Workshop User's Guide

3.0 Release Notes

These release notes reflect changes and additions to
the Lisa Workshop Environment 3.0 release software.

The notes update the the following chapters: Chapter
2, The File Manager; Chapter 4, The Editor; Chapter
5, The Pascal Compiler; Chapter 6, The Assembler;
Chapter 7, The Linker; Chapter 8, The Debugger; and
Appendix D, Common Problems. Please look over
the notes and place them with the corresponding
chapters in your binder for easy reference.

Chapter 2
The File Manager

Overview of Changes to the File Manager

The significant changes to the File Manager involve:

- The Operating System's new hierarchical catalog structure.
- Transfer operations onto more than one micro diskette.
- Password protection.
- The new OS device names.

The Operating System uses new physical device names, but still supports the old names as device aliases. You can specify a device using either the name or the alias; the OS refers to devices by name. The table shows new names.

Device Names and Phases

Name	Alias	Device
#10#1	RS232A	Serial Port A
#10#2	RS232B	Serial Port B
#11	PARAPORT	Parallel Connector (Lisa 1)
#12	UPPER or PARAPORT	Built-in hard disk (Lisa 2)
#13	LOWER	Micro diskette drive
#15#1	ALTCONSOLE	Alternate console
#15#2	MAINCONSOLE	Main console
#x	SLOTx	Peripheral at expansion slot x
#x#y	SLOTxCHANy	Peripheral at expansion slot x, connector y
#x#y#z	SLOTxCHANyDEVz	Peripheral at expansion slot x, connector y, device z

AddCatalog Command

Files on a volume can now be arranged under catalogs and subcatalogs. The AddCatalog command lets you create new catalogs. The pathname you specify for a catalog should refer to a volume that has been initialized using the Release 3.0 software.

The *hyphen* is the catalog delimiter, so a file name referring to a file in a catalog might look like -vol-cat-file or -vol-cat1-cat2-file, and so on. A file name of the form cat-file is interpreted relative to the current prefix and thus might refer to -vol-cat-file or -vol-cat1-cat-file, depending on whether the prefix is set to a volume or to a catalog. A catalog specified by a pathname without a volume part will be created using the current main prefix.

There is no special command to put a file in a catalog. Once a catalog has been created, new files get put into it in two ways:

- If the new file's name is specified by a full pathname with volume and
  catalog parts, the file is put in the specified catalog. (A catalog must exist
  before a file can be put into it.)

- If the new file's name is a partial pathname without a volume part, and the
  current prefix is a catalog, the file is put in the prefix catalog (or a
  subcatalog, if the file's pathname includes a catalog part).

When the OS tries to find a file given a partial pathname, the file will be
found only if (1) the pathname has no catalog part and is located in the prefix
volume or catalog, or (2) the pathname has a catalog part corresponding to a
path starting with a catalog at the top level of the prefix volume or catalog.

Backup/Copy/Transfer to Multiple Micro Diskettes
(See Sections 2.3.1, 2.3.2, and 2.3.7)
The Backup, Copy and Transfer commands now allow backups, copies, and
transfers to multiple volumes. If a list of files is being copied (or backed up,
or transferred) to a micro diskette and you run out of space, you will be told
which file didn't fit and how many more blocks were needed, and you will be
asked whether you want to continue on another diskette. If you answer Yes,
you will be led through a diskette change and the operation will continue.
Note that the volume names of the subsequent diskettes need not match the
first, even if the original destination was specified with a particular volume
name (instead of a device name).

List and Names Commands (See Sections 2.3.4 and 2.3.13)
There are two new attributes for items in the List display. The D attribute
indicates a directory (a catalog object) and the * attribute indicates a
password-protected file (see Password Protection, below).

The List and Names commands now indent names to show the catalog structure
whenever you list a contiguous set of files. If you specify a wildcard character
followed by a string to match, the files shown will not necessarily be
contiguous, and will not be indented.

When a file name has to be truncated to fit into a limited field of the display
(as in the List command), the missing characters are now indicated by an
ellipsis (...).

