width to break lines when printing, and the form length to divide the text into output pages. At the User Level, you will learn how to change margins and page lengths within a document, without having to reconfigure.

Because of the formatter's vigilance, usually it doesn't matter what kind of device you print to. BEX communicates with printers in a generic way, using codes that all printers can understand. It tailors output to the capabilities of

the printer. When printing to a *braille*, the formatter filters out commands that braille devices can't execute, like underlining. The formatter makes sure that paragraph indent, line space and page numbering are executed appropriately for print and braille devices.

Part 2: Set Your Printer Correctly

When it comes to printing nice-looking documents, you and BEX operate as a team. BEX does its best to make nice output, but you have the responsibility of making sure that your printer is ready to print. In order to get the best possible output, you must keep in mind some general principles about printers and printing.

- ***Vertical Alignment: Use Top of Form***

Each printer keeps track of where it is printing on the page. In order for it to do this correctly, you must make sure the top of the page is in the correct position before you print. When you tell BEX to start printing, BEX assumes that the printer printhead is in the correct position to print the first line. BEX does not add any top margin unless you tell it to do so. (Setting top margins is discussed in Section 6, Part 3.)

Some printers have a top of form button you push to tell the printer: "OK, remember your current position as 'the top of the sheet.'" Less expensive printers use the position of the printhead when you turn the machine on.

To set the top of form, first establish a landmark to use as a reference. This landmark is to point out where the top edge of your paper should be when you are ready to print. A common position is to place the top edge of the page even with the bottom of the tear bar. If you are visually impaired, have a sighted person help you establish a landmark the first time you print.

You may have to print an experimental page or two to get the paper exactly where you want it. Once you have your top of form landmark set, you

should check the top edge against the landmark immediately before telling BEX to print.

When you have set your paper correctly, then BEX takes over. Using the form length you defined in your configuration, BEX keeps track of every <CR> it sends to your printer. If you have a form length of 58, for example, BEX knows that after sending 57 <CR>s, it's time to send a form feed character to the printer. This form feed character makes the printer advance to the next top of form, where BEX starts counting <CR>s again.

To roll your paper out of the printer when it is finished, *always* use the form feed button. Form Feed advances the sheet to the next top of form, and lets the printer and BEX know that it is ready to print a whole new page.

Warning! Do not use the platen knobs to roll out your paper. If you do, your next printed page may end up being only half a sheet long.

Here's what may happen: Suppose you have a printout that's two and one-half sheets long. When BEX is done printing, the third sheet is halfway through the printer. As far as the printer knows, there are still around 30 lines left on that sheet. If you manually roll out the paper, the printer has no way of accounting for the 30 lines. Even if you manually roll the paper so it looks like it's set for the right top of form, the next time you print, your output would only fill half the sheet. The printer itself would generate a bogus form feed after it counts 30 lines, and your page breaks would not be in the correct place.

The best way to proceed is to always use the printer's form feed button that advances the sheet to the next top of form. That way both the printer and BEX are operating from the same assumptions.

- ***Form Length***

The form length is the maximum number of printed lines on each page. Generally, single spaced printer output is 6 lines per vertical inch. The standard eight-and-one-half by 11 inch paper is 66 lines tall. However, if you use 66 as your form length, your text would look cramped. You want to

allow for top and bottom margins. (Note that when you double or triple space, the blank lines between text are still counted.)

For example, for a top margin of one-half inch, subtract one-half times six (the number of lines per vertical inch), or three lines from your maximum form length. For a bottom margin of one inch, subtract one times six, or six lines from your maximum form length. Combining top and bottom margins, your form length is 66 minus nine, or 57 lines.

Confused? Here's the general rule: Subtract your top and bottom margins in inches, from the paper length. Multiply the result by six (the number of lines per vertical inch) to get the form length. Good luck!

- ***Carriage Width***

The carriage width is the maximum number of characters on each line. Inkprint printers generally can print 10 or 12 characters per horizontal inch. You may be able to specify exactly which on your printer.

On an eight and one-half by 11 inch paper, you *could* fit 85 or 102 characters on a line. But again, you want to allow room for left and right margins. When your printer prints 12 characters per inch, then your text can occupy a maximum of 72 (the carriage width) divided by 12, or six inches. Eight and one-half inches minus six equals a total of one and one-half inches for left and right margins.

Here's the general rule for figuring out how much room you have for left and right margins: Divide your carriage width by the number of characters per inch (10 or 12). Subtract the result from the width of your paper. The number you get is the total amount of space you have in inches for both the left and right margins. Of course, the exact margin depends on where the printing starts on the line.

When you define a carriage width of 72 for a printer in your configuration, you are actually telling BEX: "Print as many complete words as will fit in without exceeding 72 characters in this line, then send the printer a <CR>." Exactly where the first character on the line shows up depends on your printer. When the place that the printhead returns to is too far to the left for your taste, then you can tell BEX to use a left margin.

Again, printers differ. Some printers have their own commands for setting margins. With these commands, you can move the spot where the printhead returns to when it prints. You use an automatic set-up sequence for this (discussed in User Level, Section 3, Part 3). Then when you set top of form, you are also setting a left margin. If this is the case for you, then BEX (and you) don't need to worry about a margin. (Setting margins is discussed in Section 6, Part 3)

Position zero: the definition

In the ever-changing world of printing, some artificial absolutes must be set. When we talk about the placement of the characters on a printed line, we will be referring to them with the term position. A position is equivalent to the width of one printed character. *Position zero* is the leftmost point that the printhead on your printer can go to. Therefore, if your carriage width is 72, your printer will print characters on positions zero through 71. Position zero can move around on your paper, once you learn how to set a printer's internal margins through the use of automatic set-up sequences. However, in terms of how BEX's formatter view your text, position zero is always the leftmost position on the printed page.

Caution! | Experienced transcribers who are familiar with the numbering of braille cells will recognize that BEX's position zero is equal to braille cell number one.

Part 3: Using the Printer Test Grids

There are literally hundreds of printers on the market, each with its own bonuses and drawbacks. Different printers have different internal left margins, different numbers of characters per inch, and a different amount of lines per inch. You may want left and right margins on your printer that are different from BEX's default margins. However, properly configuring your printer is a confusing process, and one that can take much time. In this section, we provide you with a generic procedure to assist you in identifying how BEX interacts with your printer.

The horizontal and vertical test grids

As explained in Part 2, BEX format commands control the appearance of the printed or embossed page within the basic image of *carriage width* (number of characters per line) and *form length* (number of lines per page). You can also set a left margin and a top margin, for a balanced page. Four chapters on your BEXtras disk, the V GRID chapter, the RP GRID chapter, the LP GRID chapter, and the LONG GRID chapter can assist you to establish the appropriate margins, carriage width and form length for your particular printer. V GRID is a vertical grid chapter that can be printed on any inkprint printer. With this chapter, you determine the appropriate top margin, top-of-form, and form length for your printer. RP GRID is a horizontal grid chapter, designed for regular print printers. LP GRID is also a horizontal grid chapter, designed for large print printers. LONG GRID is a horizontal grid chapter designed for condensed printing on printers that can print more than 100 characters on a line. Using these three chapters, you determine your left margin and carriage width for your printer.

All four of these chapters print reference grids using BEX's horizontal and vertical numbering system. Enlisting the assistance of a sighted person if necessary, you can ascertain the appropriate horizontal and vertical numbers that provide a well-balanced print page.

- ***How to Configure Your Printer for Testing***

Before you can test a printer, you must establish a configuration that includes this printer. The reference grids are appropriate for regular and large print printers; don't use them with braille. For further information on configuring printers, consult Part 4 of the Interface Guide.

Defining a printer involves answering many questions. In terms of testing, only four questions are important: the questions on slot number, printer class, auto linefeed, and pause on form feed. After you analyze the test results, you will know exactly what values to enter for carriage width and form length.

Reboot and set up a configuration for your printer. Don't worry about any carriage width and form length values you have set; the reference grid chapters override the carriage width and form length in your configuration. If you are configuring for the first time, enter the suggested values. (Press

<CR> at any configuration question to get suggestions for how to answer.) You'll enter better values after you print the test chapters.

When you first configure, always start by answering N to the Do you want auto linefeed? question. When you print the test grids, it will be obvious if your printer needs a Y response. You need to answer Y to the auto linefeed question when you don't hear the paper advance after each line is printed, and you end up with one black line at the top of each page.

Only answer Y to pause on form feed when your printer uses single sheets of paper. When you answer Y, BEX pauses printing at the bottom of each page. You then remove the printed sheet, insert a blank sheet, and press <space> to continue printing.

- ***Printing the Vertical Test Grid***

The chapter named V GRID provides you with a guide to set form length, top-of-form, and top margins. Establish a workable landmark on your printer, as discussed in Part 2. Then print the V GRID chapter to this printer.

Where line 1 appears in this printout is where BEX prints the first line of every page. When your test sheet shows line 1 too high on the paper, then you have several ways to establish more aesthetically pleasing top and bottom margins.

Establishing a top margin

One way to position line 1 in a good place to always include a top margin command in your BEX chapter. Suppose the grid line numbered 4 seems like the ideal first line on the page. You type `$$mt3` in your BEX chapter, and at the start of each page BEX prints three <CR>s before it starts printing the text for line 1. (Section 6 explains the \$\$ format commands in detail.)

Another approach requires that your printer have a button labelled *linefeed*. When the printer is off-line, pressing the linefeed button once advances the paper exactly one line. You can align the paper using your landmark, then press the linefeed button exactly three times. Now, set top-of-form by pressing the top-of-form button or switching the printer off and on again. BEX now prints the first line of every page on line four, per your instructions.

This procedure establishes top-of-form; it does not change as long as you maintain the top-of-form.

As we've stressed, to maintain an accurate top-of-form you must never advance the paper by rolling the platen. When you are done printing a document, turn the printer off-line, and press the formfeed button. The paper advances into position for the next document you print. (The design of some printers make it difficult to tear off the sheet after just one formfeed. In that case, press the formfeed button twice, sacrificing one sheet of paper to the cause of beauty.)

At the User Level, we discuss *automatic set-up sequences*, which can include a top margin command to your printer.

Establish form length

In addition to establishing the appropriate top margin, the V GRID chapter can provide you with the appropriate value for your form length. Once you've decided on the value for your top margin, print the V GRID chapter again, using the value for your top margin. Fold the paper in half the long way (so that the top and bottom edges meet) and note which grid line number towards the bottom of the sheet meets line number 1. Use this number as your form length. When you specify that number as your form length, you have equal top and bottom margins.

- ***Printing the Horizontal Grid Chapters***

The chapters named RP GRID, LP GRID, and LONG GRID provide rulers for you to determine left margin and carriage width for your printer. Use the grid chapter that is appropriate for you: The RP GRID chapter prints six rulers; this chapter is designed for regular print printers. The LP GRID chapter prints three rulers; it is designed for large print printers. The first ruler in the chapters prints 39 characters, the second prints 49 characters, and so on up to 59 characters for LP GRID and 89 characters for RP GRID. The LONG GRID chapter is intended for condensed inkprint printers. It contains one long ruler, 159 characters long.

Determining margins for multiple print sizes

You should print the RP GRID, LP GRID, or LONG GRID chapters once for each different character size or pitch you plan to use. For example, the ImageWriter II has built-in 10, 12, and 17 characters per inch. It also has a *headline* mode which doubles the width of a character without change its vertical size. The ImageWriter II can also do BEX large print. When you plan to use *all* these various features, then you need to print the RP GRID, the LP GRID, or the LONG GRID chapters once for every possible size.

- ***Interpreting the Horizontal Grid Chapters***

Once you have your sample RP GRID, LP GRID, or LONG GRID printouts, it's time to analyze them to determine left margin and carriage width.

Each of the rulers consists of four lines. The first line labels how many characters are in that ruler. The second and third lines print a numerical label every five characters, which are read vertically. The fourth line prints the ruler: a line of lowercase *o* characters and vertical bars which make it easy to count the number of characters for your left margin and carriage width. A vertical bar appears every five characters, directly below each numerical label, beginning with zero on the left margin; four lowercase *o* characters are printed in between.

When the number of characters in a ruler line is less than your printer's maximum carriage width, then these four lines stack up vertically. The first vertical position on the line for each ruler contains *zero zero vertical bar*.

In print, it looks like this:

by by ,

by en"

for----for----for The full cell stands for the vertical bar, while dots 3-6 stands for the lowercase o.

When a ruler is longer than your carriage width, three different things can happen:

- 1. The lines of numbers, and lowercase *o* characters and vertical bar counters is overwritten by other characters
- 2. The ruler line runs off the right edge of the page
- 3. You have two lines of lowercase *o* characters and vertical bar counters in a row, with the second line beginning with numbers other than two zeros and a vertical bar

The first ruler that's too long, and the ruler immediately above it are the two rulers we are concerned with.

Setting the left margin

The left edge of the ruler is BEX's *position zero*. On some printers, this position zero appears at the left edge of the paper, which means that BEX's position zero would make a very ugly printed page. When you are unhappy with the left margin on the test printout, get a *real* ruler. Measure a nice margin of one inch or seven-eighths of an inch and make a pencil mark at this point. Compare the pencil mark with the grid ruler.

Suppose the pencil mark occurs at position number 8; you now know that BEX's left margin of eight positions the printhead at a good place. You can use this value of 8 to set a left margin, using `$$m18` when you print. Include the `$$m18` command at the start of every chapter you print. Or, place them in a chapter which you print before your text chapters.

At the User Level, you learn how to configure an *automatic set-up sequence*. By consulting your printer manual, you can find the sequence which sends a left margin command to the printer. Then, you won't need to set the left margin in every chapter you print.

Setting the carriage width

When you've set the left margin, you need to set a carriage width to work with that left margin. Take your newly printed copy of RP GRID, LP GRID, or LONG GRID and examine it. On the printed copy RP GRID or LP GRID, find the first ruler that is too long. This is the ruler you use to measure your carriage width. On the printed copy of LONG GRID, there's only one ruler to choose from. Now take a *real* ruler and measure a distance from the right edge of the paper that is equal to the distance of your left margin, and mark this position. Determine the value for your carriage width by counting over

from the number above the nearest vertical bar. This value is the number you use for your carriage width.

For example, suppose you have a left margin of one-half an inch. You measure one-half inch over from the right edge of the paper, making a mark along the first ruler that's too long. This mark falls at the third lowercase *o* after the vertical bar numbered 50. Counting over from that vertical bar, you determine that your carriage width is 53.

Now you reconfigure, using the values you obtained from the tests for carriage width and form length.

Hint! When you configure a large print printer, BEX does some calculations for you. BEX uses a combination of point size (the size of the letters) and extra spacing to calculate carriage width; the answer for linespacing affects the calculation of form length. To get these values while configuring, press <CR> at the prompt. See Section 3, Part 7 for examples of this process.

Part 4: Using Option P - Print Chapters

BEX sends information to many different devices, and not all of them are actually *printers*. You can use option P to send formatted information to an inkprint printer, a braille embosser, a Review class printer, a serial voice device, the Echo, or an electronic braille device. The procedure for "printing" to all these devices is basically the same.

Here's how the dialogue goes:

Main Menu

Enter Option: P

Print Chapters

Drive number or chapter name: 2 <CR>

There are 2 chapters:

1 BLACK

2 WHITE

Use entire list? N <CR>

Select chapters by number

Chapter number: 1 <CR>

BLACK

Chapter number: <CR>

Which printer: ? <CR>

1 - Braille in slot 4 (41 by 25)

2 - Printer in slot 1 (53 by 37)

3 - Printer in slot 1 (72 by 58)

4 - Printer in slot 3 (72 by 58)

S - Screen output

Add +V for Echo output

Which printer:

After you press P at the Main Menu, BEX needs to know what chapters to print. Entering 1 <CR> or 2 <CR> gives you a numbered list of chapters:

Drive number or chapter name: 2 <CR>

There are 2 chapters:

1 BLACK

2 WHITE

Use entire list? N

When you don't want to print all the chapters listed, or when you wish to use a different order, accept the default N answer at Use entire list? N prompt by pressing <CR>.

BEX then asks you to specify chapters by number. Enter the numbers of the chapters you wish to print, following each number with <CR>. BEX responds with the name of the chapter you've chosen. When you wish to cancel your selection, enter a minus sign (dash) to the next Chapter number : prompt, and BEX announces the cancellation:

Select chapters by number

Chapter number: 1 <CR>

BLACK

Chapter number: - <CR>

BLACK Canceled

Chapter number:

When you have specified all the chapters you wish to print, enter <CR> alone to the Chapter number prompt. BEX then asks Which printer :

Typing a question mark at the Which printer : prompt gives you a list of printers in your configuration:

Which printer: ? <CR>

1 - Braille in slot 4 (41 by 25)

2 - Printer in slot 1 (53 by 37)

3 - Printer in slot 1 (72 by 58)

4 - Printer in slot 3 (72 by 58)

S - Screen output

Add +V for Echo output

Which printer:

At this point you enter the number or letter of the printer you wish to use.

The numbers in parentheses list carriage width by form length; you can use this information to help identify the printer. (In this example we use the configuration set up in Section 3). Printer 1 is a TSI VersaPoint embosser. Printer 2 is an ImageWriter configured as a large print printer. Printer 3 is the same ImageWriter as printer 2, but used as a 12 characters per inch printer. Printer 4 is a Review class printer, configured with the same carriage width and form length as printer 3.

Hint!

Do not type the slot number when prompted for the number of the printer. You only respond with the slot number when you are configuring. "Printer number" does not refer to the number of the slot the printer is plugged into. Printer number refers to the order in which you configured your printers; this is the number you respond with. In the example above, you would respond with 3 for regular inkprint printer. If you want the Review class printer in slot 3, you would type the number 4.

You can add Echo speech to any printer by enter +V to the number or letter of the printer. The Echo speaks as the text is sent to the printer, and the Echo speaks fairly slowly. Printing to the screen plus your voice device by entering S+V <CR> at the `Which printer:` prompt is one way to proofread your text before you commit it to paper.

You can also print to the Echo alone by entering +V <CR> at the `Which printer:` prompt.

Review the printer options and enter the number and/or letter(s), followed by <CR>. The disks whir and the requested output device starts printing. When you configured the printer with pause on form feed, BEX stops at the bottom of each printed page and makes a low boop. Press <space> to signal that you're ready for the next page. Printing to the screen is also printing to a

printer with pause on form feed: when the screen fills up with text, press <space> to read the next screen. To cancel a printout, press <ESC> while the program is outputting characters.

Part 5: Review Class Printers

A Review class printer allows you to know exactly what the formatter is sending to a print or braille device, saving you paper, time, and bother. For this option, you must have an 80-column card. A Review class printer is its own class of printer; simply enter R <CR> at the Enter printer class prompt in your configuration to configure a Review class printer. This printer class is designed to work in conjunction with the Echo's line review feature.

