CP/M™ KIT

for the

COMMODORE 128

An

INTRODUCTION TO CP/M

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An Introduction to CP/M

by

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Kit concept by J. Nelson Williams.

Public Domain programs selected by Dennis Anderson

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CHAPTER 1

INTRODUCTION

WELCOME to the world of CP/M, a world with hundreds of public domain software available, free, to you.

This manual is intended to get you, the C128 owner, started in CP/M. Keeping in mind a first time user, you will go through step by step procedures for such tasks as loading the CP/M system, viewing a directory, formatting a disk, copying files, printing files, etc. But not only that, you will learn how to obtain more software from bulletin boards if you have a modem.

The purpose of this CP/M Kit is therefore four-fold:

- to explain the use of some of the programs on Commodore's System Disk.
- to demonstrate some of the main features of Commodore's 128 CP/M.
- to discuss how to get started using a modem to gather more CP/M programs and information.
- to provide a collection of useful CP/M programs.

It is NOT the purpose of this kit to teach all about CP/M. There are many good books available on the subject (see Appendix C). Instead, this Kit will supplement what has been written and will point the way to information that is available.

WHAT IS CP/M?

CP/M stands for Control Program for Microprocessors. In its simplest form, CP/M's function is to control and manage the operation of a computer.

CP/M was developed back in the late 1970's mainly to have a standard operating system. This solved the problem of having to rewrite programs that were already available for other computers. By having a standard, not only did the software become more versatile but also the computer itself. By 1979, CP/M had become the most commonly used operating system for a large number of 8-bit computers. Through the years CP/M has evolved to its latest version, namely the CP/M Version 3.0, which is also known as CP/M Plus or CP/M+.

Some of the functions of the CP/M operating system are:

- Read the keyboard.
- Read/write data from/to the disk drive.
- Control where the data is to be stored in the memory of the computer (RAM).
- Display information on the screen
- Control the I/O ports, etc.

The differences between a standard CP/M operating system and those for the C128 and C64 are:

- a standard CP/M operating system uses a Z80 microprocessor. The Commodore 128 uses different microprocessors, a Z80 for the CP/M mode, and a 8510 for either the C128 mode or the C64 mode. The Commodore 64 uses a 6510 microprocessor.
- because of these different microprocessors, the computer uses a different set of machine language instructions.
- the CP/M operating system has to be loaded into memory from disk each time you turn on the computer and want to use it. On the other hand, the operating systems (kernals) of the C128 and C64 are always in the computer, in the form of a ROM.

When using the C128 in CP/M mode, there are several advantages. Using it with the 1571 disk drive, data is read approximately 12 times faster than when in the C64 mode and about twice as fast than when in the C128 mode. The computer operating speed is the same as when in C128 FAST mode (or twice the C64's speed).

There are many programs written to run on CP/M based machines. You may have heard of some of the most powerful and popular ones, such as WORDSTAR, DBASE II, and PERFECT WRITER. Also, a very large number of good CP/M programs are in the Public Domain. This means you can obtain and use these programs free of charge. There are Public Domain word processors, data bases, programming languages, utilities, accounting programs and other categories. These Public Domain programs are available on computer bulletin boards, at user group meetings (which normally charge something for having the copies made for you), from friends, and at some computer stores that carry Public Domain software.

WHAT IS THE CP/M KIT?

This CP/M Kit contains:

- Two disks, one double sided.
- This manual.
- A registration card.

This manual is organized into four chapters and four appendices:

Chapter 2 explains the basics of CP/M, such as loading CP/M, formatting a CP/M disk, copying files, getting assistance and displaying documents. All of this by using simple examples.

Chapter 3 demonstrates some of the CP/M features by also going through several exercises such as using the resident commands and some of the programs on the disks that were included with your C128.

Chapter 4 will show you how to connect two computers via modem and exchange CP/M public domain software and capture text from electronic bulletin boards or databases.

The two disks in this kit contain a number of Public Domain programs. Appendix A gives a description of each one, how to run them and how to get the included instructions from the CP/M Kit Disks.

