TERMINAPPLE

TERMINAPPLE

DOS AND PASCAL

COMMUNICATIONS SOFTWARE

for the

APPLE][
APPLE][Plus
APPLE //e
APPLE //c

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TERMINAPPLE

USER OPERATING MANUAL

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INTRODUCTION

There is no doubt about the fact that the ability to communicate using computers is becoming a very important aspect of life for the businessman and computer hobbyist alike. Indeed, computer owners are finding that communicating through their computers is a very fast, reliable and often a most economical way of communicating.

For example, your computer can access an enormous amount of diverse information from Subscriber Information Data Bases such as the Source. Such information is not only useful to the businessman (e.g share/stock prices) but is also of benefit to domestic users (e.g. airline schedules). Computer communications is also a very useful way of sending written information and is usually a viable alternative to sending letters or telex messages.

Congratulations on having chosen TERMINAPPLE as the software to convert your Apple][, Apple //e or Apple //c into a powerful communications computer. TERMINAPPLE will allow you to very easily communicate with owners of other personal computers in addition to communicating with timesharing systems.

TERMINAPPLE has been built around four basic objectives. They are that:

1. You should always see the screen even when you are selecting options, and

2. You should always receive information sent to you even when you are selecting options, and

3. You should be able to send or receive either DOS or Pascal files without the need to reboot your Apple, and

4. You should be able to use the same software on either the Apple][, Apple //e or Apple //c installed with a range of peripheral cards. (The Apple //c does not require peripheral cards).

These objectives have indeed been achieved. You will discover as you use TERMINAPPLE that your Apple is virtually never blind to incoming characters. This means that you can go into the command structure and activate commands or change options while still receiving information. This facility also allows you to select the type of file to be received or transferred, be it DOS or Pascal, without having to do anything drastic like reboot your system with new software. Of course, during all these operations you will be able to see the screen and personally monitor what is going on.

About this manual

For ease of use, this manual has been organized along the same lines as the main menu, or outer most command level of TERMINAPPLE. That is, menu item number one corresponds to Section One in the manual etc. The manual has been designed not only to show you how to use TERMINAPPLE but also as a guide to assist you in becoming familiar with the world of computer communications.

This introduction covers the various conventions used throughout this manual and how to set up your system from the hardware viewpoint so that you may be able to use TERMINAPPLE.

Section one covers the main terminal part of TERMINAPPLE and is broken down into parts A to G. Each part deals with a specific aspect of computer communications. You should be familiar with this section of the manual. In particular you should read Part A (Getting Started), and Part B (Tutorial). Part B is essential reading since later sections of the manual assume that you are familiar with the system of prompting that is covered in the tutorial.

If you are inexperienced in computer communications you should also pay particular attention to Parts E, F, and G which are designed to introduce you to the system of transmitting or receiving files. It is strongly suggested that you become thoroughly familiar with the manipulation and transmission of files since these options form the very core of sophisticated computer communications.

Section two deals with VT100 terminal emulation. TERMINAPPLE conforms to the ANSI version of VT100.

Section three deals with how to change the default commands within TERMINAPPLE to options that are ordinarily selectable from within the command structure. It is strongly recommended that you study this section as it may prove very convenient particularly if you intend to communicate with a number of systems that use different communications conventions.

Section four deals with the definition of logons. These provide a very useful and convenient way of establishing contact with host computers and accordingly you should become familiar with the creation and use of logons.

Section five deals with how to initialize disks both in the DOS 3.3 format and in the Pascal format. The section also cover more general aspects of DOS 3.3 disk and Pascal disks.

Section six deals with how to exit or quit from TERMINAPPLE. The manual ends with a range of comprehensive material in appendix form.

If you are not familiar with computer to computer communications, it is strongly suggested that you work your way through this manual in the order that the

material is presented. Don't be afraid to try things out as they are discussed. The hands on approach as you work your way through this manual is by far the best way to learn about computer communications and how to use TERMINAPPLE.

Conventions

To improve the readability of this manual the following conventions should be understood before you start to work your way through any of the material presented.

1. Whenever a phrase which includes an uppercase word(s) or letter is bound by the "less than" and "greater than" signs such as "**<RETURN>**" is encountered, it should be interpreted as "press the key marked **<RETURN>**". If you are using the Apple //e or Apple //c, the RETURN key is not labelled return. You may identify it as the long vertical key marked with a back arrow.

2. Whenever a construct such as "**<CONTROL L>**" is encountered in this manual, it should be interpreted as "press the key marked CONTROL or CTRL while this is pressed you should then press the key marked L".

3. The terms **<LEFT-ARROW>** or **<RIGHT-ARROW>** are used to represent the keys on your keyboard which are marked with the left or right arrows. On the Apple][keyboard these may be found at the extreme right of the third row of keys from the top. On the Apple //e or Apple //c, these are found on the bottom row of keys.

4. The term CATALOG is used to refer to both the DOS CATALOG and Pascal DIRECTORY.

5. Volume numbers are used to represent the disk drives. These are ordered in accordance with the following table:

Volume	Slot	Drive
4	6	1
5	6	2
9	4	1
10	4	2
11	5	1
12	5	2

6. The term **<APPLE ESC>** is used throughout this manual to represent the following key sequences. For the Apple][**<APPLE ESC>** means **<SHIFT ESC>** or press **<SHIFT>** and at the same time press **<ESC>**. If you are using an Apple][without the shift key modification, the **<APPLE ESC>** also means **<CONTROL Λ>**. For the Apple //e or Apple //c **<APPLE ESC>** means **<OPEN APPLE ESC>** or press **<OPEN APPLE>** and at the same time press **<ESC>**.

BASIC EQUIPMENT

Equipment you need

The designers of the Apple "Two" generation computers did not intend that the machine become a computer terminal but rather that it be accepted as a powerful computer within its own right. Consequently, a number of hardware features that are necessary for the Apple][or Apple //e to operate as a computer terminal were not incorporated into the original design. However, the designers included a number of expansion slots on the computer motherboard. This design feature ensured that the machine could be upgraded at minimal cost thereby assuming a wide range of future applications such as communications and terminal operation.On the other hand, the Apple //c has been designed with a number of features built in. With the exception of the modem, all the equipment is built in. Accordingly, in this context you may need to upgrade your Apple computer system to include the following equipment.

1) A modem such as a:
   - direct connect modem, or
   - the acoustic coupler type.

2) A modem interface card (RS232C asynchronous) such as the:
   - California Computer Systems Serial Card 7710A, or
   - Apple Communications Card, or
   - Apple Super Serial Card, or
   - Digicard Serial Card, etc.

3) Any of the following eighty column video card:
   - Vision-80 Eighty Column Card, or
   - Digicard Eighty Column Card, or
   - Videx 80 Column Card
   - Apple //e Eighty Column Text Card (Apple //e only).

What you need to know about this equipment

Modem

Because computer communications of this kind is achieved by using the telephone system, the first thing that you must acquire is a modem. A modem is simply an instrument that converts outgoing information from your computer from digital form (or electric impulses) into an analogue signal (or continuous sound) that is capable of transmission over the normal telephone network. Similarly, information being sent to you over the telephone network is converted

by the modem from an analogue signal into a digital stream of information that can then be deciphered by your computer. TERMINAPPLE will work with both acoustic coupler modems or direct connect modems.

Serial Interface Card

Apart from the video and cassette interfaces the Apple][does not have any other interface capability built into the motherboard. Such capabilities must be provided by way of a plug-in card into one of the expansion slots built onto the motherboard. For example, the disk drives need interface cards as do printers etc. Similarly, for the Apple to communicate with another computer an interface card is required. The interface card regulates the information stream generated by the computer into a series of electric impulses that can be transmitted at a predetermined speed to another computer via a direct link or alternatively a modem for transmission over the telephone network.

Eighty Column Card

In computer communications it has become customary for terminals to operate in eighty columns on the screen. Most timesharing computers send their information on the assumption that your terminal is able to display this many characters across the screen. For greater usability and flexibility of your Apple as a communications device TERMINAPPLE has been written to operate in eighty column mode.

Installation and setting up of the equipment in the Apple][or //e

Warning: Before you open the Apple be absolutely sure that you have turned off the power. Touching components in the Apple or plugging in interface cards while the power is applied can cause very serious damage to either the Apple or the interface cards or both.

Before you touch any inside components of your Apple (excluding power supply) or for that matter any interface cards that you intend to install be certain that you are free from any static electricity. Static electricity is the cause of many faults that manifest themselves in electrical circuits that operate at low voltages such as the Apple. The easiest way to discharge static from your person is to touch the power supply inside the Apple. The power supply is the large metallic rectangular box located on the left side of the Apple.

Located at the back of the Apple's motherboard you will notice a row of expansion slots. In the Apple][these slots are numbered 0 (zero) to 7 from left

to right. You can see these numbers written on the motherboard behind the row of slots. If you are using an Apple //e you will notice that there are only seven slots. Slot zero is not provided. However, the Apple //e does have a special larger than normal auxiliary slot on the motherboard. The necessary extra hardware will be plugged into these expansion slots.

Serial Interface Card and Modem

Before you install the Serial Interface Card you will need to set the Baud rate (if you are using the Apple Super Serial Card, this is not necessary as you may select the Baud rate from within TERMINAPPLE). The Baud rate is related to the speed at which the stream of characters being sent by the Apple, or being received by the Apple will be interpreted. However, while the serial card will be capable of sending or receiving information at very high Baud rates, the modems that are commonly available for use with normal telephone lines are not designed for high transmission rates. In any event, the telephone network over which you will transmit information is not reliable at high transmission rates. Depending on your modem, the usual Baud rate settings are either 300 or 1200. The manual supplied with your serial card will explain how to set the Baud rate.

For both the Apple][or Apple //e plug the Serial Interface Card into slot 2 following installation instructions supplied with the card.

Your modem is external to your Apple but it is important that it be connected with a properly wired cable from the serial interface card. The wiring of the cable is dependent on the type of Modem you are using. If you are not sure what cable you require see your Modem dealer. Appendix Five supplies wiring details for commonly used serial card/modem configurations.

Eighty Column Card

Apple][: Plug either the Vision-80, Digicard or Videx eighty column card into slot 3 following the installation instructions supplied with the card. In the case of Vision-80 and Digicard, ensure that you also connect the visual shift lock indicator otherwise you will not be able to use TERMINAPPLE.

Apple //e : Plug either the Vision-80 or Digicard eighty column card into slot 3 following the installation instructions supplied with the card. If you are using the Apple //e 80 column text card you will need to plug it into the auxiliary slot following the installation instructions supplied with the card. Be sure to install this card the right way around.

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Printer Card (Optional)

If you are also using a printer it is important that the printer interface card be plugged into slot 1. TERMINAPPLE will always print via slot 1. Note that TERMINAPPLE will support either serial or parallel printer interfaces, however there are many printer cards that do not conform to standard serial or parallel ports and accordingly your particular card may not work properly.

APPLE //c

The Apple //c has been designed as a closed system with serial ports, expanded Ram, 80 column display and disk drive built into the computer. Therefore, if you are using an Apple //c the only additional item of hardware you will need is a modem.

Because computer communications of this kind is achieved by using the telephone system, the first thing that you must acquire is a modem. A modem is simply an instrument that converts outgoing information from your computer from digital form (or electric impulses) into an analogue signal (or continuous sound) that is capable of transmission over the normal telephone network. Similarly, information being sent to you over the telephone network is converted by the modem from an analogue signal into a digital stream of information that can then be deciphered by your computer. TERMINAPPLE will work with both acoustic coupler modems or direct connect modems.

Your modem is external to your Apple but it is important that it be connected with a properly wired cable from the second serial port at the back of the computer. This port is in the form of a DIN socket and can easily be identified by the receiver symbol next to the socket. The wiring of the cable is dependent on the type of modem you are using. If you are not sure what type of cable you require see your modem dealer. Appendix Five supplies wiring details for commonly used modems.

Operation without a modem

Provided you are in close proximity to a computer your Apple may be set up as a terminal without the need of a modem. This can be achieved by directly wiring the serial interface card to the host computer with an RS 232 connection. TERMINAPPLE will under a direct connection of this type support transmission speeds of up to 9600 Baud.

Before you attempt this it is suggested that you seek technical help from the company that has supplied your host computer. The supplier of the host computer will be able to assist you in the type of cable connection necessary.

SECTION ONE
PART A : GETTING STARTED

Getting Started

Since this section is designed to make you familiar with the overall structure and types of prompting used throughout TERMINAPPLE it has been organized along tutorial lines and therefore is it recommended that you boot up with the TERMINAPPLE disk and work your way through the material covered.

Either TERMINAPPLE disk supplied can be used to boot your Apple and load it with TERMINAPPLE. You should therefore take particular care of these disks. One of these disks should be stored in a safe place as a backup disk. To help you protect the disks, TERMINAPPLE is designed so that you cannot load the program unless the write protect tab is installed. This is the small piece of adhesive tape that covers the square notch that is cut into the side of the disk.

There are a number of ways that you may boot or install TERMINAPPLE in your Apple. The following approaches that are discussed work with most Apples. If your machine behaves differently it is because you have a very early model Apple in which case you will undoubtedly be very comfortable with it and know exactly how to load and run programs.

For the benefit of beginners the following approaches to loading and running TERMINAPPLE are discussed.

Cold Start (i.e. machine turned off)

Step 1: Insert the TERMINAPPLE disk in Volume 4 (Slot 6, Drive 1).
Step 2: Turn the power on.
Step 3: Close the disk drive door.

Machine in Applesoft (i.e. shows] prompt)

Step 1: Insert the TERMINAPPLE disk in Volume 4 (Slot 6, Drive 1).
Step 2: Close the disk drive door.
Step 3: Type in the command PR#6 followed by <**RETURN**>.

WARNING   While TERMINAPPLE is extremely forgiving to the inexperienced user it is not suggested that you try options at random since you may get yourself in a position through lack of experience with TERMINAPPLE where you cannot easily rejoin the tutorial material. Try the various options as they are discussed. This will make very light work of the tutorial sessions.

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If you have incorrectly configured either the Serial Card to interface with your modem or Eighty Column Card the following message will appear on the screen:

```
SLOT 2 OR 3 INCORRECTLY CONFIGURED
```

If this happens, switch off the power to the Apple and carefully check the installation of these cards but first you should refer to the Introduction and Basic Equipment section at the beginning of the manual.

If you have successfully booted then the screen should have the following appearance:

```
              T E R M I N A P P L E //
                    By Paul Zabrs
             SERIAL NUMBER 85-2000-1
               K-RAM SOFTWARE (R)
                   Copyright 1985


        SELECT:     <1> TERMINAL MODE
                    <2> VT 100 EMULATION
                    <3> TERMINAL OPTIONS
                    <4> DEFINE LOGONS
                    <5> DISK INIT
                    <6> QUIT
```

Outermost Command Level

TERMINAPPLE is built around the six options displayed on the title screen. This part of TERMINAPPLE is known as the outermost command level. As can be seen above these are:

<1> TERMINAL MODE
<2> VT 100 EMULATION
<3> TERMINAL OPTIONS
<4> DEFINE LOGONS
<5> DOS DISK INIT
<6> QUIT

From this outermost command level, TERMINAL MODE may be entered directly by pressing <1>. If you enter TERMINAL MODE from this level after initially booting your Apple, TERMINAPPLE will default to options within TERMINAL MODE that are predefined within the program. This means for example that the various command lines within TERMINAPPLE will prompt you for DOS text files. This will be explained in detail in the tutorial section (Section 1 Part B) of the manual.

TERMINAPPLE is also able to emulate a VT100 terminal. This option configures your Apple to respond to special command sequences sent to it by the host computer and therefore behave as if it were a VT100 terminal. In addition to emulating VT100, TERMINAPPLE also provides you with a range of other features all available from within the software package while you are still in VT100 mode. This option is available from the outermost command level by pressing <2>. VT100 emulation is explained in detail in Section 2.

Instead of selecting TERMINAL MODE with the standard defaults, TERMINAPPLE gives you the choice of selecting a combination of options that you decide on. In fact, you may save on any one disk seven such combinations of options. TERMINAL OPTIONS is selected by pressing <3>. The method of use, saving and subsequent use of this option is explained in Section 3.

If you intend using TERMINAPPLE with a timesharing system you will undoubtedly want to take advantage of the Logon Macro facility which is provided as the third option at the outermost command level. TERMINAPPLE will allow you to store a total of 512 bytes worth of Logon Macros. The actual number being determined by the length of each macro. Logon macros is selected by pressing <4>The method of use, saving and subsequent use of this option is explained in Section 4.

Option six provides the means of leaving TERMINAPPLE and entering another program of your choice. This is achieved by pressing <6>. Try it out now. After you press <6> the top left hand corner of the screen will show the following message:

```
PRESS <RETURN> TO REBOOT
```

At this stage simply place the disk from which you wish to re-boot your system in Volume 4 (Slot 6, Drive 1). For the purposes of this tutorial session place the TERMINAPPLE disk back in Volume 4 and then press <**RETURN**>. TERMINAPPLE will now be booted again.

You should be aware that if you intend to boot into a program that starts in forty columns you will need to reset (ie press <**CTRL RESET**>) when the message "PRESS <RETURN> TO REBOOT" appears on the screen. This is necessary so that you switch to the forty column screen before you press <**RETURN**>.

Now that TERMINAPPLE has been rebooted, we will initialize a disk for use in the next tutorial session. To do this press <**5**>. The following message will appear on the screen.

```
BE CAREFUL, THIS ROUTINE ERASES DISKS
INSERT NEW DISK IN BOOT DRIVE AND PRESS <RETURN>, <ESC> ABORTS
```

At this stage you should remove the TERMINAPPLE disk from Volume 4 or the boot drive and insert the disk to be initialized. As the screen message warns, be careful since initializing disks completely erases them. (See Section 5 for care and formatting of disks). At this stage press <**RETURN**>. The following message will appear on the screen.

```
PRESS * TO START, <ESC> ABORTS
```

To commence the initialization sequence press < * >. Over the next 30 seconds, the disk in Volume 4 will be initialized. While the disk is being initialized the following message will appear on the screen.

```
INITIALIZING
```

At the end of the initializing sequence, TERMINAPPLE will return to the Outer Most Command level.

To proceed with the tutorial, we will enter TERMINAL MODE. To do this simply press <1>. Once you have done this, TERMINAPPLE has been transformed into a powerful communications terminal. If you feel confident you can now try communicating with a timesharing systems or owners of other microcomputers like yourself. However it is suggested that you proceed to the next tutorial session.

SECTION ONE
PART B : TERMINAL MODE TUTORIAL

Prompt status line

Once TERMINAPPLE has loaded into the Apple and you have selected TERMINAL MODE by pressing <1> from the outermost command level, the tile page will be replaced by the PROMPT STATUS LINE. TERMINAPPLE is now ready to perform as a powerful communications terminal. Whenever the PROMPT STATUS LINE appears on the top of the screen TERMINAPPLE is in TERMINAL MODE. TERMINAL MODE means that whatever you type in from the keyboard will be sent to the computer that you are communicating with.

The top line on the screen or PROMPT STATUS LINE is used to indicate the status of important terminal commands. Commands that are active (or turned on) are shown in inverse while commands that are turned off are shown in normal text. For example, HALF should appear in inverse in the PROMPT STATUS LINE indicating that TERMINAPPLE is presently set for half duplex mode, but more about duplex later. The PROMPT STATUS LINE will appear as follows:

```
TERMINAL: HALF DEBG AC DERR PRNTR. MEM 8 + 1   M = 28000  I = 00000  O = 00000  T = 00000
```

The PROMPT STATUS LINE will always indicate to you the status of the following commands:

HALF   : This indicator shows whether TERMINAPPLE is in Full duplex or Half duplex. TERMINAPPLE defaults to Half duplex on loading.

DEBG   : This indicator shows the status of the Debug command. TERMINAPPLE defaults to Debug off.

AC   : This indicator shows whether All Characters will be received and processed by TERMINAPPLE or whether most control characters will be filtered out. TERMINAPPLE defaults to All Characters on.

DERR   : This indicator shows whether the Detect Errors checking facility is turned on. TERMINAPPLE defaults to no error detection.

PRNTR : This indicator shows whether the Printer is turned on or off to TERMINAPPLE. TERMINAPPLE defaults to Printer off.