A Review class printer combines the Apple 80-column display with the 80-column line review software in TEXTALKER Version 3.1.2. For those of you who are unfamiliar with the Echo's line review functions, suggestions on which commands to use appear at the end of this section.

- ***Screen Layout for Review Class Printers***

The Apple 80-column screen is 80 characters across by 24 lines down. The page display starts at the left edge of the screen. The exact number of characters in the display depends on your carriage width.

There are always four characters more than your carriage width on each line. The first two characters are the line number, expressed in two digits: 01 through 24 at the start of each page. The third character on each line is the vertical bar; it separates the line number from the start of the text. This vertical bar marks the space immediately before position zero. A character that separates information this way is called a *delimiter*. Anything directly on position zero will appear immediately after the left vertical bar delimiter. After the vertical bar delimiter comes your text, in lines of text the length of your carriage width. Finally, after your text, comes another vertical bar

which is the right-margin delimiter. The rest of the line contains empty (non-textual) spaces.

When your carriage width is 76 or greater, there are two lines of text on the screen for each line of text in your final print output. Half the number of lines as with smaller carriage widths will be on your screen at one time.

The voice stops at the end of a screen line, even if it is in the middle of a word. Words broken between lines will not be pronounced as a whole word, but are said as if they were two separate words. That means that you may hear strange sounding text at the beginning of some lines. These words are broken on the screen as the result of a carriage width wider than the screen line. The words will print normally when outputted to an inkprint printer.

The easiest way to tell if the strange words are broken words or misspellings, is to go to the numbered line above the questionable word, and after the voice is finished speaking that line, use the down-arrow key to have the voice speak the next line. If the words in question seem to go together, they probably are one broken word.

One way to proofread text formatted with extra large carriage widths is to print to the screen with voice output. A second way, printing to a textfile, is documented in User Level, Section 10.

In all carriage widths, the delete character appears immediately after the last non-space character on the line. On the screen, the looks like a square checkerboard. The Echo says "delete." This means that when you encounter a delete, the rest of the line contains nothing but more trailing spaces not in your text. Conversely, when you encounter a space character, you know that there are more real (non-space) characters on the line. When the first character in the line is a delete character, then that line is blank in your final output. For example, when line 9 is blank, the Echo says: "zero nine vertical line, delete, space (40 times), vertical line, space (35 times)." The Echo will say all the spaces in All punctuation mode.

- ***Printing to a Review Class Printer***

When you wish to preview your material, print your chapters to the printer number you specified as a Review class printer in your configuration. When

you type ? <CR> at the Which printer: prompt, this printer appears as Printer in slot 3 You don't add +V for simultaneous Echo output. If you did, you would hear every line as it is displayed. What you want to do is send a screenful of data and then examine it with line review.

It's important to keep in mind that after you enter line review, all of your keystrokes are interpreted as line review commands. While you are in line review, you cannot use the down arrow to see any lines on your current page past 24; the spacebar, to get the display of your next output page; and <ESC> to stop printing. All these commands have different functions once you are in line review. Once you exit line review, you can use these command functions again.

As each line of text is printed to the screen, the Apple speaker makes a click. A short series of clicks alerts you to a short page. When the clicks stop, you can enter line review.

- ***Basic Echo Line Review Commands***

The following are basic Echo commands. They are not comprehensive, but are just suggestions; there are as many ways to use Echo line review as there are Echo users. Feel free to experiment! See Section 10 for further help with Echo commands.

SlotBuster | SlotBuster's SCAT software also has line review. It uses the same strategy, but has different commands. See Appendix 2 for further help.

Start printing your chapter. When the clicks stop, the first 24 lines are on the screen. Enter control-L to begin line review. The next character you enter must be a letter between *A* and *It*, which establishes which screen line you want read first. To hear a range of lines, enter the first letter of the line you want read, then comma, then the letter of the last line you want read. For example, to hear the first through seventh line on the screen, enter *A, G* after entering line review. When the Echo finishes reading the lines, the audio cursor is placed on the line following the last line read.

When you press <CR> on any line, the entire line is read. Or, you can use the left and right arrows to move left and right on the line, word by word. To move character by character, press T to toggle off moving by word. Press T again to move word by word again. Use the up and down arrows to move up and down lines.

Any keystroke except <space> shuts up the Echo. When the keystroke is a valid Echo command, that command is executed.

To exit line review, press <ESC>; the Echo says "exit." Now you may press the down-arrow key to review the rest of the print page, or the spacebar to move to the next print page. You can enter line review with control-L and exit it with <ESC> as many times as you want. Sometimes it's a lot faster to exit and re-enter than to move your audio cursor many lines.

Part 6: Troubleshooting -- Print Problems

Here is a list of common problems encountered while printing. For further help, for large print printer problems, and for guidance on establishing communication between BEX and your printer, see the Interface Guide, Section 4 on printers.

- Problem: My first page of output is fine, but then everything stops.
- Possible Cause: You configured this printer with "pause on form feed", which directs the formatter to stop printing after each page.
- Solution: Press the spacebar to resume output after each pause. If you don't want to pause after each form feed, set up a new configuration and answer N to the Do you want pause on form feed? question.
- Problem: At the Which printer : prompt, I specified a printer by number, pressed <CR> and nothing happened.
- Cause 1: Your printer is not ready to receive data
- Solution 1: Press the ON LINE or SELECT or CONTINUE button that puts your printer in "ready to get data mode." BEX's formatter is very patient--it will wait indefinitely until your printer is ready.
- Cause 2: Your printer is not turned on or the cable from the Apple to the printer is loose

- Solution 2: Press <ESC> to cancel option P - Print and return to the Main Menu. Turn your printer on or wiggle the cable, then try printing again. If that doesn't work, check your printer manual to make sure you have the proper cables for your printer.
- Cause 3: You chose a printer number that you didn't establish in your configuration.
- Solution 3: Press control-Reset, then type RUN <CR> Try printing again: when BEX prompts Which printer: enter ? <CR> You'll get a list of the printers you specified in your configuration. Remember that it is the printer number you enter, and not the slot number, when you specify printers.
- Problem: After I entered the correct printer number at the Which printer: prompt, BEX briefly reads the disk in drive 1 and then hangs.
- Cause: Many printers require special software, called *drivers*. BEX large print on dot-matrix printers and the Cranmer Braille are two common examples. When you tell BEX to print to one of these devices, it has to read the driver software from the program disk. When the program disk is not in drive 1, BEX hangs.
- Solution: Press <ESC> to cancel printing. Insert your BEX Main side in drive 1, then specify the chapters and printer number again.
- Problem: My first page of output is fine, but the next pages don't print correctly on the sheet: they are too short or too long, and the page break is not in the right place.
- Probable Cause: You used the platen knob to advance your paper out of the printer the last time you printed.
- Solution: Turn your printer off, then on again. Set the top of your paper in its proper place, then print again. When it is finished, use the form feed button to advance the paper out of the printer.
- Problem: My printer prints over each line, so that the text is unreadable. I can't hear the paper move forward for each line; it only advances on form feed between pages.
- Solution: Reconfigure, and answer Y to the auto linefeed question.
- Problem: Everything prints fine but I get double-spaced text when I didn't ask for it.
- Cause: You have answered Y to the auto linefeed question when configuring this printer.
- Solution: Reconfigure, and answer N at the auto linefeed question.
- Problem: All I get are garbage characters, or I get nothing at all.

- Probable Cause: You have incorrectly set the switches on your interface card or on your printer.
- Solution: Refer to your manuals for the right settings.

6 Formatting Inkprint Documents

BEX's *formatter* controls what your output looks like. When you enter the appropriate commands into your text, the formatter follows these instructions to break text into lines, paragraphs, and pages, and to complete all other formatting tasks.

There are some terms and concepts you need to know, before beginning. BEX provides some default values for new lines, paragraphs and margins. You can always change them if you want to, or accept them by not specifying any others. A *hard* <CR> is one that you type into your text--a hard <CR> *always* causes a new line in your output. Don't type a <CR> after every line as you enter text in the Editor; enter <CR> only when there must be a new line in your output. The formatter automatically places soft <CR>s in the text as it prints. A *soft* <CR> is one that the formatter creates when it runs out of room on the current line, and must begin a new one. It is not always easy to change a hard <CR>; but BEX's soft <CR>s can easily change, depending on the carriage width of your printer or braille.

Part 1: Format Indicators: Lines and Paragraphs

Format indicators and format commands: the difference

BEX uses *format indicators* and *format commands* in different ways, even though you use both sets of commands to format your text. Indicators and commands are different in two fundamental aspects: First, format indicators serve as navigational units in BEX's Editor, while format commands do not. For example, you can enter control-A control-P to advance to the next paragraph indicator. Or, you can enter control-Z control-L to go to the beginning of the previous new-line indicator or hard <CR>.

Second, format indicators and format commands look different. You enter format indicators into your text with exactly four keystrokes. Format commands may be more or less than four keystrokes. Format commands frequently have a number value associated with them, as we show with , the number sign; indicators never use number values.

- ***The New-Line Indicator***

The new-line indicator is four keystrokes: space, dollar sign, lowercase *l*, space (\$l). (Note that it is lowercase ell, not the digit one. Whenever there is a possibility of confusing the two, we try to make the distinction clear.) Remember, the parentheses are used to emphasize the initial and final spaces; do not type these parentheses in your text. The (\$l) functions exactly the same as a <CR>, causing the formatter to start a new-line of text. The Echo pronounces it as "dollar sign ell" no matter what punctuation mode is set. It's also readable on a "linear electronic braille device," such as a VersaBraille.

- ***The Carriage Return***

The carriage return <CR> also forces a new line. On the Editor screen, the <CR> can appear in two ways. In any HI-RES screen mode, <CR> looks like tiny uppercase *C* and *R* jammed together. In 80 column or 40 column non-HI-RES screen mode, <CR> shows as a small checkerboard. With voice output, BEX makes a low boop as it goes over a <CR> character in your text. When you arrow over letters, the voice pronounces a <CR> as "return."

- ***The Paragraph Indicator***

The paragraph indicator is four keystrokes: space, dollar sign, lowercase *p*, space (\$p). This symbol is executed differently depending on whether it's sent to a printer or braille. You can also control how the (\$p) symbol is executed with several format commands.

Use (\$p) at the beginnings of paragraphs, and before any other text you wish to set off, such as headings and items in a list. We advise you to use it instead of typing two hard <CR>s and five spaces. It is more flexible and can be changed easily using a few format commands. BEX changes its parameters automatically and appropriately depending on how you configure. BEX uses it as an indicator for editor commands, and its voice output is unambiguous.

Case and space rules

Caution! Format indicators must be typed precisely as discussed here. Case is important for format indicators: (\$p) signals a new paragraph. \$P just prints dollar sign uppercase *P* in your text. Always enter the format indicators with four keystrokes; the initial and final spaces are integral parts of the (\$p) and (\$l) indicators.

Part 2: Overview of Format Commands

All BEX's format commands start with two dollar signs. BEX only recognizes the \$\$ format commands when they are typed in a particular way.

All format command letters *must be* lowercase. As an example, \$\$np starts page numbering. \$\$NP just prints two dollar signs uppercase *NP* in your text. We've tried to make the letters remind you of the command's function. More format commands contain numbers; numbers must follow the letter, with no space in between. As we introduce the commands, we'll use # (the number sign) in place of a particular numerical value.

Every \$\$ command must be immediately preceded by one of five choices:

- 1. A space
- 2. The trailing space of a format indicator (\$l) or (\$p)
- 3. A <CR>
- 4. The beginning of a BEX page
- 5. Another \$\$ command

The formatter recognizes that a space immediately following a \$\$ command is not a *real* space. The formatter throws this space away. When you have a string of format commands, you can jam the commands together:

\$\$p-1 \$\$s2 \$\$l2 \$\$i5 \$p

or you can type spaces between them:

\$\$p-1 \$\$s2 \$\$l2 \$\$i5 \$p

Both have the same effect. However, for isolated format commands, we advise you to put spaces before and after them. We find that adding the spaces makes the commands easier to work with, because each command becomes a BEX "word." Following each \$\$ command with a space ensures that the Grade 2 translator correctly translates the word following a format command.

- ***How Format Commands Work***

When the formatter encounters the commands in their proper form, it doesn't print the characters. The formatter wakes up and says "Wow! Time to execute this command." The formatter knows that print and braille devices need to have some commands executed differently, such as paragraphs. The formatter prevents any underlining commands from being executed when printing to a braille. Section 9 details how the Grade 2 translator uses the underlining commands to place the italics symbols in braille.

- ***When Format Commands Take Effect***

You must place a format command before the text you wish to affect. For example, you must place the centering command immediately before the text you want centered. Some format commands take immediate effect, like tabs and centering. Others, like margin commands, influence the start of the next new line. Some, like page numbering, keep on working, affecting the placement of information on every page.

The current line

The formatter, when preparing to print text, assembles each line before it is actually put onto paper. We call the line being assembled the *current line*. The current line contains all the text from one soft <CR> to the next soft <CR>. Because the formatter operates this way, it is important to place commands that create new lines, such as the new-line (\$l) and paragraph (\$p) indicators before format commands that take effect on a new line; commands

that take effect after a new line has begun must be placed *after* a command that begins the new line. When we introduce commands, we explain when they take effect. For example, the \$\$c centering command must be placed after a new-line or paragraph indicator. If a command does not work properly, check to see when it takes effect, and alter your sequence of commands accordingly.

Part 3: Format Commands in Detail

BEX has many, many format commands. We introduce some fundamental ones at the Learner Level; you'll learn about others at the User and Master Levels. All the commands introduced here are also listed on the BEX Quick Reference Card.

- ***Centering***

Place \$\$c before the text you want to center. BEX continues to center the text until it encounters a hard <CR>, or a new-line (\$l) or paragraph (\$p) indicator. If your text doesn't fit in one line, it centers on two or more lines.

Place a (\$p) or (\$l) indicator before \$\$c to ensure that *only* the text you want is centered. If you do not, BEX's formatter would also center the line of text immediately before your \$\$c, as well as the text that comes after.

- ***Center and Underline Combine to Make a Heading***

Place \$\$h before the text you wish to center and underline. BEX continues to center and underline the text until it encounters a paragraph (\$p) indicator.

If you do not want to use a (\$p) indicator to end your heading, you must turn off underlining with, and the centering with (\$l). For example, you want the next line after your heading to be a full line, and not indented, so you type:

`$$$p-1 $$$h` Heading `$$$l` The next line begins here.
to get: CBC emphasis indicators show underlining in following sample
`$$$c` Heading
The next line begins here.

Caution! `$$$h` does not initiate placement of braille italics signs. Use the underline commands (explained below) instead.

Make your headings into paragraphs

Always precede the centered or centered-and-underlined text with the (`$$$p`) indicator. Using the default inkprint format, this creates a blank line between the previous paragraph and the text of the heading, and insures that only the text you want is centered and/or underlined. For example, if you do not have a (`$$$p`) indicator before your centered text you will get something like this:
`$$$v`e end of the line. Centering starts here
Place a (`$$$p`) before the `$$$c` to solve this problem:
the end of the line.

- ***Underlining***

The underlining commands must appear in pairs: *signals underline begin, and signals underline finish*. To prevent an inkprint printer from going crazy underlining, underlining is also turned off by a (`$$$p`) indicator. Always enter five characters: space, two dollar signs, lowercase *u*, lowercase *b* or *from*. When you use the underlining commands in this way, the Grade 2 translator can automatically insert italics signs in the braille text where appropriate.

- ***Line Spacing***

`$$$l#` changes how far apart lines are on the page; it changes the number of soft `<CR>`s between (`$$$l`) indicators and hard and soft `<CR>`s. The default value for both inkprint and braille is single spacing, or `$$$l1` (two dollar signs lowercase *l*, digit one). `$$$l2` sets double linespacing, or one blank line between every line of text.

- ***Paragraph Spacing***

\$\$s# sets the number of soft <CR>s the formatter issues when it executes the paragraph (\$p) indicator. \$\$s2 sets two <CR>s at each paragraph to create one blank line between paragraphs. \$\$s1 sets one soft <CR>, or no blank lines between paragraphs. When printing to an inkprint printer (or the screen) the default value is \$\$s2 -- two <CR>s at each paragraph. For a braille, the default value is \$\$s1 -- one <CR> at each paragraph.

- ***Paragraph Indent***

\$\$i# sets the paragraph indent. The value # can be a positive or negative number: it always moves relative to the left margin, discussed below. When the number is positive, the first line of your paragraphs are shorter than the rest of the lines. When the number is negative, the first line of your paragraphs are longer than the rest of the lines. We call this *outdenting*. Outdenting is discussed briefly below, and more thoroughly in Section 9, Part 4.

When printing to an inkprint printer (or the screen) the default value is \$\$i5 - - indent five spaces at the start of each paragraph. For a braille, the default value is \$\$i2 -- indent two spaces at the start of each paragraph.

- ***Left Margin***

\$\$ml# (lowercase *m* lowercase *l*) sets the left margin. The value of # ranges from zero to your carriage width. \$\$ml# sets the margin at a definite *position* on the line. \$\$ml2 means establish a left margin at position 2. The default for \$\$ml# is *position zero*.

\$\$ml# and \$\$i# work as a team. The left margin defines where every line of text starts, except for the first line of a paragraph. The first character of a new paragraph is placed using the combined values of \$\$ml# and \$\$i#. The default for both commands are \$\$ml0 \$\$i5. Indent *always* moves relative to left margin. If you set \$\$ml5 and do not set a value, \$\$i# automatically moves five positions left to position 10. \$\$ml5 \$\$i5 means that the first line of a paragraph starts at position 10 and all subsequent lines start at position 5.

Entering `$$ml5` alone in your text, and entering `$$ml5 $$i5` does the same thing. (Remember that `$$i#` is always measured from the current left margin.) `$$ml0 $$i0` creates block-style paragraphs, with the first line and subsequent lines even at the left margin.

Left margin and carriage width

The left margin uses up space from your carriage width (horizontal line length). When you define a printer with carriage width 72, and then establish a left margins with `$$ml5`, characters can appear from position 5 to position 71. If the place the printhead returns to on your printer is too far to the left for your taste, you can always use a margin command to move text further right.

Suppose your printer has 12 characters per inch. We advise a carriage width of 72 characters to yield six-inch lines of text, with a three-quarter inch margin on either side. Unfortunately, when you just turn the printer on, the printhead is positioned 1/4 inch from the left hand edge of the paper. You want to move the place the printhead returns to one-half inch to the right. Twelve times one-half is six, so setting a margin with `$$ml6` will do the trick. Seventy-two plus six equals 78, so define a carriage width of 78 in your configuration to get approximately equal white space to the left and the right of your text. Part 4 shows how the ever-resourceful Macalaster J Prude handles a similarly repetitive format requirement.