One disk is single-sided and the other has programs on both sides. Both are made to be read by the 1541 or 1571 disk drive. This means, that with either drive, you will have to turn the two-sided disk over to read the second side.

All of the programs in this kit have been thoroughly tested on the C128 and have documentation to supplement and explain their use.

The programs provided on these two disks are all Public Domain. *We are not selling these programs.* The cost of this kit is for the booklet, packaging, disks and other expenses incurred in its production and distribution. You are free to use, copy and give away these programs, but not this manual.

Some of the terms used in this manual are defined in our Computer Glossary section. It is intended to supplement the Glossary included in the Commodore 128 System Guide. If there is a word that you do not understand look at these glossaries for a definition.

If you return the registration card, included in this Kit, you will receive a copy of INCA's latest catalog listing our library of public domain CP/M software on 1541 or 1571 disks plus regular updates, and become eligible to utilize the INCA customer assistance hot line. This service is available by calling

(619) 484-2173 10 a.m. to 10 p.m. Pacific Time, Monday through Saturday

or you may write to: INCA CP/M Customer Services
9732 Paseo Montril
San Diego, CA 92129

CHAPTER 2

GETTING STARTED

In this chapter you will go through a step by step procedure for getting started in the CP/M mode of your C128. You will be using some of the first utilities that most everyone needs in CP/M. An explanation is also included.

EQUIPMENT REQUIRED

The items required for this chapter are:

- Commodore 128 Personal Computer.
- A Commodore 1541 or 1571 disk drive.
- TV or monitor.
- Introducing The Commodore 128 Personal Computer. (Packed in the C128 carton).
- The Commodore CP/M System Disk. (Packed in the C128 carton).
- Blank 5 1/4" disks.
- Printer. Optional.
- INCA's 40/80 Switch Cable. Optional but highly recommended for displaying 80 columns on monitors other than TV sets or RGBI monitors, such as the 1902.

INSTALLATION OF THE EQUIPMENT

You must carefully follow the instructions for installing the Commodore 128 as described in the booklet "Introducing the Commodore 128 Personal Computer", packed in the C128's carton.

LOADING THE CP/M OPERATING SYSTEM

The CP/M operating system must be loaded into the computer before anything else can be done. To do so, follow these steps:

1. Turn off computer (leave monitor and disk drive on).
2. Insert the Commodore CP/M System Disk, side 1, in disk drive.
3. Select the 40 or 80 column display with the **40/80 DISPLAY** key, press it down for 80 columns. If you are using a composite monitor you can take advantage of the 80 column display by installing an **INCA 40/80 Column Switch Cable**. On the other hand, if you are using a TV, which can only display 40 columns of an 80 column screen presentation, leave the **40/80 DISPLAY** key up.
4. Turn on computer.
5. CP/M will automatically be 'booted' (LOADed and RUN).

Once the disk drive stops spinning you will see the familiar CP/M prompt, **A>** and next to it the flashing cursor. This means that the CP/M operating system is waiting for you to specify a command on disk A.

From now on, all of the examples will assume that you have booted and you have the A> prompt ready.

By loading CP/M when turning the computer on with the System Disk in the drive, you performed a 'cold start' or power-up sequence. This is different from the 'warm start' sequence. To load CP/M by performing a warm start, simply press the **reset switch** with the computer on and the System Disk, side 1, in the drive.

Most CP/M programs use an 80 column screen. Therefore when the 40 column display is selected with the **40/80 DISPLAY** key only 40 columns of the 80 column display is seen on the monitor. To view all 80 columns of the display you must scroll the screen horizontally by simultaneously pressing the CONTROL key and the left or right arrow keys on the upper row of the keyboard.

DISK DIRECTORY

In order to discover which files are on a particular CP/M disk, you should type at the A> prompt:

dir <return>

where **<return>** means that you have to press the **RETURN** key in order for the computer to obey your command. Also, the given command can be in either upper or lower case.