MEM   :   This indicator shows whether TERMINAPPLE's Memory is turned on or turned off. TERMINAPPLE defaults to Memory on.

8 + 1   :   This indicator shows the current data or Character Format that TERMINAPPLE will operate under. TERMINAPPLE defaults to the Character Format 8 plus one or, 8 bits with one stop bit. (More about this later).

M =   :   This counter shows the memory that is available to record incoming characters. The maximum memory available is 28,000 characters.

I =   :   This counter shows the total number of characters that have been received by TERMINAPPLE.

O =   :   This counter shows the total number of characters that have been transferred or typed at the keyboard.

T =   :   This counter shows the total number of characters received and transferred or typed at the keyboard. It is the sum of counters I and O.

If you are worried as to what these conditions mean or how they should be used then don't worry, at least not yet. Remember, in this section you should become familiar with how TERMINAPPLE looks and the methods used for prompting and the selection of prompts. The terms mentioned above plus many more will be discussed in detail in the next section.

<ESC> key

The <**ESC**> key is one of the most important keys in TERMINAPPLE. It fulfills two important functions:

1.   When its use is prompted it is used to recover from error conditions.

2.   If <**ESC**> is not prompted you may use it anyway. Under these circumstances it is used to backtrack along the command structure.

In TERMINAL MODE the <**ESC**> key can be used as any other key. The ESC will be sent but it will not appear on the screen unless TERMINAPPLE is in DEBG (debug) mode.

<SHIFT> key

The <**SHIFT**> key is used to select uppercase and lower case characters. The exact operation of this key will depend on which eighty column card you are

using. This particularly applies to the shape of the screen cursor which in some of the eighty column cards is used to indicate the case that you happen to be in. Note that some Videx cards do not have a shift key modifications to select between upper and lower case. This is achieved by pressing <**CTRL A**>. You should check your Videx manual to ensure you are aware of the shift key operation and case selection.

Special control functions

While in TERMINAL MODE under half duplex, these control keys can be used for the following effect:

Control	Effect
G	Sound the bell
H	Back space one character at a time
J	Line feed and maintain horizontal cursor position
K	Move cursor up and maintain it's horizontal position
L	Clear the screen
M	Carriage return
Y	Home the cursor without clearing the screen

To select any of these special control functions you will need to hold the "control" key down and at the same time press the character nominated. Try pressing <**CONTROL G**>. The speaker in the Apple will emit a high frequency tone.

Pressing the wrong key

If you accidentally press a key that is not prompted to you TERMINAPPLE will simply beep in protest with no harm done.

Entering COMMAND MODE using the Apple //e or Apple //c

If you are using an Apple //e or Apple //c, COMMAND MODE is entered by pressing <**APPLE ESC**>. This means that you need to press <**OPEN APPLE**> and while the <**OPEN APPLE**> key is still depressed, press the <**ESC**> key. The

<**OPEN APPLE**> key is the key marked with an outline of an apple. This key is found on the bottom row and to the immediate left of the <**SPACE BAR**>. For convenience the <**OPEN APPLE**> key is referred to as the <**APPLE**> key.

Entering COMMAND MODE using the Apple][

If you are using an Apple][, COMMAND MODE is entered by pressing <**SHIFT ESC**>. This means that you need to press <**SHIFT**> and while the shift key is still depressed, press the <**ESC**> key. If your Apple][is not fitted with a shift key modification you may still enter COMMAND MODE by pressing <**CTRL Λ**>. For ease of presentation, the term <**APPLE ESC**> is used throughout this manual. Therefore, if you are using an Apple][, substitute <**SHIFT ESC**> for <**APPLE ESC**> or alternatively <**CTRL Λ**> for <**APPLE ESC**>.

When you press these keys, the Apple will generate a high pitch tone. This combination of keys is important since it is always used to enter COMMAND MODE.

Because TERMINAPPLE is based on the principle that you should always see the terminal screen when you are in TERMINAL MODE and therefore communicating, only one screen line has been devoted to prompting. This has been chosen as the top line of the screen. Consequently, the outer most level of the COMMAND MODE is broken into two parts. These are referred to as COMMAND MODE A and COMMAND MODE B.

<**APPLE ESC**> will always enter COMMAND MODE A. From COMMAND MODE A you are able to access COMMAND MODE B and all other command and prompt lines. Try entering COMMAND MODE by pressing <**APPLE ESC**>. If you have been successful in entering COMMAND MODE A the prompt line should now look like this:

```
Break  Half  Debug  Allch  Lfeed  Printer  View  Memory  Clrmem Q ?
```

COMMAND MODE B is selected from COMMAND MODE A by pressing <**?**>. This command is indicated to you at the end of the COMMAND MODE A prompt line. This command therefore provides the means for toggling or flipping between COMMAND MODE A and COMMAND MODE B. Try it and see for yourself. For convenience, it is not necessary to press the <**SHIFT**> key to flip between COMMAND MODE A and COMMAND MODE B. The prompt line in COMMAND MODE B should look like:

Prmtln	Inv	Dterr	Echo	Chrform	Transfer	Receive	Logon	Svmem ?

I am sure that by now you are wondering what the commands in the prompt line are all about and where they are used. Remember that this tutorial session is designed so that you can explore and learn how to activate commands within TERMINAPPLE. All the commands will be discussed in detail in the next two sections.

While either COMMAND MODE A or COMMAND MODE B are prompted on the screen, any of the prompted commands may be selected.

Selection or de-selection of commands is achieved by pressing the first letter of each command as it appears in the prompt line. For example, while you are in COMMAND MODE A, select or turn on the "Debug" command by pressing <**D**>. You will have noticed that as you pressed <**D**> the "Debug" command changed from appearing in normal text to appearing in inverse.

When a command is turned off it will always appear in normal text. When a command is turned on it will always appear in inverse. The only variation to this is the "Clrmem" (clear memory) command that will flash in warning after <**C**> has been pressed.

To de-select or turn off the "Debug" command, press <**D**>.

Most of the commands in COMMAND MODE A or in COMMAND MODE B are used in this simple flip/flop way. Some commands perform specific tasks immediately they are selected. For example, if you select the "Break" command then this command stays selected for only a very short period of time. Lets try this out. To select "Break" press <**B**> while in COMMAND MODE A. While the "Break" command is selected your Apple will also generate a low pitched tone.

Nested commands

A few commands used in COMMAND MODE B have nested beneath them a series of prompt lines that allow for the more complex tasks of, for example, transferring a file to another computer.

You may have already discovered some of these NESTED COMMANDS while pressing valid command keys in COMMAND MODE B. Such a selection will display a new prompt line which simply presents a range of alternative options under a specific command. These commands are referred to as NESTED COMMANDS.

Highlight cursor

Unlike the flip/flop system of selecting commands in COMMAND MODE A or COMMAND MODE B, selection of NESTED COMMANDS revolves around the HIGHLIGHT CURSOR which is manipulated by the following keys:

```
The <LEFT-ARROW> key
The <RIGHT-ARROW> key
The <RETURN>
```

The HIGHLIGHT CURSOR is simply a way of displaying in the prompt line which option of the displayed alternatives currently forms part of the NESTED COMMAND. The position of the HIGHLIGHT CURSOR is shown by displaying the selected option in inverse.

For illustrative purposes, the "Transfer" or transfer command (accessible from COMMAND MODE B) is used in the remainder of this section. In case you have forgotten where to find the "Transfer" command, enter COMMAND MODE A from TERMINAL MODE by pressing <**APPLE ESC**>, then enter COMMAND MODE B by pressing </>. Now you may select the "Transfer" command by pressing <**T**>.

The first command level in the NESTED COMMAND SET will now be displayed as the prompt line with the option DOS(TXT) highlighted. This will look as follows:

```
TRANSFER:  MEM  PAS(TXT)  PAS(ANY)  DOS(TXT)  DOS(ANY)  BLOCKS  <-,->,Ret
```

Unprompted <ESC>

If you happen to press a wrong key and a new prompt line appears, simply press the <**ESC**> key to backtrack. The <**ESC**> key will usually backtrack to the start of the NESTED COMMAND set that you are working with. Therefore, if you have selected the file transfer NESTED COMMAND set and you have progressed beyond the above prompt line, the <**ESC**> key will generally return you to that prompt line. There are a few special exceptions that will be discussed later on in this tutorial session.

Manipulating the highlight cursor

The prompt line will often show at its extreme right the following collection of characters.

<center><-,->,**Ret**</center>

These characters advise you of the keys that are used to manipulate the HIGHLIGHT CURSOR or to advance to the next prompt line in that set of NESTED COMMANDS. Of course, the <**ESC**> key can always be used but it is not prompted.

<LEFT ARROW> key

The <**LEFT-ARROW**> key is used to scroll or move the HIGHLIGHT CURSOR to the left. Press the <**LEFT-ARROW**> and see for yourself.

<RIGHT ARROW> key

The <**RIGHT-ARROW**> key is used to scroll or move the HIGHLIGHT CURSOR to the right. Press the <**RIGHT-ARROW**> and see for yourself. Both these keys wrap around at the end of the prompt line.

<RETURN> key

If you press <**RETURN**> a new prompt line will appear. The option that was highlighted in the previous prompt line remains selected and will usually appear in either a full or abbreviated literal as part of the new prompt line.

To continue with the tutorial session, use either the <**RIGHT ARROW**> or <**LEFT ARROW**> keys to position the HIGHLIGHT CURSOR on the MEM option. Using this option you will be able to load TERMINAPPLE's memory with a text file. Once you have positioned the HIGHLIGHT CURSOR on the MEM option, press <**RETURN**>. The following prompt line should now appear.

TRANSFER MEM: LOAD MEMORY ? YES NO	<-,->,Ret

Using this prompt line TERMINAPPLE allows you to load memory, or to transfer the existing contents of memory. For the purpose of this tutorial exercise, load memory with a file. This is achieved by positioning the HIGHLIGHT CURSOR on

the YES options by way of the **<RIGHT ARROW>** or **<LEFT ARROW>** keys as has been described above. Press **<RETURN>** and TERMINAPPLE will prompt you with the following new prompt line.

```
TRANSFER   MEM:   PASCAL   DOS                                <-,->,Ret
```

This prompt line seeks to define the type of file that you wish to load into memory. TERMINAPPLE will handle either Pascal or DOS files. To simplify this tutorial session, a sample DOS text file has been provided on the TERMINAPPLE disk. This file has been called "SAMPLE TEXT FILE". Since this file is a DOS text file and the highlight cursor is already on the DOS alternative you will not need to move the HIGHLIGHT CURSOR. All you need do to progress to the next prompt line is to press **<RETURN>**. TERMINAPPLE will display a new prompt line that will look like this.

```
TRANSFER   MEM   DOS:   REPLACE   APPEND                      <-,->,Ret
```

Since the NESTED COMMAND structure has been designed to build up a command from a number of options, you will find that the individual prompt lines will leave behind an indication of past selections. This will help you remember past selections as you build up a command. The prompt line that appears on your screen at this stage will indicate to you that you intend to TRANSFER the contents of MEMORY which will be a DOS file.

Memory can at this stage be cleared of any existing information or alternatively you may wish to add or append additional information to it from disk. In this tutorial session we will replace the existing contents of memory. This is achieved by selecting the REPLACE option with the HIGHLIGHT CURSOR. After you have selected REPLACE and have pressed **<RETURN>** a new prompt will appear as follows.

```
TRANSFER   MEM   DOS  : VOLUME 4,5,9,10,11,12                 <-,->,Ret
```

TERMINAPPLE gives you a choice from which volume you wish to load memory. This prompt line is used extensively throughout TERMINAPPLE. In case you have

forgotten about volume numbers, you are reminded that the volume number is used to represent the slot and drive combination of a disk drive. These combinations are as follows:

Volume	Slot	Drive
4	6	1
5	6	2
9	4	1
10	4	2
11	5	1
12	5	2

Once again, the HIGHLIGHT CURSOR is used to select the volume number. In this tutorial session we will use Volume 4. This should be your boot drive. Having selected Volume 4 press <**RETURN**>. TERMINAPPLE will display a prompt line that will ask for a file name. The prompt line will appear as:

```
TRANSFER   MEM   DOS   VOL   4   FILE:                              -> catalog
```

As with the previous prompt line, this prompt line is also used extensively throughout TERMINAPPLE. This prompt line is used to nominate the file which you wish to load. However, before you read on, or for that matter press any keys, you should insert into Volume 4 the disk from which you will load the text file. At this stage you should check that the TERMINAPPLE disk is in Volume 4 since the file "SAMPLE TEXT FILE" is on it.

There are two ways that you can select a file name:

1. You may simply type in a file name followed by pressing <**RETURN**>. (If you intend trying a Pascal disk remember to append .TEXT to the file name).

2. You may use the <**RIGHT-ARROW**> to step through the disk's catalog. This will cause the file name of the first text file on the disk to appear in inverse in the prompt line. (If you are using a Pascal disk you will notice that the disk's name will appear before the file name in the prompt line). When the desired file name appears in the prompt line, press <**RETURN**>. Of course if no text files exist on the disk then no file name will be displayed. Since you cannot

step backwards through the catalog the <**ESC**> key is used to reset back to the start of the catalog. Therefore, if you have scrolled past the desired file name with the right arrow simply press <**ESC**>. You may now recommence stepping through the catalog.

Either type in the name "SAMPLE TEXT FILE" or use the automatic catalog stepping feature as described above to nominate the file to be loaded. Once the name appears in the prompt line press <**RETURN**>. The disk drive (volume 4) will start to spin and the file will be loaded. On completion of loading TERMINAPPLE will display a new prompt line that will appear as follows.

```
PROTOCOL: NONE   EOB-ACK   STP-STRT   BOTH   ECHOCHECK   WDCHR   <-,->,Ret
```

At this stage, two options are opened to you. If you only intended to load memory then simply press <**ESC**>. TERMINAPPLE will return to the beginning of the transfer NESTED COMMANDS. From this point you could return to COMMAND MODE B by pressing <**ESC**> or TERMINAL MODE by pressing <**ESC**> twice. However, if you intended to transfer the contents of memory to another computer you would need to select a PROTOCOL. In this tutorial session we will follow the path that allows the file to be transferred.

The purpose of the PROTOCOL is to allow the two communicating computers to have an understanding between each other as to when information is to be transmitted. This is explained in detail in Section Seven of this manual. In this tutorial session we will assume that no protocol is necessary. Since the HIGHLIGHT CURSOR is on the NONE option all you need do to advance to the next prompt line is to press <**RETURN**>. At this point an additional protocol prompt line will appear as follows.

```
CHARS: DLY = (O) EOB = (M) ACK = (Q) STP = (S) STRT = (Q) EOF = (C) Cont <-,->,Ret
```

This prompt line allows you to define the protocol controlling characters that are necessary to allow the two computers to have an understanding between each other as to when information is to be transmitted. Once again, this is covered is detail in Section One, Part E and accordingly, the theory of protocols is not dealt with in this tutorial session. Since the HIGHLIGHT CURSOR is positioned on the Cont (Continue) option simply press <**RETURN**>.

At this point a final prompt line is presented before the file is transmitted. The prompt line will look like this:

```
TRANSFER MEM NONE                              <ESC> aborts,   <RET> starts
```

This prompt line provides verification that "MEM" or memory will be transferred with the "NONE" protocol. In the event that you have made an error getting to this point, you may abort by pressing <**ESC**>. This is prompted to you. Since you should have successfully completed all the steps necessary to get to this point of the tutorial all you need do to transfer the contents of memory is press <**RETURN**>. This is prompted to you at the end of the prompt line.

Once you have pressed <**RETURN**> the end of the prompt line will be replaced with the message "SENDING ..., <ESC> aborts". The prompt line will look like this:

```
TRANSFER MEM NONE                              SENDING ..., <ESC> aborts
```

At this point the contents of memory is being transmitted. This is evidenced by the file "SAMPLE TEXT FILE" which you loaded into memory appearing on the screen as it is being transmitted. You are probably wondering where the file is going. Well, the answer is that it is going out via the modem to nowhere. Of course had another computer been connected via the modem then that computer would receive the file. At the end of transmission TERMINAPPLE will automatically return you to TERMINAL MODE.

To continue this tutorial session we will save (as a DOS text file) the file "SAMPLE TEXT FILE" that you have just loaded in memory and sent nowhere. The file should be saved on a DOS disk of your choice (excluding the TERMINAPPLE disk).

Pascal users: If you intend to also communicate using Pascal files you may continue this tutorial session saving the file as a Pascal text file. All you need do is substitute the word Pascal wherever DOS appears. If you try this out, please remember to use a disk that has been formatted to hold Pascal files.

Since you are now in TERMINAL MODE you will need to enter COMMAND MODE A by pressing <**APPLE ESC**> and then COMMAND MODE B by pressing </>. The "Svmem" command can now be selected by pressing <**S**>. At this stage

TERMINAPPLE will display the first prompt line in the "Svmem" NESTED
COMMANDS. This will look like this.

```
┌─────────────────────────────────────────────────────────────────┐
│  SAVE MEMORY:      PASCAL   DOS                      <-,->,Ret    │
└─────────────────────────────────────────────────────────────────┘
```

Because the last type of file you used was a DOS file the HIGHLIGHT CURSOR
will be on the word DOS. Therefore you will not need to change this. (If you are
saving the file as a Pascal file simply select PASCAL with the HIGHLIGHT CURSOR
and then press <**RETURN**>). The following prompt line should now be displayed.

```
┌─────────────────────────────────────────────────────────────────┐
│  SAVE   MEMORY   DOS   VOLUME:    4,5,9,10,11,12      <-,->,Ret   │
└─────────────────────────────────────────────────────────────────┘
```

Because the DOS file type has been selected on the previous prompt line the word
DOS forms part of the new prompt line. As before, the volume on to which the
contents of memory are to be saved must be nominated. For this tutorial session
we will leave the volume number as Volume 4. Press <**RETURN**> to continue.
TERMINAPPLE will prompt you with the following prompt line.

```
┌─────────────────────────────────────────────────────────────────┐
│  SAVE MEMORY   DOS   VOL 4 FILE:                        -> catalog │
└─────────────────────────────────────────────────────────────────┘
```

From this point onwards in this tutorial session you should remove the
TERMINAPPLE disk that is most probably still in Volume 4 and replace with a disk
that has been initialized to accept DOS files. If you intend saving the file as a
Pascal file you will need to insert a disk that is formatted to accept Pascal files.
[You should have initialized (formatted) some disks for use under DOS (Pascal)
when reading through Section One, Part A].

As before, you must nominate under which name the contents of memory are
to be saved by either typing in the name directly or using the <**RIGHT-ARROW**>
key to step through the catalog. This time type in a file name such as TEST. If
you happen to accidentally press a wrong key and you wish to correct the file
name you can backspace using the <**LEFT-ARROW**> key. Try typing in a
wrong name and then deleting the characters in the name by using the <**LEFT-**

ARROW> key. If you are saving memory as a Pascal file make sure that you finish the file name with .TEXT.

Once you have typed in the file name press **<RETURN>**. Depending on your choice, TERMINAPPLE will now start to save the contents of memory as a DOS text file or as a Pascal text file. If you accidentally type in an existing file name, TERMINAPPLE will ask you whether you wish to delete that file. If you answer NO, TERMINAPPLE will back track and ask again whether you wish to save a Pascal or DOS file. If you answer YES, TERMINAPPLE will replace the file on disk.

Once the file has been saved TERMINAPPLE will return you to TERMINAL MODE. The screen will still display the contents of the file SAMPLE TEXT FILE that was originally loaded into memory.

Check the contents of the four counters in the PROMPT STATUS LINE. The memory counter will be showing something less than 27,103 characters still available in memory. The second counter should still be showing 000000 since no characters would have been received by TERMINAPPLE during this tutorial. The third counter will show something greater than 898 characters depending on how many characters you have typed in from the keyboard plus the number of characters in the file SAMPLE TEXT FILE. Since no characters have been received by TERMINAPPLE, the fourth counter or total character count will be the same as the third counter.

To complete this tutorial session we will try a few of the commands accessible from COMMAND MODE A and COMMAND MODE B.

Start by entering COMMAND MODE A by pressing **<APPLE ESC>**. The prompt line should appear as follows:

Break	Half	Debug	Allch	Lfeed	Printer	View	Memory	Clrmem	Q	?