- ***Top Margin***

`$$mt#` sets the top margin of your paper. The value # is equal to the number of soft <CR>s added after a form feed. The default value is zero. This command does not change the number of lines of text printed per page. When you define a form length of 56, you get 56 lines of text whether you use `$$mt#` or not. What changes is where the text starts on the page. You can't use a negative number with this command.

This command makes it much easier to get things lined up correctly on your printer. Using `$$mt#`, you can set top-of-form so that the printhead is immediately below the top edge of the sheet. If you know how many lines per inch your printer gets, you can easily calculate the size of margin you

want. For example, if you get six lines of text per inch, then `$$mt3` will give you a top margin of a half inch. Type in `$$mt3` and BEX will send out three `<CR>`s before it starts printing the text of line one.

Section 5, Part 3 discusses the horizontal and vertical grid chapters, which assist you in establishing left, right, and top margins, and carriage width for your printer.

- ***Simple Page Numbering***

To number pages, use `$$np`. Where the page number appears depends on whether you are printing to a "printer" or a "braille." The print format is the word "Page" followed by the appropriate number, centered on the bottom line of each printed page; the line above the page number does not contain text. The braille format places the page number, preceded by at least three spaces, on the right-hand margin of line 1.

- ***Tabs***

BEX's tabs operate differently than tabs on a typewriter. There are many situations in BEX where the right command for the job is the left margin command, not the tab commands you might use on a typewriter. You have to establish values for tabs; none are set when you start out. There are many ways to specify where a tab should be. You can't clear just one tab; you have to clear all of them at once. And you can't use the key marked Tab on the Apple IIe, IIc or IIgs keyboard to move to tabs (see Section 4, Part 9 for uses of the Tab key.)

Setting Tab Stops

Use `$$t#` where # is the number of the position where you want the tab stop established. The value # can be any number from zero to one less than your carriage width. For example, entering `$$t10` means set a tab stop at position 10 on the line.

Clearing tab stops

Use `$$tc` to clear every tab you've set.

Advance to next tab

To set text to begin at the next tab stop on the line, you enter four keystrokes: `<space>`, dollar sign, dollar sign, `<space>`. Since the leading and following spaces are integral parts of this command, we show this command as `($$)`.

Using BEX tabs

The tabs stops are completely independent of the margins. When you want to advance to the next tab, enter `($$)`. To advance two tab stops, enter two of these commands: `($$ $$)`. Notice that the final space of the first advance-to-the-next-tab command can also serve as the initial space of the second advance-to-the-next-tab command. When `($$)` appears after the tab, then BEX separates your text with just one space. For example, you set a tab at position 10. You type this text:

\$1 Year to date earnings: \$\$ 5,000.00

The first four words occupy positions 0 to 21. There isn't a tab stop for BEX to place the `$5,000.00` at, so there's one space between the colon and the dollar sign:

Year to date earnings: \$5,000.00

- ***Reset to Default***

Use `$$d` to reestablish the print or braille defaults: no page numbering, no margins, no tabs, line spacing at single space, paragraph format as appropriate for print or braille.

The importance of \$\$d

Each time you press P to print chapters, the formatter resets to default. However, when you print two chapters with different format without going back to the Main Menu, as when you scan for chapters, you may run into format problems. If you do not have `$$d` at the beginning of the second chapter, that chapter would be printed in the format of the chapter printed before it. For example, suppose you set `$$l2` for double spacing in the first chapter, but use the default single-spacing in the second. If you do not have

\$\$d or \$\$l, in the second chapter and you print the two chapters in a row, the second chapter would also be double-spaced.

Therefore, we recommend you place a \$\$d command at the start of every document, which may be one chapter or several. That way, you ensure your chapters will be printed correctly no matter if you print them one immediately after the other, or by returning to the Main Menu and pressing P for each one.

Part 4: Putting Format Commands to Work

There are two chapters called LETTERHEAD and JOAN on your BEXtras disk. Together, they form a sample letter that shows how to put some of these format commands to work. The format commands and text in the LETTERHEAD chapter can be used over and over again. Because the boundary between two BEX pages need not define any boundary in your output, you can make one letter out of two chapters. Insert your BEXtras disk in your data drive, and use the Editor to examine these chapters.

- ***Inside the LETTERHEAD Chapter***

Notice that the LETTERHEAD chapter starts with \$\$d. This ensures that the formatter is set to default parameters, so that the following format commands are executed correctly.

The next command is \$\$t40, which sets a tab stop at position 40. Mr. Prude uses this tab stop for positioning the date and the complimentary close.

Next comes \$\$l2 (dollar sign, dollar sign lowercase *l* digit two), which sets double spacing. The default value for the paragraph (\$p) indicator is also double spacing, and Mr. Prude wants the first three lines of his letterhead to be equally spaced.

Mr. Prude wanted a spiffy-looking letterhead, so he decided to center and underline his name, and center his address. This type of format is a pain to

do on a typewriter, but quite straightforward with a word processor. The fourth command is `$$h1` which immediately precedes Mr. Prude's name. His name will appear centered and underlined on the first line of his letter. His name finishes with a `($p)`, required to turn off the underlining started by the `$$h` command. The next two lines are his address: because both lines start with `$$c`, this information is centered. Because he set line spacing to double space with `$$l2`, his street address appears on line 3 of his page, and his city, state, zip appears on line 5. That's all that the LETTERHEAD chapter contains, so Mr. P can use this same chapter to start off all his letters.

- ***Inside the JOAN Chapter***

The first seven characters are a paragraph indicator and an advance-to-next-tab format command. Notice that while both of these commands require leading and trailing spaces, the trailing space in the `($p)` and the leading space in the `($$)` are actually the same space. Remember that whenever a command requires a leading or trailing space, that space can be shared with other commands. Mr. Prude didn't have to reestablish a tab stop, because the tab at position 40 from the LETTERHEAD chapter is still in the formatter's memory. Because of the `($p)`, the date appears on line 7.

After the date, Mr. Prude uses a new-line `($l)` indicator. (A `<CR>` would have the same effect.) If he used a `($p)` indicator, Joan Hackney's name would be indented 5 spaces, which he doesn't want. Her name appears on line 9. After the last line of Joan Hackney's address, there's the `$$l1` (dollar sign, dollar sign, lowercase *l* digit one) command, which resets the line spacing to single-space. This line finishes with a `($p)`, so his salutation is nicely indented 5 spaces. It's been double-spaced up to this point, so the *Dear Joan* appears on line 15. The `($p)` after the salutation moves the start of the first paragraph of text to line 17, and the start of the subsequent line is line 18. Mr. Prude hasn't changed the line spacing at paragraphs, so `($p)` is executed with two `<CR>`s, and the soft `<CR>`s the formatter puts in the rest of the letter are executed with one `<CR>`.

Using Underlining

The second sentence in the first paragraph contains some underlining. Notice that the underline begin command, *and the underline finish command*, stand

alone as words surrounding the text they underline. The formatter automatically throws away the space between *and* the word *was*, as well as the space between *the* and the word *surprised*. The printed output is correctly underlined: there's just one space between the words *and* and *was* as well as the words *surprised* and *at*. After the third paragraph, Mr. Prude uses the tab at position 40 again. Notice that it doesn't matter whether a line begins with a (\$p) or a (\$l) as far as the tab goes. Mr. P uses two (\$p) indicators in a row to make four blank lines where he can sign his name. There are several other ways he could create the same four blank lines: either four (\$l) indicators or four <CR>s would do the same thing.

- ***Using the Screen and Echo to Proofread***

Now that you've taken an in-depth look at these two chapters, try proofreading them. At the Main Menu, press P. When BEX prompts for drive number or chapter name, enter the drive number where the BEXtras disk is. Choose LETTERHEAD and JOAN by number. When BEX prompts Chapter number: for the third time, press <CR> alone. When BEX prompts Which printer: enter S+V <CR> and the text of these chapters is printed to both the screen and the Echo.

You'll notice that words are not broken between lines. How many characters fit in one line depends on the screen mode you've defined in your configuration. The Echo pauses slightly at the end of each line. If you want to hear *all* the spaces, set the Echo to All punctuation mode with the Echo command control-E A

Whenever you add Echo output to a printer with +V you hear every line as it is sent to the printer. If you print to 80 or 40 column screen, you can also use the Echo line review feature (discussed in Section 10, Part 7) to examine each line on the screen.

*Large
Print
Screen:*

When you request 20-column or larger screen display and print LETTERHEAD and JOAN to the screen, you run into a problem with the default margins set for the screen mode and the tab stops set in these chapters. Because the tabs are set to stops greater than the screen SL margins, BEX has trouble coping. After BEX is finished printing the two chapters, it pulls in random text from

memory to print to the screen. The result is much more text printed to the screen than are in the LETTERHEAD and JOAN chapters. This does not harm your data or your BEX disk. After you see the sentence Give all my love to the kids and dog simply press <ESC> to cancel printing.

- ***Using a Review Class Printer to Proofread***

Use option P - Print at the Main Menu. When BEX prompts for drive number or chapter name, enter the drive number where the BEXtras disk is, and choose LETTERHEAD and JOAN by number. Press <CR> when BEX asks for drive or chapter the third time. When BEX prompts Which printer: enter the printer number for your Review class printer. Enter ? <CR> when you are not sure of the printer number. Remember that any Review class printer must be configured in slot 3. Enter the printer number, and not the slot number to get the printer to work correctly.

You hear clicks as the review printer prints each line to the screen. When the clicks stop, the first 24 lines of text are on the screen. Enter Control-L to begin line review. Press a letter between A and X to read lines one through 24. The Echo will read first the two digit line number, then the text on that line. You can use the left and right arrow keys to examine the text word by word, and the up and down arrow keys to move line by line. Any keystroke but <space> shuts up the Echo.

When you are ready to examine the next set of lines, press <ESC> to exit (the Echo will say "exit") and press the down arrow key. More clicks tell you that the lines are printing to the screen. When the clicks stop, you can enter line review again. A summary of Echo line review appears in Section 10, Part 7. More details are on the Echo/Cricket Lessons Disk.

- ***Inside the QUANDARY Chapter***

This chapter is also on your BEXtras disk--it's the same one you used in the Exploratory Trip in Section 2. It's four pages long. When you Edit page 1, you see that the first two "words" are format commands. First off is our friend \$\$d

to reset the formatter to default. Next comes `$$np` which establishes page numbering. Then there's a `<CR>`. The format commands at the very start of the chapter do not "use up" room on the page when printing. However, there are two reasons why placing a `<CR>` right there is a good idea:

First, you must place format commands before the text you wish to format. Many format commands influence behavior at the beginning of a line. Placing `<CR>` or a `($p)` indicator after a group of format commands and before the start of the text insures that the commands take affect. Second, the `<CR>` means that line 1 on the page will not contain text, which makes the title stand out in inkprint.

The article's title is all uppercase, centered and underlined with `$$h`. The author's names and all subsequent sub-headings are centered with `$$c` command, and each is preceded and followed by a `($p)` indicator. Again, this makes one extra blank line before and after the heading, which is more legible in inkprint.

Examine the chapter carefully for further ideas about how format commands and indicators work with your text. Experiment with the new format commands you have learned. Try several different number values with `$$ml#`, `$$i#`, `$$s#` and `$$l#` to change the shape of the paragraphs and line spacing. Some ideas: create block-style paragraphs, with single- then double-spacing between paragraphs; create outdented paragraphs with no spaces between both lines and paragraphs.

Part 5: Troubleshooting Format Problems

- Problem: My `$$c` is centering text that appears previous to the `$$c` command itself.
- Solution: Immediately before the `$$c` command, place a `($p)` or `($l)` indicator, so that the text you want centered is the only text in the current output line.
- Problem: The underlining in my heading continues into the text after my heading.
- Cause: You have ended your heading text with a `($l)` indicator or hard `<CR>`, and not a `($p)` indicator.

- Solution: Change (\$l) or <CR> to (\$p). Only a (\$p) or a ends underlining. The (\$p) indicator turns off both centering and underlining after a \$\$h command. When you must avoid a (\$p) indicator after your heading, type this: Last of Heading \$l Next text
- Problem: I've entered the left margin command \$\$ml# correctly, but the text after it does not go to that margin.
- Solution: Margin commands take effect at the beginning of the next new line. Place a (\$p) or (\$l) indicator, or a hard <CR> directly after the \$\$ml# to have the margin command take effect immediately.
- Problem: I can't get my line spacing or left margin commands to work properly.
- Possible Cause: It is very easy to confuse the lowercase *l* and the number one in print. You have entered yr \$\$l# or \$\$ml# commands with the digit one instead of lowercase *l*.
- Solution: Check to make sure that all your format commands have lowercase *l* where needed. Refer to Part 3 to review the proper sequences of letters and numbers in format commands.
- Problem: My paragraph (\$p) or new-line (\$l) indicators aren't formatting my text correctly, and they get printed in the text.
- Solution: Check the spaces around your paragraph and new-line indicators. Remember that there must be a space both before and after your (\$p) or (\$l).
- Problem: My format commands are not working like they should: text is appearing left of where I set it and is all over the place.
- Possible Cause: You have not put a number value where needed with a format command. If no number is assigned to a format command that requires one (such as \$\$s# or \$\$l#), BEX uses the default value of zero.
- Solution: Search through your text for format commands that require numbers, and add them where needed. Review Part 3 to see which commands require numbers.
- Problem: The first letters of my paragraphs disappear when I print.
- Cause: You have changed your paragraph indent \$\$i# so that some text is left of position zero, and can't be printed.
- Solution: Move your left margin to the right by entering \$\$ml# into your text. Make sure that the value # is equal to or greater than the number value of your paragraph indent.
- Problem: When I print two chapters in a row, my second chapter is not formatted correctly.

- Cause: BEX's formatter "remembers" format commands from the previous printing if you do not return to the Main Menu and press P again.
- Solution: Place a \$\$d at the very beginning of your chapters. This will ensure they are correctly formatted, especially if your format commands are different in each chapter.

7 Translating from Print to Braille

Manually transcribing inkprint to braille is a complex task. Fortunately, BEX automates almost all of it. For most reading material, you change inkprint to braille by following the rules for what's called *literary*, *contracted*, or, most commonly, *Grade II* braille. This Section provides a very basic, step-by-step understanding of how to do braille translation with BEX. Section 8 explains how you send your translated text to an embosser, and Section 9 deals with some basic format issues.

Because most voice synthesizers pronounce the Roman numeral *II* as "aye," BEX's prompts refer to the Grade 2 translator; we use that nomenclature from here on in.

Part 1: Distinguishing Between Braille and Print Chapters

We suggest that you always name your translated braille chapters by adding the digit 2 to the name of the print original. BEX doesn't demand that you name your braille chapters this way, but it is crucial that you develop *some* system that clearly distinguishes braille from print chapters. (At the User Level, we explain how you can select chapters based on the last character of a chapter's name.)

Here's why it's so important: BEX has no way of knowing if a print chapter is sent to a braille device. It's your responsibility to make sure that the text matches the type of printer. If you send a braille chapter to an inkprint device, the *screen braille* result doesn't make a lot of sense--in fact, it looks like

garbage. If you send a print chapter directly to a braille device, the result is *not* grade 2 braille.

Instead, this untranslated braille uses one braille cell for every print character. Untranslated braille requires more space than grade 2 braille. That's because grade 2 translation involves many *contractions*, where common letter combinations and whole words are represented by one or two braille cells. For example, the word *the* is just one cell in Grade 2. Another reason untranslated braille is inconvenient concerns capitalization. Untranslated braille shows the upper- and lowercase versions of a letter with the same braille cell, leaving the braille reader in doubt about how the original is capitalized.

Hint!

The relationship between inkprint characters and braille cells is standardized. The nitty-gritty details are discussed in Appendix 1. We use the term *screen braille* to describe viewing grade 2 braille through an inkprint medium, such as a computer screen. Accept it on faith for now that the crazy-looking screen braille that you encounter when you edit a braille chapter indeed make wonderful braille when you send the text to a braille device.

Part 2: Using the Grade 2 Translator

You find option G - Grade 2 Translator on the Main Menu. You provide BEX with the names of one or more inkprint *source* chapters. You tell BEX how to name the grade 2 *target* chapter or chapters. The grade 2 target chapter is a modified copy of the inkprint source chapter. If you use the same name for your inkprint source chapter and your braille target chapter, you would lose your print original.

*Large
Print
Screen:*

The software that BEX uses in braille translation occupies the same memory space as the software that draws the large letters on the screen. When you use the Grade 2 translator, you temporarily lose large print screen display. This is normal. As soon as the translation is finished, the letters on the screen return to the size you defined in your configuration.

Once you supply the names of the chapters, you sit back and wait for BEX to do the work. The following sample shows the step-by-step dialogue for translating the QUANDARY chapter from your BEXtras disk in drive 2 to a different data disk in drive 1. You need to have an initialized data disk. Start out with the BEX program in drive 1 and the BEXtras disk in drive 2.

Main Menu

Enter Option: G

Grade 2 translator

Drive number or chapter name:

At this point, BEX has loaded the Grade 2 translator software into the Apple's memory. You are now free to remove your BEX disk from the program drive. Insert the data disk in drive 1. Now you provide BEX with the name of the inkprint source chapter:

Drive number or chapter name: QUANDARY <CR>

Target chapter name:

Following the suggestion above, we name the grade 2 braille version by adding the digit 2 to the inkprint chapter name. The BEXtras disk is quite full, so there wouldn't be room to write the translated chapter on the BEXtras disk. Tell BEX to write the translated chapter on drive 1 by preceding the target chapter name with the digit 1.

Target chapter name: 1QUANDARY2 <CR>

Starting to translate.

That's all there is to it! Now you sit back and wait. How long translation takes depends on how many characters are in each page and the total number of pages in the chapter. BEX reads each page of the print original into the page buffer, performs a large number of computerized tricks on it, and then writes the translated text into the corresponding page of the target QUANDARY2 chapter. The QUANDARY chapter takes a little under three minutes to translate from print to grade 2 braille--around 70 characters per second. When BEX is finished translating, it announces Chapter QUANDARY done and presents the Main Menu prompt.

- ***How format commands are translated***

When the translator encounters a word that begins with two dollar signs, it recognizes a BEX format command. The translator does not try to translate these commands. In Section 4, Part 4, we defined a BEX *word* as any group of characters that begins and ends with either a space or <CR>.