Since DIR is a resident command, that is it remains in memory after the system boot, it does not need to be loaded from the disk every time you need it.

If you have the System Disk in the drive and give the DIR command or press the **f3** key you should see something like this:

```
A: CPM+    SYS:CCP      COM:HELP      COM:HELP      HLP:KEYFIG  COM
A: KEYFIG  HLP:FORMAT   COM:COPYSYS   COM:SCREEN40  COM:PIP     COM
A>
```

Where the filename appears at the left and the type of file is on the right. The filename, for example, CPM+, can be up to 8 characters long. The type of file (filename extension), on the other hand, such as SYS for CPM+, can only be up to 3 characters.

Try looking at the contents of each of your CP/M Kit disks. Compare the directories you obtain from these disks with those printed in Appendix B.

Some programs are ready to run such as those with the .COM extension. Others are documentation files; those with .DOC, .DQC, or .HLP extensions. Some of the file extensions available are:

ASC ASCII file
ASM Assembly language source file
BAK Back up file
BAS BASIC source program
C C source file
COM Executable program
CMD CP/M 86 machine language program
DAT Data file
DOC Document text
FOR FORTRAN source program
HEX Intel hexadecimal file (created by MAC)
HLP Help message file
INT Intermediate work file produced by some compilers
LIB Language library file used by MAC & RMAC
OBJ Machine code object file
PAS PASCAL source program
OVL Overlay file used by application programs
OVR Overlay file used by application programs
PLI PL/I source program
PRN Assembly print listing or file created by MAC or RMAC
REL Relocatable machine language file created by RMAC
SUB List of commands to be executed by the source file used by SUBMIT
SYM Symbolic table file created by MAC & RMAC
SYS System file used by CP/M
RSX Resident System Extension
TEX Documented Text
TXT Documented Text
XRF Cross Reference file
$$$ Temporary file

The documentation files may be compressed (a compressed file is also known as a "squeezed" file) to save disk space. You can recognize a squeezed file because it will have a 'Q' in the middle letter of the file extension, for example the squeezed file of NULU12.DOC will be shown as NULU12.DQC. You can read about squeezed files in Appendix A under SQ.COM and USQ.COM and see an example in Chapter 4 under downloading.

FORMATTING A DISK

To store information on a disk, you need to prepare it. Formatting a disk is a very important process, and fortunately the computer takes care of this process, all you have to do is tell it to FORMAT and select the desired format with a cursor key.

Let's start by formatting a blank disk.

1. Insert the System Disk, side 1, in the disk drive and type next to the A> prompt:

format <return>.

In this case we have to insert the System disk to load the **FORMAT** command, unlike DIR, which is always in memory.

2. Select the desired format using the C128 cursor keys at the top of the keyboard, then press **<return>** to lock it in. You can select the following type of formats:

   C128 double sided
   C128 single sided
   C64 single sided

   If you have a 1571, it is recommended that you use the double sided format as it will give you more disk room.
3. Take out the System Disk and put in the blank disk to be formatted.
4. Press the **SHIFT** key and the number 4 key at the same time (the $ sign) to begin formatting.
5. Upon completion, you will have a formatted CP/M disk. The computer will ask you if you want to format another disk. If you press the **N** key, for no, then you should see the A> prompt. Be sure that the light on the drive is not flashing. If it is repeat steps 1 thru 4 again.
6. Label this disk as your **CP/M Kit Work Disk No.1**

As you can see formatting in the CP/M mode is practically automatic, the computer does most of the job.

If you check the directory of this disk you should get **NO FILE**. This is because you have not stored any files on this disk yet.

COPYING SINGLE FILES

The easiest way to copy a CP/M file is by using PIP. This command is the one most used by CP/M users. As a matter of fact, it is actually included on both sides of your CP/M System Disk. Let's copy a file from your CP/M Kit Disk 1.

Let's practice copying files by duplicating NEWSYS.COM from your CP/M Kit Disk No.1.