Prefix Command (See Section 2.3.5)
Prefixes may now be set to catalogs in addition to volumes. A prefix to a
catalog or subcatalog must be specified with a complete pathname.

The effect of the current prefix on the interpretation of file names is discussed
under AddCatalog Command, above.

WARNING

Setting the main prefix (or working directory) may cause problems when
running programs that use intrinsic units (this includes all the Workshop
tools). The OS loader tries to find a program's intrinsic libraries using the
pathnames it finds in INTRINSIC.LIB; if these names are partial
pathnames, it looks on the prefix volume or catalog, *not the boot volume.*
To assure that your program's intrinsic libraries are found, you can do one
of two things:

- Copy the intrinsic libraries to the prefix catalog. This way, you can
  support several different library environments on the same volume,
  though you could end up with a proliferation of library files.

- Change the names of the libraries in INTRINSIC.LIB to pathnames of
  the form -#BOOT-libname (using the IUManager, described in Chapter
  11, Utilities), then reboot so the OS will store the new names. This
  method is better, but be careful about changing things in
  INTRINSIC.LIB.

If you unmount the main prefix volume by ejecting the diskette, Scavenging the
volume, or using the Unmount command, the boot volume becomes the prefix
volume.

Rename Command (See Section 2.3.6)
To rename a file to a name that only differs from the original in the *case* of
the letters (e.g., DEMOGRAPHICS.OBJ to DemoGraphics.Obj), you must first
Rename the file to a temporary name, then Rename that to the name you want.

Password Protection (See Section 2.3.10, FileAttributes)
Two new commands for password protection are found under the FileAttributes
command. AddPassword allows you to password-protect a file (or files, using
wildcards). RemovePassword allows you to remove a file's password, but you
must know the password to remove it.

The Workshop tools can't open a file once it is password-protected; you must
remove the password before you can use the file.

Initialize Command (See Section 2.3.11 and 2.4.1)
Volumes initialized under the new Workshop and OS have a hierarchical catalog
structure. Since this structure cannot be applied retroactively, an existing
volume must be reinitialized in order to take advantage of these features.
Commands that operate on a list of files (e.g., List) run much faster on a
reinitialized disk, because in the new structure names are already sorted.

Online Command (See Section 2.3.14)