The first command that we will try is the View command. To select the View command press **<V>**. As soon as you press **<V>**, the contents of TERMINAPPLE's memory will be scrolled on the screen. At the conclusion of scrolling TERMINAPPLE will automatically return you to TERMINAL MODE.

Re-enter COMMAND MODE A by pressing **<APPLE ESC>**. This time turn on the Debug command by pressing **<D>**. The Debug command should now appear in inverse indicating that it is turned on. The control characters that are part of the text file SAMPLE TEXT FILE that is still in TERMINAPPLE's memory will now be visible to you in inverse. For example, each **<RETURN>** that is in the file SAMPLE TEXT FILE will be displayed as **<CONTROL M>**. Using the View

command you can take a look at the file SAMPLE TEXT FILE with the Del try is the View command. To select the View command press <**V**>. As soon as you press <**V**>, the contents of TERMINAPPLE's memory will now be scrolled on the screen.At the conclusion of scrolling TERMINAPPLE will automatically return you to TERMINAL MODE.

Re-enter COMMAND MODE A by pressing <**APPLE ESC**>. This time turn on the Debug command by pressing <**D**>. The Debug command should now appear in inverse indicating that it is turned on. The control characters that are part of the text file SAMPLE TEXT FILE that is still in TERMINAPPLE's memory will now be visible to you in inverse. For example, each <**RETURN**> that is in the file SAMPLE TEXT FILE will be displayed as <**CONTROL M**>. Using the View command you can take a look at the file SAMPLE TEXT FILE with the Debug command turned on. Since you should have already turned on Debug all you need do is press <**V**> to take a "debugged" view of memory. TERMINAPPLE will now scroll the contents of memory on the screen. The file SAMPLE TEXT FILE will scroll on the screen showing all control characters that are normally used to format the text. At the end of the View command TERMINAPPLE will automatically return you to TERMINAL MODE.

Go back into COMMAND MODE A by pressing <**APPLE ESC**> and turn Debug off. Remember that Debug is turned off by pressing <**D**>. The Debug command in the prompt line should revert back to normal text. Now View the contents of memory again. Because you are still in COMMAND MODE A and the View command is prompted simply press <**V**>. The contents of memory is reformatted into normal looking text and will appear in exactly the same format as when it was originally loaded from disk. As before TERMINAPPLE always returns you to TERMINAL MODE after using the View command.

Now that you are back in TERMINAL MODE clear the screen by pressing <**CONTROL L**>. Since <**CONTROL L**> only clears the screen the information has not been lost from TERMINAPPLE's memory. To confirm this, lets View the contents of memory. To do this you must re-enter COMMAND MODE A by pressing <**APPLE ESC**>. As before select the View command by pressing <**V**>. This time at the conclusion of scrolling the contents of memory on the screen, TERMINAPPLE also clears the screen. This is because the <**CONTROL L**> that you originally typed in to clear the screen was also stored in memory. Consequently <**CONTROL L**> was processed by the View command as the last character in memory.

Re-enter COMMAND MODE A by pressing <**APPLE ESC**>. At this stage we will clear the contents of memory. This is achieved by selecting the "Clrmem" command by pressing <**C**>. Once you have done this the "Clrmem" command will flash, warning you that if you press <**C**> again you will clear the contents of memory. If you do not wish to clear memory simply press any other usual key such as the <**SPACE BAR**>. Since we want to clear the contents of memory press <**C**> again. The contents of memory has now been cleared.

Let's confirm this by using the View command to display the contents of memory. To do this, press <**V**> to view the contents of memory. Since memory is empty, TERMINAPPLE will immediately return you to TERMINAL MODE without scrolling the screen. You should note that the "M" counter in the PROMPT STATUS LINE has been reset to 28,000 characters indicating that memory has been cleared. However, you should also note that the screen has not been cleared. This is because the screen memory and the main memory for keeping a journal of what transpires during a communications session are quite separate and independent.

At this stage you should be able to almost intuitively use the system of prompting and selection of commands and options within commands. Many more prompt lines than those discussed in the tutorial are used, however, the principles that have been discussed for manipulating the HIGHLIGHT CURSOR and progressing to the next prompt line always apply.

N.B. In the event that you feel comfortable with communications jargon and intend using TERMINAPPLE without further assistance from the manual, your attention is drawn to Appendix Six which lists all the unprompted features of TERMINAPPLE. These are discussed in detail in Section One, Part D.

Happy communicating.

SECTION ONE
PART C : ESTABLISH A LINK

Before you can communicate with anyone using your Apple you will need to establish a communications link. Irrespective of whether you communicate Apple to Apple or Apple to a timesharing computer, the link must be established. The link may be a direct connection between computers using an RS 232 connection, or a telephone connection supported by a carrier signal.

The carrier signal

When communicating a carrier signal is used to "carry" the stream of information in an audible tone. This means that digital values of "1" and "0" must be sent as different frequencies. Some modems can only operate in half duplex which means that information can only be transmitted in one direction at any one time.

Other modems can operate in full duplex which means that information may be sent and received at the same time. To avoid confusing outgoing information with incoming information a new tone pair must be used.

With another microcomputer

Before you can start Apple to Apple communications you must first establish a link with the other party. Unless you are in very close proximity to the other machine this will usually mean the need for a phone call to the other party. Once the other party answers your call and you exchange pleasantries, your actions then depend on which type of modem you are using.

1. Acoustic Coupler: Cradle the telephone handset into the acoustic coupler.

2. Direct Connect Modem: Throw a switch on the modem from "PHONE" to "MODEM" or "DATA".

Before you cradle your telephone or switch to modem for direct connect units you should agree with the other party on the answer/originate option with which most modems are equipped. If your modem has an answer/originate switch on it, the tone pairs that are used to transmit or receive are controlled by you. Of course, the party with whom you are communicating must also be able to select between answer or originate, In short, the answer/originate switch controls which tone pair are used to transmit or receive. Therefore, if you select the originate mode, the other party must select the answer mode. Note that some modems are

manufactured with only the originate mode possible. Under these conditions the other modem must be set to the answer mode.

Once you and the other party have established this link you may start communicating from the Apple keyboard. Remember to load up your Apple with TERMINAPPLE otherwise you will not be able to communicate.

If the other Apple you are communicating with is in close proximity you may decide to connect the two machines with a direct RS 232C wire obviating the need for modems. This method of connecting two machines allows for transmission speeds of up to 9600 Baud. Wiring details for such a cable are provided in Appendix Five.

The remainder of this section deals with communicating with timesharing systems.

With a timesharing computer

Establishing a link with a timesharing computer is some what different from the procedure that is used for linking with another microcomputer.

The first thing you will need to do is telephone the computer installation on one of their time-sharing numbers. The phone will ring as normal until it is answered by an automatic answering device. When your call is answered you will be greeted with a high pitched tone. After a short period of time this high pitched tone will be replaced by the lower pitched carrier signal.

1. Acoustic Coupler: Cradle the telephone handset into the acoustic coupler and be in originate mode.

2. Direct Connect Modem: Throw a switch on the modem from "PHONE" to "MODEM" and be in originate mode.

Computer installations that allow timesharing will always be in answer mode. Therefore, your modem should be set to the originate mode.

It is strongly recommended that you load your Apple with TERMINAPPLE before you call the timesharing system. This will ensure that you are in a position to see the greeting message and be able to respond to the logon sequence. If you are uncertain what a logon sequence is all about read on; otherwise skip the rest of this section.

Logon sequence

While you should have established a link by now, you are still not in a position to communicate. To successfully communicate you must first logon to the system. This means that you must announce who you are by way of some user identification thereby gaining a security clearance to enter the system. The identification required varies from system to system. It may be as little as a password or as complex as a series of numbers and passwords. In any event, the remote computer should prompt you through this stage.

SECTION ONE
PART D : TERMINAL MODE
COMMAND STRUCTURE

If you have been working your way through this manual you should by now be familiar with how to select commands that are presented to you and how to enter COMMAND MODE and move through the command structure. You will also recall that previous tutorial sessions in this manual have not explained any of the actual commands in any detail. The following two sections explain in detail all the commands that are available in TERMINAPPLE's terminal operation. The material covered in these sections assumes that you have worked your way through and understand the tutorial material in earlier sections.

The commands discussed in this section are arranged in the order that they appear in the prompt lines first under COMMAND MODE A and then under COMMAND MODE B.

COMMAND MODE A

Break

The Break command is selected by pressing <**B**>. This command is used when you wish to interrupt the host computer that TERMINAPPLE is connected to. While a break is being sent, your Apple will generate a low pitch tone with the Break prompt temporarily switching to inverse. The Break command is useful since you may wish to stop the host computer sending information that you do not require. Consider a long program that you requested a listing for only to find that it is the wrong program. TERMINAPPLE sends a standard break of 0.233 seconds. If you are using an Apple //e or Apple //c you may send long breaks by holding down the <**B**> key. If you are using an Apple][you may send long breaks by using the <**REPT**> key together with the Break command. If you wish to be able to receive breaks from say another Apple, you will need to turn on TERMINAPPLE'S Detect Errors mode "Dterr" (see below). Note that not all timesharing systems respond to the standard break.

Half

Communication between computers is achieved by transmitting a signal from the source machine to the receiver. This communication can be set to one of two modes known as FULL DUPLEX and HALF DUPLEX. Full duplex allows the communications signal to be transmitted in both directions at the same time while half duplex allows only one machine to be transmitting at any one time. If you

are in Half duplex, what you type in is both displayed on your screen and sent to the host computer. If you are in Full duplex, what you type in is sent to the host computer and echoed back by the host with only the echoed image displayed on your screen. Of course, the host does not have to echo back your message for the host to receive the message. If the host computer does not echo back your signal then you will not see what you type on your screen.

Selecting between Full duplex and Half duplex is achieved by pressing <**F**> or <**H**>. Either key will work irrespective of the what duplex mode TERMINAPPLE happens to be in. The Half/Full prompt will always appear in inverse text showing whether Full duplex or Half duplex is active.

If you wish to communicate in full duplex you must ensure that the other party is able to echo your signal back to you otherwise what you type will not appear on your screen. Similarly, if you select half duplex and the other party is echoing your signal then each character that you type will appear twice on your screen.

Debug

The Debug mode allows TERMINAPPLE to display all characters that are sent or received. This of course includes all control characters. To distinguish between normal characters and control characters, TERMINAPPLE displays control characters while Debug is turned on in inverse text. (If you are using a VISION-80 card, control characters will appear in underscored inverse). Note that while Debug is turned on, the <**RETURN**> key for example will appear as Control M, the <**LEFT-ARROW**> key will appear as Control H etc. (Appendix 2 provides a detailed list of the ASCII character set which includes control characters).

If the Printer command is selected while Debug is turned on, ALL characters will be sent to the printer. Since printers have a wide range of responses to various control characters don't be surprised if your printer behaves in an unpredictable sort of way. If this happens you should consult your printer and printer interface card manuals.

To enable Debug press <**D**>. While debug is selected, the Debug command in the prompt line will appear in inverse. Turning Debug on also automatically selects the Allch command (for a fuller explanation see the Allch explanation). To deselect Debug press <**D**>.

Turning on Debug will automatically turn on Allch and turn off Inv.

Allch

The ASCII character set consists of many more characters than the standard alphabet and numbers (see Appendix 2). There are numerous control characters

that form an important part of the ASCII character set. Being able to identify these characters allows you to analyze the stream of information being sent by a timesharing computer to establish what protocol it is using (see Section One, Part E). Being able to identify all characters received allows you to manipulate files thereby stripping them of characters that are not desired.

It should be noted that while the Allch command is selected, all characters sent or received are stored in the memory if the Mem command is turned on, however these characters will not appear on the screen. To see all characters on the screen it is necessary to turn the Debug option on (see Debug — selecting Debug automatically turns on Allch with the Debug features presiding over Allch). If the Printer option is selected while either Debug or Allch is turned on, then ALL the characters being received will be sent to the printer. Since printers have a wide range of responses to various control characters don't be surprised if your printer behaves in an unpredictable way (see Debug). Perhaps the filtering of most control characters by TERMINAPPLE makes a bit more sense in this context.

Under default options, TERMINAPPLE will turn on the Allch command. You may turn Allch off by pressing <**A**>. Turning off Allch does not mean that all control characters will be filtered out and not stored in TERMINAPPLE's memory. When the Allch command is turned off TERMINAPPLE will still process the following control characters and save them as part of the text:

Control G	Bell or Buzzer
Control H	Back Space
Control J	Line Feed
Control K	Reverse Line Feed
Control L	Form Feed
Control M	Carriage Return
Control Y	Home cursor without clearing screen

These characters form an important part of formatting text for reviewing it on the screen or obtaining hard copy output and therefore are considered an intrinsic part of a file.

The Allch command is selected by pressing <**A**>. When Allch is on, the Allch prompt will appear in inverse. To deselect Allch press <**A**>.

Lfeed

When communicating between computers, the <**RETURN**> key on terminals will not usually generate a line feed. The Lfeed (line feed) option inserts a line feed

following each <**RETURN**> however, the line feed is not transmitted and consequently has an effect only on your Apple. This is useful when communicating with another microcomputer. If you are communicating with a timesharing system, a line feed will be sent back from the host computer after you press <**RETURN**>. In these instances it is therefore unnecessary to use the Lfeed command. Lfeed is selected by pressing <**L**>. When Lfeed is selected, the Lfeed prompt in the prompt line will be displayed in inverse text. To deselect Lfeed, press <**L**>.

For added flexibility, TERMINAPPLE does provide for sending a line feed with each carriage return. In computer jargon, each Control M is preceded with a Control J. Since this feature is not in common use it has not been prompted. However you will find it necessary if you wish to communicate with the MacIntosh computer. To enable this option you will need to press <**X**> when you are in COMMAND MODE A. To disconnect this option you will need to press <**Z**> when you are in COMMAND MODE A.

Printer

A very useful feature of TERMINAPPLE is that it allows you to direct incoming characters to your printer so that they can be printed while as they appear on the screen. To use this option you should ensure that your printer is turned on. Output may then be directed to it by pressing <**P**>. Output that appears on the screen will now be printed line by line when TERMINAPPLE encounters a carriage return. To disengage the Printer, press <**P**> and incoming characters will now appear only on the screen.

If you wish to print the contents of memory then you must physically turn your printer on, then select the Printer command within TERMINAL MODE. To start printing select the View command (see below). Note that while you are printing using this method you cannot deselect the Printer command. You may selectively enable or disenable the printer while in View by pressing <**P**> twice in a row.

To stop printing you must press <**ESC**>. This will return you to TERMINAL MODE. However the Printer command is still selected and must be deselected.

Beware of using the Debug or Allch commands with the Printer command. The Debug or Allch commands do not filter out any control characters that are being received by TERMINAPPLE and consequently TERMINAPPLE will send these to the printer. Since printers have a wide range of responses to various control characters don't be surprised if your printer behaves in an unpredictable sort of way. If the printer behaves oddly, you should consult your printer and printer interface card manuals.

View

The contents of TERMINAPPLE'S memory may be reviewed at any time. To enable the View command and consequently review the memory press <**V**>. The contents of memory will now begin to scroll on the screen.

It is often very useful to be able to move over uninteresting parts of TERMINAPPLE'S memory quickly and then be able to slow down the reviewing speed to a level where you can scan the contents for that part of memory that you're really interested in and then to stop scrolling altogether when that vital part of the memory is found. The speed with which the contents of memory scrolls on the screen is selectable by pressing any key from <**1**> through to <**9**>. <**1**> is the default and slowest scrolling speed while <**9**> is the highest. Ascending numbers between <**1**> and <**9**> will gradually increase the scrolling speed. To stop scrolling press any usual key such as the <**SPACE-BAR**>. You are now able to study that part of memory that appears on the screen. To recommence scrolling of the memory from that point press any usual key.

To return to TERMINAL MODE before the entire contents of memory has been viewed press <**ESC**>. If you wish to use the Printer command in conjunction with the View command, see the explanation covering the Printer command.

While the contents of memory are being reviewed through the View option, incoming characters will be stored in a special buffer until TERMINAPPLE can process them. If the special buffer is filled and you are still viewing the contents of memory TERMINAPPLE will exit from the View command and take care of the contents of the special buffer ensuring that no information is lost.

Memory

It is often very useful to record incoming characters and review the data at a later date. TERMINAPPLE provides you with the facility for recording up to 28,000 characters of incoming information in a memory set aside specifically for such a purpose. To select this facility press <**M**>. While incoming characters are accumulated in Memory, the Memory prompt will appear in inverse text. To disenable the Memory facility, press <**M**>. Incoming characters will now not be accumulated in Memory.

The Memory buffer is designed to be dynamic so that when memory is filled, characters that entered memory first will start to drop off.

Clrmem

It may be necessary to clear TERMINAPPLE'S memory so that an important piece of information to be received will fit into the memory or perhaps for it not to be

confused with other data presently in memory. TERMINAPPLE'S memory is cleared by pressing <**C**>. When <**C**> is pressed, the Clrmem command will flash in warning that you are about to destroy the current contents of the memory. To proceed with the Clrmem command press <**C**> again. To abort out of an accidental Clrmem while the Clrmem command is still flashing press any other usual key except <**C**>.

The counters that represent characters in, characters out and the total of characters in and characters out may be cleared without clearing the contents of memory. To clear or reset these counters press <**SHIFT 3**> while you are in COMMAND MODE A.

Q

To exit TERMINAL MODE or VT100 terminal emulation press <**Q**> from within COMMAND MODE A. TERMINAPPLE will exit to the following prompt line:

Save terminal options   Quit

By pressing <**RETURN**> you may return directly to TERMINAL MODE. The contents of memory will still be preserved. To quit to the outermost command level press <**Q**>. From the outermost command level you can quit TERMINAPPLE by pressing <**6**>. The Save Terminal Options are discussed in Section Three under the heading "How to create or save the 'OPTIONS' file.

? or /

Not all of TERMINAPPLE's prompts in COMMAND MODE can be displayed on the screen at one time. To toggle between COMMAND MODE A and COMMAND MODE B press <**?**> (<**SHIFT**> need not be used).

ESC

The <**ESC**> key forms an important part of the TERMINAPPLE command structure. This key allows you to move backwards through the command structure. If <**ESC**> is pressed while COMMAND MODE A (or COMMAND MODE B) is prompted you will be returned to TERMINAL MODE.

COMMAND MODE B

Prmtln

You Apple computer normally displays 24 screen lines on the screen however because of the system of prompting TERMINAPPLE uses the first line for prompting leaving 23 lines to display communications text. Since it may be important to see the full 24 screen lines, TERMINAPPLE provides a facility to turn-off the PROMPT STATUS LINE. This is achieved by pressing <**P**> for Prmtln. The prompt line will not instantly disappear; rather you will need to scroll the prompt line off the screen or clear the screen by pressing <**CTRL L**>. To re-establish the PROMPT STATUS LINE press <**P**>. If the PROMPT STATUS LINE is turned-on, the Prmtln prompt will appear in inverse. If the PROMPT STATUS LINE is turned-off, the Prmtln prompt will appear in normal text.

While the PROMPT STATUS LINE is turned off, the four character counters will still be updated.

Inv

When communicating with another system it is often very useful to be able to identify rather quickly what you type in as opposed to what the host computer communicates to you. TERMINAPPLE provides an Inv (inverse) command which once selected causes all characters typed in by you to appear in inverse on the screen. Information received by you from the host computer will still appear in normal text. If you select the Debug and Inv commands at the same time then the Debug will take precedence over Inv turning the Inv off.

To select the Inv command press <**I**>. While the Inv command is active the Inv prompt will appear in inverse. To deselect Inv press <**I**>.

Dterr

When data is being transmitted between computers or simply relayed to a terminal from a host computer, any corruption of the data usually has highly undesirable effects. TERMINAPPLE is capable of detecting and reporting the following error conditions. The error code being reported will be displayed in the top left hand corner of the screen:

ERROR#1: Loss of carrier signal

> During communications a carrier tone is used to carry information between the two modems (see Section Five). If the carrier tone is not

present the link between TERMINAPPLE and the other computer is effectively broken precluding further communications. TERMINAPPLE is capable of detecting a loss in carrier signal and will under such a situation report **ERROR#1.**

ERROR#2: Data received before previous byte is read

TERMINAPPLE processes incoming characters at a very high speed, however, if a very high baud rate is used to communicate between two machines, it is possible that the stream of information arrives at a faster rate than TERMINAPPLE is able to process that stream. If this happens, **ERROR#2** is reported.