When you enter BEX \$\$ commands correctly, they are BEX words. If you did not end a format command with a space or <CR>, you would confuse the translator. For example, suppose you have a centered heading like this:

```
$$p-1 $$c Computer Literacy
```

There's one space between the centering command and the first word, so it's correctly translated to:

```
$$p-1 $$c ,-put] ,lit]acy
```

As promised, *screen braille* (looking at grade 2 text through a print medium) can be a little strange at first. The comma at the beginning of both words is a *cap sign*, showing that the initial C and L are uppercase. The hyphen stands for the three letters *com*, and the right bracket stands for the two letters *er*.

But when you don't include a space between the centering command and the first word, and your inkprint looks like this:

```
$$p-1 $$c Computer Literacy
```

the translator leaves the entire first word untranslated. The inaccurate result is:

```
$$p-1 $$c Computer ,lit]acy
```

The moral is, make sure you put spaces after your BEX \$\$ format commands.

Scanning a disk for chapters to translate

In the QUANDARY sample, you only translated one chapter. You can also translate many chapters at once. Instead of typing a chapter name at the Drive number or chapter name : prompt, you can ask BEX to scan the disk. You enter a drive number followed by <CR>, and BEX presents a numbered list of chapters. BEX then prompts Use entire list? N and gives you the opportunity to translate every chapter on disk.

When you want to translate every chapter, type Y <CR> to change the default answer from *no* to *yes*. When you only want to translate some of the chapters on the list, press <CR> to accept the N default. BEX then prompts you to choose chapters by entering their numbers.

You can instruct BEX to scan the disk for every menu option. Extensive samples are shown in Section 11.

- ***Grade 2 and Grade 1 Braille***

Grade 2 braille is the standard for braille production because it saves space. In some rare situations, you may wish to create *uncontracted* or grade 1 braille. Grade 1 braille does not use grade 2's word and letter-combination contractions. Grade 1 does use special symbols for capitalization, underlining, and numbers. Sending inkprint chapters to a braille device does *not* create grade 1 braille, except if your braille embosser has software in it that translates from inkprint to grade 1. User Level Section 9 discusses changing between grade 2, grade 1, and untranslated braille within a document.

8 Embossing Braille Documents

Once you have translated material from inkprint to grade 2, the grade 2 chapter is ready to be embossed. However, before you do this with BEX, you *must* define a configuration that includes a braille embosser.

Part 1: Configuring an Embosser

BEX sends formatted information to many different devices, and not all of them are literally "printers." How you tell BEX which chapters to print is the same, no matter what the output device is. You use Print chapters to send formatted information to an inkprint printer, a braille embosser, a serial voice device, the Echo, or an electronic braille device. Exactly what BEX sends to the device depends on how you define it in your configuration.

BEX can communicate with every computer-driven embosser made. However, some embossers require that BEX send data in a particular fashion. We did not include a braille embosser in our supplied configurations because we can't know which kind of embosser you have.

The Interface Guide contains detailed information about how to set switches and other embosser-specific items. Section 3 in the Learner Level gives step-by-step examples of establishing a new configuration. In the configuration process, you have an opportunity to define up to four different printers. For each printer, BEX asks you what *class* the printer belongs to. All embossers

are class B - Brailers. Once you tell BEX that a particular printer is a brailer, then BEX asks you to enter a numerical *brailer code*. You can press <CR> to see the entire list of codes. Numbers 1 and 2 are *braille previewers*, discussed in detail in User Level Section 6. The rest of the list are actual braille embossers.

If your embosser is *not* on the list, try configuring it as number 5 - Thiel. If this does not work, call the RDC Technical Hotline 608-257-8833 for assistance.

Part 2: Using Option P - Print Chapters to Emboss Braille

In Section 5, we explained how to use option P - Print chapters on the Main Menu. The general procedure is the same whether you are sending inkprint text to a printer or sending grade 2 braille text to a braille embosser. Here is an example of printing the QUANDARY2 chapter you translated in Section 7. Your BEX disk is in drive 1; the data disk with QUANDARY2 is in drive 2.

Main Menu

Enter Option: P

Print chapters

Drive number or chapter name: 2 <CR>

There are 1 chapters:

1 QUANDARY2

Use entire list? N Y <CR>

This sample demonstrates how you tell BEX to scan a disk by entering the drive number at the `Drive number or chapter name:` prompt. BEX presents a numbered list of chapters and allows you to select chapters by entering their numbers instead of their names. We're assuming that the QUANDARY2 chapter is the only chapter on the disk in drive 2; the numbered list has only one chapter.

You may have created other chapters on this disk. If so, then your screen display is different: the numbered list contains more than one chapter. You just want to print the QUANDARY2 chapter, so you would press <CR> to accept the N - default at the `Use entire list? N -` prompt. BEX then prompts you to enter chapter numbers. You select the QUANDARY2 chapter

by typing its number followed by <CR>. BEX responds by parroting the name of the chapter you selected, then prompts again for a chapter number. Entering <CR> alone at this prompt signals BEX that you are finished choosing chapters.

Once you have supplied BEX with the chapters you want to print, The last prompt is this:

Which printer:

BEX wants you to supply a printer destination. When you are embossing braille, you must supply the printer number that corresponds to your embosser. Enter ? <CR> to get a list of choices. Which printer number is the right choice depends on the configuration you have established. Here's what appears for the sample configuration shown in Section 3:

Which printer: ? <CR>

1 - Braille in slot 4 (41 by 25)

2 - Printer in slot 1 (53 by 37)

3 - Printer in slot 1 (72 by 58)

4 - Printer in slot 3 (72 by 58)

S - Screen output - Add +V for Echo output

At the risk of sounding like a broken record, this is *just* an example. In this case, the appropriate printer destination is printer number 1, the braille in slot 4. The printer number does *not* refer to the slot for the embosser's interface card. The printer number refers to the order you defined the printers in your configuration. Which printer number is the appropriate destination depends on which number you configured as a class B - Braille.

When you press the printer number followed by <CR>, BEX starts sending text to the embosser. You can always cancel printing by pressing <ESC>.

Caution!

As mentioned earlier, some embossers require that BEX tailor output in a particular way. This special handling is called a "printer driver" in computer jargon. One common embosser, the Cranmer Braille, requires a printer driver. When you print chapters to the Cranmer, BEX needs to load the printer driver from the program disk. If you don't have your BEX disk in drive 1, then BEX briefly reads the disk in drive 1, then "hangs." Press control-Reset, then type RUN <CR> to get back to the Main Menu. Insert your BEX Main side in drive 1 and try printing again.

9 Controlling Braille Format

The \$\$ format commands introduced in Section 6 are also used to format braille output. For more details about any of the commands discussed here, see Section 6. As we mentioned there, BEX's formatter uses different default values for print and braille output. The grade 2 Translator recognizes that a group of characters that begins with two dollar signs and ends with a space or <CR> is a format command; it doesn't try to translate it.

Part 1: General Braille Format Principles

The main rule in formatting braille is to conserve space wherever possible. Blank lines are only used to signal *major* divisions in the text. The braille line is a lot shorter than the print line; the maximum carriage width for an embosser is around 41 cells. Standard braille paragraphs do not skip a line; the indent is just two blank cells. BEX takes care of this automatically.

Underlining in the way inkprint documents are underlined is not possible in braille. The braille cell is always three dots high; you can't add extra dots beneath the cell to show that something's underlined.

When you create print with a typewriter or computer printer, underlining shows emphasis. It's also used for the titles of books. When you *typeset* print, you don't use underlining, you use *italics*. Braille also has a way to indicate italics. The Grade 2 translator uses the presence of BEX's underline *begin* and *underline finish* command to place braille italics signs as it translates.

Since the Grade 2 translator ignores most format commands, you can format your text in print before you translate it. This is easier for people who are not braille readers.

When you create print documents with a typewriter, you usually space twice at the end of a sentence. In both braille and typeset print, there is only one space at the end of a sentence. At the User Level, we explain how to use

Replace characters to delete two spaces at the end of a sentence for better braille format.

Part 2: BEX's Automatic Braille Format

BEX's formatter tailors the execution of some format indicators and format commands differently for print and braille. The formatter does not analyze the text within the chapter; it's relying on you to send braille text to a braille device. The only way that the formatter knows that text is "braille" is when you specify a printer that you have configured as a class B - Brailier.

To ensure appropriately formatted grade 2 braille output with BEX, you must do three things:

- 1. Define one of your printers as a brailier in your configuration.
- 2. Translate inkprint chapters to grade 2 chapters with option G - Grade 2 translator
- 3. Establish a distinctive naming method that distinguishes between braille and print chapters, so you only send grade 2 chapters to the braille device.

In Part 3, we explore how each of the basic \$\$ commands are executed for a braille device. When you send text to either a printer or brailier, BEX uses *default* values for paragraphs, underlining, and page numbering. You can easily override these default values by entering \$\$ commands in your chapters. When the \$\$ commands you enter create values that are inappropriate for braille, make sure they are removed from the braille chapter before you emboss it.

You can either delete the commands in the print chapter before translating it, or you can delete the commands in the braille chapter once it's translated. Since the Grade 2 translator doesn't change the \$\$ format commands at all, they look the same in both print and braille chapters. When you are creating print and braille versions of the same text, it's faster to delete the \$\$ commands in the braille chapters. At the User Level, you learn how option R - Replace characters on the Main Menu can automate this process.

Part 3: Basic Format Commands for Braille

As mentioned in Section 6, it's important that you precede and follow your `$$` commands with a space or `<CR>`. When you do, the translator translates your text but leaves the format commands untranslated.

Underlining

When you print a braille chapter like `QUANDARY2` to a device configured as a braille, the formatter does not execute the underlining for any `$$sub` or `$$h` commands.

When `$$sub` and `$$uf` commands are present in your inkprint source chapter, the Grade 2 translator places italics signs where appropriate in your grade 2 target chapter. There are two forms for the braille italics sign: single and double. The single italics sign is dots 4-6, shown in screen braille by the period. The double italics sign is *two* dots 4-6, or two periods in screen braille. When an italicized passage is three or fewer words, each word is preceded with the single italics sign. When the italicized passage is more than three words long, the initial word is preceded by the double italics sign, and the last word is preceded with the single italics sign.

Here's a silly inkprint sentence showing how italics signs work:

Yesterday he purchased *The Cat in the Hat* for his daughter, and she `$$sub` loved it. `$$uf`

When the chapter is translated, the result in screen braille looks like:

```
,ye/]d he pur*ased $$sub ..! ,cat 9 ! .,hat = 8 dau<t]1 & %e $$sub .lov$ .x4 $$uf
```

As mentioned in Section 7, viewing screen braille can be a little disconcerting at first. In this sample, when the braille gets the exclamation point, it embosses dots 2-3-4-6, the grade 2 contraction for the word *the*. The exclamation point is preceded by two periods; this double italics sign shows there are more than three italicized words. The comma after the two periods and before the exclamation point is the *caps sign*, showing that the initial *T* of the word *the* is uppercase. The word *hat* is preceded by a single italics sign that signals the end of the italicized passage, plus a single caps sign to show the uppercase *H*.

Both of the last two words are preceded by a single italics sign. The dollar sign in `.lov$` is the grade 2 contraction for the letters *ed*. The single letter `x` is the grade 2 contraction for the word *it* and the final digit `4` is the grade 2 period.

Centering

Place `$$c` before the text you want to center. A typical carriage width for inkprint is 72 characters; for braille it's 40 or 41 cells. The centering effect of `$$c` continues until a `($l)`, `($p)`, or hard `<CR>`. A heading that centered on one line in print may require two or more lines to center in braille; BEX takes care of this automatically.

Center and underline

As mentioned, BEX suppresses underlining when sending text to a braille. When printing to a braille, BEX executes the `$$h` command exactly the same as a `$$c` command. The `$$h` command does not signal the start of braille italics; the translator only uses *and* to place braille italics.

Line spacing

Braille text is always single spaced, BEX's default value for both inkprint and braille. If at some point in your inkprint chapter you have increased the line spacing with a `$$l#` command, remember to remove the `$$l#` command before embossing the grade 2 version.

Paragraph spacing

BEX's default value for braille paragraphs is one `<CR>` at each `($p)`. If you have increased the paragraph line spacing with a `$$s#` command, remove the `$$s#` command before embossing.

Paragraph indent

BEX's default value for braille indenting at paragraphs is 2 spaces. The `$$i#` command allows you to change where the first line of a paragraph starts. The value `#` can be either negative or plain: it determines where the first line of a paragraph appears *relative to the existing left margin*. BEX defaults to no margins, either right or left. When you want to change how paragraph `($p)`

indicators are executed, you must place the `$$i#` command before the first paragraph indicator you want to affect. All subsequent (`$p`) indicators use the new value until you change it with another `$$i#` or reset to default with `$$d`. In Part 4, we show how you combine a negative indent with a positive left margin to create *outdenting*.

Left margin

You set the left margin with the `$$ml#` command, lowercase *m*, lowercase *l*, followed by a number. The default for `$$ml#` is *position zero*. `$$ml2` means establish a left margin at position 2; `$$ml10` means establish a left margin at position 10.

The left margin defines where every line of text starts, except for the first line of a paragraph. The first character of a new paragraph is placed using the combined values of `$$ml#` and `$$i#`: Indent always moves relative to left margin. The default value for braille is `$$ml0 $$i2`, so the first line of a paragraph starts at position 2 and all subsequent lines start at position zero. `$$ml0 $$i0` means that the first line of a paragraph starts at position zero and all subsequent lines start at position 2. This is discussed further under "Outdenting," in Part 4.

Hint!

When transcribers talk about braille format, they use the terms indent and runover. BEX's default values for braille are: a transcriber would call this "indent to cell three, runover to cell one." Keep in mind that the numbers for braille cells are one higher than BEX's position numbers. That's because BEX calls the first character on the line *position zero*, while transcribers refer to the same spot as *cell one*.

Simple page numbering

Enter `$$np` in your chapters to number pages in either print or braille. When BEX outputs to a braille, the page number is placed at the right margin of line one, with at least three preceding blank cells.

Tabs

You use tabs identically with print and braille material. It is important to keep in mind the different carriage widths of the two formats. The grade 2 version of a word is usually shorter than the inkprint version. When

representing columnar material in braille, you usually have just two blank cells between columns. RDC'S TranscriBEX software, an add-on module to BEX, includes extensive systems for transcribing columns and tables.

To establish a tab stop, you use `$$t#`. The value for # corresponds to that position on the line. `$$t10` sets a tab at position 10, and `$$t28` sets a tab at position 28.

Establishing a tab stop does not clear any other tab stop. You can only clear *all* the tab stops at once with `$$tc`. Generally, you should enter `$$tc` immediately before you establish new tabs.

Move to the next tab stop with (`$$`). The leading and following spaces are integral parts of this command.

Reset to default

To reestablish braille default values, use `$$d`. This clears all margins, page numbering, or tabs, sets line spacing to single space, and paragraphs to single spaces with an indent of two.

Part 4: Braille Format for QUANDARY

In Section 7, we use the QUANDARY chapter to show how you translate inkprint to grade 2 braille. The QUANDARY chapter doesn't contain any `$$l#`, `$$s#`, or `$$i#` commands, so BEX uses the appropriate default values for braille line spacing, paragraph spacing, and paragraph indent. There are two places where minor changes can improve the format of the braille version. You can make these format command changes in the inkprint version, before it's translated, or in the final grade 2 version. If you want to make changes in the inkprint version, you should make a copy of the QUANDARY chapter first--we use the original version in several other samples.

Delete the <CR>

The QUANDARY chapter begins with
`$$l $$d $$np <CR> $$h`

The <CR> makes line one on the page blank, which sets off the title in print. For braille, the blank line here is inappropriate; delete it.

Establish outdenting

We use the word *outdenting* to describe a situation where the first line of a paragraph is further to the left than the start of all subsequent lines in that paragraph. Another term for this format in print is a *hanging indent*. Outdenting is frequently used in braille for lists of things. Braille transcribers would use the phrase *indent to cell one, runover to cell three* to describe the format we establish here.

There is one place in the QUANDARY article where *outdenting* would be good: the list of four things for training centers to ponder that appears at the end of BEX page 2.

To establish outdenting, combine a *negative value* for # in the paragraph indent command `$$i#` with a left margin greater than or equal to . In braille, the standard paragraph indent is 2. That's also the value for a paragraph outdent. When you combine a left margin of 2 with a paragraph indent of minus 2, the first line of the paragraph begins at position zero, with all subsequent lines beginning at position 2. That's because the value in `$$i#` always moves relative to the current left margin.

You always place format commands before the text you wish to format. The margin command influences how the formatter handles the start of the next line. The indent command influences how the formatter handles the start of the next paragraph. To start outdenting, place immediately before the first (`$p`) indicator where outdenting commences. To restore normal braille paragraphs, place before the first (`$p`) indicator where standard braille paragraphs recommences.

Edit page 2 of the QUANDARY chapter. The paragraphs under discussion all begin with a dash, shown by two hyphens. Press control-L to begin locating, then type `<space>$p<space>--` to specify the start of the outdented paragraph, then press control-A to move your cursor ahead to the first of these paragraphs. Press control-I to start inserting. Type to establish a 2-character outdent. Press control-N to finish the insert.

- All paragraphs after this are outdented. You want to reestablish normal braille paragraphs after four outdented paragraphs. Enter control-L control-A three times, again locating for the paragraph indicator and hyphens that appear at the start of each outdented paragraph. The third time positions your cursor at the beginning of the last outdented paragraph. Now press control-A control-P to move to the end of this paragraph. Press control-I to start inserting, then type to reestablish normal paragraphs. Finish the insert with control-N.

More sophisticated braille formats

When you are doing a lot of braille transcribing, you will encounter a number of code books that dictate more sophisticated braille page formats and subtle braille translation issues. The TranscriBEX module is an enhancement of BEX that provides you with the tools to create perfectly formatted and translated braille in accordance with *English Braille--American Edition*, the *Code of Braille Textbook Formats and Techniques*, and the *Code for Computer Braille Notation*. Contact RDC for more information about TranscriBEX.

10 Making the Most of the Echo

At the Learner Level, BEX supports two *integral* voice devices: the Echo family, and the SlotBuster II. This Section focuses on the Echo. Most of the strategies discussed here are equally appropriate for SlotBuster users; the actual commands differ. Since the SlotBuster is a multi-function circuit card, it requires more sophistication to operate. You have to know when you want to send text to the SlotBuster for talking, and when you send text for printing. A concise summary of SlotBuster commands is provided in Appendix 2. RC Systems also distributes a talking SlotBuster manual on disk.

Part 1: Why the Echo?

Street Electronics has manufactured four different devices: the Echo II, Echo Plus, the Echo IIb, and the Cricket. We refer to them all as *Echo* because BEX

treats them identically. When the Echo speaks, it's a cooperative effort between a circuit card, BEX, and the TEXTALKER software. TEXTALKER is on the BEX Boot disk and the Echo/Cricket Training Set. This combination of hardware and software integrates the Echo into the Apple's operations.