The Online command now displays both the new OS device names and the old names, which are now device aliases. The new device names are listed in the Overview at the beginning of this section, and shown in the syntax diagrams under File Specifiers, below.
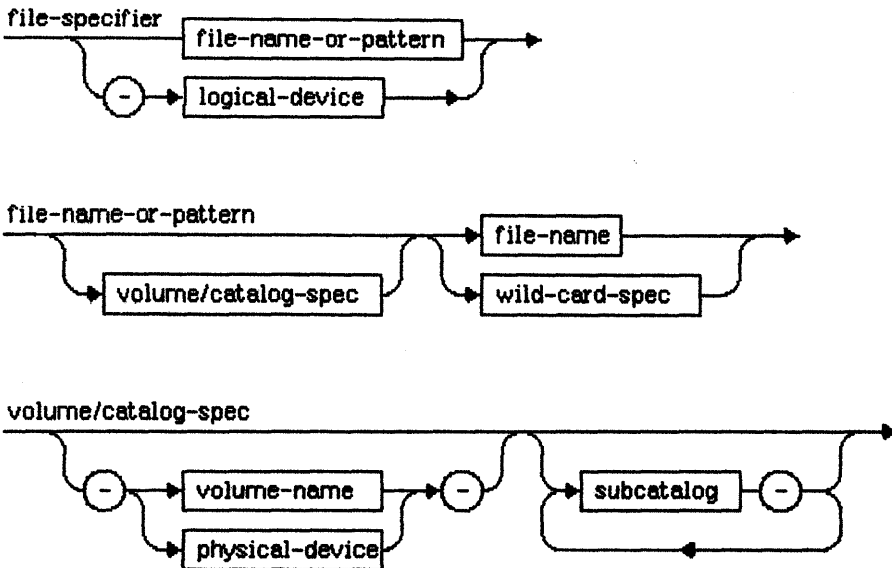
The prefix attribute P is now sometimes displayed as a lowercase p. Uppercase P indicates that the main prefix is the indicated volume, while lowercase p indicates that the prefix is a catalog on that volume.
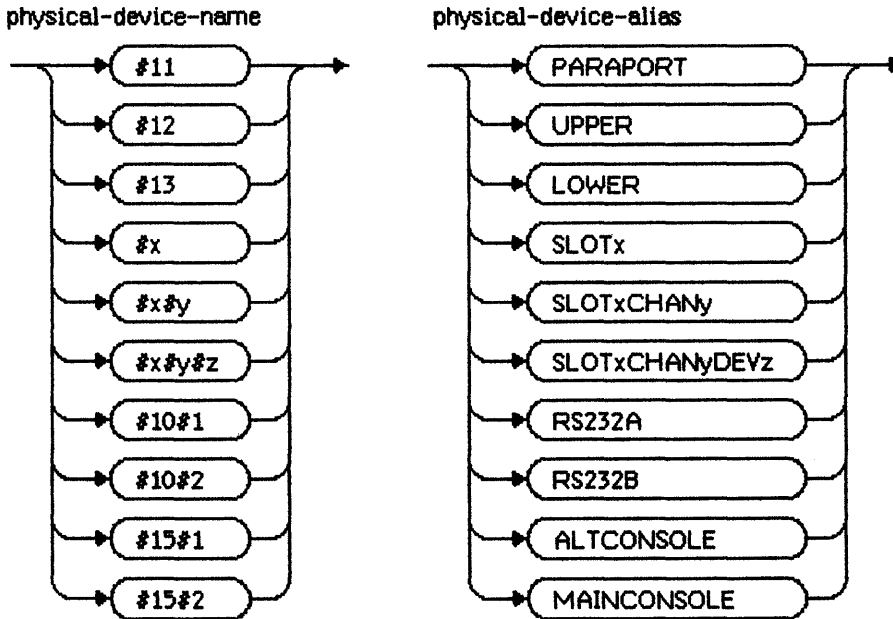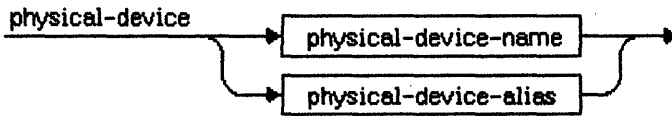

NOTE

The Online command uses the configuration information set by Preferences. If Online output says that it could not find #11 (PARAPORT) on a Lisa 2/10, use Preferences to detach the nonexistent device. If the Workshop pauses unexpectedly in the middle of Online output, it means a device is configured but not present. Make sure that Preferences' idea of how the system is configured is correct.

File Specifiers (See Section 2.4.2)

File specifiers have changed to allow for subcatalogs, new device names, and the new wild card characters. The diagrams that follow show the new format of file specifiers, replacing those on pages 2-9 and 2-10 of the manual. (The logical device names have not changed, but the diagram is repeated here for convenience.) A full pathname must not exceed 255 characters; the pieces between dashes (-) must not exceed 32 characters.

file-specifier

```
        ┌─── file-name-or-pattern ───┐
────────┤                            ├────▶
        └─(-)─▶ logical-device ──▶───┘
```

file-name-or-pattern

```
        ┌────────────────────────┐  ┌─▶ file-name ──────┐
────────┤                        ├──┤                   ├────▶
        └─▶ volume/catalog-spec ─┘  └─▶ wild-card-spec ──┘
```

volume/catalog-spec

```
────────┬──────────────────────────────┬──────────────────────▶
        └─(-)─┬─▶ volume-name ──┬─(-)─┬─┤ subcatalog ├─(-)─┐
              └─▶ physical-device┘     └───────────◀───────┘
```

physical-device

```
                    ┌─────────────────────────┐
physical-device ───►│  physical-device-name   │────►
              │     └─────────────────────────┘   ▲
              │     ┌─────────────────────────┐   │
              └────►│  physical-device-alias  │───┘
                    └─────────────────────────┘
```