ERROR#3: Not used

ERROR#4: Parity error

A binary character is composed of a series of on bits (1) and off bits (0). To ensure that such a character is transmitted in the correct combination of on and off bits, a parity check is used which appends a parity bit to the end of the character representation. For even parity, the sum of the seven bits that make up the ASCII character plus the parity bit must be even. Therefore either a "zero" or a "one" bit is added to the character so that the sum of bits is even. For odd parity, the sum of the seven bits that make up the ASCII character plus the parity bit must be odd. Therefore either a "zero" or a "one" bit is added to the character so that the sum of the bits is odd, some systems ignore parity bits and consequently give rise to no parity character formats. This is usually found with asynchronous links which are very reliable. TERMINAPPLE is capable of detecting characters that fail to meet the parity check and reports such instances as **ERROR#4**.

ERROR#5: Combination of **ERROR#1** and **ERROR#4**

The Dterr or Detect Errors command is selected by pressing <**D**>. The detection of errors is deselected by pressing <**D**>. With error detection mode active, the Dterr prompt will appear in inverse text. Error messages that have been detected will be displayed in the left corner of your screen. When an error is detected TERMINAPPLE will also emit a tone.

When Dterr is used in conjunction with the ECHOCHECK protocol under the file transfer or file receive options (see Section One, Part E), the additional function

of correcting glitches in transmission is also performed. Normally, when a glitch occurs transmission is halted with the appropriate error reported. TERMINAPPLE through the combined uses of the ECHOCHECK protocol and the Dterr option intercepts transmission glitches and attempts to resolve the fault. If the glitch is resolved then transmission continues. If the glitch cannot be resolved I/O ERROR 33 will be reported.

Echo

When a computer is set to communicate in full duplex, the receiving computer must be able to echo back each character as it is received. If the receiving computer is unable to do this then the operator of the sending computer ,while in full duplex, will not be able to see what he types in from the keyboard. Similarly, if you set TERMINAPPLE to full duplex then the other computer must echo each character back to you before they appears on your screen.

At times it is absolutely essential that you know that the information sent by you to another computer was received without any corruption. For example, you may wish to send a very important letter and you must know that the letter was received exactly as it was sent. To ensure that the information was not corrupted during transmission, you should request that the other party echoes your signal back to you while at the same time you set TERMINAPPLE to full duplex.

This method of communicating ensures that the character you sent was in fact received since otherwise a different character is echoed back and displayed on the monitor from that which was originally transmitted. If the printer is turned on through the Printer command then the printed copy is actually an echo of what you sent. This means that your hard copy of the file will be identical to the file that is received by the host computer.

If you have selected the Echo command then you should ensure that the other party has selected full duplex on their communications software otherwise each character that they type in will be displayed twice on their screen; once when it is typed and a second time when it is echoed back by TERMINAPPLE. If both TERMINAPPLE and the other computer are echoing their respective signals you can expect very strange and meaningless results.

To select the Echo command press <**E**>. When the Echo command is selected, the Echo prompt will appear in inverse. To de-select the Echo command, press <**E**>.

Chrform

When communicating between two systems it is necessary to send characters in such a way that the receiving system can understand the character being

received. This is of particular relevance when using asynchronous transmission where the flow of information may not be a steady stream. Character formatting therefore involves:

1. Setting the number of bits that make up the character

2. Establishing the parity of these bits

3. Establishing where the bits that represent a character start and stop.

The number of bits that make up each character is simply the number of bits that are used to represent a character. The ASCII standard uses seven bits to represent characters whereas EBCDIC uses eight bits.

A parity bit may be used to detect some errors in the encoding/decoding or transmission of characters. Since the computer will always use the same number of bits to encode (represent) characters, an extra bit can be appended to the bits that are used to represent the character. For even parity, a parity bit is added to the character bits so that the sum of the bits is even. For odd parity, a parity bit is added to the character bits so that the sum of bits is odd (See discussion of **ERROR#4** under the Dterr command).The receiving computer can therefore use this system of parity bits when decoding a character and sometimes determine that the character has been corrupted during transmission.

The stop/start bit(s) are used to determine where a character starts and finishes in the stream of bits being transmitted. Some computer systems require one stop/start bit whereas some systems use two stop/start bits.

The following table outlines the character format alternatives that are allowed by TERMINAPPLE.

No. of Bits	Parity	Stop/Start	TERMINAPPLE
7	Even	2	7E + 2
7	Odd	2	7O + 2
7	Even	1	7E + 1
7	Odd	1	7O + 1
8	—	2	8 + 2
8	—	1	8 + 1
8	Even	1	8E + 1
8	Odd	1	8O + 1

To select the Chrform command press <**C**>. The prompt line will be replaced by a new prompt line that shows the available character formats in an abbreviated form as detailed in the above table. For example, 8 + 1 stands for eight bits per character with no parity plus one stop start bit etc. TERMINAPPLE defaults to 8 + 1.

If you are not sure of what is meant by the terminology that is used in the next paragraph to describe the selection from the available options, then please review the material covered in Section One, Part B of this manual.

To change the default character format use the <**RIGHT-ARROW**> key or the <**LEFT-ARROW**> key to scroll the HIGHLIGHT CURSOR to the desired character format. When the desired character format is selected, press <**RETURN**>. TERMINAPPLE will return you to COMMAND MODE B. To return directly to TERMINAL MODE press <**ESC**>.

Transfer

For file transmission see Section One, Part F.

Receive

For file transmission see Section One, Part G.

Logon

Since the logon procedure is unexciting, repetitive and prone to error it is very useful to be able to logon to another computer in as automatic a way as possible. TERMINAPPLE through the Logon command allows you to use predefined logon sequences to logon on to other computers with the simple press of a key. In computer circles, a predefined sequence of this nature is commonly referred to as a macro.

If you are not sure of what is meant by the terminology that is used in the next few paragraphs to describe selection of the available options, then please review the material covered in Section One, Part B of this manual.

Before you press <**L**> to invoke the logon macros, insert the disk on which you keep your logon macros file into Volume 4 (see Section 4). If you press <**L**> without the correct disk inserted in Volume 4 an error message will be reported. After you have inserted the disk with the predefined logon macros in Volume 4 press <**L**>. The prompt line will be replaced with a new prompt line that will look as follows:

```
┌─────────────────────────────────────────────────────────────────┐
│  LOGON MACRO:                                          -> name    │
└─────────────────────────────────────────────────────────────────┘
```

You may either type in the name of a previously defined macro or alternatively use the <**RIGHT ARROW**> key to scroll through the predefined logon macros until the desired macro appears in the prompt line. Once the desired macro name appears in the prompt line press <**RETURN**>. TERMINAPPLE will attempt to perform a logon. Therefore, before you press <**RETURN**> you should establish the link with the host computer as discussed in Section One, Part C.

After a successful logon to the host computer TERMINAPPLE will return you to TERMINAL MODE. (It is sometimes necessary to press <**RETURN**> a few times to initiate a response from a timesharing system).

The definition and changing of macros is discussed in Section Four.

Svmem

Since TERMINAPPLE has a memory that provides a record (if Mem is turned on) of what has been sent and received, you may wish to save the contents of the memory for later review or editing by a word processor or printing etc. To use the Svmem (save memory) command press <**S**>. The prompt line will be replaced with a new prompt line that will ask what type of file (Pascal text or DOS text) you wish to save. The new prompt line will appear as:

```
┌─────────────────────────────────────────────────────────────────┐
│  SAVE MEMORY:    PASCAL DOS                            <-,->,Ret  │
└─────────────────────────────────────────────────────────────────┘
```

To change the default file type use the <**RIGHT-ARROW**> key or the <**LEFT-ARROW**> key to scroll the HIGHLIGHT CURSOR to the desired file type. When the desired file type is selected, press <**RETURN**>. Note that files will be saved as TEXT files.

Once you have confirmed under which text file format you wish to save memory, you will be prompted to select the volume number onto which the file should be saved. The new prompt line will appear as follows:

```
┌─────────────────────────────────────────────────────────────────┐
│  SAVE MEMORY: (DOS or PAS) VOLUME 4,5,9,10,11,12       <-,->,Ret  │
└─────────────────────────────────────────────────────────────────┘
```

To change the default volume use the **<RIGHT-ARROW>** key or the **<LEFT-ARROW>** key to scroll the HIGHLIGHT CURSOR to the desired volume number. When the desired volume number is selected, press **<RETURN>**. The prompt line will now be replaced with a new prompt line that will ask for a file name. The prompt line will appear as follows:

```
SAVE MEMORY: (DOS or PAS) VOL (number) FILE:              -> catalog
```

Before you use this prompt line you should insert the disk onto which the contents of memory are to be saved in the volume number you have specified. If you are saving memory under the Pascal format ensure that the disk has been formatted to save Pascal files and conversely if you are saving memory under DOS format ensure that the disk has been initialized to accept DOS format files. If you are unsure of the differences between Pascal formatted disks and DOS initialized disks see Section 5.

TERMINAPPLE requires a file name under which to save the contents of memory. You may simply type in a file name followed by the **<RETURN>** key to save the contents of TERMINAPPLE's memory. If you are saving files in the Pascal format, be sure to append .TEXT to the file name before pressing **<RETURN>** otherwise the Pascal editor will be unable to find the file. Alternatively you may press the **<RIGHT-ARROW>** key to step through the catalog. This feature is provided to simplify the replacement or renaming of text files that already exist on the disk. Only text files will be cataloged. If you catalog a Pascal disk in this way both the disk name and file name will be shown. For clarity, the file name will be displayed in inverse.

While this prompt line appears on the screen, the **<ESC>** key is used to reset stepping through the catalog back to the beginning of the catalog. Therefore, if you have scrolled past the desired file name with the right arrow simply press **<ESC>**. You may now recommence stepping through the catalog.

Unlike DOS which is able to break up a file and save portions of it on many Sectors scattered around the disk, Pascal requires enough contiguous Block space to fit the contents of memory or a file onto the disk. The following prompt line will therefore be displayed only if you have nominated the Pascal format to save the contents of memory.

```
## BLOCKS IN LARGEST SPACE.     <R>  Recalculates. KRUNCH DISK    YES NO
```

The first part of this prompt line illustrated with the **##** indicates to you the largest available contiguous Block space on the disk. You should be aware of how much disk space the contents of memory is likely to occupy. A Block holds 512 bytes of information, and is equivalent to two DOS sectors. If memory will not fit into this space then you may try to Krunch the disk or try another disk.

If you wish to try another disk simply replace the disk having insufficient contiguous space with another disk. To see how much contiguous space exists on the replacement disk press **<R>**. The prompt line will be adjusted with a new figure indicating the contiguous Block space.

If on the other hand you wish to Krunch the disk use the **<RIGHT-ARROW>** key or the **<LEFT-ARROW>** key to select the Yes option with the HIGHLIGHT CURSOR. To start the Krunching process press **<RETURN>**. The Krunching process will relocate all files thereby creating the largest possible contiguous space. At the end of the Krunching process the available file space will be displayed in the prompt line. If there is still not enough space on the disk, you will need to use a disk with sufficient space to store memory.

If on the other hand you think that the file will fit in the available file space then you do not need to Krunch the disk. To proceed with the saving of the contents of memory press **<RETURN>**. At the completion of saving memory TERMINAPPLE will return you to TERMINAL MODE.

If for any reason you wish to backtrack or abort from the Svmem NESTED COMMANDS use the **<ESC>** key. You will be returned to the outermost level of the Svmem NESTED COMMAND. From here pressing **<ESC>** will return you to TERMINAL MODE.

? or /

Not all of TERMINAPPLE's prompts in COMMAND MODE can be displayed on the screen at one time. To toggle between COMMAND MODE B and COMMAND MODE A press **<?>** (**<SHIFT>** need not be used). This command is also used in COMMAND MODE A.

ESC

The **<ESC>** key forms an important part of the TERMINAPPLE command structure. This key allows you to move backwards through the command structure. If **<ESC>** is pressed while COMMAND MODE B (or COMMAND MODE A) is prompted you will be returned to TERMINAL MODE.

SECTION ONE
PART E : FILE TRANSMISSION — PROTOCOLS

While you may think that computer communication is of great benefit in normal communications by typing in commands or responses to the host computer you will find that computer communication really comes into its own in file transmission mode. File transmission in essence can become the very core of computer communication.

Computer communication of this kind can be of very practical use. The business user will find the ability to transfer or receive files a reliable and very economical alternative to telex communication. Ordinary mail can become something of the past if correspondence is sent as a file. For example files that you have prepared at your leisure on a word processor or spread sheet can be transmitted relatively cheaply to anywhere in the country or for that matter to anywhere in the world that is serviced by a telecommunications network. Imagine storing documents or letters on a timesharing system which can later be retrieved by someone else.

Protocols are an important part of transmitting files. Accordingly, Part E of the manual discusses the various protocols that TERMINAPPLE supports. Parts F and G respectively go on to discuss how to transfer a file and how to receive a file.

Protocol

When two computers communicate an understanding must be established between the two machines as to when the machines are free to accept or send information. That is to say, if your machine is receiving information it may only receive a certain amount before it interrupts the sender to performs housekeeping tasks, or alternatively, the sending machine can temporarily halt transmission until the receiving machine is ready to start receiving again.

Control over the information flow is achieved by designating either one character or a number of characters to act as flags in stopping transmission or restarting transmission.

As can be imagined, many kinds of protocol can be designed and in fact, some computer systems use, to say the least, rather strange protocol arrangements. TERMINAPPLE will handle the commonly used protocols and to help you overcome unconventional protocols a special facility is provided. There are six protocols predefined within TERMINAPPLE.

NONE	No protocol
EOB-ACK	End Of Block Acknowledge
STP-STRT	Stop Start also known as XON-XOFF
BOTH	Both EOB-ACK and STP-STRT
ECHOCHECK	Special TERMINAPPLE protocol
WRCHR	Ward Christensen

None

Under this protocol the sending computer will send a steady stream of characters to the receiving computer either with or without pauses in the transmission. Normally, the receiving computer will receive a limited number of characters before it processes them. The number is dependent on the receiving computer. Consequently, it may be necessary for the sending computer to pause at regular intervals to allow the receiving machine to perform these house keeping tasks. During this processing time any characters sent by the sending computer will be lost. This problem may be alleviated by organizing the transmission stream so that the sending machine pauses on a regular basis. The NONE protocol therefore may provide you with a means of communicating with a timesharing system that does not recognize the standard protocols like EOB-ACK, STP-STRT or Ward Christensen (see below).

In TERMINAPPLE a pause may be inserted into the transmission stream after each carriage return is sent. For added flexibility, the length of the pause may be determined by the user. By default TERMINAPPLE does not pause after each carriage return under the NONE protocol. The length of pause may be varied from the following prompt line.

CHARS: DLY = (0) EOB = (M) ACK = (Q) STP = (S) STRT = (Q) EOF = (C) Cont <-,->,Ret

To change the length of the pause select the DLY definition and change the value in brackets. The range of pauses is 0 to 9. Zero (0) represents no pause while 9 represents a maximum pause of 4 seconds. Pauses between 0 and 9 increment in equal time steps from 0 to 4 seconds.

Beware of using this protocol with large files and not specifying a pause of sufficient length otherwise some information will be lost. Of course, if the receiving machine is able to receive large files without losing any information, then the

sending machine will not need to pause. Note that the DLY option can only be invoked under file transfer and not file receive.

EOB-ACK: End of block acknowledge

The END OF BLOCK ACKNOWLEDGE protocol is a system whereby the computer that is sending information will stop transmitting information at the end of each block. Each block will be ended with the EOB character (usually Control M). The receiving computer must send an ACKNOWLEDGEMENT character to the sending computer before the sending computer will restart transmission.

If you intend communicating with a timesharing system it will be important for you to know what EOB character and what ACKNOWLEDGEMENT character the host computer will respond to. If these characters are incorrect, transmission will be totally confused. If you intend communicating with another Apple or micro computer system then the controlling EOB character and controlling ACKNOWLEDGEMENT character can quite easily be agreed to by yourself and the other operator. Do not use the EOB-ACK protocol with text files that have lines over 160 characters in length.

STP-STRT: Stop start (also known as XON-XOFF)

The STP-STRT start protocol is a system where the receiving computer is able to completely control the flow of information. The STP-STRT protocol requires the receiving computer to send a STOP character to the sending computer. On receipt of this character the sending computer will stop transmission. When the receiving computer is ready to receive more information it will send a START character. The sending computer will restart transmission on receipt of the START character.

If you intend communicating with a timesharing system it will be important for you to know what STOP character and what START character the host computer will respond to. If these characters are incorrect, transmission will be totally confused. If you intend communicating with another Apple or micro computer system then the controlling STOP character and the controlling START character can quite easily be agreed to by yourself and the other operator.

You should also note that when using this protocol with a mainframe or mini host computer it is advisable to set the EOF (end of file) character to the NULL character. When you are communicating with another computer where the EOF character is known or where you are able to set the EOF character then the EOF character should be set to the same character on both machines. See the paragraph on the EOF character in this Section.

BOTH

Both STP-STRT (Stop Start) and EOB-ACK (End of Block Acknowledge) can be used simultaneously to control the flow of characters. TERMINAPPLE will respond to the STOP, START, EOB, and ACKNOWLEDGE characters as they occur in the transmission. If you use these combined protocols please ensure that the four controlling characters are appropriately set to those that the host computer will respond to.

ECHOCHECK

The ECHOCHECK protocol provides in Apple to Apple communications an extremely reliable method of file transmission. Under ECHOCHECK TERMINAPPLE will send a character and wait for that character to be echoed or sent back before the next character is sent. The echoed character is compared to that which was sent. This ensures the absolute integrity of the file being transferred.

To use ECHOCHECK the other computer will also need to be using TERMINAPPLE. Note that both machines will need to set the EOF (end of file) characters to the same character.

A very powerful feature built into the ECHOCHECK protocol of TERMINAPPLE is its ability to self-correct errors that may arise during transmission. Transmission glitches occur from time to time caused mainly by noise entering the transmission stream. TERMINAPPLE will endeavor to correct transmission glitches. To use this feature you will need to turn on the "Dterr" (detect error) command in Command Mode B and then proceed to use the ECHOCHECK protocol to transfer or receive the file as DOS(ANY) or PAS(ANY). Under these options that section of the data stream that fails the echo-check test is retransmitted. While the resolution of the error is taking place TERMINAPPLE will appear as if it is doing nothing for approximately five seconds. When the error is resolved transmission resumes from where it was temporarily halted by the glitch. If the glitch re-occurs when TERMINAPPLE resumes transmission the file transfer/receive mode will be aborted with an 'I/O ERROR 31 "error in transmission"' message appearing at the top of the screen. This method of transmitting files ensures maximum reliability.

WRCHR: Ward Christensen

The Ward Christensen protocol for transmitting or receiving text files is very useful since it checks the transmission for accuracy. Under the Ward Christensen protocol detected errors in transmission cause the sending computer to re-transmit that section of data that is thought to be faulty. Put simply, this protocol works by the receiving computer requesting that data be sent to it by the sending computer. On instruction from the receiving computer, the sending computer

begins to transmit the data in blocks of 128 bytes. At the end of each block, the receiving computer verifies the accuracy of the block by comparing a check-sum sent to it be the sending computer with its own check-sum that it has accumulated as the block is being received. If the check-sums are identical then the 128 byte block is written to disk. The process is repeated until the entire file is received. If a 128 byte block does not verify correctly then the receiving computer will ask for that block to be re-transmitted. If this verification process fails ten times in succession then the error message "ERROR IN TRANSMISSION" will appear at the top of the screen. Please note that the TERMINAPPLE implementation of the Ward Christensen protocol can only be used to transmit or receive TEXT FILES.

EOF: End of File Character

The EOF character is used by TERMINAPPLE to detect the end of the file being transmitted. When using this protocol with a mainframe or mini host computer it is advisable to set the EOF (end of file) character to the NULL character. When you are communicating with another computer where the EOF character is known or where you are able to set the EOF character then the EOF character should be set to the same character on both machines.