Apple II Plus: | Your computer uses a different version of TEXTALKER, numbered 1.3. This version lacks many of the features described here. More details appear in Appendix 4.

We've chosen to standardize on the Echo family because it has many wonderful features. The Echo's speech output is flexible: you can enter commands to control the pitch, how fast it speaks, which punctuation is announced, and the delay between words. You can change these parameters at any time within BEX.

The TEXTALKER software enables the Echo to speak any possible combination of letters and words. TEXTALKER also allows you to review the contents of the Apple screen. It does require some practice to understand the Echo speech. Because the Echo is designed for a mass market, it is relatively inexpensive, unlike some special purpose sensory aids. Almost every program for blind Apple users supports the Echo, and it is sometimes possible to make general-market Apple software work with it, too. Finally, the Echo's manufacturer, Street Electronics, has maintained a commitment to carefully supporting the particular needs of blind computer users since 1982.

Included in your BEX package are two flippies called the Echo/Cricket Training Set. One side is the Echo/Cricket Lessons Disk. These lessons are aimed at the novice computer user: we strongly recommend these lessons to familiarize yourself with all the Echo's features.

Part 2: BEX and the Echo

As you boot BEX, it scans your Apple system looking for an Echo II, Echo Plus, Echo IIb, or Cricket. BEX can only recognize the Cricket when it's turned on before you boot BEX. When BEX locates the Echo, it automatically loads the TEXTALKER software into the Apple's memory.

When BEX recognizes an Echo in your system, then BEX speaks the first `Enter configuration:` prompt. At this point, you enter a configuration name. When your configuration includes Echo voice, then the Echo continues to speak throughout the program. When your configuration does not include Echo voice, the Echo is silent. However, you can get BEX to speak even when you don't have Echo speech in your configuration.

Part 3: Turn the Voice Off and On Automatically

Two chapters on the Main side of your BEX disk can turn the Echo voice off and on automatically. These chapters are examples of *automatic procedure chapters*, which you learn how to create at the Master Level. An automatic procedure chapter contains instructions for BEX to do a series of actions without you having to type them. You can *use* automatic procedure chapters at all levels.

You don't need to use an automatic procedure chapter when you just want to silence the Echo temporarily: Part 6 explores the various ways you can suppress Echo speech. Turning the voice off and on is handy when sighted and blind computer users are sharing a system. Use this feature when you have configured without Echo speech and want it, or configured with Echo speech, and don't want it. Here's how:

- 1. Jump to the Main Menu and make sure your BEX disk is in drive 1.
- 2. Press control-A. BEX prompts: `Automatic procedure chapter:`
- 3. Type one of these chapter names:
 - To turn the Echo on, type `1VOICE ON <CR>`
 - To turn the Echo off, type `1VOICE OFF <CR>`

Sit back and watch the fireworks! BEX is reading keystrokes from the chapter you specified. When the automatic procedure is finished, you are back at the Main Menu prompt.

Part 4: Voice-Oriented BEX Features

When you know what Echo features BEX provides, you can better understand how to use the Echo without BEX. We've designed BEX to make word processing with voice output efficient. Program prompts are concise to speed access time. You *can* press <CR> for the list of options at a menu, or scan a drive for all the chapters on the disk. But when you know exactly what you want, you save time by just typing it in. The software makes various signal tones with the Apple's speaker to distinguish program parts. A low beep signals menu announcements; a high beep signals errors.

- ***Editor Features***

Many Editor commands are designed for voice output. These were mentioned in Section 4, but are repeated here for ready reference.

- ppi Pitch - When the Echo speaks your text, it uses pitch to show capitalization. All uppercase is highest, initial uppercase is medium, all lowercase is lowest.
- Arrowing - The left and right arrow keys always talk the character at the cursor, regardless of punctuation mode. When you arrow to an uppercase H, BEX makes the Echo say "cap H." Outside BEX, the Echo behaves differently. When you arrow right, the Echo talks the character the cursor lands on. When you arrow left, the Echo talks the character the cursor moved from. When you are in Some punctuation mode, the Echo won't pronounce some characters.
- Talking Cursor Movement - Control-G goes forward one word and speaks it; control-R reverses one word and speaks it. Control-T talks the next sentence; you can press <space> to stop speech and cursor movement. Control-O talks to the end of the BEX page or until you press <space>.

- ***Printer features***

You can add Echo output when BEX prints to any printer. Add the two characters +V to the printer destination number or letter. The Review class printer is designed to work in combination with the Echo's line review mode,

which we discuss further in Part 7 of this Section. Examples of using the Review class printer appear in Section 2, Part 11 and Section 5, Part 5.

Part 5: Echo Commands

You can set and change many parameters for the Echo family of synthesizers. The best way to discover how these changes work is to play around with them. The Quick Reference Card contains a summary of all Echo commands. Two commands are disabled in BEX's Editor; several commands are not useful with BEX.

All Echo commands begin with the Echo's *command character*, control-E. Some commands have a numerical value; we show a number sign where you enter a number. You can issue an Echo command *whenever* the Apple is waiting for input, even in the middle of typing a chapter name. All Echo commands change TEXTALKER in memory, so they only last until the next time you boot BEX.

Apple II Plus: | Your commands are different; see Appendix 4.

Controlling what characters the Echo speaks

The Echo has three different punctuation modes. When you're reading a document for content, you may not want to hear every apostrophe and period. But when you're carefully proofreading your sentence structure, you probably do. TEXTALKER names some punctuation marks differently than your English teacher; you hear this version when you move the cursor by words or sentences. BEX has a special vocabulary for pronouncing punctuation when you arrow left and right in the Editor. Most of the names there are what your English teacher prefers; we shortened the name of the \$ character to dollar because you use many dollar signs for formatting your text.

- Control-E S - Some punctuation mode (default) Some pronounces these symbols: # \$ % & = @ +> < /]
- From left to right, the Echo words for these symbols (plus the BEX term in parentheses) are: number sign, dollar sign (dollar), percent, and

- (ampersand), equals, at (at-sign), plus, greater than, less than, slash, ready (right bracket)
- Control-E M - Most punctuation mode pronounces everything except Return <CR>; linefeed <control-J>; and <space>.
- Control-E A - All punctuation mode pronounces everything.

The Echo parrots most of the letters you press at a menu, depending on punctuation mode. For example, when you are in Some punctuation, the Echo does not speak when you press question mark. We don't recommend using All punctuation mode unless you *really* need it. If you used this mode in BEX's Editor, you would hear a <CR> between each word. Those *Returns* are not in your text. BEX sends a <CR> after each word so the Echo speaks it immediately.

Most of the time, you want the Echo to speak words. When you are reviewing grade 2 braille text in the Editor, however, word mode is very difficult to understand. Two commands control this function:

- Control-E W - pronounce Words (default)
- Control-E L - pronounce Letters

The repeat filter

When you create text that contains more than two punctuation characters in a row, you probably will encounter TEXTALKER'S repeat filter. For example, you might want to create a letterhead that centers 12 asterisk characters under your name. When you control-G over this *word*, you only hear "star star."

TEXTALKER has a *repeat filter* that suppresses pronunciation of punctuation and control characters when the same character appears more than two times in a row. In BEX, the repeat filter is active when you're printing to the Echo with +V or when you issue a talking Editor command; the repeat filter does not work in line review. The repeat filter only filters punctuation and control characters. When a line contains 80 8s or Ms, you hear every one. The repeat filter command is:

- Control-E # R - Where # tells TEXTALKER how many characters it can pronounce before it starts filtering. The default value is 2.

BEX's screen display doesn't contain any ornamental characters. We've pared it down to show only the information you *need* to hear. Software mainly designed for sighted people is quite different: frequently the screen is decorated with all manners of punctuation. The Echo's repeat filter makes using software like this bearable.

Controlling speed

When you first use the Echo, it can be hard to understand. Use these commands to slow down the Echo:

- Control-E C - Compressed or *fast* speech is what BEX uses by default.
- Control-E E - Expanded or *slow*
- Control-E # D - Delay (lag time) between individual words. The number is between 0 (no delay) and 8 (longest delay); default is 0. Increasing the delay also increases the time required for the Echo to "talk silently" with control-X.

Controlling pitch and volume

- Control-E # P - Pitch with intonation. The pitch code is number between 1 (lowest pitch) and 63 (highest pitch). Default for menu prompts is pitch 21. *Intonation* means the Echo varies pitch depending on word placement in the sentence.
- Control-E # F - pitch with Flat intonation. Using the same pitch codes as the previous command, where 1 is lowest pitch and 63 is highest pitch. With flat intonation, the Echo speaks in a monotone.
- Control-E # V - adjust Volume (sound level). Use a number between 0 (silent) and 15 (loudest).

- ***Echo Commands in BEX's Editor***

You use the same commands in BEX's Editor and at menus. However two Echo commands are disabled in the Editor: control-X (to temporarily turn off the Echo voice) and control-L to enter Echo line review mode (detailed in Part 7). However, BEX provides you with workable alternatives: many commands let you review text, and you can use <space> to stop Echo speech.

- ***General Echo Commands outside of BEX***

All of the above commands, using the same syntax, are available plus three more. You don't need the following three commands inside BEX, because BEX takes care of all input and output itself.

- Control-E T - Talk only (no screen)
- Control-E O - Output only (screen, no voice)
- Control-E B - Both screen and voice output

Part 6: Making the Echo Stop Talking

One of the most important features for any voice device is shutting it up. There are several different ways to do this. In the Editor, you press <space> to silence the Echo for control-T and Control-O. There's also an explicit Echo command that *only* shuts up the Echo: control-X. The drawback to control-X is you must wait for the Echo to finish speaking "silently" to itself.

TEXTALKER also shuts up whenever you press *any* key except <space> while the Echo is talking. This is a wonderful feature once you know your way around BEX. For example, while printing a chapter, you want to be reminded of which printer number corresponds to your inkprint printer. You specify the list of chapters to print. Then, when BEX prompts `Which printer:` you enter `? <CR>` for the list of printer numbers. Printer number 2 is the one you want; as soon as you hear that information, you can enter `2 <CR>` and BEX starts printing. As soon as you press 2 that keystroke shuts up the Echo.

Here's an example in the Editor. You want to locate the third `$$c` centering command in a page. Enter control-L `$$c` control-A and the Echo announces the character position of the first `$$c` command. You don't have to listen to the entire number; when you enter control-L control-A to locate the next occurrence, the Echo shuts up. However, the Echo's instant silence response can be a little confusing in the Editor.

Keeping track in the Editor

When you issue an Editor command while the Echo is talking, that command *may* shut up the Echo. But in some situations, it may not. The problem boils down to a "battle of the buffers." TEXTALKER has a buffer that can store approximately 128 characters. This buffer is crucial to TEXTALKER'S ability to inflect sentences. TEXTALKER accumulates a bunch of characters in its buffer, analyzes the punctuation, and tries its best to give a natural conversational tone to its output.

But that's not all! BEX's Editor *also* has a buffer: the keyboard buffer, which holds up to 256 keystrokes. BEX regulates how fast keystrokes are passed from the buffer to the Apple. BEX knows that TEXTALKER'S buffer can hold only 128 characters, so BEX makes sure that TEXTALKER'S buffer doesn't get overloaded. If you hold down control-G for a count of three seconds and then let go, you have an opportunity to hear the battle of the buffers at its most confusing. As long as you're holding down the control-G command, each control-G starts the Echo talking a word, and then interrupts that word and starts it talking the next word. But once you lift your fingers from the keys, BEX starts storing the control-G commands in the keyboard buffer. BEX slows down the stream of control-G commands to the point where TEXTALKER has time to fully pronounce each word.

Part 7: Echo Line Review

The Echo's *line review* feature allows you to randomly read any material on the 40-column and 80-column Apple screen. (Some people call this feature "screen review.") You cannot use line review in combination with BEX's large print screen display at menus. BEX large print is a graphics display; TEXTALKER can never review graphics. By the way, you don't need to plug in a computer monitor to use line review. TEXTALKER uses the information in the Apple's screen memory to show you what's on the screen. The Apple doesn't know or care if there's a monitor plugged in.

Echo line review is not available in the Editor; you can use Echo line review in combination with a Review class printer to proofread your work. When something interrupts you as you're working at a BEX menu, Echo line review is a handy way to see what's on the screen and what you last did.

Line review mode creates a separate *audio cursor*. The position of the audio cursor determines what the Echo speaks. You move the audio cursor around the screen with the line review commands. Once you have entered line review, every character you type is either interpreted as a line review command, or ignored (you hear a medium-tone boop.) The Quick Reference Card contains the complete list of Echo line review commands.

Control-L enters line review mode; the Echo says *Review*. You can press control-L when the Apple is waiting for input, or you can enter line review while the Apple is outputting characters. In the second case, control-L freezes the Apple temporarily. When you exit line review, the Apple resumes whatever it was doing (before it was so politely interrupted).

Choosing lines to read

The 24 lines on the Apple screen are labelled with the letters *A* through *It*: line 1 is *A*, line 2 is *B*, up to line 24 which is *X*. The first step after entering line review is choosing a line to read. When you press a letter between *A* and *X*, the Echo immediately begins speaking that line. When you press *Z* the audio cursor moves to the same line as your true cursor. After you press *Z*, press <CR> to read that line.

Once you have specified the first line to read, you have a wealth of choices. Press <space> and the Echo announces the position of the audio cursor. Press <CR> to reread your current line; your audio cursor ends up at the start of the line. Use right and left arrows to read word by word. You can change to letter-by-letter mode by pressing *L*; when you do then right and left arrow read letter-by-letter.

After you have specified the first line, you don't use *A* through *X* to position the audio cursor. Instead, press the up and down arrows to move your cursor to a new line and start talking it.

Instead of reading one line at a time, you can read several. The comma key is the *through* key used to separate the first and last line to read. When you first enter line review mode and press *A, G* then the Echo reads the first through seventh line on the screen. After you have selected the first line to read, then *comma, letter* selects the current line through the letter you enter.

You leave line review by pressing <ESC>; the Echo says "Exit." Moving the audio cursor does not affect the position of the true cursor, so you are at the same place you were when you pressed control-L. Alternatively, you can press X to exit line review and move your screen cursor to your audio cursor position. This can be very useful when programming and issuing DOS commands.

Changing Echo parameters in line review

You can also issue many Echo commands in line review mode, but the syntax is a little different. You *don't* use the Echo command character control-E. When you are in line review mode, the Echo is already paying attention to all your keystrokes. The changes you make to the Echo's parameters in line review do not affect the Echo's parameters at menus and in the Editor.

- S - Some punctuation
- M - Most punctuation
- A - All punctuation
- E - Expanded speech
- C - Compressed speech
- L - Letter mode; when you're in Letter mode, uppercase letters are pronounced at a higher pitch than lowercase letters.
- W - Word mode
- T - toggles between word and letter modes

Column review

In addition to reading the entire screen line, you can divide the Apple screen horizontally into up to nine columns. Each time you load TEXTALKER into memory, you start out with nine default columns, labelled, logically enough, 1 through 9. Each column is 5 characters wide: column 1 contains the characters in position 01 through 05; column 2 is 06 through 10, and so forth up to column 9 at 41 through 45.

The first time you enter line review, you default to the entire screen: 00 through 40 or 80, depending on which screen you configure with. The entire screen is also known as *column 0*. Once you've chosen a line to read, you choose a column by pressing a digit between 1 and 9. The Echo responds by reading the text on the chosen line within the column boundaries. You can

up and down arrow lines within a column, or move to a different one by pressing another digit.

You can hear the entire line by choosing column 0; but if you don't want to leave your column, you can press the letter R. This reads the entire line without escaping from your chosen column. As always, <CR> repeats the chosen text, whether it's a full line or a columnar portion of it. When you exit line review, TEXTALKER remembers your last column. The next time you enter line review, you'll be in the same column.

Changing column boundaries

While the nine default columns may suit your needs, it's always nice to be able to customize your operating environment. Each column is an independent entity; column boundaries may overlap. If you wish, you could define column 1 as positions 02 through 39, column 2 as 04 through 09; column 3 as 00 through 31. We explain changing column boundaries in a minute.

Whichever column you're in, you get a low boop when you attempt to move past its edge. (It's the same low boop you get when you reach the edge of the screen on a full line.) Press <space> to find out your current cursor. (It may be easier to interpret portions of words when you change to Letter mode at this point.) Moving the column boundaries is similar to setting margins on a typewriter.

The combination of open-Apple and left arrow keys is like the *left margin release* on a typewriter. When you *decrease* the left column boundary (move it to the left) you use the open-Apple and left arrow combination. Similarly, the open-Apple combined with the right arrow is like the *right margin release*. To increase the right column boundary (move it to the right) you use the open-Apple and right arrow combination.

The hyphen key is the *left margin set* and the equals sign is the *right margin set*. When you want to increase the left column boundary to the right, you use the hyphen to establish the new column edge; when you decrease the right column boundary to the left, you use the equals sign.

Suppose you want to change column 2's default values; its left edge is position 06 and its right edge is position 10. You want to make column 2 encompass positions 00 through 09. Here's how you proceed.

Enter line review, then press A to choose a line. Press 2 to shut up the Echo and enter column 2. The Echo reads the five characters from 06 to 10; your audio cursor ends up at A, 06. Press <space> to confirm this. Press the left arrow and the boop signals the left edge of column 2. Hold down the open-Apple key while pressing the left arrow, and you're moving the left edge of the column as you go. Each left-arrow press is acknowledged with a boop; six presses gets you to position 00. Press 2 now and you hear the text between 00 and 10. The open-Apple right arrow combination can not move the right edge of the column to the *left*. In this example, move your audio cursor right with the right arrow key until the Echo announces A, 09, when you press <space>. Now press the equals key to set the right column edge.

- ***Using Line Review in BEX***

The 20, 10 and 5 column screen display draw letters on the Apple's screen, and TEXTALKER can't read graphics. You can review the 80 and 40 column screens. When you are interrupted while working with the Apple and want to know where you left off, use line review to find out. Enter control-L Z R. Control-L enters line review mode; Z places your audio cursor on the same screen line as your true cursor; and R reads that line. You hear what BEX is prompting for. You can then use the up and down arrows to see what else is on the screen.

You can also use line review to examine text you print to the 80 or 40 column screen, or to a Review class printer.