physical-device-name

```
   ┌──► ( #11    ) ──┐
   │    ( #12    )   │
   │    ( #13    )   │
   │    ( #x     )   │
   │    ( #x#y   )   │
   │    ( #x#y#z )   │
   │    ( #10#1  )   │
   │    ( #10#2  )   │
   │    ( #15#1  )   │
   └──► ( #15#2  ) ──┘
```

physical-device-alias

```
   ┌──► ( PARAPORT         ) ──┐
   │    ( UPPER            )   │
   │    ( LOWER            )   │
   │    ( SLOTx            )   │
   │    ( SLOTxCHANy       )   │
   │    ( SLOTxCHANyDEVz   )   │
   │    ( RS232A           )   │
   │    ( RS232B           )   │
   │    ( ALTCONSOLE       )   │
   └──► ( MAINCONSOLE      ) ──┘
```

(The device names on the left correspond to the device aliases on the right.)

logical-device

```
 ─────────────┬──▶( CONSOLE )──┬──────▶
              │                │
              ├──▶( PRINTER )──┤
              │                │
              └──▶( KEYBOARD )─┘
```

wild-card-spec

```
 ──────┬──────────────┬──▶(=)──┬───────────────────▶
       │              │        │
       └──▶[string-1]─┤  ──▶(≠)─┤ ──▶[string-2]──┘
                      │        │
                       ──▶(?)──
                      │        │
                       ──▶(¿)──
                      │        │
                       ──▶($)──
```
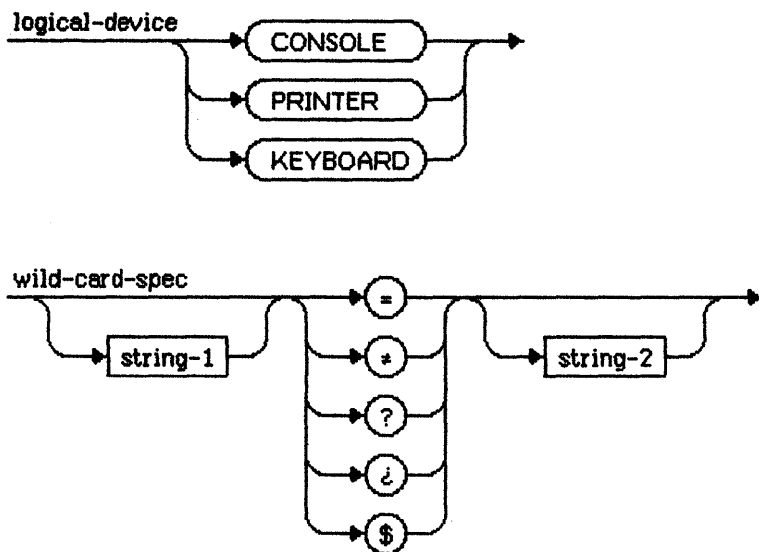
New ✱ and ¿ Wildcard Characters (See Section 2.5)

Because of the new hierarchical catalog structure, the meanings of the ▪ and ?
wildcard characters have changed, and the new analogous wildcards ✱
(OPTION ▪) and ¿ (OPTION ?) have been added. The plain ▪ and ? wildcards
mean search for a match only across the top level of the catalog, while the
option wildcards mean search through all levels. The way in which the matches
are made is the same:

  ▪ matches any string in the top level of the catalog.

  ✱ matches any string throughout all levels of the catalog.

  ? matches any string in the top level of the catalog, asking for confirmation
    of each file name before performing the operation.

  ¿ matches any string throughout all levels of the catalog, asking for
    confirmation of each file name before performing the operation.

Chapter 4
The Editor

Stationery (See Section 4.2.3)

If you want to use stationery on a volume other than your boot volume, type in the volume name after you choose Tear Off Stationery.

Note that the file name "PAPER.TEXT" is reserved for the default stationery template and should not be used for other purposes.