Default protocol characters

The following characters have been set up as defaults within TERMINAPPLE:

EOB	Control M
ACK	Control Q
STP	Control S
STRT	Control Q
EOF	Control C

SECTION ONE
PART F : FILE TRANSMISSION — TRANSFER

Unlike most options available in TERMINAPPLE, the file TRANSFER options are a little more complex to use. When you select the file Transfer command from COMMAND MODE B you will be presented with a number of prompt lines each designed to provide TERMINAPPLE with information to set up the type of file transfer you desire.

TERMINAPPLE allows you to transfer:

MEM	Load memory — with Pascal text files only — with DOS text files only Transfer memory
PAS(TXT)	Pascal text files in text file format
PAS(ANY)	Pascal text files in coded format Pascal (compiled) code files Pascal data files in coded format
DOS(TXT)	DOS text files in text file format
DOS(ANY)	DOS text files in coded format DOS Applesoft files DOS Binary files DOS Integer files
BLOCKS	Disk blocks in coded format

Note that ProDos files can be transferred by TERMINAPPLE provided the ProDos file has been converted to the equivalent DOS 3.3 file type using the "DOS <-> PRODOS CONVERSION" program on the ProDos User's Disk.

These alternatives form the prompt line that greets you when you select the file "Transfer" command. The Transfer command is entered from COMMAND MODE B by pressing <**T**>. On selecting "Transfer", you will be greeted with the following prompt line.

```
TRANSFER: MEM   PAS(TXT)   PAS(ANY)   DOS(TXT) DOS(ANY)   BLOCKS   <-,->,Ret
```

For ease of understanding, and since each of these file transfer alternatives leads to more prompt lines each alternative will be dealt with separately. Before you start looking at any of these alternatives you are reminded that the selection of options from this point onwards changes. If you have forgotten how to interpret the prompt cues or need elucidation on the terminology used please refer back to Section One Part B.

To transfer memory

The MEMORY option allows you to load and/or transfer the contents of TERMINAPPLE's memory. However some nifty flexibility has been included in this option. To select the MEMORY option scroll the HIGHLIGHT CURSOR to the "MEM" prompt and then press <**RETURN**>. The prompt line will be replaced with a new prompt line that looks like:

```
TRANSFER MEMORY: LOAD MEMORY YES NO                      <-,->,Ret
```

If you select "No" by scrolling the HIGHLIGHT CURSOR with either the <**RIGHT-ARROW**> key or the <**LEFT-ARROW**> key to the "No" option followed by <**RETURN**> and TERMINAPPLE's memory is empty then you will be returned to TERMINAL MODE.

However, if TERMINAPPLE's memory contains some information then you will be greeted with a new prompt line that will seek the definition of which protocol is to be used for transmission. The new prompt line will look like:

```
PROTOCOL:  NONE   EOB-ACK  STP-STRT  BOTH  ECHOCHECK  WRCHR    <-,->,Ret
```

Once you have selected the desired type of protocol by way of the HIGHLIGHT CURSOR TERMINAPPLE will display a new prompt line that will look like this:

```
CHARS: DLY = (0) EOB = (M) ACK = (Q) STP = (S) STRT = (Q) EOF = (C) Cont <-,->,Ret
```

TERMINAPPLE now requires the characters that it is to interpret as "controlling" characters. These characters will control the flow of information to and from your computer. The default controlling characters are control characters.

To change the controlling characters move the HIGHLIGHT CURSOR to the desired character definition such as STRT (start). Once you have selected the desired character definition press <**RETURN**>. The 'equals' sign will begin to flash. TERMINAPPLE is now locked into this character definition. To select the controlling character press the <**RIGHT-ARROW**> or <**LEFT-ARROW**>. This will scroll the ASCII character set through the character definition window defined by the parentheses following the flashing equals sign. When the appropriate ASCII character appears press <**RETURN**> the desired character is now selected under that protocol definition. The cursor will return to the Cont (Continue) option. To scroll the ASCII character set in the reverse direction through the protocol window use the <**LEFT-ARROW**> key. TERMINAPPLE displays control characters in the ASCII character set in inverse.

Once you have made all the necessary adjustments to the protocol controlling characters and the HIGHLIGHT CURSOR is on the Cont option press <**RETURN**>. TERMINAPPLE will now display the following prompt line (uses STP-STRT) in the example:

```
┌─────────────────────────────────────────────────────────────────┐
│  TRANSFER   MEM   STP-STRT                    <ESC> aborts, <RET> starts  │
└─────────────────────────────────────────────────────────────────┘
```

The prompt line indicates that if you continue along this path you will transfer the contents of memory under the stop start protocol. To abort thereby returning to the beginning of the transfer prompts press <**ESC**>. To start the transfer process press <**RETURN**>. After you have pressed <**RETURN**>, TERMINAPPLE will immediately start to transfer the contents of memory and change the prompt line to the following:

```
┌─────────────────────────────────────────────────────────────────┐
│  TRANSFER   MEM   STP-STRT                    SENDING ..., <ESC> aborts  │
└─────────────────────────────────────────────────────────────────┘
```

During file transfer, the word "WAITING" will appear from time to time in the prompt line. This allows TERMINAPPLE to perform various house keeping tasks. After a short time transmission will automatically continue. If the message "WAITING" appears on the screen for what you consider is an excessive period of time, you may halt the file transfer process by pressing <**ESC**>. It will probably

mean that you are using the incorrect protocol or the communications line has been lost.

If on the other hand you select the "Yes" option from the load memory alternatives the prompt will be replaced with a new prompt line that will look like:

```
TRANSFER MEMORY:   PASCAL   DOS                            <-,->,Ret
```

Use the HIGHLIGHT CURSOR to select the file type you wish to transfer. Once you have selected the file type, you will be greeted with a new prompt line that will look like:

```
TRANSFER MEMORY   <DOS or PAS>   : REPLACE APPEND           <-,->,Ret
```

At this stage, TERMINAPPLE through the "Replace" command allows you to replace the contents of memory with the file that you wish to load into memory. If you select the "Append" command TERMINAPPLE will simply add the file to the contents of memory. It is quite permissible to load memory with a mixture of Pascal and DOS files and to then transfer these files as a single file.

Once you select between the Replace or Append options TERMINAPPLE will display the volume select prompt line that will look like:

```
TRANSFER MEMORY   <DOS or PAS>   :VOLUME 4,5,9,10,11,12      <-,->,Ret
```

Using the highlight cursor select the volume from which you wish to load the file. After you select the volume number from which to load the file, TERMINAPPLE will replace the prompt line with a new prompt line that will look like:

```
TRANSFER MEMORY   <DOS or PAS>   VOL <number>:              -> Catalog
```

This prompt line requires the name of the file that is to be loaded into TERMINAPPLE's memory. You may type in a file name or alternatively, you may step through the catalog by using the <**RIGHT-ARROW**> key. After you have either typed in the file name or selected a file name by using the right arrow key press <**RETURN**> to start loading the file into memory.

Once TERMINAPPLE has finished loading the file into memory the prompt line will be replaced by the PROTOCOL prompt line which has been discussed above.

If all you planned to do was load TERMINAPPLE's memory then you may return to TERMINAL MODE by stepping backwards using the <**ESC**> key.

To transfer Pascal text files

File transfers under this option are made directly from disk. Therefore the contents of memory will remain unchanged. To transfer a Pascal text file you will need to select the PAS(TXT) command with the HIGHLIGHT CURSOR. As mentioned above this is accessed from COMMAND MODE B by pressing <**T**>.

Once you select the PAS(TXT) option TERMINAPPLE will display the volume select prompt line as used in the "Mem" transfer alternative. Volume selection is achieved in the same way.

After you have selected the volume from which TERMINAPPLE will load a Pascal text file, you will need to specify the file name that is to be transferred. TERMINAPPLE accordingly will display the file name prompt line. Once again this prompt line has been discussed above in the "Mem" transfer alternative. Two points are drawn to your attention in relation to selecting files under the PAS(TXT) transfer alternative:

1. If you type in the file name it must be appended with .TEXT.

2. Stepping through the catalog will display only text files.

On selecting the file to be transferred TERMINAPPLE will display the protocol prompt lines just as those that have been discussed above in the "Mem" transfer alternative. Selection of the desired protocol is achieved in exactly the same way.

Please note that when transferring text files to mainframe host computers you should keep each line to less than eighty characters in length.

To transfer any kind of Pascal file

TERMINAPPLE is not only able to transfer Pascal text files as text files but is also capable of transferring any kind of file in a coded format. But unlike text files

which can be transmitted to practically any computer, non text files can only be transferred to another Apple][, //e, or //c. This means that you can transfer a compiled file to another Apple. Such a file can be executed by the receiver without any need for him to compile a text file into an executable code file. Of course such a transfer would be meaningless to any machine but another Apple that is equipped with TERMINAPPLE. This is because the encoded file must be decoded to make any sense to the machine, and secondly because compiled files by their nature are executable only by a machine that understands the compiled code.

Any kind of Pascal file can be transferred in this mode. For example, a standard text file could be transferred in this mode. The file will be encoded and therefore becomes unintelligible to anyone unless they too have TERMINAPPLE which will decipher the encoded file on receipt. An encoded text file may actually take less time to transfer since leading blanks are not transferred as blanks but rather they are encoded. This is of particular advantage in transferring a Pascal program text file which will have many such leading blanks.

The PAS(ANY) command is virtually the same to use as the transfer PAS(TXT) command. The only difference being that the automatic cataloging feature will step through the catalog file by file.

To transfer a DOS text file

The DOS(TXT) command is used in the same way as the PAS(TXT) command. Simply enter DOS(TXT) by using the highlight cursor and follow the instructions given above for PAS(TXT). Remember to insert a disk that contains DOS text files in the Volume from which you will transfer the file.

Please note that when transferring text files to mainframe host computers you should keep each line to less than eighty characters in length.

To transfer any kind of DOS file

TERMINAPPLE will transfer any kind of DOS file. Therefore you may transfer Applesoft programs or Binary files or Integer programs without first converting these to text files. The receiver can simply run an Applesoft program that has been transferred to him using TERMINAPPLE. Of course, he too will need to use TERMINAPPLE so that the file can be decoded on receipt.

DOS text files may also be transferred under this option. The text file is coded, sent and then decoded by the receiver. This form of transfer affords a high level of security when transferring sensitive information.

The DOS(ANY) command is used in the same way as the PAS(ANY) command. Simply enter DOS(ANY) by using the HIGHLIGHT CURSOR and follow the instructions given above for PAS(ANY).

To transfer blocks (For experienced users only)

TERMINAPPLE has been provided with a powerful BLOCK transfer option that allows you to transfer all or part of a disk by selecting the BLOCK range. Before you use this feature of TERMINAPPLE ensure that you are familiar with the way that information is physically stored onto the disk surface under both the Pascal and DOS systems. These topics are covered in Section 5. Transferring BLOCKS of information can be a very tricky business. This in particular applies to transferring parts of DOS disks since a file may be scattered over a range of sectors that can be randomly distributed over the disk.

To transfer blocks or for that matter an entire disk, use the HIGHLIGHT CURSOR to select the BLOCKS command. TERMINAPPLE will display the volume select prompt line. As before select the volume from which you wish to select the blocks for transfer. Once you have selected the volume from which the transfer will be made, TERMINAPPLE will replace the volume select prompt line with a new prompt line that will look like:

```
TRANSFER   BLOCKS   VOL (number): START BLOCK# :        END BLOCK#:
```

You must now type in the Start block number and the End block number that you wish to transfer. Once you type in the Starting block number press <**RETURN**> to proceed to the End block number. The permissible block range for floppy disks is 000 through to 279. Each block is equal to two sectors or 512 bytes. There are eight blocks per track starting with block 0 on track 0, and ending with block 279 on track 35.

Once you have selected the Starting block and the End block, TERMINAPPLE will continue prompting with the Protocol select prompt line as explained above. It is recommended that either ECHOCHECK or STP-STRT protocol be used in transferring blocks.

You are reminded that transferring a large number of blocks is a very time consuming business. Transferring an entire disk at 300 Baud using the ECHOCHECK protocol will take approximately three hours. This could turn out to be a very expensive long distance telephone call.

To transfer ProDos files

To transfer a ProDos file, you will need to convert the ProDos file to the equivalent DOS 3.3 file type before it is sent. This is done by using the "DOS <—> PRODOS

CONVERSION" program on the ProDos User's Disk. The file is then treated as a DOS file be it a text file, Applesoft program etc. If the receiver wishes to have the file in its original ProDos format then he will need convert the file back to the equivalent ProDos file format using the "DOS <—> PRODOS CONVERSION" program on his ProDos User's Disk.

Please note that when transferring text files to mainframe host computers you should keep each line to less than eighty characters in length.

To transfer text file under VT100 emulation

TERMINAPPLE will transfer text file while operating in VT100 emulation. To do this you should follow the instructions for sending a DOS or Pascal text file. However, you should use the NONE protocol with the DLY (delay) set to a pause of sufficient duration to allow the host computer to accept the data as it is being sent. You may need to experiment to find the shortest DLY setting that will still allow your particular host computer to accept characters at a high speed without losing characters. Please note that when transferring text files to mainframe host computers you should keep each line to less than eighty characters in length.

SECTION ONE
PART G : FILE TRANSMISSION — RECEIVE

Before you use the file Receive command you should ensure that you have a suitably formatted (Pascal) disk or suitably initialized (DOS) disk onto which to store the file that you will receive. If you are uncertain how to format or initialize disks review the material covered in Section 5.

As with the file Transfer command, the file Receive command is a little more complex to use than other TERMINAPPLE commands. When you select the file Receive command you will be presented with a number of prompt lines each designed to provide TERMINAPPLE with information to set-up the type of file receive conditions you desire.

TERMINAPPLE allows you to receive:

PAS(TXT)	Pascal text files in text file format
PAS(ANY)	Pascal text files in coded format Pascal (compiled) code files Pascal data files in coded format
DOS(TXT)	DOS text files in text file format
DOS(ANY)	DOS text files in coded format DOS Applesoft files DOS Binary files DOS Integer files
BLOCKS	Disk blocks in coded format

Note that ProDos files can be received by TERMINAPPLE provided the ProDos file has been converted to the equivalent DOS 3.3 file type before it is sent to you, using the "DOS <-> PRODOS CONVERSION" program on the ProDos User's Disk. On receipt, you may convert the file back to the equivalent ProDos file format using the "DOS <-> PRODOS CONVERSION" program on the ProDos User's Disk.

These alternatives form the prompt line that greets you when you select the file Receive command. The Receive command is entered from COMMAND MODE B by pressing <R>. On selecting Receive, you will be greeted with the following prompt line.

```
RECEIVE:  PAS(TXT)  PAS(ANY)  DOS(TXT)  DOS(ANY)  BLOCKS          <-,->,Ret
```

For ease of understanding and since each of these file receive alternatives leads to more prompt lines each alternative will be dealt with separately.

To receive Pascal text files in text file format

File receive under this option is made directly to disk bypassing Memory. Therefore the contents of memory will remain unchanged. To receive a Pascal text file you will need to select the PAS(TXT) alternative with the HIGHLIGHT CURSOR.

Once you select the PAS(TXT) alternative TERMINAPPLE will display the volume select prompt line as used in the "MEM" (memory) transfer alternative that has already been explained at the beginning of this Section.

TERMINAPPLE will now prompt you for a file name that will be used to save the file to be received. Once again this prompt line has already been discussed in this Section in the "MEM" transfer alternative. Four points are drawn to your attention in relation to the selecting file names under the Pascal(text) receive alternative:

1. If you type in the file name it should be appended with .TEXT otherwise the Pascal SYSTEM.EDITOR will be unable to read the file unless it is renamed with the Pascal SYSTEM.FILER.

2. If you type in a file name that already exists in the catalog, you will be given the option to either replace it or type in a new file name.

3. Stepping through the catalog will display only files that are stored as text files.

4. You are advised to exercise extreme caution in selecting file names. If you select a file name that already exists on the disk that file will be deleted as soon as you press <**RETURN**>.

On selecting the file to be received TERMINAPPLE will display the protocol prompt lines that were discussed in Section One Part E.

On completion of setting the protocol to be used to receive the file, TERMINAPPLE will display a new prompt line that will look like this:

```
RECEIVE  PAS(TXT)  NONE                       <ESC> aborts, <RET> starts
```

By pressing <**ESC**>, you may abort back to the start of the file receive mode. However if all is well simply press <**RETURN**>. After you have pressed <**RETURN**> the end of the prompt line will change and at the same time the cursor will be returned to the screen position it occupied last. The altered prompt line will appear as follows:

```
RECEIVE   PAS(TXT)   NONE                    <ESC> aborts, <CTRL C> closes
```

TERMINAPPLE is now ready to start receiving the desired file. So that you may advise the sending party that you are ready to start receiving you may type in a message such as 'I AM READY'. The sending party will now know that your machine is set to receive the file. If you are communicating with a timesharing system, it is essential that you be able to type in a command that the computer will respond to so that it will begin transmitting the file to you. TERMINAPPLE will treat the first incoming character as the beginning of the file to be received. Therefore any message you have typed in will not form part of the file. If the "Mem" command is selected these messages will not be stored in memory.

There are three ways that TERMINAPPLE may be controlled while it is receiving a file.

1. As per the prompt line, press <**ESC**> to abort from the file receive mode. This option will return you to TERMINAL MODE. No part of the file that was being received will be saved.

2. As per the prompt line, press <**CONTROL C**> To stop receiving the file and also complete the saving of all that has been received up to that point. TERMINAPPLE will then return you to TERMINAL MODE.

3. Let TERMINAPPLE handle things automatically. At the end of receiving the entire file TERMINAPPLE will return you to TERMINAL MODE. This assumes that the EOF character is set to the same character on both machines otherwise your Apple will wait until you interrupt by pressing <**ESC**>.

During file receive, the message "WAITING" will appear from time to time in the prompt line. During these waiting periods TERMINAPPLE performs various house keeping tasks. After a short period of time transmission will automatically continue. If the message "WAITING" appears on the screen for what you consider is an excessive period of time, you may halt the file receive mode by pressing <**ESC**>.

To receive any kind of Pascal file

TERMINAPPLE will not only receive Pascal text files but is also capable of receiving any Pascal file in a coded format. These files must be transmitted by another Apple supported by TERMINAPPLE. This means that you can receive a compiled file from another Apple and execute the file without any need to compile the text version of the program (source code). Of course a file received under this format would be meaningless to any machine but another Apple. This is because compiled text files by their nature are executable only by a machine that understands the compiled code.

Any kind of Pascal file can be received in this mode. For example, a standard text file could be received in this mode. The file will be encoded and therefore becomes unintelligible to anyone unless they too have TERMINAPPLE which will decipher the encoded file on receipt. An encoded text file may actually take less time to receive since leading blanks are not received as blanks but rather they are encoded. This is of particular advantage in receiving Pascal source code since it normally contains numerous leading blanks.

The PAS(ANY) receive option is essentially the same to use as the PAS(TXT) receive option. The only difference being that the automatic cataloging feature will step through the catalog file by file. This will allow you to select any kind of file that is stored on the disk.

To receive a DOS text file

The DOS(TXT) option is used in the same way as the PAS(TXT) option. Simply enter DOS(TXT) by using the HIGHLIGHT CURSOR and follow the instructions given above for PAS(TXT). Remember to insert a disk that contains DOS text files in the Volume in which you intend to save the file that is to be received.

To receive any kind of DOS file

TERMINAPPLE will receive any kind of DOS file. Therefore you may receive Applesoft programs, Binary files or Integer programs without first converting these to text files. An Applesoft program that has been received in this way can be run without any further conversion. Of course, both the sender and receiver must use TERMINAPPLE to send and receive Applesoft programs in this way.

DOS text files may also be received under this option. The text file is coded, sent and then decoded by the receiver. This form of receive affords a high level of security when receiving sensitive information. To use this option both the sender and the receiver must use TERMINAPPLE.

The DOS(ANY) command is used in the same way as the PAS(ANY) command. Simply enter DOS(ANY) by using the HIGHLIGHT CURSOR and follow the instructions given above for PAS(ANY).