Part 8: Troubleshooting Echo/Cricket Problems

- Problem: I don't have any Echo/Cricket output.
- Cause 1: You don't Echo firmly plugged in to your Apple IIc, IIe, or IIgs
- Solution 1: Turn off Apple and reseal your circuit card

- Cause 2: You don't have the external speaker plugged into the Echo
- Solution 2: Turn off the Apple, plug the speaker into the jack on the circuit card
- Cause 3: Your Cricket is not in your Apple IIc's port 2 or you have the Cricket volume turned down or the Cricket was not turned on before you booted BEX.
- Solution 3: Turn off your Apple and plug the Cricket in port 2, then turn the Cricket on, then reboot.
- Cause 4: You did not ask for Echo speech in your configuration.
- Solution 4: Use the supplied configurations E1 or E2; Establish a new configuration and answer Y to the Do you want Echo speech? question; or Use the automatic procedure chapter VOICE ON described in Part 3.
- Problem: My Echo is not responding to my commands.
- Causes: You're not using control-E to start each command; or You're not following the correct syntax. For example, changing volume must be control-E 10 V not control-E V 10
- Problem: When I press control-T or control-O in the Editor, the Echo says "Space Return" between each word.
- Cause: The Echo is in All punctuation mode, so it pronounces every <CR> and <space>. During control-T or control-O, BEX adds one <CR> character between each word so the Echo speaks immediately.
- Solution: Enter control-E S for Some punctuation mode or control-E M for Most punctuation mode. At the User Level, you learn another way to change how the Echo speaks during talking movement commands.
- Problem: When I press Control-Reset, I lose Echo voice.
- Cause: When you crash BEX, you temporarily lose BEX's control of input and output.
- Solution: At the BASIC prompt, type PR#0<CR>
- Problem: After I crash and type PR#0 <CR> a sighted person wanders by and asks why characters are not displayed on the Apple screen.
- Cause: BEX controls what information appears on the screen and what the Echo says. When you crash with Control-Reset the Echo is in *talk-only* mode.
- Solution: When you return to BEX, the screen display is fine. When you want to have screen display before returning to BEX, put the Echo in both screen and talk mode by pressing control-E B

- Problem: My Echo is acting really weird at BEX menus. I keep getting the list of options; I press control-X to make it stop, but the options keep on coming. Line review won't work either.
- Cause: You crashed out of the Editor with control-Reset. Two Echo commands are disabled when you're in the Editor: control-X and control-L. When you crash out of the Editor, they are still disabled.
- Solution: Press control-Reset again to stop the endless list of menu options. You silently arrive at the BASIC prompt. Depress caps lock and type RUN <CR> Your Echo will probably make some strange noises at this point--don't worry! Use the Editor to edit *any* chapter. As soon as you enter the page, leave it with control-Q. Now control-X and control-L are properly re-enabled by BEX.

11 The Second, Page, and Starting Menus

Up to now, you've concentrated on the Editor, Print formatter, and Grade 2 braille translator. While these options form the heart of BEX, there are many other utility functions provided on the Second, Page, and Starting Menus. Before we explore those menus, however, we want to provide you with an overview of how you select chapters in BEX.

Several methods are available for choosing which chapter or chapters to work with. We use the term *default data drive* to refer to the number that appears as the default when you press D at any menu. When you have a 2-drive system, your default data drive is always drive 2. When you have a 1-drive system, your default data drive is always drive 1. At the Master Level, you can have up to eight drives; knowing your default data drive becomes quite important.

Part 1: Specifying Chapters

When BEX needs to know which chapter you wish to work with, it prompts `Drive number or chapter name:` When you receive this prompt, BEX has loaded any program it needs from disk into the Apple's memory.

When you have a 2-drive system, you can now insert a data disk in drive 1, if you wish.

When presented with the `Drive number or chapter name :` prompt, you have two choices. When you know the name of the chapter, just type it in and press `<CR>`. When you want to work with more than one chapter, or when you're not sure of the chapter's name, enter the drive number (1 or 2) where your data disk is located, followed by `<CR>`. BEX presents a numbered list of the chapters on that disk. We call this method of specifying chapters *scanning* the disk.

Part 2: Choosing from a Numbered List of Chapters

When you work with the Editor and all of the Page Menu options, you work with just one chapter at a time. In this situation, BEX prompts you to enter the number of the one chapter you want to use.

For all other options, you can work with an entire disk of chapters. When you scan the disk for chapters, BEX presents a numbered list of your chapters, and then asks you if you want to use the entire list in order. The default is N since you usually don't want to work with the entire list. Enter Y `<CR>` when you do want the whole list of chapters in the order presented. Otherwise, accept the default by pressing `<CR>`.

After you get a numbered list of chapters, BEX prompts you to pick one or more chapters by entering their numbers. After you enter a number followed by `<CR>`, BEX responds with the name of the chapter you've picked. When you want to cancel this chapter, enter a minus sign (the hyphen) followed by `<CR>`. BEX announces that the chapter is canceled. When you're done entering chapter numbers, enter `<CR>` alone to the `Chapter number :` prompt.

- ***What Happens Next?***

You have just specified a list of *source chapters* for BEX to use. What happens next depends on the option. When the result of the option is writing one or more chapters on disk, then you have to tell BEX how to name the chapters. BEX prompts `Target chapter naming method:` For an online summary of target chapter naming methods, press ? <CR> at the prompt. Target chapter naming methods are explained in Part 3.

BEX prompts for multiple chapter names with options G - Grade 2 translation and R - Replace characters on the Main Menu, and with options A - Adjust size of pages, C - Copy chapters, M - Merge chapters, N - Name change for chapters and R - Read textfile to chapter, on the Second Menu. We discuss these in detail in the next Part.

When the option doesn't involve writing new files on disk, then after you specify the source chapter list, you're asked for other information. With option P - Print chapters, the next step is answering the `Which printer:` prompt. When you aren't sure of the printer number, you can press ? <CR> at this prompt for a list of printers you have in your configuration. A sample of this dialogue appears in Section 5. For option D - Disk catalog, the next question is `Which drive?` Again, you can press ? <CR> after this prompt for further help. With option K - Kill chapters, the next question is `OK to Proceed? N`

Part 3: Target Chapter Naming Methods

Many BEX options created modified copies of your chapters. We refer to these new chapters as *target chapters*. Options G - Grade 2 translation and R - Replace characters on the Main Menu, as well as many of the options on the Second Menu, ask you how you wish to name the target chapters you create.

- ***Working with One Chapter***

When you are only working with one chapter, BEX prompts for the `Target chapter name:` You must type in a new name for the chapter that is created. If you use the name of a chapter that's already on the disk, then the

text in the new target chapter overwrites the existing chapter, and you lose whatever text you had in the existing chapter.

The rules for naming chapters stated in Section 4, Part 2 still apply: the chapter names cannot exceed 25 characters; the first character must be a letter they must never contain periods, commas, colons, or semicolons; and they must never end with a space.

When you have two disk drives, BEX assumes that all your chapters are read from and written to drive 2, your default data drive. You can tell BEX to write your target chapter on drive 1 by starting your target chapter name with the digit 1, as we did in the preceding example. If you have a 2-drive system, you can copy and modify chapters from one disk to the other.

Caution! | When you use an option that creates a target chapter, you must consider if there's enough room on your disk for it.

At all BEX menus, you can press number sign # to get the number of sectors free on the disk. If there isn't enough room when BEX is creating a new chapter, BEX crashes with a `DISK FULL` error. This is much less serious than it sounds. Full details on how to recover are in Section 13.

• ***Working with More than One Chapter***

When you specify more than one source chapter, BEX prompts for you to enter one of the target chapter naming methods, as shown in the example above. This is a handy shortcut that allows you to create target chapter names by systematically changing the source chapter names. Enter ? <CR> to receive a summary of your options. In the following list, the letters X, Y, and Z, stand for any characters of your choosing.

- S - means use the same name for the target chapters as the source chapters, and write the target chapters on default data drive
- 1S - use the same name for source and target chapters, and write the target chapters on drive 1
- I - individually type the target chapter names. BEX presents each source chapter name and asks for the target chapter name. Write the target chapters on your default data drive

- 19 - individually type the target chapter names. BEX presents each source chapter name and asks for the target chapter name. Write the target chapters on drive 1
- AXY - add the characters XY to the end of the source chapter name to make the target chapter name. Write them on the default data drive. You can add one or more of any letter or number. BEX checks to make sure that adding the characters won't make your chapter name longer than 25 characters
- 11XY - add the characters XY to the target chapter names, and write them on drive 1
- LX - change the last character of the source chapter names to the character X to make the target chapter names. Write the target chapters on default data drive. You can use any letter or number
- 1LX - change the last character of the source chapter names to the character X to make the target chapter names. Write the target chapters on drive 1.

When you make your choice, enter the characters that define your naming method, and press <CR>. You've probably noticed that the target chapter naming methods all concentrate on changing the final characters of the source chapter names. At the User Level, you'll learn how you can use the last character of a chapter name to select a subset of chapters on the disk.

For example, suppose you want to copy the LETTERHEAD and JOAN chapters on the BEXtras disk onto your data disk, so that you can experiment with format commands with those chapters. You go to the Second Menu and proceed like this:

Second Menu

Enter Option: C

Copy chapters

Drive number or chapter name: 2 <CR>

BEX presents you with a numbered list of the chapters, then asks:

Use entire list? N <CR>

Select chapters by number

Chapter number:

Enter the number of the LETTERHEAD chapter. BEX confirms your choice by repeating the name of the chapter. Then BEX prompts again:

Chapter number:

Enter the number for the JOAN chapter. Again, BEX confirms your choice, and asks for a chapter number. Press <CR> when you are finished specifying

chapters:

Chapter number: <CR>

(enter question mark for choices)

Target chapter naming method: ? <CR>

Naming methods are:

S = Same name as source chapters

I = Individually name target chapters

AX = Add letter X to make target names

LX = Last character changes to X

Precede naming method letters with 1 for drive 1

(enter question mark for choices)

Target chapter naming method:

You want to make the target chapter names slightly different so you know which are the unaltered chapters and which are your experimentation chapters. You use the A target chapter naming method, with the letter B added to the end of the chapter names. You have your BEXtras disk in drive 2, so you put your data disk into drive 1, and add the digit 1 to the beginning of the target chapter naming method, to write the chapters onto that drive:

(enter question mark for choices)

Target chapter naming method: 1AB <CR>

The disk drives whirl as the copies are being made. BEX tells you when the copies are finished:

Chapter LETTERHEAD done

Chapter JOAN done

● ***Using the Same Names for Source and Target Chapters***

We briefly mentioned above that BEX allows you to use the same name for source and target chapters. This characteristic of BEX comes in very handy as you advance to the Master Level, but it has its drawbacks. There's no danger at all when you are simply copying a chapter from one disk to another, as when you make back-up copies of your chapters. But when you specify the same name for source and target chapters) on the same disk, the data in your source chapters is forever lost to you: it's overwritten by the data in the target chapters. Sometimes this is just the effect you're seeking, and it saves you a lot of time. We give more examples of this in Section 12.

Whenever you instruct BEX to save data on a disk with a particular name, BEX carries out your instructions to the letter. BEX doesn't check to see if that name already exists on the disk. For example, you have a chapter named CONTRACT and you use option G - Grade 2 translator to translate it into braille. You use the A2 target chapter naming method to make CONTRACT2 the target chapter. If CONTRACT2 is already on the disk, the new data replaces the old. While this feature saves a lot of time killing chapters, it's your responsibility to use option D - Disk catalog periodically so you know what chapter names are already used on a disk.

Part 4: Manipulating Chapters with the Second Menu

All the options on the Second Menu allow you to change how information is saved on disk. Section 12 demonstrates using some of these options to accomplish a specific task. In this Part we detail the features of each option. Most of the options allow you to work with many chapters at once.

• *Second Menu Options*

- A - Adjust size of pages. Make a copy of chapter with different page boundaries. At the first prompt, you supply one or more source chapters. The next prompt asks for target chapter name or naming method. The next two prompts ask for minimum page size and maximum page size. BEX attempts to divide pages at appropriate boundaries: (\$p) indicators or <CR>S.
- C - Copy chapters. Make an exact copy of chapter with different name. Keeps same page boundaries.
- D - Disk Catalog. Standard BEX disk catalog, available at all four menus.
- F - Fix directory file of chapter. Recreates a chapter *directory file* by examining the contents of each page file on disk. This option helps restore a damaged chapter, but may resequence the order of pages. You can't select the chapter to fix from a numbered list, because a chapter with a damaged directory file won't appear in the list. You must type in the chapter name (with or without a drive indicator). More details in Section 13.

- J - Jump to the Main Menu.
- K - Kill chapters. Deletes entire chapters. After you specify the chapters), BEX gives the OK to proceed? N prompt. You must enter Y <CR> to start the deletion. Any other response cancels the option and returns you to the Second Menu prompt.
- M - Merge chapters. Makes a copy of the specified chapters) in a big new chapter. Specify one or more source chapters, and one target chapter.
- N - Name change for chapters. Changes one or more chapter names). Name change does not make a copy of the source chapter; it just changes its name. It's your responsibility to catalog the disk first and make sure that changing a chapter's name won't mess up data that's already there. Never change the name of one chapter to the name of an existing chapter on the same disk. For example, you have two chapters on disk named RED and BLACK. Don't change the name RED to BLACK--your chapter gets messed up. See Section 13 for help on how to recover.
- R - Read textfile to chapter. Copies one or more DOS 3.3 or ProDOS textfiles into the BEX chapter binary file format. When you have a 1-drive system, you can only read DOS 3.3 textfiles. You select and name textfiles using the same chapter selection and naming methods described earlier in this Section. You must use different names for textfiles) and chapters), even when they are on different disks. Read textfiles creates copies of BEX chapters: the source textfiles) are still on disk when you're done. Section 12 demonstrates using Read textfile to chapter, and explains more about textfiles.
- Z - Zip to the Page Menu
- # - Free space on disk. Gives the number of free sectors left on the disk. Each sector contains 256 characters.

Part 5: Manipulating Pages with the Page Menu

The Page Menu allows you to reorganize pages in many, many ways. Section 12 shows some examples. All the options assume you are working on one chapter. When you Zip to the Page Menu and choose an option, you're prompted `Drive number or chapter name:` to specify which chapter you want to concentrate on. The Page Menu "remembers" this

chapter until you use option C - Change current chapter or leave the Page Menu.

- C - Change to another chapter. Use option C to enter a different chapter into the Page Menu's memory. The Page Menu only operates on one chapter at a time. When you supply a chapter name, that chapter becomes the current chapter. When you respond with just a <CR>, you clear the current chapter. It's as if you had just entered the Page Menu.
- D - Disk catalog. The standard list of BEX chapters, available at all four menus.
- E - Exchange pages. Prompts for the first page and the second page. Enter the existing page numbers in the new page order you wish to establish.
- F - File list of all pages. Presents a three-column list. The first column contains the page number, the second column contains the size, and the third column contains the single letter extension BEX adds to the chapter name to create that page's filename on disk. The page's number automatically changes to reflect any rearranging you do: the extension stays constant. Use File list frequently to keep track of what you're doing as you move pages around.
- G - Grab pages from another chapter. Grab pages allows you to copy one or more pages from another chapter into the *current* Page Menu chapter. When you do not have a *current* chapter specified, you are prompted: Grab into Drive number or chapter name: When you type a name that's not on the disk, you can create a new chapter. Next you're asked for the name of the chapter you're copying pages from. You can enter the drive number for a numbered list of chapters, or type in the chapter name directly. BEX gives you the number of pages in that chapter, then prompts for the range of pages you wish to grab. When you only want to grab one page, you specify a range of one. The grabbed pages are placed at the end of the current chapter. The *source chapter* is not altered by the grab. A detailed example appears in Section 12, Part 3.
- J - Jump to the Main Menu.
- K - Kill pages. Kills one or more pages from a chapter. After you specify the pages, you're prompted OK to Proceed? N. You must enter Y <CR> for the deletion to occur.
- M - Merge pages. This is the opposite of using control-C control-P to cut pages in the Editor. Appends the second page to the end of the first page. The two pages need not be consecutive: you can merge page 4 to the end of page 12.

- R - Rearrange pages in the current chapter. Option R gives you a choice of how to rearrange pages. Move a range of pages? N is the first prompt. When you accept the N default by pressing <CR>, you rearrange the pages by specifying the old page numbers in the new order desired. This is appropriate for relatively short chapters. When you change the default to You, you get to specify a range of pages and then indicate where that range goes. Rearranging by range is faster when the chapter has more than eight pages.
 - S - Second Menu
 - W - Whole disk catalog. Presents a three-column list: the first column is the chapter name, the second contains the number of pages, the third contains the total characters in the chapter. The last line is grand total of all characters on disk.
 - # - Free space on disk. Gives the number of free sectors left on the disk. Each sector contains 256 characters.
-

Part 6: Starting Menu Utilities

In Section 2, we explored some items on the Starting Menu. In Section 3, we discussed two options relevant to configuring. For your reference, here's a complete list of all Starting Menu options. To move from the Main Menu to the Starting Menu, insert the Boot side of BEX in drive 1 and press <space>.

- C - Copy disks. Copies all the contents of the disk in drive 1 to the disk in drive 2. Demonstrated in Section 2, Part 6.
- D - Disk catalog. The standard list of BEX chapters, available at all four menus
- F - File Developer (FID). BEX provides you with many ways to manipulate *chapters*, which are a particular type of file on disk. The File Developer utility lets you work with every kind of file. It's usually known by its abbreviation FID, which rhymes with *bid*. More information on FID appears in User Level Section 13.
- I - Initialize disks. Prepares a data disk to store BEX chapters. Demonstrated in Section 2, Part 5.
- K - Kill configurations. The Boot side of BEX is pretty full of files. You can have as many configurations as you have room for on disk. When the

Boot disk gets full, use option K - Kill configurations to make room for more.

- Q - Quitting BEX temporarily. You can Quit BEX and use Applesoft BASIC or issue DOS commands. Option Q - Quit is also available at the Main Menu.
- R - Recognition of cards. One of the reasons Apple computers are so flexible is that you can plug a variety of different devices into their slots. Manufacturers are always modifying and improving on the cards that go in those slots. Option R - Recognition of cards lets you tell BEX the function of a card it doesn't already know about. Section 15 of the BEX Interface Guide explains how and when you would use this option.
- S - System description for RDC. We hope you don't encounter problems as you use BEX. But if you do, we want to help you out. Some problems only happen with certain combinations of equipment. When you call our Technical Helpline for assistance, we may need to know more about your equipment. In that case, we would ask you to use this option. System description creates files on disk that can help us diagnose problems.
- U - Update date. This announces which level you're working at, the BEX version number, and when it was last changed. We need to know this information if you ever call us for technical support. Information about updates is only supplied to registered BEX owners--make sure you return your Registration Card.
- W - What is in this computer. Tells you what cards are in what slots of your Apple.
- V - View a configuration. Displays the contents of any configuration file on the BEX Boot side.
- # - Free space on disk. Gives the number of free sectors left on the disk. Each sector contains 256 characters.