Editing Multiple Files (See Section 4.2.4)

If the Editor becomes sluggish when you have many documents open at the same time (or a few large documents), put some of them away, and then continue.

Using the Arrow Keys to Move the Insertion Point (See Section 4.3.1)

You can now use the arrow keys on the numeric keypad to move the insertion point. The arrow keys are the +, *, /, and , keys with the black triangle in a box on them, as shown below. Pressing an arrow key moves the insertion point one position in the direction of the arrow--either one character to the right or left, or one line up or down. If the insertion point is at the beginning of a line, the left arrow will move it to the end of the previous line; the right arrow will move it from the end of a line to the beginning of the next line.

You can also use the ú key in combination with the arrow keys to move the insertion point farther. Holding down the ú key and pressing the left or right arrow will move the insertion point to the beginning or end of the line, respectively. Holding down the ú key and pressing the up or down arrow will move the insertion point to the beginning or end of the document, scrolling the window if necessary to display it.
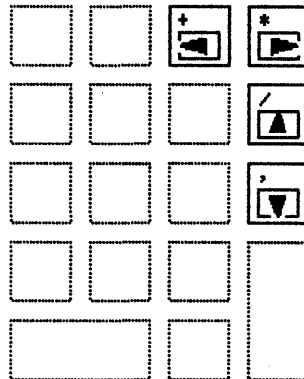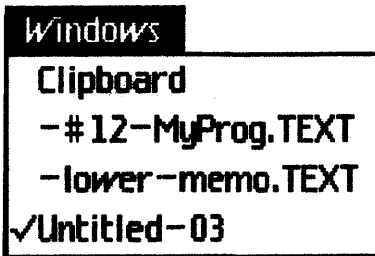
The Arrow Keys

Selecting the Last Line of a Document (See Section 4.3.3)

A triple-click will not select the last line of a document unless the line ends with a carriage return.

Windows Menu

The Windows menu lets you keep track of the windows you have open. It lists the names of all open windows, with a check mark indicating which is the active window. To make a different window active and bring it to the top, choose that window's name from the menu. An example of the windows menu is shown.

```
┌─────────────────────────┐
│ Windows                 │
├─────────────────────────┤
│ Clipboard               │
│ -#12-MyProg.TEXT        │
│ -lower-memo.TEXT        │
│ ✓Untitled-03            │
└─────────────────────────┘
```

Markers Menu

The Markers menu lets you associate a name with a specific place in a document, and easily find that place again later.

To set a marker:

1. Select the portion of text that you want marked. This can be an insertion point, or any selection of text.

2. Choose Set Marker Named ? from the Markers menu.

3. Type the name you want the marker to have. Marker names can consist of any characters, including spaces, up to 20 characters.

4. Type [RETURN].

Nothing in your document will be changed, but the marker name will appear in the Markers menu. When you choose the marker name from the menu, the window will scroll so that the point or selection of text associated with that marker is visible. You can set up to 18 markers in a document.

Whenever you have at least one marker set, there is a Delete Marker Named ? item in the Markers menu. This allows you to delete any of the markers you have set, when you don't need them anymore.
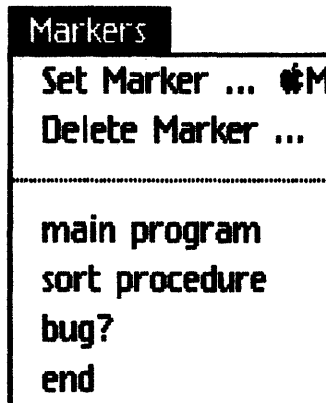
To delete a marker:

1. Choose Delete Marker Named ? from the Markers menu.

2. Type the name of the marker you want deleted.

3. Type [RETURN].

The marker name will be removed from the Markers menu.