To receive blocks (For experienced users only)

TERMINAPPLE has been provided with a powerful block receive option that allows you to receive and save part of a disk by selecting the block range where the information is to be stored. Of course, the block receive can be used to receive and save an entire disk. Receiving a range of BLOCKS can be a very ticklish business and may result in the destruction of files that already exist on the disk. These of course always end up being the files that you do not want to lose. The physical arrangements of stored information is covered in Appendix Six. Before you use the BLOCKS receive command it is strongly suggested that you become thoroughly familiar with the material covered in Section 5 and understand how data is stored in file format. You should pay particular attention to how DOS files are stored since a DOS file may be scattered over many disk sectors.

To receive blocks or for that matter an entire disk, use the HIGHLIGHT CURSOR to select the BLOCKS command. TERMINAPPLE will display the volume select prompt line. As before select the volume onto which you wish to save the blocks to be received. Once you have selected the volume onto which to save, TERMINAPPLE will replace the volume select prompt line with a new prompt line that will look like:

```
RECEIVE   BLOCKS   VOL   (number):      START BLOCK#:       END BLOCK#:
```

You must now type in the Start block number and the End block number of where the file is to be stored on your disk as it is received. Once you type in the Start block number press <**RETURN**> to proceed to the End block number. The permissible block range for floppy disks is 000 through to 279. Each block equals two sectors or 512 bytes. There are eight blocks per track starting with block 0 on track 0, and ending with block 279 on track 35.

Once you have selected the Starting block and the End block, TERMINAPPLE will continue prompting with the Protocol select prompt line as explained above.

To receive ProDos files

To receive a ProDos file, the sender will need to convert the ProDos file to the equivalent DOS 3.3 file type before it is sent to you. This is done by using the "DOS

<—> PRODOS CONVERSION" program on the ProDos User's Disk. The file is
then treated as a DOS file be it a text file, Applesoft program etc. On receipt of
the now DOS file you may convert the file back to the equivalent ProDos file format
using the "DOS <—> PRODOS CONVERSION" program on the ProDos User's
Disk.

To receive text files under VT100 emulation

TERMINAPPLE will receive text file while it is emulating a VT100 terminal. You
should follow these steps:

1.   Issue the command which causes the host computer operating under VT100
     mode to send the nominated file to the screen. The command will vary from
     system to system. Normally "TYPE <filename>" can be used. DO NOT press
     <**RETURN**> at this point.

2.   Enter TERMINAPPLE's command structure by pressing <**APPLE ESC**> and
     then clear TERMINAPPLE's memory using the Clrmem command.

3.   Return to VT100 mode by pressing <**ESC**>.

4.   You may now start the host computer by pressing <**RETURN**>. This causes
     the host computer to send the file.

The file will be received into TERMINAPPLE's memory. At the end of receiving the
file you should save memory using the Svmem command.

If you wish to receive the file directly to disk or if the file is greater than 28,000
characters you will need to use the STP-STRT protocol. When the file is received
you should press <**CONTROL C**> so as to close the file.

How to delete a file

If you wish to delete a file from a disk enter the Receive NESTED COMMAND from
COMMAND MODE B. On entry into the Receive command the following prompt
line will greet you.

| RECEIVE: PAS(TXT) PAS(ANY) DOS(TXT) DOS(ANY) BLOCKS | <-,->,Ret |

Using the HIGHLIGHT CURSOR select the type of file that you wish to delete. Do
not select the BLOCKS since you will not be able to delete BLOCKS on a disk.

Once you have selected from either the PAScal or DOS options TERMINAPPLE will prompt you for the Volume number where the file to be deleted will be found. This prompt line is the same as the Volume select prompt line that is used throughout TERMINAPPLE.

After selecting the volume where the file to be deleted is to be found TERMINAPPLE will prompt you for the file name. As with volume select, this prompt line is used throughout TERMINAPPLE to select the file name of the file to be Received etc. You may either type in the name of the file to be deleted or you may select the file name using the <**RIGHT-ARROW**> and then press <**RETURN**>. To delete the file press <**ESC**>.

If you have typed in an existing file name TERMINAPPLE will ask whether you wish to delete the nominated file. To delete the file use the HIGHLIGHT CURSOR to select the YES option and then press <**RETURN**>. If you have typed in an incorrect file name and you do not wish to delete the file simply select the NO option. TERMINAPPLE will return you to the first prompt line in the file RECEIVE NESTED COMMAND set without deleting the file.

As an added convenience, TERMINAPPLE will delete DOS files that are LOCKED.

SECTION TWO
VT100 TERMINAL EMULATION

Terminal emulation

TERMINAPPLE is capable of emulating most features of a standard VT100 terminal. This means that your Apple can be used as a remote terminal to a host computer where that computer require the terminal to respond in a predetermined way. TERMINAPPLE's VT100 terminal emulation therefore allows your Apple to respond to the host computer software in exactly the same way that a dedicated VT100 terminal would.

To select the VT100 terminal emulation mode press <2> at the outermost command level. TERMINAPPLE will now be in VT100 terminal emulation mode. However you should be aware that the host computer will usually require you to send a special command that is dependent on the host computer before it will treat your Apple as a VT100 terminal.

The keyboard

To effectively use your Apple as a VT100 terminal you will also need to be able to send special key sequences. These special key sequences allow the host computer software to respond to your Apple. The following table compares the standard VT100 numeric keypad with the equivalent keys on your Apple.

VT 100 KEYPAD	APPLE][	APPLE //e or //c
0	<Push button 0>	<Open Apple 0>
1	<Push button 1>	<Open Apple 1>
2	<Push button 2>	<Open Apple 2>
3	<Push button 3>	<Open Apple 3>
4	<Push button 4>	<Open Apple 4>
5	<Push button 5>	<Open Apple 5>
6	<Push button 6>	<Open Apple 6>
7	<Push button 7>	<Open Apple 7>
8	<Push button 8>	<Open Apple 8>
9	<Push button 9>	<Open Apple 9>

Table continued from previous page

VT 100 KEYPAD	APPLE][	APPLE //e or //c

Gold Key PF1
    PF2
    PF3
    PF4
OR
Gold Key PF1
    PF2
    PF3
    PF4
	<Push button Shift 1>
	<Push button Shift 2>
	<Push button Shift 3>
	<Push button Shift 4>
	
	<Push button Q>
	<Push button W>
	<Push button E >
	<Push button R >
		<Open Apple Shift 1>
		<Open Apple Shift 2>
		<Open Apple Shift 3>
		<Open Apple Shift 4>
		
		<Open Apple Q>
		<Open Apple W>
		<Open Apple E >
		<Open Apple R >

Enter	<Push button Return>	<Open Apple Return>

Note: Push button means pressing either button on the games paddles or the joy stick.

Special control characters in VT100 emulation

Control H (backspace), Control J (linefeed), Control K (vertical tab) or Control U (right arrow) are also used to manipulate the cursor. Therefore, if you wish to send the proper Control H, J, K or U as distinct from moving the cursor you will need to press either the Push Button or the Open Apple key in conjunction with the Control letter.

TERMINAPPLE's command structure

Because terminal emulation has been fully integrated within TERMINAPPLE you may still use the commands within TERMINAPPLE in the normal way (ie. **<APPLE ESC>** etc) however, terminal emulation does not provide a prompt status line. The prompt status line will always be disengaged when you enter VT100 mode.

File transfer in VT100 emulation

TERMINAPPLE allows text files to be transferred to a host computer operating in VT100 mode. For instructions on how this is achieved see Section One, Part F.

If you are not familiar with how files are transferred, you will also need to study Section One, Part E which discusses transmission protocols.

File receive in VT100 emulation

TERMINAPPLE allows text files to be received from a host computer operating in VT100 mode. For instructions on how this is achieved see Section One, Part G. If you are not familiar with how files are received, you will need to study Section One, Part E which discusses transmission protocols.

SECTION THREE
TERMINAL OPTIONS

A very useful feature of TERMINAPPLE is that it provides fro up to seven different OPTION SETS (combinations and options normally selectable within the command structure of TERMINAL MODE) to be saved on disk. For example, this means that if you require TERMINAPPLE configured to be in full duplex with no line feed you can save the TERMINAPPLE prompt lines with the selected options. In this way you can save a mixture of commands and options without having to manually select these during terminal operation.

You can store seven such OPTION SETS on a DOS disk. If you require more than seven OPTION SETS, you will need to use a second (or more) disk to hold subsequent files. The file OPTION may be coped using FID (see your DOS System Master). The DOS catalog will show to OPTION file as file type "S".

The TERMINAL OPTIONS mode is entered from TERMINAPPLE's outermost command level. That is you enter TERMINAL OPTIONS from the outer most command level or title page by pressing <**3**>. After you press <**3**>, the following message will appear on the screen:

INSERT A DOS IN BOOT DRIVE & PRESS <RETURN>, <ESC> ABORTS

If you press <**ESC**> you will be returned to the outermost command level. Otherwise, insert the disk that contains the Options file in the boot drive and press <**RETURN**>. If the disk you insert does not contain the Options file, the following message will appear on the screen:

FILE 'OPTIONS' NOT ON DISK PRESS <ESC> TO CONTINUE

After you press <**ESC**> you will be returned to the outmost command level. If you accidentally insert a disk that is not formatted to store DOS files the disk drive will make a rather harsh noise. After several tries at reading the disk the following message will appear on the screen:

DISK ERROR   PRESS   <ESC> TO CONTINUE

After you press <**ESC**> you will be returned to the outermost command level. If the file Options is found on the disk that you inserted, TERMINAPPLE will greet you with the following prompt line:

```
OPTIONS:   choose #   Delete   Quit   <ESC>aborts
```

If the 'Options' contains some OPTION SETS that you have previously saved these will be listed beneath the prompt line. Otherwise the prompt line will appear on its own. The system of selecting these prompts is as is used in TERMINAL MODE, that is you select by the first letter of the prompt provided that the prompt starts with an uppercase letter.

choose

To select or 'choose' an OPTION SET simply press the number that corresponds to the name of the OPTION SET. You will immediately enter TERMINAL MODE with the selected OPTION SET. The TERMINAPPLE disk contains an OPTIONS file eith an OPTION SET saved in it. This OPTION SET will be useful if you wish to communicate with a timesharing system. Please note that it will not necessarily work with all timesharing systems. The OPTION SET is called "T/SHR" and is designed to change the duplex flag from TERMINAPPLE's default setting of half duplex to full duplex and to turn off the Lfeed (line feed) command. To try out this option select the OPTIONS prompt line as it appears above and press <**1**>. This will change the duplex flag in COMMAND MODE A to full duplex and also change line feed to no line feed in COMMAND MODE A. All other command settings will not be affected.

Delete

To delete a combination of options press <**D**>. TERMINAPPLE will prompt you as follows:

```
OPTIONS:   del #   <ESC>   exits
```

To delete an OPTION SET press the number that corresponds to the OPTION SET name you wish to delete. The selected OPTION SET is now deleted from RAM and

you will be returned to the main options prompt line. If you do not wish to delete any OPTION SETS simply press <**ESC**> and you will be returned to the main options prompt line.

Quit

To leave TERMINAL OPTIONS simply press <**Q**>. The exit path will depend on what you did while you were in TERMINAL OPTIONS mode. If you have deleted any OPTION SETS, the disk that holds the file named 'OPTION' will be updated before you return to TERMINAL MODE. If you Quit without deleting an OPTION SET you will be returned directly to TERMINAL MODE leaving the file named 'OPTION' as it was. TERMINAL MODE will still be configured to the options that were last used. TERMINAPPLE's memory will still contain whatever was in it before you quit TERMINAL MODE.

<ESC>aborts

To abort from TERMINAL OPTIONS without updating the file Options or, to return to the outermost command level of TERMINAPPLE simply press <**ESC**>.

How to create or save the 'OPTIONS' file

When you Quit from TERMINAL MODE, TERMINAPPLE will prompt you as follows:

Save terminal options   Quit

Save terminal options

To save the command settings as they exit within TERMINAPPLE when you quit TERMINAL MODE simply press <**S**>. TERMINAPPLE will now display the following message on the screen:

INSERT A DOS DISK IN BOOT DRIVE & PRESS <RETURN>, <ESC> ABORTS

After you insert the disk onto which you wish to save the OPTIONS SET and have pressed <**RETURN**>, TERMINAPPLE will further prompt you with:

TYPE IN OPTION NAME (6 chrs max)   <ESC> aborts

If a file named 'OPTION' exists on the disk then the new OPTION SET will be added to that file. If a file does not exist then a file will be created with the name 'OPTION'. To save the OPTION SET type in a name of no more than six characters and press <**RETURN**>. On completion of saving the OPTION SET TERMINAPPLE will return you to the outermost command level. At this stage all the command settings are saved under the name you nominated. It is as simple as that.

You can save OPTION SETS on the TERMINAPPLE disk if you wish, but you must remove the write protect tab first and after you have saved the OPTION SET write protect the TERMINAPPLE disk again.

If you wish to abort from the "save" operation press <**ESC**>. TERMINAPPLE will return you to the outermost command level. If the file named 'OPTION' already contains seven OPTION SETS then the message:

NO ROOM IN FILE, PRESS ANY KEY TO CONTINUE

will be printed on the screen. After you press any key, you will be returned to the outermost command level. You can, from this level, delete an OPTION SET thereby creating some space in the file 'OPTION' or alternately insert another disk thereby creating a new file named 'OPTION'.

Quit

To quit to the outermost command level press <**Q**>.

SECTION FOUR
DEFINE LOGONS

TERMINAPPLE allows you to create files of logon macros that greatly simplify the procedure required to logon to a timesharing system. A logon macro is simply a collection of the prompts that a timesharing system sends and the responses that are necessary to establish contact with the timesharing system. The collection of prompts and responses can be stored in a file with TERMINAPPLE automatically sending each response to the prompts as they are received.

To define logons enter DEFINE LOGONS by pressing <4> from the outermost command level. TERMINAPPLE will then print the following message on the screen:

```
INSERT A DISK IN BOOT DRIVE & PRESS <RETURN>, <ESC> ABORTS
```

After you insert a DOS disk in the boot drive and press <**RETURN**>, TERMINAPPLE will prompt you as follows:

```
LOGON:   Review   Add   Quit   <ESC> aborts
```

If the disk you insert into the boot drive does not hold the MACROS file then the additional message [NEW FILE] will appear as part of this prompt line. To select a command from the prompt line, press the first letter of each prompt word (provided that the first letter is shown in uppercase).

Review

The Review command allows you to review the contents of the MACROS file. If the MACROS file is empty the following message will be printed on the screen "NO MORE MACROS IN FILE, PRESS ANY KEY TO CONTINUE". If there are macros in the file then the following prompt line will appear:

```
LOGON:   Next   Delete   Quit
```

As before, each prompt is selected by the first letter of that prompt provided the first letter appears as uppercase in the prompt. To see the next logon macro press <**N**>. If there is another macro in the file then that macro will be displayed on the screen. If there are no more logon macros in the file the message "NO MORE MACROS IN FILE, PRESS ANY KEY TO CONTINUE" will be printed on the screen.

To delete a logon macro press <**D**> when that macro is displayed on the screen. The message:

```
THIS MACRO HAS BEEN DELETED, PRESS ANY KEY TO CONTINUE
```

will be displayed on the screen. Note that at this stage the macro is only deleted from the computer's memory (RAM), therefore you may abort before the new macros file is saved to disk without losing the old macro. To return to the main LOGONS prompt line press <**Q**>.

Add

The Add command allows you to add a new macro to the file MACROS. To do this press <**A**> while in the main LOGONS prompt line. After you press <**A**>, the screen will appear as follows:

```
LOGON: ADDING NEW MACRO, two <RETURN>s terminate

MACRO NAME (6 chrs max) ->
```

Type in a name of your choice of no more than six characters so that you can identify the macro and use it to perform the automatic logon function. After you have typed the name and pressed <**RETURN**> the following prompt will appear:

```
TYPE ->
```

TERMINAPPLE now requires you to type in the first thing that you would normally type during a manual logon to a timesharing system. This will vary from

timesharing system to timesharing system. After you have pressed <**RETURN**>, the following prompt will appear:

```
PROMPT ->
```

TERMINAPPLE now requires you to type in the prompt sent by the timesharing system in reply to the initial message you typed in. After you have typed in the "prompt character" the cycle will repeat itself once again prompting you with "TYPE ->" followed by "PROMPT ->". To terminate the definition of a logon macro simply type <**RETURN**> twice (note that it is not possible to create a macro that has in it two consecutive RETURNs) . TERMINAPPLE will now return you to the main logon prompt line.

The following example is given to assist you in creating your own MACROS.

Consider the following logon with a timesharing system. The messages that you would normally be required to type in are shown in bold face.

```
WELCOME TO FASTBUCK TIMESHARING SYSTEM
12/11/85 AT 15:37 CHANNEL 12
USER ID - John Citizen
PASSWORD Enter
```

At this stage in this example you are logged on and ready to start working with the timesharing system. The following explanations will assist you in creating logons. The first prompt you are given is the request for the "USER ID-". Your response is "John Citizen". The second prompt you are given is "PASSWORD". Your response is "Enter".

By way of explanation, when the DEFINE LOGON option prompts you with "PROMPT ->" you need to tell TERMINAPPLE to send the words "John Citizen" when the dash in "USER ID-" is received. The DEFINE LOGON program then asks you for the next "PROMPT ->". You should look for a unique character that has not been sent to you since the last prompt character was received and that this new character occurs not more than ten characters ago. In the example the letter "D" from the word "PASSWORD" is suitable. Accordingly you should type in the letter

"D" in reply to "PROMPT ->". The DEFINE LOGON program will now ask you for your next input with the "TYPE ->" prompt. In the example, your reply is "Enter". Since this is the end of the logon procedure you should press the <**RETURN**> key twice.

This procedure has now created a macro which can be saved on disk and called using the LOGON command from COMMAND MODE B from within TERMINAL MODE to automatically logon to a timesharing system.

If you are using the Apple auto dial modem you may wish to create the macro so that it will also dial the telephone number of the timesharing system and then proceed to logon. To do this your response to the first "TYPE ->" prompt should be the commands required by the modem followed by the telephone number of the timesharing system. For the Apple auto dial modem this would normally be "ATDP1234567" where "1234567" is the telephone number. This is then followed by the normal macro as outlined above. For full details you should refer to your modem manual.

Quit

To leave the DEFINE LOGON program, press <**Q**> while you are in the main logon prompt line. During the exit from this program, TERMINAPPLE will update the MACROS file that contains the logon macros on disk. TERMINAPPLE will return you to the outermost command level.

<ESC> aborts

To leave the DEFINE LOGON program without updating the MACROS file press <**ESC**> while you are in the main logon prompt line. TERMINAPPLE will return you to the outermost command level.

512 bytes have been allocated to store logon macros. When this space is used the message:

```
NOT ENOUGH ROOM, PRESS ANY KEY TO CONTINUE
```

will be displayed. Whatever you have typed in as the incomplete macro will not be saved. Therefore to save the new macro you will need to either delete some existing macros or start a new file MACROS on another disk. Existing MACROS

files may be copied using FID (see your DOS System Master). The DOS catalog will show the MACROS file as file type "S".

Logon macros may be saved on the TERMINAPPLE disk. However you will need to remove the write protect tab before you save the macro, then save the macro and afterwards replace the write protect tab.

SECTION FIVE
CARE AND FORMATTING OF DISKS

Care of disks

Disks are rather delicate parts of any computer system because they are generally the medium on which you will store data. The following words of caution not only apply to your data diskette but they also apply to your TERMINAPPLE disk.

The disk itself is made from plastic and is coated with an oxide that can be structured by exposure to a magnetic source. The disk is housed inside a protective sleeve that affords a reasonable degree of protection.

Care should be taken not to touch the disk surface and not to expose the disk surface for prolonged periods to dust. Grime that may settle on the disk surface may make it difficult to retrieve data that is stored on the disk.

Because the disk is sensitive to magnetism it should never be placed in close proximity with magnetic sources like electric motors or television sets. Such contact may damage the data stored on the disk.

Never force the disk in or out of the disk drive and never close the disk drive door if too much resistance is felt. Similarly, you should not insert or remove the disk while the disk drive's in use light is on.

By and large, if you treat your disks with the same care that you do your favorite Hi-Fi records then all should be well.