12 Manipulating Data

In Section 11, we detailed all the ways you can specify source chapters and name target chapters. We also described several of the options on the Second and Page Menus. In this Section, we demonstrate how you might combine these features to accomplish a specific task.

BEX's ability to manipulate information is like a Swiss army knife: there are many, many tools available. These examples are neither exhaustive nor prescriptive. As you gain experience, you'll develop your own work patterns. For example, you'll recognize when it makes most sense to use Copy chapters and when Adjust pages or Merge chapters is more efficient. To give yourself a better "feel" for the possibilities on the Page Menu, use option F - File list on every chapter you edit.

One Disk Drive: While BEX has many features that let you reformat information, they are pretty clumsy to use with just one drive. The following discussion assumes you have two drives. You can still do these things with one drive, but all the manipulations have to fit on one disk. Only option C - Copy chapters on the Second Menu allows you to swap between two data disks with a one-drive system.

Part 1: Dealing with Textfiles

Option R - Read textfiles to chapters on the Second Menu allows you to copy information from one type of file into another. *Textfiles* are information stored on disk differently than BEX chapters. Apple software that creates textfiles which can be read by BEX include AppleWorks, ProTERM, AppleWriter, ASCII Express, and a host of others. At the User Level, we explain how BEX creates textfiles.

Textfiles have a format different than BEX chapters, and often require some internal changes before they are workable with BEX. Option R reads textfiles, which many other Apple programs can manipulate, into BEX chapters, which are unique to BEX. The EchostCricket Training Disk contains textfiles full of useful information. In this Section we demonstrate reading textfiles with the EchostCricket Training Disk in your BEX binder.

There are two ways to locate a textfile on disk. In a DOS catalog, the letter *T* in the second column of the catalog indicates a textfile. On the Second Menu, option R - Read textfiles to chapters lets you scan a disk for textfiles in the same way you scan a disk for BEX chapters. Instead of prompting `Drive number or chapter name:` BEX simply prompts `Textfile:` Enter the drive number followed by `<CR>`.

When no textfiles are present, BEX responds with

There are 0 textfiles

Textfile:

You can insert another disk and enter the drive number here, or press <CR> to get back to the Second Menu prompt.

When there are textfiles on the disk, BEX presents a numbered list. Respond by entering the textfile number as you would with a numbered list of chapters. After you specify the source textfiles, BEX prompts for target chapter names; use the same techniques as always. However, you *can't* use the S target chapter naming method. Your new chapter must have a different name than the textfile, even if it's on a different disk.

After you specify the names, BEX gets to work. The BEX chapter uses slightly more room on a disk than the textfile it's read from: it's generally a good idea to read textfiles from one disk to chapters on another disk.

Part 2: Transforming a Textfile into a BEX Chapter: An Example

If you use the Echo synthesizer, you've probably already explored the EchostCricket Training Disk. Even if you don't use the Echo, however, there's some useful information on the disk, stored as textfiles. To examine it with BEX, you must copy the textfiles to BEX chapters. To do this, you need your EchostCricket Training Disk, your BEXtras disk, and an initialized data disk.

Insert the EchostCricket Training Disk in your data drive. Use option D - Disk catalog at any BEX menu; there are two BEX chapters named MENU and LESSONS that contain what their names imply. Press <space>, and you are presented with a very full disk. There are three type *T* (for Textfile) files on the disk, but it's hard to pick them out from such a full catalog.

- ***Using Option R - Read Textfile to Chapter***

The first step is to change the textfiles into BEX chapters. Press S to get to the Second Menu, proceed as follows:

```
Second Menu
Enter Option R
Read textfile to chapter
Textfile: 2 <CR>
There are 3 textfiles:
1 HELP TEXT
2 ECHO COMMANDS
3 APPLE RESOURCES
Use entire list? N
```

When you don't want to use the whole list, you press <CR> here to accept the default answer. BEX then prompts:

```
Select textfiles by number
Textfile:
```

At this point, you can remove your BEX disk from drive 1, and insert your initialized data disk in drive 1. Enter the numbers of the textfiles you want.

When you choose only one textfile, BEX prompts: `Target chapter name :` and you must type in the target chapter name.

But here we are interested in the whole list, so when BEX asks `Use entire list? N` change the default answer to Y and press <CR>.

You must use different names for the BEX chapters you're creating. When BEX prompts: `Target chapter naming method: enter 1A-C <CR>` to add the characters -C to the end of the target chapter names.

Because you precede the naming method with 1, the target chapters are written on drive 1. It takes a few minutes for BEX to read and write all that data. When this step's completed, you receive the Second Menu prompt.

- ***Reformat the BEX Chapters with Option R - Replace characters***

Put your BEX disk in drive 1 and your data disk with the newly created chapters in drive 2. Jump back to the Main Menu, and edit one of the chapters you've just created.

You'll notice that there aren't any format indicators or format commands in the text, but there are lots of spaces and hard returns. This is true of almost all textfiles you encounter: they are usually formatted as if they had been printed to disk. You could reformat these chapters by hand, but it would be very dull and time-consuming. Anyway, one of BEX's most powerful features is option R - Replace characters on the Main Menu. Replace characters can reformat these chapters for you automatically.

Quit the Editor and press R for Replace characters:

Replace

Drive number or chapter name: 2 <CR>

There are 3 chapters:

1 HELP TEXT-C

2 ECHO COMMANDS-C

3 APPLE RESOURCES-C

Use entire list? N Y <CR>

Target chapter naming method: S <CR>

Enter transformation chapter name:

At this point, you can remove your BEX disk from drive 1 and insert your BEXtras disk.

A *transformation chapter* is a BEX chapter that has a list of changes to make. We supply several transformation chapters on the BEXtras disk. One is named `FIX TEXT` and it's designed to reformat textfiles for print-oriented BEX chapters. At the User Level, you learn how to write a transformation chapter yourself. At the Master Level, we explain how `FIX TEXT` works.

`FIX TEXT` is on the BEXtras disk in drive 1, so this is how you proceed:

Enter transformation chapter name: 1FIX TEXT <CR>

The last prompt allows you to load a transformation chapter from disk, then remove that disk and insert a data disk:

Continue? Y <CR>

Large

Print

Screen:

When BEX uses a transformation chapter from disk, you temporarily lose large print screen display at this point. As soon as Replace chapters is finished, BEX returns to large print display. The last prompt, `Continue? Y` is shown in 40-column screen, so you will have to assume its there, and respond accordingly.

Now the Apple's speaker starts making all sorts of noises. Replace characters makes a click for every replacement. One of the replacements going on is getting rid of extra spaces. There are so many extra spaces that the clicks turn into a moan.

Notice the *target chapter naming method* code of S. As we explained in Section 11, Part 3, this tells BEX to use the same name for source and target chapters, and to write chapters on drive 2. This is a good example of when you *want* your target chapters to overwrite your source chapters. The reason we're using Replace characters is because the format in the source chapters is not what you want to work with. You have no further use for this data. If you use a different target chapter naming method, you create modified copies with Replace characters. You would have to use option K - Kill chapters to get rid of the source chapters at some point. Using the naming method S is a shortcut.

Replace characters takes some time. When you no longer hear any clicks, BEX is finished replacing, and you get the Main Menu prompt.

Now edit one of the transformed chapters, and you see paragraph (\$p) indicators and \$\$c centering commands.

Writing BEX chapters into textfiles

At the User Level, we explain option W - Write chapters into a textfile. This option enables BEX to print DOS 3.3 textfiles to disk. Raised Dot Computing also distributes a ProDOS utility called the Quick Textfile Converter, or QTC. This utility copies BEX chapters into ProDOS textfiles. It has on-line documentation that's stored as a ProDOS textfile, which you can read into a BEX chapter if you want. Contact us for further details.

Part 3: Manipulating Pages

The Page Menu allows you to manipulate individual pages within a chapter. Because page numbers can easily change as you use the options available, we recommend you frequently use option F - File list to keep track of your work.

To understand File list, you need to learn a little bit about the structure of BEX chapters.

- ***How BEX Keeps Track of Pages***

Insert your BEXtras disk and choose option D - Disk catalog at any BEX menu:

Enter Option: D

Which drive? 2 <CR>

Chapters located:

BEX lists the chapters on the BEXtras disk, including the QUANDARY chapter. BEX then prompts:

Press space for DOS catalog: <space>

There are many files on the disk, including the five files that make up the QUANDARY chapter:

B 013 QUANDARY.A

B 014 QUANDARY.B

B 014 QUANDARY.C

B 010 QUANDARY.D

B 003 QUANDARY

For every BEX chapter, there is one *directory* file and additional *page* files. The file named QUANDARY above is the directory file. The directory file is a table of contents for each chapter. BEX internally generates the directory files so the software knows exactly where to find each page on the disk. You cannot create directory files; BEX generates them for you.

The files named QUANDARY.A, QUANDARY.B, QUANDARY.C, and QUANDARYDDD are the page files. The page files contain the information in each BEX page. BEX adds a two character extension to each page file as a label for the directory. The extension is period followed by a letter. This is why you can't use a period in a chapter name. BEX recognizes page files by the period and letter extensions in their names.

- ***Use File List To Keep Track of BEX Pages***

Every time you choose option F - File list on the Page Menu you get the page number, the size of the page, and the extension letter for each page file for the specified chapter.

Here's how to get a file list of the QUANDARY chapter:

Page Menu

Enter Option: F

File list

Drive number or chapter name: QUANDARY <CR>

Chapter QUANDARY

4 Pages

Page 1 Size 3064 A

Page 2 Size 3281 B

Page 3 Size 3307 C

Page 4 Size 2223 D

Total of 11875

There are three columns: page number, size, and the letter in the extension.

You can easily change the page number; the letter extension stays the same.

- ***Manipulating Pages: An Example***

Here's the task: you want to send a friend some excerpts from the QUANDARY article. You think that what's said is fine, but feel it could be better stated if the three main points were rearranged.

Make a working copy

Use option C - Copy chapters on the Second Menu to make a copy of the QUANDARY chapter. You will be typing the name of this chapter a lot, so make it easy to enter. Here we call it WC for Working Copy.

Chop the pages into logical units

Jump to the Main Menu and edit chapter WC. At this point it has four pages. From previous examination, you know it has five headings: the main title, and four sub-titles. The sub-titles are centered, so you can find them by Locating for the \$\$c format command.

On page 1, enter control-L \$\$c control-A. The first occurrence is the author's names. Enter control-L control-A again, and you arrive at the first sub-title, *Aids Can Play Three Roles*. Enter control-Z control-P to zoom back to the previous paragraph (\$p) indicator. Now enter control-C control-P to cut the page at this point. There's a slight pause while the new, shorter contents of page 1 is saved to disk. BEX announces page 2 and your cursor is at character position 0 of new page 2.

Enter control-L control-A again, and you go to the first subtitle again. Enter control-L control-A once more, and you receive a high error beep because there are no further centered sub-titles in this page. Move to the beginning of the next page (page 3) with control-P 3 <space>

Enter control-L control-A and you advance to the next sub-title, *Training*. Enter control-Z control-P to zoom back to the previous paragraph (\$p) indicator. Enter control-C control-P to cut the page again. Wait as the new page 3 is saved to disk; when BEX announces page 4 your cursor is at character position 0 of that page.

Enter control-L control-A twice to locate the next sub-title, *Expertise Needed for Prescribing Aids*. You get the high error beep, because it's not on page 4. Enter control-P 5 <space> to get to page 5.

You see \$p \$\$c as the first characters on the page. Enter control-L control-A to locate the last sub-title, *The Quandary Summarized*. Go through the control-Z control-P, control-C control-P routine one last time. Quit the Editor with control-Q and Zip to the Page Menu.

Rearranging the pages

Since you have put each of the three main points (delineated by subheadings) onto separate pages, you can use options M - Merge pages and R - Rearrange pages to manipulate them. Here's how:

Page Menu

Enter Option: F

File list

Drive number or chapter name: WC <CR>

Chapter WC

7 pages

Page 1 size 795 A

Page 2 size 2269 E
Page 3 size 908 B
Page 4 size 2373 F
Page 5 size 2316 C
Page 6 size 991 G
Page 7 size 2223 D
Total of 11875

As you created the new pages, BEX automatically renumbered them, and added the extension letters shown in the third column. The new page 1 contains just the introduction; pages 2 and 3 contain the *Aids Can Play Three Roles* discussion; page 4 contains *Training*; page 5 contains *Expertise Needed*; and the summary spans pages 6 and 7.

Merge pages into topics

To make the task of rearranging easier, use option M - Merge pages to make each topic one BEX page. Merge pages lets you merge two pages together-- the opposite of control-C control-P in the Editor:

Page Menu

Enter Option: M <CR>

Merge pages

Enter first Page: 2 <CR>

Enter second Page: 3 <CR>

BEX reads the contents of both pages into the page buffer and then writes them to disk as one page. Next, press F for File list:

Chapter WC

6 pages

Page 1 size 795 A

Page 2 size 3177 E

Page 3 size 2373 F

Page 4 size 2316 C

Page 5 size 991 G

Page 6 size 2223 D

Total of 11875

When you merge pages, the new page uses the extension letter of the old first page. Page 2 is still *E*, while *B* (old page 3) has disappeared. Use Merge pages again to merge the last 2 pages. The first time you did file list, they were pages 6 and 7, but since you've merged two pages, they are now pages 5 and

6. Their extension letters are the same however: still *G* and *D*. Enter page 5 as the first page and page 6 as the second page. Use option F - File list again with this result:

Chapter WC
5 pages
Page 1 size 795 A
Page 2 size 3177 E
Page 3 size 2373 F
Page 4 size 2316 C
Page 5 size 3214 G
Total of 11875

The last step: rearrange the pages

At this point, each page of chapter WC contains one topic: the *Introduction* is page 1; *Three Roles* is page 2; *Training* is page 3; *Expertise* is page 4; and the *Summary* is page 5. You want to present the information in this order: *Introduction, Expertise, Training, Three Roles, Summary*. Use option R - Rearrange pages. Here's what happens:

Page Menu
Enter Option: R
Rearrange pages
Move a range of pages? N <CR>
List the new order of the pages
For new page 1 use old Page: 1 <CR>
For new page 2 use old Page: 4 <CR>
For new page 3 use old Page: 3 <CR>
For new page 4 use old Page: 2 <CR>
For new page 5 use old Page: 5 <CR>

The disk drive whirs as BEX saves these changes. When you use option F - File list again, here's the result:

Chapter WC
5 pages
Page 1 size 795 A
Page 2 size 2316 C
Page 3 size 2373 F
Page 4 size 3177 E
Page 5 size 3214 G
Total of 11875

Incorporate this text into another chapter

Harking back to our original purpose, you want to include this text in a letter to your friend. You don't want to bother with the introduction, just the last four pages. This is where option G - Grab pages from another chapter comes in handy. But first, you must use option C - Change current chapter. The Page Menu always works with one chapter as the *current* chapter, and at this point, it's chapter WC. You want to clear the current chapter because you want to grab into a *new* chapter not yet on disk:

Page Menu

Enter Option: C

Change current chapter

Drive number or chapter name: <CR>

Pressing <CR> at this point clears the current chapter. You cannot specify a new current chapter because the chapter you want is not yet on disk. If you type the name of a chapter that's not on disk, BEX gives an error message.

After you have cleared the current chapter, you are free to use option G - Grab pages from another chapter:

Page Menu

Enter Option: G

Grab pages from another chapter

Grab into Drive number or chapter name: FRIEND <CR>

Want to start a new chapter? Y <CR>

Grab from Drive number or chapter name: WC <CR>

BEX now lets you specify which pages to copy from WC into FRIEND:

There are 5 pages in chapter WC

Select pages from chapter WC

From page: 2 <CR>

Through page: 5 <CR>

Now you can jump back to the Main Menu and write your letter by editing the FRIEND chapter.

13 Coping When Things Go Wrong

When you first start out using computers, it's common to feel that the computer is smarter than you. We want to help dispel that feeling. It's very hard to break a computer unless you physically damage it--sit on top of it,

pour coffee on the keys, or plug in a card when the power is on. Just about anything other mistake you make you can recover from.

When you do something that BEX isn't expecting, it tells you with an *error message*. We've tried to make the BEX error messages self-explanatory, so you know exactly what went wrong and how to fix it.

But it's also possible for you to do something that Apple's DOS 3.3 isn't expecting, and the Apple's error messages can be a little frightening. In this Section, we try to pull together answers for the basic problems you could encounter as you use BEX. User Level Section 13 discusses some less likely problems. If you can't solve the problem by reading this manual, please give us a call at 608-257-8833. We want to help you make the most of BEX.

Part 1: Cancelling Gracefully

There are several ways to cancel a BEX activity. Which method you use depends on what you're doing.

- ***Cancel an Option During the Prompts***

When BEX needs more data to continue, then you cancel the option by entering <CR> alone. For example, when BEX prompts `Drive number` or `chapter name`: it's expecting a digit or some letters. Enter just <CR>, and BEX returns you to the menu prompt. When BEX prompts `Which printer`: it's expecting a number or letters; enter <CR> alone and you cancel printing.

Some options supply defaults, so when you press <CR>, BEX has enough information to continue. As a safety feature, all options that *delete* text supply a N default; pressing <CR> automatically cancels the option. On the other hand, option D - Disk catalog prompts `Which drive?` 2 so pressing <CR> supplies BEX with enough information to continue. You get a catalog of the disk in drive 2.

When the unwanted option moves you to another menu, press the letter that returns to the previous menu. For example, if you press Z at the Main Menu by mistake, just press J to return from the Page Menu.

- ***The Escape Key***

<ESC> allows you to cancel three BEX options in progress. When you are using option R - Replace characters or option G - Grade 2 translator, you are generally creating *target* chapter copies of your original chapters. When you press <ESC> before BEX announces that's the chapters) done, BEX does not finish writing the target chapters. The partially-finished chapters take up room on the disk, but they do not appear in a BEX disk catalog. Part 7 explains how you can delete these partial chapters from disk.

When you press <ESC> during printing, your printer may not stop immediately. Many printers and printer interface cards have a *buffer* that stores text waiting to be printed. Buffers are usually very handy; BEX can send the text to be printed to the buffer, and then BEX is free to do other tasks. But when you want to cancel a printout, you have to know how to clear the text in the printer or interface card buffer--check out their manuals.

Can't cancel disk activities

Many BEX activities consist mainly of reading and writing to disk. Because BEX chapters are stored as several files, your chapters won't be complete if you cancel this sort of option in the middle. When you press D for a Disk catalog, they won't appear in the list of chapters located. In fact, this sometimes happens if your disk gets full in the middle of writing a chapter--Part 7 explains how you handle this situation.