The items in the Markers menu are associated with a particular document, so the menu will change when you move between documents, but the markers you set will stay associated with each document until you delete them (even when you leave the Editor or the Workshop). An example of the Markers menu is shown.

```
Markers
─────────────────────
Set Marker ...    M
Delete Marker ...
·····················
main program
sort procedure
bug?
end
```

File Menu (See Section 4.5)
The following commands have been added to the File menu:
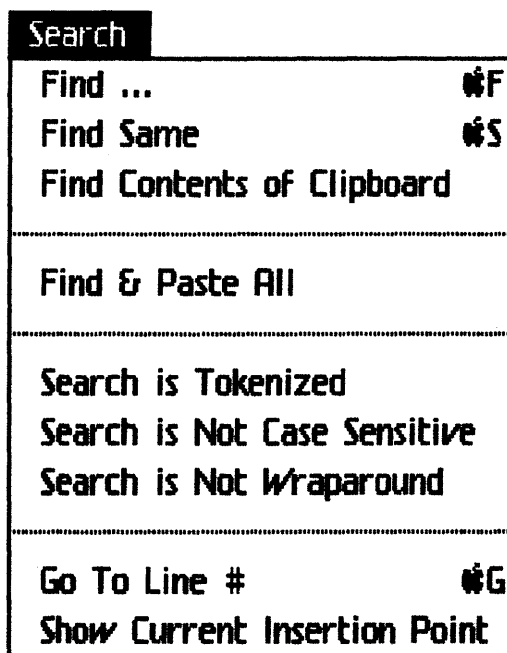
Throw Away Window
Discards the active window. If you have made any changes to the document, the Editor asks if you really want to discard the window. If you have previously saved the document, the copy on disk remains; only the contents of the window are discarded.

Eject Diskette
Ejects the micro diskette. You can also eject by holding down the key and typing E.

Search Menu (See Section 4.7)
The following changes have been made to the Search menu, as shown on the next page. Note that the options determining how the search is to be done (whether case is important, etc.) are no longer marked with a check mark. Instead, only the options currently in effect are shown; to switch between the two options in each set, choose the menu item.

```
┌─────────────────────────────────────────┐
│ Search                                   │
├─────────────────────────────────────────┤
│   Find ...                          ⌘F   │
│   Find Same                         ⌘S   │
│   Find Contents of Clipboard             │
│ ·······································  │
│   Find & Paste All                       │
│ ·······································  │
│   Search is Tokenized                    │
│   Search is Not Case Sensitive           │
│   Search is Not Wraparound               │
│ ·······································  │
│   Go To Line #                      ⌘G   │
│   Show Current Insertion Point           │
└─────────────────────────────────────────┘
```

Find Contents of Clipboard

> Search for the contents of the Clipboard. If the Clipboard contains more than one line, the Editor looks for only the first line.

Search is Tokenized/Search is Literal

> If Search is Tokenized appears in the menu, the Editor looks for the search string as a separate word. If Search is Literal appears, the Editor looks for any occurrence of the search string, even if it appears in the middle of another word. To toggle between the two options, choose the menu item. (The Search is Tokenized/Search is Literal choice replaces the Separate Identifiers and All Occurrences menu items.) The definition of a *word* here is any combination of alphanumeric characters, dollar signs, and underbars, bounded by spaces, punctuation, or other symbols.

Search is Case Sensitive/Search is Not Case Sensitive

> If Search is Case Sensitive appears in the menu, the Editor looks for the search string with the case of the letters exactly as you typed it. If Search is Not Case Sensitive appears, the Editor looks for any occurrence of the search string, regardless of case. To toggle between the two options, choose the menu item. (The Search is Case Sensitive/Search is Not Case Sensitive choice replaces the Cases Must Agree and Cases Need not Agree menu items.)