The formatting process

Before you can save Pascal files of any nature on a disk you must first format the disk. The Formatting process sets up the disk with tracks and blocks that allow the disk drive mechanism to store data in such a way that it may be retrieved at a later date. Disks that are formatted using the Pascal formatter are for the storage of Pascal files only. Do not attempt to save DOS files on disks that have been formatted for the storage of Pascal files. The formatting procedure is comprehensively described in your Pascal manuals.

Formatting Pascal disks

To format Pascal disks it will be necessary to execute a code file on your Pascal system disks that is called FORMATTER.CODE. Execute that file from the

outermost command level of the Apple Pascal environment and follow the instructions that prompt you on the screen. Be careful to specify the correct Volume number since if you accidentally have the wrong disk in the nominated Volume the contents of the disk will be destroyed.

After some harsh sounds from your disk drive and approximately 30 seconds the disk in use light will go out. The disk is now ready to handle Pascal files through TERMINAPPLE.

Disks that are formatted to work with Pascal files are set up during the formatting process with 35 tracks. Each track is divided into eight blocks with each block able to hold 512 bytes of information.

When you save a Pascal file you will need sufficient contiguous blocks to store the entire file. Of course files can spill over tracks but the tracks must be contiguous. By and large files will be in one package on the disk. Particular care should therefore be exercised when using the BLOCK transfer and in particular the BLOCK receive commands. Saving blocks without some knowledge of what information is already recorded in the nominated block space will result in the loss of the file that previously occupied that space.

Initializing DOS disks

Because TERMINAPPLE is also able to send and receive DOS files in addition to Pascal files it will be necessary to initialize some disks under the DOS system. Disks that are initialized under DOS are for the storage of DOS files only. Do not attempt to save Pascal files on disks that have been initialized for the storage of DOS files.

Since the majority of users will use the DOS format, TERMINAPPLE is able to initialize disks. This is a powerful feature since you may initialize disks in the DOS 3.3 format without disconnecting the communications line to the host. TERMINAPPLE initialized disks for use under the DOS 3.3 format from the outermost command level or title page. To initialize a disk press <5> at the outermost command level. The following message will appear on the screen.

```
BE CAREFUL, THIS ROUTINE ERASES DISKS

INSERT NEW DISK IN BOOT DRIVE AND PRESS <RETURN>, <ESC> ABORTS
```

Pressing <**ESC**> aborts back to the outermost command level. To continue, place the disk to be initialized in the boot drive (Volume .4) and press <**RETURN**>. The following message will appear on the screen.

PRESS ✱ TO START, <ESC> ABORTS

Pressing <**ESC**> aborts back to the outermost command level. To initialize the disk press <✱>. After some harsh sounds from your disk drive and approximately 30 seconds the disk in use light will go out. The disk is now ready to handle DOS files through TERMINAPPLE. Disks initialized in this way will not contain DOS and consequently you will not be able to use them to boot your Apple, however these disks have more space available for storing files.

Disks that are formatted to work with DOS files are set up during the initialization process with 35 tracks. Each track is divided into sixteen sectors with each sector able to hold 256 bytes of information. Two DOS sectors are equal to one Pascal block.

DOS files are saved in a rather strange way. DOS is able to make use of any sector that is not being used irrespective of where the sector is located on the disk. Therefore, files will not necessarily be saved in contiguous sectors. When a disk has been freshly initialized, information will be stored starting with track 18 moving inwards towards track 35. When these tracks are used up the outer tracks are used. However as files are deleted from the disk pockets of space become available. DOS is able to break up a large file and store parts of it in these pockets. After some time that a disk has been in use a large file when saved will probably be scattered over many sectors.

Particular care should therefore be exercised when using the BLOCK transfer and BLOCK receive commands. Transferring a range of blocks will necessarily select sectors in lots of two because there are two sectors to a block and further, a range of blocks may not contain one file in its entirety. Saving blocks without some knowledge of what information is already recorded in the nominated block space will result in the loss of the file that previously occupied that space and most probably parts of other files that occupied those sectors.

Labelling of disks

It is recommended that you write on the diskette label the date in which the disk was formatted and the purpose for which the disk was formatted. Be sure to

prepare the label before you fix it to the disk or else use a felt tipped pen. Writing on the disk itself with excessive pressure may damage the disk.

Storage of disks

Always ensure that your disks are stored in a dry cool place that is relatively dust free.

SECTION SIX
QUIT

To leave the TERMINAPPLE program you will need to:

1. Turn your Apple off and then on (not recommended), or
2. In the case of the Apple //e or //c press <**OPEN-APPLE CTRL RESET**>, or
3. Exit via option <**6**> at the outer most command level.

The third choice is recommended. After you have pressed <**6**> at the outer most command level the screen will look as follows:

```
PRESS <RETURN> TO REBOOT
```

Note that this message appears in the eighty column screen display and consequently when you press <**RETURN**> your Apple will be booted into eighty columns. If you wish to boot into forty columns you will need to press <**CTRL RESET**>. This will cause your Apple to switch to forty column screen display. The above screen message will appear in forty columns. To reboot press <**RETURN**>.

APPENDIX ONE
TERMINAPPLE ERROR MESSAGES

TERMINAPPLE will detect a range of error conditions. These can be broken into two categories namely TRANSMISSION ERRORS and INPUT OUTPUT ERRORS.

TRANSMISSION ERRORS

Transmission errors will only be detected if the Error command has been been turned on. Transmission errors are discussed in detail under the Error command in Section Six.

TRANSMISSION ERROR NUMBER	TRANSMISSION ERROR DESCRIPTION
1	Loss of carrier signal
2	Data received before the previous byte is read
3	Not used
4	Parity error
5	Error 1 and Error 2 combined

INPUT/OUTPUT (I/O) ERRORS

10 : no such drive I/O ERROR 10 will result from attempting to access a Volume that is not connected to your Apple.

11 : disk not pascal I/O ERROR 11 will result from attempting to perform a Pascal operation on a DOS disk.

12 : disk not dos I/O ERROR 12 will result from attempting to perform a DOS operation on a Pascal disk.

13 : file not found I/O ERROR 13 will be reported if TERMINAPPLE cannot locate the nominated file on the selected Volume.

14 : disk full Attempting to save a file on a disk with insufficient space to accommodate the file will result in I/O ERROR 14.

15 : file not text If you attempt to operate with a text file after you have selected a non text file option TERMINAPPLE will report I/O ERROR 15.

16 : disk error General disk error will be reported under this error code. For example, if the disk door is left open during a disk operation then I/O ERROR 16 will be reported.

17 : write protected If you attempt to write to a disk that is write protected then I/O ERROR 17 will be generated.

30 : interrupted by sender TERMINAPPLE can be stopped from transferring or receiving a file by pressing <ESC>. Such interruptions will be reported as I/O ERROR 30.

31 : error in transmission If an error arises during transmission TERMINAPPLE will stop the transfer of the file and report such a break as I/O ERROR 31. This error will also be generated if the automatic error correction mode available when transmitting coded files under the ECHOCHECK protocol fails.

32 : Interrupted by receiver

If the sender of the file stops his system from transmitting to you TERMINAPPLE will react with an I/O ERROR 32.

33 : DETECT ERR mismatch

The automatic error correction facility that is available on TERMINAPPLE only works if the host computer is also operating under TERMINAPPLE. If you intend to use this facility the selected file must be transmitted as either a PAS(ANY) or a DOS(ANY) file or as BLOCKS under the ECHOCHECK protocol with the Dterr command turned on in both computers. If only one computer has the Error command turned on then the receiving TERMINAPPLE will report I/O ERROR 33. The sending TERMINAPPLE will report I/O ERROR 31.

34 : memory empty

If you attempt to save memory when memory is empty, TERMINAPPLE will report I/O ERROR 34.

35 : inappropriate protocol

Because of file encoding, TERMINAPPLE will not accept EOB-ACK protocol for either PAS(ANY) or DOS(ANY) transmission modes. The selection of these illegal combinations will generate I/O ERROR 35.

36 : no file 'MACROS'

If you attempt to perform a Logon with a disk that does not contain the logon MACROS file, an I/O ERROR 36 will be reported.

37 : block > 279

If you attempt to select a block number greater than 279 in Block Receive or Block Transfer I/O ERROR 37 will be reported. The legal range for a floppy disk is 000 to 279.

38 : block #1 > block #2

I/O ERROR 38 will occur when the block range in Block Receive or Block Transfer is specified such that the first block number is larger than the second block number.

APPENDIX TWO
ASCII CHARACTER CODES

The ASCII (American National Code for Data Interchange) is a seven bit code that is used by many computer systems for communicating. The following table lists each ASCII character by its decimal and hexadecimal representations against the characters name and typeable key from the Apple keyboard. Note that some characters require the use of the Control key before they can be typed. These characters will not appear on the monitor unless the debug mode has been selected.

DECIMAL	HEXADECIMAL	CHARACTER	TYPEABLE
0	00	NULL	CTRL @
1	01	SOH	CTRL A
2	02	STX	CTRL B
3	03	ETX	CTRL C
4	04	ET	CTRL D
5	05	ENQ	CTRL E
6	06	ACK	CTRL F
7	07	BEL	CTRL G
8	08	BS	CTRL H
9	09	HT	CTRL I
10	0A	LF	CTRL J
11	0B	VT	CTRL K
12	0C	FF	CTRL L
13	0D	CR	CTRL M
14	0E	SO	CTRL N
15	0F	SI	CTRL O
16	10	DLE	CTRL P
17	11	DC1	CTRL Q
18	12	DC2	CTRL R
19	13	DC3	CTRL S
20	14	DC4	CTRL T
21	15	NAK	CTRL U
22	16	SYN	CTRL V
23	17	ETB	CTRL W
24	18	CAN	CTRL X
25	19	EM	CTRL Y
26	1A	SUB	CTRL Z
27	1B	ESC	ESCAPE

DECIMAL	HEXADECIMAL	CHARACTER	TYPEABLE
28	1C	FS	CTRL \
29	1D	GS	CTRL]
30	1E	RS	CTRL ∧
31	1F	US	CTRL __
32	20	SP	SPACE
33	21	!	!
34	22	''	''
35	23	#	#
36	24	$	$
37	25	%	%
38	26	&	&
39	27	'	'
40	28	(	)
41	29	)	(
42	2A	★	★
43	2B	+	+
44	2C	,	,
45	2D	-	-
45	2E	.	.
47	2F	/	/
48	30	0	0
49	31	1	1
50	32	2	2
51	33	3	3
52	34	4	4
53	35	5	5
54	36	6	6
55	37	7	7
56	38	8	8
57	39	9	9
58	3A	:	:
59	3B	;	;
60	3C	<	<
61	3D	=	=
62	3E	>	>
63	3F	?	?
64	40	@	@
65	41	A	A
66	42	B	B
67	43	C	C
68	44	D	D
69	45	E	E
70	46	F	F
71	47	G	G

DECIMAL	HEXADECIMAL	CHARACTER	TYPEABLE
72	48	H	H
73	49	I	I
74	4A	J	J
75	4B	K	K
76	4C	L	L
77	4D	M	M
78	4E	N	N
79	4F	O	O
80	50	P	P
81	51	Q	Q
82	52	R	R
83	53	S	S
84	54	T	T
85	55	U	U
86	56	V	V
87	57	W	W
88	58	X	X
89	59	Y	Y
90	5A	Z	Z
91	5B	[	[
92	5C	\	\
93	5D	]	]
94	5E	∧	∧
95	5F	—	—
96	60	'	'
97	61	a	a
98	62	b	b
99	63	c	c
100	64	d	d
101	65	e	e
102	66	f	f
103	67	g	g
104	68	h	h
105	69	i	i
106	6A	j	j
107	6B	k	k
108	6C	l	l
109	6D	m	m
110	6E	n	n
111	6F	o	o
112	70	p	p
113	71	q	q
114	72	r	r
115	73	s	s

DECIMAL	HEXADECIMAL	CHARACTER	TYPEABLE
116	74	t	t
117	75	u	u
118	76	v	v
119	77	w	w
120	78	x	x
121	79	y	y
122	7A	z	z
123	7B	{	{
124	7C	|	|
125	7D	}	}
126	7E	~	~
127	7F	RUB	DEL

A brief explanation of abbreviations used above follows. The explanations are listed in order of their decimal equivalent.

| 0 | **NUL Nul** **(all zero)** | The NUL character that is represented by CTRL @ is used to create space and has no effect on the text. The character(s) may be inserted or deleted without any detrimental effect on the text. |

| 1 | **SOH** **Start of** **Heading** | The SOH character that is represented by CTRL A is used to indicate the beginning of a message header. |

| 2 | **STX** **Start of Text** | The STX character that is represented by CTRL B is used to indicate the end of the message header and the beginning of the message text. |

| 3 | **ETX** **End of Text** | The ETX character that is represented by CTRL C is used to indicate the end of the message text. |

| 4 | **EOT** **End of** **Transmission** | The EOT character that is represented by CTRL D is used to indicate the end of transmission with some devices being physically turned off on receipt of a CTRL D. |

| 5 | **ENQ** **Enquiry** | The ENQ character that is represented by CTRL E is used to query remote devices. |

| 6 | **ACK** **Acknow-** **ledgement** | The ACK character that is represented by CTRL F is used by the operator of a receiving device to indicate a yes response to the sender. |

| 7 | **BEL** **Bell** | The BEL character that is represented by CTRL G causes devices fitted with a bell or buzzer to emit a warning sound or gain the operators attention. |

| 8 | **BS** **Back Space** | The BS character that is represented by CTRL H is used to back space over existing characters. |

9   HT
**   Horizontal**
**   Tab**

The HT character that is represented by CTRL I is used to move the cursor to the next predetermined tab position on the terminal.

10   LF
**   Line Feed**

The LF character that is represented by CTRL J is used to generate a line feed causing the cursor to move to the same position one line down. CTRL J is fully supported by TERMINAPPLE.

11   VT
**   Vertical Tab**

The VT character that is represented by CTRL K is used to vertically tab or move the cursor to the same position on another line by the preset number of tab stops.

12   FF
**   Form Feed**

The FF character that is represented by CTRL L is used to generate a form feed thereby moving the cursor to the next page. This feature is supported by TERMINAPPLE and appears to clear the monitor.

13   CR
**   Carriage**
**   Return**

The CR character that is represented by CTRL M is used to move the cursor to the first position of the same line.

14   SO
**   Shift Out**

The SO character that is represented by CTRL N is used by some terminals to access special characters or cause specific actions to occur. The action that can be expected when using SO is very much device dependent.

15   SI
**   Shift In**

The SI character that is represented by CTRL O is used by some terminals to access special characters or cause specific actions to occur. The action that can be expected when using SI is very much device dependent.

16   DLE
**   Data Link**
**   Escape**

The DLE character that is represented by CTRL P is used to indicate the beginning of another sequence of characters whose function it is to control the device or indicate to the operator required action.

17   DC1
**   Device**
**   Control 1**

The use of DC1 represented by CTRL Q varies greatly with different manufactures of computers and communications equipment using them to achieve rather varied results.

18 DC2
Device
Control 2

The use of DC2 represented by CTRL R varies greatly with different manufactures of computers and communications equipment using them to achieve rather varied results.

19 DC3
Device
Control 3

The use of DC3 represented by CTRL S varies greatly with different manufactures of computers and communications equipment using them to achieve rather varied results.

20 DC4
Device
Control 4

The use of DC4 represented by CTRL T varies greatly with different manufactures of computers and communications equipment using them to achieve rather varied results.

21 NAK
Negative Ack

The NAK character that is represented by CTRL U is used by the operator of a receiving device to indicate a no response to the sender.

22 SYN
Synchronous
Idle

The SYN character that is represented by CTRL V is used to synchronize devices that rely on synchronous transmission.

23 ETB
End trans.
Block

The ETB character that is represented by CTRL W is used to flag data into blocks as required by the transmitting/receiving device.

24 CAN
Cancel

The CAN character that is represented by CTRL X is used by most devices to cancel an entry from a predetermined point. This is usually the beginning of that line.

25 EM
End of
Medium

The EM character that is represented by CTRL Y is used to indicate the end of transmitted text.

26 SUB
Start Special
Seq

The SUB character that is represented by CTRL Z is used as a filler for characters that have been lost or distorted in transmission.

27 **ESC**
        Escape
The ESC character that is represented by the ESC (ESCAPE KEY) is used to gain access to additional operations available from the keyboard as defined by the user. For example, TERMINAPPLE uses <**shift esc**> to enter the command mode from terminal mode.

28 **FS**
        File Separator
The FS character may be inserted in a transmission to flag points that the receiver may wish to identify at a later date. The use of such a character is very much user dependent.

29 **GS**
        Group
        Separator
The GS character may be inserted in a transmission to flag points that the receiver may wish to identify at a later date. The use of such a character is very much user dependent.

30 **RS**
        Record
        Separator
The RS character may be inserted in a transmission to flag points that the receiver may wish to identify at a later date. The use of such a character is very much user dependent.

31 **US**
        Unit
        Separator
The US character may be inserted in a transmission to flag points that the receiver may wish to identify at a later date. The use of such a character is very much user dependent.

32 **SP**
        Space
The SP character that is represented by the space bar key on the key board is used to insert spaces in text.

APPENDIX THREE
GLOSSARY

Acoustic coupler   A device that generates a frequency after conversion of digital data for transmission over the telephone network. The same device converts an acoustic frequency into digital form.

Analogue signal   The frequency signal resulting from the conversion of digital data for transmission over the telephone network.

ANSI   ANSI is an acronym for American National Standards Institute

Append   Add a new file to the existing contents of a file or memory.

Applesoft   A version of the computer language BASIC that executes on the Apple][, Apple //e and Apple //c computers.

ASCII   An acronym for the American Standards Code for Information Interchange. The code defines 128 characters that are detailed in Appendix Two of this manual.

Asynchronous   The transmission of a data signal that is not regulated by specific timing between characters.

BASIC   This is an acronym for Beginners All purpose Symbolic Interchange Code. BASIC is a high level computer language.

Baud   Baud is a unit of signal speed equal to the number of signal changes per second. Note that this is not the same as bits per second.

Binary   A number system comprised of only two numbers, namely zero and one. Each position moving left is represented by 2 raised to ascending powers starting with zero.

Bit   Bit stands for binary digit and is either zero or one.

Block   A physical unit of storage equal to 512 bytes of information for disks formatted to store Pascal files. A

block is also the minimum allocation of disk space when storing Pascal files.

Boot   The process of loading a computer with an operating system or special program that creates an environment for the running of other programs.

Break   Sends a 233 millisecond break to the host computer. At the conclusion of this break terminal mode is resumed.

Buffer   A temporary storage area for data before it is finally processed.

Byte   A collection of eight binary bits that are used to represent characters. In the Apple a byte comprises eight bits.

Carrier signal A background signal of fixed frequency that is modulated or varied to carry the information being transmitted.

Carriage return Causes a break in reception or transmission resulting in the next line to be printed.

Catalog   A special track on disks initialized under DOS which contains the list of files on that disk.

Character   A symbol with a commonly understood meaning. Appendix Two of this manual details the ASCII character set that is commonly used by computers.

Character format The number and structure of bits used to represent a character to be transmitted.

Code (file)   The representation of a file in a form that is not normally legible. TERMINAPPLE may be used to encode all file types for transmission in a coded format.

Contiguous   A contiguous file occupies one area of space. Pascal files require sufficient space for the entire file to be saved in contiguous blocks.

Control characters A special range of the ASCII character set generated by holding the Control key and another character simultaneously. See Appendix Two for details of control characters.

Controlling character

A user definable character from the ASCII character set that is used to control information flow by way of setting a communications protocol during computer communication.

Cursor

An indicator that marks the current position for data input/output on the screen. This is usually a blinking square or block.

Default

A value that is set by TERMINAPPLE in the absence of any specific instruction.

De-modulate

The process of converting an analogue signal into a digital stream.

Digital signal

An information stream composed of bits representing zero or one.

Direct connect

A method which directly connects by wire a modem into the telephone network.

Directory

A special track on disks formatted under Pascal that contains the list of files on that disk.

DOS

An acronym for Disk Operating System that is a special program allowing a computer user to access disk drives.

DOS System Master

A special disk provided by Apple Computer Inc. with their disk drives.

Drive

A device that is connected to a computer that is capable of storing data for use by the computer.