Part 2: When BEX Crashes

Most of the time, when something goes wrong, BEX can recognize the problem. For example, when you place an uninitialized disk in the drive, BEX can't save data on it. When you have an uninitialized disk and you try to

move between pages in the Editor, BEX realizes that it can't save the current page, so it tells you what to do next. (Details in Part 5).

When BEX can't cope gracefully, it crashes. While *crash* is a dramatic word, it's not something to be afraid of. In computer jargon, crash just means that the program stops. There are some times you intentionally crash BEX by pressing Control-Reset; we discuss this further in Part 4.

- ***Symptoms of a Crash***

Other times, BEX crashes by itself. Here's how you recognize a crash: Whatever BEX was doing stops. You hear a high beep, and then you hear an Apple *error message*, a short phrase like FILE NOT FOUND or DISK FULL Next, there's another high beep and the Apple says BREAK IN LINE followed by a four-digit number. Finally, the Apple displays *the BASIC prompt*: the right bracket] on the screen. (The Echo says *ready*, because] means the Apple is ready to accept your commands.)

Whenever you are at the BASIC prompt, you return to BEX by depressing the Caps Lock key, then typing RUN <CR>

Even though the Apple says *break*, your BEX disk is *not* broken! When BEX crashes, the Apple is running a program. Whenever a program stops unexpectedly, the Apple says BREAK and then the program line number where it stopped. It's safe to ignore a message like BREAK IN LINE followed by a four-digit number.

While the BREAK IN LINE message is not particularly informative, the first Apple error message can help you pinpoint the problem. Here are some causes and solutions for common error messages:

DISK FULL

This error message mean that there is not enough room left on the disk to save a file. Get a different, *initialized* disk that has some room and try again. You can find out how much room is available on disk by pressing # at any BEX menu. When you crash with DISK FULL in the middle of creating a

chapter in the Editor, BEX swings into action to rescue your current page buffer--Part 5 explains what happens.

I/O ERROR

I/O is the abbreviation for *input/output*. (A more detailed discussion of *I/O* is presented in User Level Section 2.) This error message means that BEX is having trouble writing to disk, which can be caused by a variety of problems, some trivial and some serious. The following problems are easy to fix:

- You don't have a disk in the drive or the drive door is not closed. In that case, insert a disk, close the door, and try again.
- Your disk is not initialized for DOS 3.3. Every BEX data disk must be initialized with the correct DOS before you can write chapters on it. You get an `I/O ERROR` message when you try to save to a totally blank disk, or to a disk that's formatted for ProDOS. See Section 2, Part 5 for how to initialize disks.
- The disk is not centered in its square plastic disk housing. Try removing and inserting the disk several times--this can reseal the disk.

When you try these solutions and you still get an *I/O* error, there's something seriously wrong with your disk. You may be able to salvage the chapters on the disk by using option C - Copy disks on the Starting Menu.

With audio tapes, a copy usually degrades the quality. But a disk copy can actually improve your data. When you get an `I/O ERROR` Apple error message, immediately make a copy of the disk. Toss the disk that failed straight into the trash. Some people feel that inexpensive disks are a good way to keep the cost of computing down. An extra 75 cents is negligible when compared to the human cost of rekeying an entire disk worth of data when a cheap disk fails.

FILE NOT FOUND

As we discussed in Section 12, Part 3, each BEX chapter is composed of page files and a directory file. BEX makes sure that the directory file describes the correct order for the page files. Usually, you never worry about these issues. But when you start having problems with your data, it becomes important to understand what's going on. When you get a `FILE NOT FOUND` message, then the directory file claims a page file exists, but the page file is not on the

disk. Use option F - Fix chapters on the Second Menu to create a new directory file--details in Part 7.

Part 3: When BEX Hangs

*Hang*ing is another piece of computer jargon that sounds more serious than it really is. When a program *hangs* it doesn't do anything. You don't hear any beeps or error messages--the computer is unresponsive.

When you're in the Editor and BEX seems to hang, press <CR>. Chances are you typed control-E for an Echo command. Once you type control-E, TEXTALKER grabs control of the keyboard, waiting for you to finish the Echo command. When you press <CR>, TEXTALKER relinquishes control of the keyboard to BEX.

When BEX hangs during Replace characters, then there's something wrong with the transformation chapter you specified from disk. When you read User Level Section 8, you find out how to diagnose and solve this problem.

When you tell BEX to print, but the printer is not ready to receive text, then BEX hangs. Your printer has an *on-line* or *select* button that switches its attention between the printer control buttons and the computer. When you press the button that makes it ready to print, BEX starts printing.

When BEX is printing to the screen, it pauses for each screen full of data. BEX won't do anything more until you press <space> for the next screen.

Many printers require special software, called *drivers*. BEX large print on dot-matrix printers and the Cranmer Brailer are two common examples. When you tell BEX to print to one of these devices, it has to read the driver software from the program disk. When the program disk is not in drive 1, BEX hangs.

Part 4: When You Make BEX Crash

There are times when you choose to induce a program crash to stop BEX. While you can press <ESC> to stop printing, replacing, or translating, you can crash BEX in almost every situation.

To crash BEX, you press Control-Reset. Whatever BEX was doing stops, and you hear a high beep. You temporarily lose Echo and large print output. The screen clears, and the BASIC prompt appears at the top. You have to issue some DOS instructions, so you must depress your Caps Lock. To get back to BEX, enter four keystrokes: RUN <CR> and you're back at the menu you crashed from.

Warning! | Never press Control-Reset when the Apple is *writing to* disk. You can permanently damage your disk by doing this. It's not harmful to enter Control-Reset when the Apple is *reading from* disk.

If you want to issue DOS commands without losing the Echo or large print, don't crash. Use option Q - Quit on the Starting or Main Menus.

- ***Good Times to Crash***

You can intentionally crash BEX whenever you don't want to do something *except* when you are writing to disk. For example, you tell BEX to edit a chapter, and BEX tells you There are 4 pages Edit on page 1 and pauses. You realize you must have specified the wrong chapter, as the one you wanted to work with has five pages. You *could* press <CR> to edit page 1, then immediately enter control-Q to exit the Editor. But why wait? Enter Control-Reset, then type RUN <CR> and you're back at the Main Menu prompt.

Exit the Editor without saving the page

As you use the Editor, you are always working in the page buffer. When you edit an existing chapter, you copy the data from the page file on disk to the page buffer. When you enter control-Q or control-P 0 <space> or move to a different page, all changes you make are saved back to the page file on disk.

When you don't want to save the changes you made, crash out of the Editor by pressing Control-Reset. Because you leave the Editor without saving the current page, the original material on disk is unchanged.

Echo: BEX temporarily disables two Echo commands when you use the Editor: control-L and control-X. When you quit the Editor normally with control-Q, BEX returns control-L and control-X to their regular Echo functions. When you crash out of the Editor, control-L and control-X are still disabled. This means you can't shut up the Echo and you can't use screen review. The solution is to edit any chapter; then quit normally with control-Q. Control-L and control-X are then back to normal.

Crashing can recover material deleted in error

After you issue a delete command, the text you delete no longer appears on the screen. However, the characters may still be in the page buffer. The delete command does not actually place blank characters in the page buffer; it simply changes the pointers BEX uses to know where the real text is. An example: you have a 3000 character page, move the cursor to position 2000, then enter control-D control-A. BEX's pointers say real text is between 0 and 2000, but the characters from 2001 to 3000 have not been erased until you save that page. When you crash at this point, you can recover using RUN 999 discussed below.

However, when you delete the characters *between* position 0 and 1000, RUN 999 can't recover them. BEX's pointers always start at 0, so the old text from 1000 to 2000 has overwritten the 0 to 1000 text.

Typing Control-Reset

Depress the control key, then press and release the Reset key. Just to make things interesting, the Reset key is located in a different place for each model Apple, as follows:

- Apple IIgs: The Reset key is a long rectangle parallel and above the 5 and 6 keys; it's labelled with an incised triangle pointing left.
- Apple IIe with Numeric Keypad: The Reset key is a slightly recessed square above the top row, halfway between the Escape and digit 1 keys; it's labelled Reset.

- Pre-1987 Apple IIe: The Reset key is a lower square key with a circular depression, to the right of the Delete key level with the Top row; it's labelled Reset.
- Apple IIc: The Reset key is shaped like a parallelogram, much lower than the other keys, above the Escape key; it's labelled Reset.

Warning! Control-Reset is a safe way to stop BEX. Many other programs are not as resilient as BEX. When you enter Control-Reset with other programs, you may lose data.

Caution! Do not confuse Control-Reset with Open-Apple-Control-Reset. Control-Reset crashes BEX. Open-Apple-Control-Reset reboots the Apple.

Part 5: Recovering the Page Buffer with RUN 999

Because each BEX chapter is divided into pages, and you always work one page at a time, the worst thing that can happen if your power suddenly dies is you lose the text in one page. As you move between pages in the Editor, BEX always writes the current page to disk. If BEX can't write a page to disk for any reason, it performs a rescue routine called `RUN 999`

Things that can prevent BEX writing to disk include a disk that's full, a disk that's not initialized, or when there's no disk at all in the drive. When BEX realizes it cannot write to disk, it prompts you to insert a data disk in drive 1, and then saves the most recent page buffer in a one-page chapter named `SAVE` on the disk in drive 1. When you don't have a good data disk handy, you can use your BEX disk in a pinch--there's usually enough room for the `SAVE` chapter. Once BEX has created the `SAVE` chapter, you are at the BASIC prompt. Here's exactly what happens with `RUN 999`

- 1. When BEX can't write to disk, you hear a beep followed by `Cannot write to disk. Insert a data disk in drive 1 and press any key`
- 2. Insert an initialized disk with at least 25 free sectors into disk drive 1, then press any key. If there's not enough room on this disk, BEX simply asks you to insert another disk.

- 3. The disk drive whirs for about a minute, and then BEX tells you: The page buffer is now saved in a 1-page chapter named SAVE on drive 1
- 4. You are now at the BASIC prompt. Depress the Caps Lock key. Type RUN <CR>
- 5. You're back at the Main Menu. Release the Caps Lock. Edit the SAVE chapter. Press E and type 1SAVE <CR> at the Drive number or chapter name: prompt.
- 6. This page contains the complete page buffer, 4095 characters. There are usually strange characters lurking at the end of the page buffer--control characters, some text you may have deleted, perhaps the text of all the menu prompts. You have to find the boundary between the good stuff you want to keep, and the crazy stuff you want to get rid of. When you get to the point where strange stuff starts, all subsequent characters are guaranteed garbage. At this point, enter control-D control-A.
- 7. Quit the Editor with control-Q.
- 8. Move to the Second Menu. Insert the original disk with the problem chapter in your data drive, then press # to obtain the free sector count. You need to have at least 25 sectors free. When you do have at least 25 sectors free, proceed to step 10.
- 9. If the original disk is almost full, you must make room. When you have a backup copy of most of the chapters on the original disk, then use option K - Kill chapters to delete several duplicate chapters. When you don't have a backup copy of the original disk, get another initialized disk and copy the problem chapter to the new disk. Insert the disk with the problem chapter in your data drive.
- 10. Zip to the Page Menu. Choose option G - Grab pages from another chapter. When BEX prompts Grab into Drive number or chapter name: type the name of your problem chapter. When BEX prompts Grab from Drive number or chapter name: type 1SAVE <CR>
- 11. The salvaged page buffer is now the last page of the problem chapter. You can use option R - Rearrange pages to move it to another position in the chapter.
- 12. Move back to the Second Menu and Kill the SAVE chapter now!

Every time you or BEX uses RUN 999 any SAVE chapter already on the program disk is overwritten by the new one. Don't put off salvaging the SAVE chapter until after it's too late!

- ***Using RUN 999 by choice***

In addition to BEX automatically using RUN 999 you can choose to use it yourself. RUN 999 lets you recover the information in the most recent page buffer. As mentioned in Part 4, you press Control-Reset to exit the Editor without saving your changes. At this point, you can use RUN 999 to recover the new text that is not yet on disk. Follow these two steps whenever you use RUN 999

- 1. Get to the BASIC prompt. You can do this two ways: press Q to Quit BEX at the Main Menu, or press Control-Reset. When you Quit, you retain large print and speech output. When you press Control-Reset, you can't use large print. You also temporarily lose voice output; to restore speech, type PR#0 <CR>
- 2. At the BASIC] prompt, type RUN 999 <CR>

From this point on, follow the 12 steps outlined previously.

Part 6: Recovering Missing Text with Fix chapters

Some mistakes are impossible to correct; others you can recover from. Once you understand the basic BEX chapter structure of directory and page files, you have insight into how to cope with problem chapters.

We don't want to alarm you about the safety of your data. When you follow our suggestions for disk management, you probably won't ever run into trouble. However, we provide this information for the unfortunate few who encounter problems.

When the page and directory files for a BEX chapter don't match, you can have problems. To identify a chapter on disk, BEX must be able to find a directory file. To access all the pages in a chapter, all the page files must be referenced in the directory file. You can encounter three types of problems:

- 1. A chapter disappears from the list with option D - Disk catalog. This means the directory file is missing (or locked).
- 2. One or more BEX pages of text are not printed in your final output. The missing page files) are not referenced in the directory file.
- 3. BEX crashes with the `FILE NOT FOUND` error message during any manipulation of a chapter. This means a page file that *is* referenced in the directory is not on disk.

Option F - Fix chapters on the Second Menu reconstructs the chapter directory file. When you are encountering any of the above problems, using Fix chapters may be able to solve them. Problem 1 is the most common; this happens when you crash with the `DISK FULL` error message before BEX has finished writing a chapter to disk. BEX always saves the directory file last, so the full disk contains some number of page files, but no directory file.

When you use Fix chapters, you must have some free space on your "problem" disk. First, use option C - Copy chapters to copy all the good chapters from the problem disk to another disk. Then use option K - Kill chapters to delete the good chapters from the problem disk. Catalog the problem disk: you probably won't see any chapters located, so press `<space>` when prompted. Make a note of the chapter name as it appears in the DOS catalog.

When you get the Second Menu prompt, press F for Fix chapters. As BEX reminds you, you must type the exact chapter name. Once you do, BEX goes about reconstructing the directory file. When it's finished, BEX announces how many pages it has found for the fixed chapter. Some of these pages may contain zero characters; this is normal. (We explore exactly why this happens in User Level Section 13.) Once the chapter is fixed, you should edit it and check to make sure that your page files are in order.

As we explained in Section 11, BEX starts out lettering page files alphabetically. When you cut pages in the Editor or move pages with the Page Menu, the page numbers can change, but the letter extensions stay the same. When you cut pages in the Editor, BEX uses the next available letter of the alphabet for the new page you create.

When you first create a three-page chapter, page 1 has an `.A` extension, page 2 has an `.B` extension, and page 3 has an `.C` extension. When you have a three-page chapter and enter control-C control-P on page 2, the new page 3

gets the .D extension. After you Exchange pages 1 and 2 with the Page Menu, page 1 ends with .B and page 2 has the .A extension.

Fix chapters uses the letter at the end of the page file to determine its order. So a page file ending with .A always becomes page 1. That's why you may need to use the Page Menu to rearrange the pages after you Fix chapters.

- ***Name Change Follies***

Before you use option N - Name change for chapters, you should always catalog the disk. You never want to change a chapter to a name that's already used on that disk. If you change the name of a chapter to a name that's already taken, your chapter seems to have had a nervous breakdown. (The official term for this in computerese is *data salad*.) It's possible to recover your data using Fix chapters.

Here's an example of what you shouldn't do: you have a three-page chapter named HOMEWORK on a disk. You also have a chapter named SCHOOLWORK on the same disk. You ask BEX to change the name of chapter SCHOOLWORK to HOMEWORK. When you print the HOMEWORK chapter, the first three pages contain the information from the old HOMEWORK chapter; the last two pages contain the information from the last two pages of SCHOOLWORK.

If you find yourself in this situation, here's how you recover. Copy the confused chapter, in this case HOMEWORK, to a completely different name, like RED for instance. Now, delete HOMEWORK with option K - Kill chapters. Then, use option F - Fix chapters, and specify HOMEWORK as your target chapter. Finally, copy the fixed HOMEWORK to a totally different name, GREEN for instance. The RED chapter now has the same data as the old SCHOOLWORK; the GREEN chapter is just like the old HOMEWORK.

Part 7: Problems with Copying Disks

In Section 2, Parts 5, 6, and 7, we lectured you about using high-quality disks. We won't repeat that lecture here, but what we said there is still true. Don't be surprised if you have trouble initializing or copying on to a disk that you've notched. Don't be surprised if you have trouble initializing or copying on to a disk that cost seven cents. We can't be very sympathetic to people who place priceless data on cheap disks and then call and complain.

Many people are startled at the noise the Apple makes the first time they copy or initialize a disk. This *gronking* sound seems to be a symptom of total disaster, but it really is normal.

If you encounter problems making a working backup of your BEX Master disk, don't panic. Do *save* all the disks you have created. Call our Technical Support hotline at 608-257-8833 for advice on what to do next.

- ***Take advantage of DiversiCOPY***

Your BEX binder contains a DiversiCOPY program disk. This is a *shareware* utility that copies disks faster than anything else. Shareware means that you can try the program out for 45 days; if you like it, you send \$30 to the program's author. DiversiCOPY is fast because it uses every scrap of the Apple's memory; it is not compatible with Echo speech or large print. However, it does provide enough beeps and boops for a visually impaired person to keep track of what's going on. There's a BEX chapter on the DiversiCOPY disk that explains how to use it, and where to send the shareware payment.

When BEX refuses to initialize or copy any disk, this can be a symptom of disk drive trouble. We use our disk drives all day long here at RDC, so we take them in for preventive maintenance every six months. Disk drives are the trickiest mechanism in your computer system, and the part of your computer system that's most prone to wear and tear. When BEX balks at all disk initializing and copying, and you're sure that you have high-quality disks, try using DiversiCOPY. While DiversiCOPY copies, it displays the speed of your disk drives; if your drives are too fast or too slow, DiversiCOPY tells you. Take your *entire computer system* in for repair when you have disk drive problems, as the source of the trouble can be a

combination of problems with the drive itself and the disk controller card in the Apple.

Part 8: Start Panicking! Errors You Can't Recover

Every program has limits. Some BEX operations are irreversible. The following are also discussed in detail in their appropriate Sections. We compile them here to warn you!

- 1. Initializing a disk is irrevocable; you can't restore the data.
 - 2. Every K operation is irreversible: Kill configurations, Kill chapters, and Kill pages.
 - 3. When you use the same name for source and target chapters, then your source chapter overwrites your target chapter. Sometimes you want to overwrite your source chapter, especially with R - Replace characters. Certain options won't let you use the same names; BEX warns you with a high beep and an error message.
-