Search is Wraparound/Search is Not Wraparound
> A search is always done starting at the insertion point. If Search is Wraparound appears in the menu, the Editor searches from the insertion point to the end of the document, then starts at the beginning of the document, and searches to the insertion point. If Search is Not Wraparound appears, the Editor only searches from the insertion point to the end of the document. To toggle between the two options, choose the menu item.
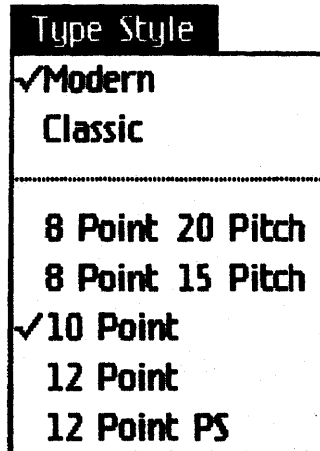
Go To Line #
> The Go To Line # command lets you scroll the window to show text starting at a particular line number in a document. The Editor asks you what line you want to go to. If you specify a line number greater than the number of lines in the document, you will get a message to that effect. The Go To Line # command can also be executed by holding down the key and typing G.

Show Current Insertion Point
> Choosing Show Current Insertion Point scrolls the window to where the insertion point is. If the insertion point is already in the window when you choose Show Current Insertion Point, the command does nothing.

Type Style Menu (See Section 4.8)
> The Type Style menu has been changed so that you can choose separately the size of the type in which a document is displayed, and whether the type style is modern or classic. The classic type fonts have serifs; the modern fonts do not. The new Type Style menu is shown below.

```
┌─────────────────────────┐
│ Type Style              │
├─────────────────────────┤
│ ✓Modern                 │
│  Classic                │
│ ·······················  │
│  8 Point 20 Pitch       │
│  8 Point 15 Pitch       │
│ ✓10 Point               │
│  12 Point               │
│  12 Point PS            │
└─────────────────────────┘
```

Print Menu (See Section 4.9)

The Plain Keywords and Differentiated Keywords items are no longer on the Print menu. Keywords are always printed as plain text.

Editor Initialization Errors

If the initialization of the Editor fails due to lack of disk space (Error 309), and space on the disk is then made free, the next attempt to start the Editor will also fail (Error 304). You must enter the ManageProcess subsystem of the System Manager, Kill the Editor process, and then try again.

Text Files

The Editor, language processors, and other Workshop utilities expect a standard .TEXT file as input. The internal structure of a text file in a block-structured device is described in the *Pascal Reference Manual:*

- Each page (two 512-byte blocks) contains some number of complete lines of text and is padded with null characters (ASCII 0) after the last line as necessary to complete the page.

- Two 512-byte header blocks are also present at the beginning of the file. These may or may not contain information.

- A sequence of leading spaces (ASCII 32 decimal, $20 hexadecimal) can be compressed into a 2-byte code namely, a DLE character (ASCII 16 decimal, $10 hexadecimal), followed by a byte containing the value 32 decimal plus the number of spaces represented.

Maximum Length of Lines

The Editor now has a maximum line length of 255 characters. You'll get an error message if you create a line of more than 255 characters, or a warning if you read in a file containing a line of more than 255 characters. (This change is unlikely to affect you, since even using the smallest type font, you can't display more than about 150 characters in a line.)

Chapter 5
The Pascal Compiler

New Compiler Commands (See Section 5.3)

Five new Compiler commands have been added: **$ASM, $E, $M, $P,** and **$U.**
$ASM controls whether or not the listing shows the assembly code generated
by your Pascal statements. **$E** lets you automatically invoke the Editor. **$M**
lets you generate Macintosh code. **$P** starts a new page in your listing. **$U**
controls the Compiler's search for a regular or intrinsic unit's interface.

For a detailed update, consult the 3.0 Release Notes for Chapter 12, The
Compiler, of the *Pascal Reference Manual for the Lisa.*

Chapter 6
The Assembler

.MAIN Assembler Directive (See Section 6.5)

The Assembler now has a .MAIN directive, which allows you to generate a main program:

.MAIN ProgName   ; begin main program

Chapter 7
The Linker

New Linker Options (See Section 7.3)

The Linker accepts the following new options:

+C moduleName segmentName

Make a copy of moduleName in segmentName. Used for performance reasons to prevent cross-segment calls and the possible need for a segment swap.

+F   Means the link is a link of system code that runs in Domain 0, and therefore cannot use MMU's 1-16. The default is -F.

+I   Include interfaces in an intrinsic library link. The default is +I. (Note: this is a change--in previous releases, interfaces were not included.)