EBCDIC

An acronym for Extended Binary Coded Decimal Interchange Code. EBCDIC was developed by IBM and uses eight bits to represent a total of 256 characters.

Echocheck

A communications protocol that uses each character in the information stream as a check that that character was correctly received by the host computer.

EOB-ACK

(End Of Block — ACKnowledge) A communications protocol where control over the information flow is achieved by the sending computer terminating batches of characters with a special end of block character. The receiving computer restarts transmission with a special acknowledgement character.

EOF   (End Of File) A special character inserted into the information stream to determine the end of the information stream.

Firmware   A computer program that is stored in ROM.

Floppy disk   A flexible magnetic medium of five and one quarter inches diameter, used to store computer data.

Formatting   A process necessary to mark a disk with tracks and blocks for use with Pascal files.

Full duplex   A communications line capable of transmission in each direction at the one time.

Half duplex   A communications line capable of transmission in only one direction at one time.

HELLO   A special program that is executed by DOS at the completion of the boot process.

Hexadecimal   A number system to base sixteen with numbers represented as 0 to 9 then A representing 10 through to F which represents 15.

Hz (hertz)   A measure of frequency rated in cycles per second.

Integer   A version of the high level language BASIC that is executable on Apple computers.

Interface   The combination of a hardware device, firmware and software that allows the compatibility of two otherwise incompatible pieces of equipment.

INIT   A command of the instruction set of the Apple DOS system used to initialize disks for use under DOS.

Initialize   The process of storing predetermined information in set locations. This term is also used to refer to the process necessary to mark a disk with tracks and sectors for use with DOS files.

K (1024)   A unit of measure that consists of 1024 bytes of information.

Krunch   The process of repacking Pascal disks to make all files contiguous.

Lock

A DOS command that protects files from being deleted or over written.

Logon

The process of establishing contact with another computer by answering in a predetermined sequence.

Macros

A predetermined sequence of characters that can be activated by a single name.

Modem

A device that is used to modulate a digital signal into an analogue signal and demodulate an analogue signal into a digital signal. The term modem comes from MOdulate DEModulate.

Modem eliminator

The cross connection of an RS 232C cable of pins 2 and 3 that obviates the need for a pair of modems. Transmission distances should be short as reliability decreases with distance.

Modulate

The process of converting a stream of data from digital form to analogue form.

Motherboard

The large circuit board made of non-conductive material traced with metal connectors linking chips inside the Apple computer.

Parallel interface

An interface system that transmits each data bit used to represent a character on its own wire. Transmission of each therefore occurs simultaneously.

Parity

A system used to tag a character with an extra bit to ensure that the correct character is received. Even Parity attaches an extra bit to the character so that the count of bits used to represent the character is even. Odd Parity attaches an extra bit to the character so that the count of bits used to represent the character is odd.

Pascal

A high order computer language named after the French mathematician Pascal.

ProDos

A disk operating system designed for the Apple //e and Apple //c computers.

Protocol

A predefined convention of characters that is used to control the flow of information during file transmission.

RAM

An acronym for Random Access Memory. RAM is a series of memory locations able to be read or written to.

ROM

An acronym for Read Only Memory. ROM is a series of memory locations that can only be read.

RS 232C

A standard established by the Electronic Industries Association to facilitate the manufacture of serial communications equipment that would conform to a common interface.

Sector

A physical unit of storage equal to 256 bytes of information for disks initialized to store DOS files. A sector is also the minimum allocation of disk space when storing DOS files.

Serial interface

An interface system that transmits each data bit one after the other along the same wire.

Slot

A 50 pin connector to hold an interface card. These are found at the rear of the Apple][and Apple //e motherboards.

Software

A computer program that is stored in RAM.

Source code

A non executable version of a program that must first be compiled before program execution. The source code of a program is in a human readable form.

STP-STRT

(SToP STaRT) A communications protocol where transmission is controlled by the receiving computer through the use of a stop character and a start character.

Synchronous

The transmission of a data signal that is regulated by specific timing between characters.

Text file

A file that is not an executable program file. Text files are sometimes called data files.

The Source

An American data base available by subscription to timesharing users.

Timesharing

A computer system that is capable of sharing its time amongst many users with each user thinking he is the only person using the system.

Track

An arrangement of sectors or blocks in a circular pattern on a disk's surface. DOS 3.3 disks contain sixteen sectors per track. Pascal disks contain eight blocks per disk. Each track contains 4096 bytes of information. A

floppy disk used with the Apple][, Apple //e or Apple //c will normally contain thirty five tracks.

Unlock   A DOS command that cancels the Locked condition of a file.

Volume   A representation of physical devices connected to the Apple such as disk drives.

VT 100   A commonly used computer terminal which recognizes preset commands from the host computer.

Ward Christensen   A communications protocol where transmission is controlled by the receiving computer through the use of receiving data in 128 byte blocks which are checked before being written to disk.

Write protect   The placing of an adhesive label over a disks write protect cutout preventing the accidental writing or deleting of files on the disk.

XON-XOFF   Same as SToP STaRT protocol. A communications protocol where transmission is controlled by the receiving computer through the use of a stop character and a start character.

APPENDIX FOUR
TROUBLE SHOOTING

This appendix is designed to help you resolve some problems from situations that you may experience which preclude your full use of TERMINAPPLE. Most of these situations will arise primarily due to a lack of experience with either communications software in general or the Apple. While TERMINAPPLE is designed to guide you as much as possible, situations will arise which require you to draw on your own experience. For example, VT100 emulation is set to operate in full duplex. This may cause much concern if it is not realized. If you cannot resolve these problems then check this appendix.

Problem: **Characters that are typed in from the keyboard do not appear on the screen.**

You may have set the duplex flag to full duplex. Full duplex requires characters to be echoed back to you from the other computer before they appear on your screen. Therefore if the other computer is not echoing your signal back to you simply go to half duplex. If you require TERMINAPPLE to stay in full duplex then advise the other computer that you require your signal to be echoed back to you. Refer to the paragraph headed Half in Section One, Part D.

Problem: **Each character that is typed in appears twice on the screen.**

The most common cause of this problem is that you are in half duplex and the other computer is echoing back your signal. If this is the case, you may resolve the problem by switching to full duplex, or stopping the host computer from echoing your signal. Note that most timesharing systems operate in full duplex therefore the only practical solution is for you to switch to full duplex. Refer to the paragraph headed Half in Section One, Part D.

Problem: **Gibberish appears on the screen.**

There are many causes for such a problem, however do not mistake TERMINAPPLE's non Text file mode of transfer as gibberish. Under this transfer or receive option the file is encoded and consequently makes a lot of sense to TERMINAPPLE. Some possible causes for the appearance of inappropriate gibberish are:

1: The Baud you have selected is not the same as the baud rate being used by the host computer. To verify this as the problem, you will need to determine the baud rate being used by the host computer. Beware of using a Baud rate that your modem is incapable of handling. Refer to Section Two and Section One, Part C.

2: Acoustic couplers rely on transmitting the data stream as a sound signal. You can quite simply listen to what your transmission sounds like by typing anything on the keyboard and listening to the transmission or "mouth piece" end of your acoustic coupler. Data being received by acoustic couplers also sounds the same except that it arrives over the telephone lines. If the acoustic coupler is able to pick up additional sounds from the immediate environment or perhaps electrical noise during transmission these could be represented as gibberish mixed up with the information that should have been received. You should ensure that the telephone handset is well fitted to the rubber cups of the acoustic coupler. TERMINAPPLE has been provided with a powerful feature that allows for the self correction of such transmission glitches. This feature can be invoked by using the ECHOCHECK protocol and also turning on the Dterr command. Refer to Section One, Part E.

3: The CHARACTER FORMAT you are using is incompatible with that being used by the host computer. You will need to verify the character format used by the host computer and reset TERMINAPPLE's character format. Since it is very simple to change the character format from within TERMINAPPLE it may be easier to do just that until understandable text appears on the screen. Failing this shortcut method, check the details that apply to the character format used by the host computer. Refer to the paragraph headed Chrform in Section One, Part D.

Problem: **You can type information into TERMINAPPLE but seem unable to establish contact or raise a response from the host computer. There are many possible causes for such a problem. You should check the following:**

1: Check that the cable you are using to connect the Serial Interface Card to your modem is properly wired. If details for your particular card/modem combination are not provided in Appendix Five you should contact your dealer.

2: If you are using an acoustic coupler you should ensure that the telephone handset is cradled the correct way around.

3: This situation can also arise if both modems have been set to answer mode or both modems have been set to originate mode. The answer/originate switch on your modem tells your modem which tone pair will be used to transmit your signal stream to the host computer. If the host computer is using the same tone pairs to transmit to you, the transmission becomes rather muddled. You should therefore set your modem's answer/originate switch to the opposite setting used by the host computer. If you are talking to a timesharing system the host computer will operating in the answer mode. Refer Section One, Part C.

4: Ensure that the telephone link has not dropped out. This is usually verifiable by checking the carrier tone indicator (LED) on your modem. If your modem is not equipped with an indicator you may verify a line drop out by turning on the Error command. If Error is turned on and the carrier tone is not present TERMINAPPLE will generate **Error #1** and at the same time generate a high pitched tone. Refer to Section One, Part C; the paragraph headed Error in Section One, Part D; and Appendix One.

Problem: **Data disks continually result in some form of I/O ERROR.**

1: Before you can use a disk to store data files you must ensure that the disk is initialized. Trying to access an uninitialized disk will most probably result in an I/O ERROR 16 "disk error". You should also take care that disks initialized for DOS are used only with DOS files and disks initialized or formatted for use with Pascal files are used only with Pascal files.

2: From time to time (usually as a result of poor handling of the disk), some damage may be caused to the disk thereby precluding the loading or saving of files or worse still the cataloging of a disk. Such disks may be reconstructed with most if not all of the data recovered. However, recovery does depend on your knowledge of how data is stored on the disk. In any event, the reconstruction of disks is not for beginners. If these types of problems occur too frequently you should review the way you use or store disks or perhaps have your disk drive checked by an authorized dealer. Refer to Section One, Part D.

Problem: **The TERMINAPPLE disk is placed in the disk drive but the program refuses to load.**

1: You should ensure that you are using the boot drive to load TERMINAPPLE (usually means Slot 6 Drive 1). In the Apple //c, the boot drive is built into the side of the computer.

2: Not all disk drives are identical and consequently a disk may work with one disk drive and not work with another. Fortunately, this situation is rare since there is enough tolerance built into systems to be able to read disks that have been prepared on another disk drive. If after following the instructions for loading TERMINAPPLE the disk just spins and does not load or it continually results in an I/O ERROR, you should contact your dealer. The chances are your disk drive is highly incompatible with other disk drives or that your TERMINAPPLE disk is damaged. Refer to Section One, Part A.

Problem: **All the characters that you type appear on one line only (ie. No line feed).**

When communicating between computers, the <**RETURN**> key does not usually generate a line feed. Therefore when only one screen line is used over and over it is fair to assess the problem as no line feed. To remedy this situation turn on the line feed or Lfeed command. Refer to the paragraph headed Lfeed in Section One, Part C.

Problem: **The printer double line feeds when using the Printer command.**

If the printer double line feeds when printing under TERMINAPPLE's Printer command it means that the line feed or Lfeed command is on. To remedy the situation simply turn off the Lfeed command. Refer to the paragraphs headed Lfeed and Printer in Section One, Part C.

Problem: **The Printer command does strange things to the printer while printing.**

Control characters have varied affects on printers. For example some printers receiving a Control Q attempt a high resolution screen dump while Control Q on other printers initiates underlining. It is a fair bet that if your printer starts doing these

strange or unexpected things it is because it is encountering control characters as part of the text file being printed. The solution is to remove these control characters from the text. Also, the printer must print faster than characters arriving from the host computer. Refer to the paragraph headed Printer in Section One, Part C.

Problem: **The Printer command does not work.**

You must physically turn your printer on before you can use the Printer command. If you have selected the Printer command without having turned on your printer simply turn your printer on and the printer will start printing. You cannot turn the printer command off if the printer is physically turned off. Also, not all printer interfaces will work with TERMINAPPLE. Refer to the paragraph headed Printer in Section One, Part C.

Problem: **How to stop the host computer.**

If you wish to stop the host computer from completing the function that it is presently engaged in you will need to use the Break (or similar) command to send a break. For example, this will cause the listing of a program to be halted returning control to you. If a single Break does not halt the host computer try sending a string of Breaks.

If the other computer is also being used under TERMINAPPLE, the Break command will only work provided the other computer has the Dterr command turned on. Note that not all systems respond to the "Break" command. Some Bulletin Boards may use other methods such as Control K, or Control P to halt the host. Refer to the paragraph headed Break in Section One, Part C.

Problem: **The protocol you selected is not being recognized by TERMINAPPLE.**

1. It is possible that you may have incorrectly set the controlling characters that set up the protocol.

2. It is also possible that the host computer with which you wish to communicate uses some non standard protocol. If this occurs you may wish to try to use "NONE" protocol with the delay set to a suitable pause. You will need to experiment to establish just what constitutes a suitable pause. If this option fails you will probably not be able to transfer files to the host computer. Refer to Section One, Part E.
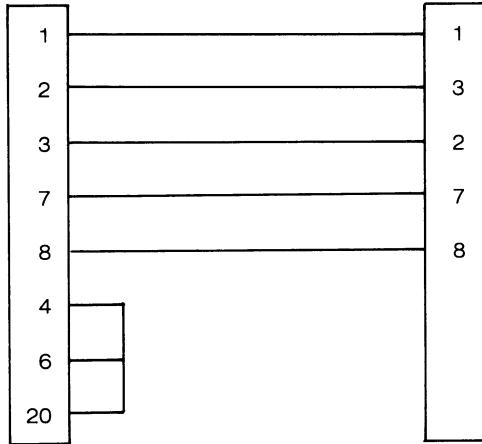
APPENDIX FIVE
WIRING OF INTERFACE CABLES

SEND-DATA modem to serial interface card

This cable is required if you are using a SEND-DATA modem with a serial interface card. To construct this cable you will need both male and female DB 25 PIN CONNECTORS and a short length of three strand cable. The connections should be made in accordance with the following diagram noting that pins 4, 6 and 20 on the male connector should be shorted. Note that pins 4, 6 and 20 should only be shorted on CCS equivalent cards.

MALE END : Pin　　　　　　　　　**Pin : FEMALE END**

```
 2 ─────────────────────  3
 3 ─────────────────────  2
 7 ─────────────────────  7
 4 ┐
 6 ┤
20 ┘
```
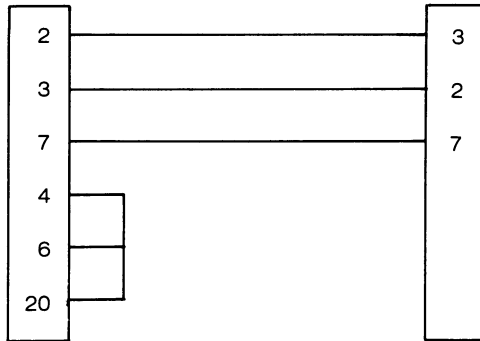
DATAPHONE modem to serial interface card

This cable is required if you are using a DATAPHONE modem with a serial interface card. To construct this cable you will need two male DB 25 PIN CONNECTORS and a short length of five strand cable. The connections should be made in accordance with the following diagram noting that pins 4, 6 and 20 on the serial interface card or Apple end of the cable should be shorted. Note that pins 4, 6 and 20 should only be shorted on CCS equivalent cards.

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APPLE END : Pin   **Pin : MODEM END**

```
    ┌─────┐                              ┌─────┐
    │  1  │──────────────────────────────│  1  │
    │  2  │────────────┐      ┌──────────│  3  │
    │  3  │──────────┐ │      │ ┌────────│  2  │
    │  7  │──────────────────────────────│  7  │
    │  8  │──────────────────────────────│  8  │
    │  4  │──┐                            │     │
    │  6  │──┤                            │     │
    │ 20  │──┘                            │     │
    └─────┘                              └─────┘
```

Direct connect Apple to Apple

This cable is required if you wish to connect two Apples that are in close proximity to each other without either machine requiring a modem. Each computer will need to be installed with a Serial Interface Card. To construct this cable you will need two male DB 25 PIN CONNECTORS and a length of three strand cable. The connection should be made in accordance with the following diagram. Note that pins 4, 6 and 20 should only be shorted on CCS equivalent cards.

MALE END : Pin   **Pin : MALE END**

```
    ┌─────┐                              ┌─────┐
    │  2  │────────────┐      ┌──────────│  3  │
    │  3  │──────────┐ │      │ ┌────────│  2  │
    │  7  │──────────────────────────────│  7  │
    │  4  │──┐                         ┌──│  4  │
    │  6  │──┤                         ├──│  6  │
    │ 20  │──┘                         └──│ 20  │
    └─────┘                              └─────┘
```
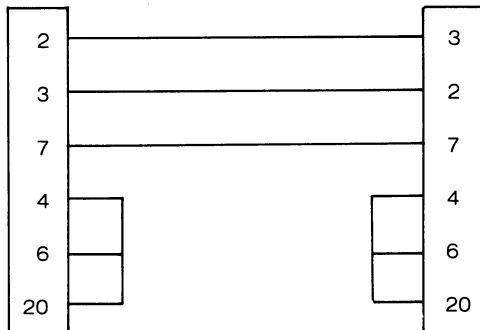
APPENDIX SIX
TERMINAPPLE'S UNPROMPTED FEATURES

This Appendix is a summary of TERMINAPPLE's unprompted features. These features are discussed in detail in the appropriate section of the manual and are reproduced for reference and convenience.

<Apple ESC>

The command structure of TERMINAPPLE is always entered from TERMINAL MODE. The necessary key strokes to enter command mode depend on which model Apple computer you are using.

Apple][	Press <**SHIFT**> and <**ESC**> simultaneously or <**CONTROL** Λ>
Apple][Plus	Press <**SHIFT**> and <**ESC**> simultaneously or <**CONTROL** Λ>
Apple //e	Press <**OPEN-APPLE**> and <**ESC**> simultaneously
Apple //c	Press <**OPEN-APPLE**> and <**ESC**> simultaneously

All these key stroke sequences are referred to as <**APPLE ESC**>. For full details refer to Section One, Part B.

Operations without the shift key modification

If you are using an Apple][or an Apple][Plus TERMINAPPLE will allow you to enter command mode by pressing <**CONTROL** Λ>. This feature is provided so that you may access command mode even if you are not using a shift key modification.

Variable scrolling speed

The View command (review of the memory buffer) within TERMINAPPLE supports variable scrolling speed. To vary the speed during scrolling under the View

•

command press any number from "1" to "9". One is the default and slowest speed while nine is the fastest speed. For full details of this feature see the paragraph headed View in Section One, Part D.

Unprompted <ESC>

The <**ESC**> key can virtually be used from anywhere within TERMINAPPLE. If its use is prompted to you it will perform the prompted task. However when the <**ESC**> is not prompted it is used to back track along the command structure. Note that if you are in TERMINAL MODE you may type ESC as a normal ASCII character. For further details on this feature see Section One, Part B.

Self correction of transmission glitches

Transmission glitches which occur from time to time are caused mainly by noise entering the transmission stream. TERMINAPPLE will endeavor to correct transmission glitches provided the ECHOCHECK protocol is used with either DOS(ANY) or PAS(ANY) and the Dterr command has been turned on. Under these options that section of the data stream that fails the echo-check test is retransmitted without transmission being broken. A successive glitch at the same place causes transmission to be aborted. This can only be used in Apple to Apple transfers. For full details of this feature see Section One, Part E.

Clearing the character counters

The counters that represent characters in, characters out and the total of characters in and out may be cleared. To clear these counters press <**SHIFT 3**> while you are in COMMAND MODE A. Clearing these counters does not affect the memory counter or the contents of memory.

Line feed & carriage return for each carriage return

You may configure TERMINAPPLE so that each time you press or send return, a line feed will also automatically be sent before the return. That is each CONTROL M will be preceded with a CONTROL J. This option is particularly useful if you wish to communicate with the MacINTOSH computer. To enable this option you will need to press <**X**> when you are in COMMAND MODE A. To disconnect this option you will need to press <**Z**> when you are in COMMAND MODE A.

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