+O   Emit OS data record for main programs. Used by the OS for initial program loading. The default is +O.

+X   Mac link--generate an object file specially designed for the Macintosh Resource Compiler. The default is -X.

+Z   Warn if codesize is too large. The default is +Z.

The -H and +S options (for setting initial disk space and stack size) no longer have any effect.

Intrinsic Units (See Section 7.5)

You can now link to intrinsic units you've created yourself; you are no longer limited to those provided by Apple. For information on writing intrinsic units, see the Release 3.0 Notes to the *Pascal Reference Manual*, Chapter 9, Units.

Chapter 8
The Debugger

Changes in Printing Commands (See Section 8.4.9.4)

The Debugger now supports both parallel and serial printers. The PR command has been extended to let you enable a printer attached to any of the parallel or serial connectors. Its new format is:

PR n m

where n and m indicate which connector your printer is on (or which printer to enable):

n = 0	Disable printer, or no printer on system.
n = 1,2, or 3	Expansion slot 1, 2, or 3, respectively.
n = 4	Serial connector A.
n = 5	Serial connector B.

If n is 1, 2, or 3, the second parameter indicates which connector the printer is on:

m = 1	Lower connector.
m = 2	Upper connector.

The PB command replaces the PU and PL commands to generate bug reports:

PB n m

where n and m are the same as above.

Appendix D
Common Problems

D.7 Installation Problems

1. The most common installation problems are caused by *not following the installation instructions*. To get the correct versions of all the software onto your disk, including booting information, you must go through the installation procedure in Chapter 1 of the manual. Other methods, such as using your old version of the File Manager to copy the files, will cause problems.

2. If you are installing the 3.0 Workshop over an older version of the Workshop, and you do not install the optional tools from diskettes 6 through 9 (see Section D.8, below), the older versions of the tools will still be on your hard disk. These do not work on the 3.0 Workshop and take up needless disk space. Consult the list of 3.0 files (in the *Pascal Reference Manual*, Appendix I, Pascal Workshop Files) and use the File Manager's Delete command to delete all files on the list that are still on your disk but were not just installed with the 3.0 Workshop. A better way to avoid this problem is to save any personal files you need onto diskettes, then reinitialize the disk, reinstall the Office System if desired, and install the 3.0 Workshop.

3. The 3.0 Workshop will not work on the same disk as pre-3.0 versions of the Office System. Use separate disks if this arrangement is required.

4. The first time you start up the Workshop, it may appear to hang. Don't worry, this is actually just a long delay--the Workshop anticipates the maximum possible number of attached devices (such as hard disks) and has to "look" the first time to see which of these devices is really attached. This can take as long as four or five minutes.

D.8 Files Not Automatically Installed

The files on diskettes 6 through 9 of the release 3.0 Workshop are optional tools, and are not automatically installed by the Installer program. (These tools are programming aids such as Find, SXRef, and Pasmat; filters such as LineCount and Translit; and specialized tools such as QuickDraw, QuickPort, and Macintosh support tools.) Use the File Manager to copy any of these tools that you wish to use frequently onto your hard disk. When you copy them, you can shorten some of the file names by eliminating the prefix. For example, to eliminate the "MAC/" prefix from all of the Macintosh files, copy -LOWER-MAC/= to =. Do *not* do this for the QD and QP object files; the sample programs depend on the names as they are.

D.9 Programs Compiled on Previous Releases of the Workshop

Programs created on an earlier release of the Workshop will not work on the 3.0 Workshop until you have relinked them using the new Linker and libraries. Unless you saved the unlinked object file, you must recompile as well. Old Workshop tools will not work on the 3.0 Workshop; use the equivalent new tool from the 3.0 release disks.

Programs developed in the 2.0 Workshop that use QuickDraw graphics need to change the list of files to link to: instead of linking to IOSPasLib and <QD/QDStuff (which contains a list of other QuickDraw files), link to IOSPasLib, QD/Support, and Sys1Lib.

Minor changes have also occurred in the interface to QuickDraw.