1. Make sure the System Disk (side 1 or side 2) is in the disk drive and invoke PIP by typing:

   pip <return>
2. When PIP is ready to be used, an * prompt will appear instead of the normal CP/M A> prompt. Put the disk with the program you wish to copy in the drive. As an example, insert your CP/M Kit Disk No.1 in your drive. This disk contains the file NEWSYS.COM.
3. Next type:

   e:=a:newsys.com[v] <return>

   This will copy NEWSYS.COM from Source disk, A, your CP/M Kit disk No.1, to the Destination disk, E, your CP/M Work Disk No.1. The verify

option, [v], is optional, but recommended. This will verify that your copy is accurate.

4. When PIP has finished reading the file, a message will appear at the bottom of the screen:

   INSERT DISK E IN DRIVE A

   This means you are to take out the Source Disk, A, and put in the Destination disk, E.
5. To continue, press **<return>**
6. When PIP has finished copying, the * prompt will reappear, waiting for you to do more copying. For now press **<return>** to exit and return to the A> prompt.
7. Check the directory of your Work disk No.1 with DIR:

   dir <return>

   At the bottom of the screen you should see:

   INSERT DISK A IN DRIVE A

   This is left over from pip. Now that we are out of pip just press **<return>** once more. Then you should see:

   A: newsys com

You have made a copy of NEWSYS.COM, if you do not see the name of this program then repeat steps 1 through 8 once more.

COPYING AN ENTIRE DISK

Before you proceed any further, let's make a backup of your CP/M Kit Disks. The method you will be using is rather slow. There are other copy programs on the market which copy disks at a higher speed, but they are not in the public domain. This section is intended to provide you with practice on using PIP.COM to copy an entire disk.

1. Format 3 blank disks, see **FORMATTING A DISK** in this Chapter.
2. Insert the System Disk side 1, in the drive and type:

   pip <return>

3. At the * prompt insert your CP/M Kit Disk and type:

   e:=a:*.* [v] <return>

   the * will match all files and copy all of them
4. When the first prompt

   PLACE DISK E INTO DRIVE A

   appears, put the formatted disk into the drive and press **<return>**.
5. When the prompt

   INSERT DISK A IN DRIVE A

   appears, insert the Source Disk, (your CP/M Kit Disk) and press **<return>**.

6. Continue this process until copying is completed and the * prompt reappears.

To continue copying the rest of the disks repeat steps 2 thru 5 or press <**return**> to quit.

HELP FILE

If you do not remember a command or its syntax you can always obtain help. The HELP.COM and HELP.HLP files on your System Disk, side 1, can be of great assistance.

This help file is, in fact, the best source of information on CP/M as implemented on the C128. Reference will be made to this HELP file often as a source for specific information. In this section we show you how to display this HELP file and how to make a hardcopy.

Assuming that you are in CP/M mode and you need information on, say, the HELP file itself:

1. insert the CP/M System Disk, side 1.
2. at the A> prompt, type:

   HELP <**return**>

   or press the **HELP** key followed by <**return**>. You will then be presented with a list of subjects on which you may receive help.
3. Just type the name of the subject at the **HELP**> prompt and some information will appear about the subject you selected. Let's try getting assistance on how to use HELP itself, just type again:

   HELP <**return**>

   you will now see the syntax and an explanation for using the HELP file.
4. At the bottom the message "Press RETURN to continue" is displayed, so press the <**return**> key to continue. You will see the rest of the HELP information and part of the main HELP menu.
5. Once you have read the information you can press the <**return**> key to continue. Notice that the HELP> prompt reappears, indicating that the computer is ready to assist you with any of the topics displayed.
6. To exit the HELP file just press <**return**> at the HELP prompt.

You will find more information about the HELP program in the C128 System Guide, page 216.

PRINTING THE HELP FILE

It is often advantageous to have a printed copy of a help file on hand. There are several ways to make a copy of the HELP file. Let's review three of them.

Control-P Method.

This method is the easiest, but it will only print by subject. It will not print the whole HELP file.

Incidentally, if you do not have a printer, follow these steps except steps 1 and 4 so you will get practice using the HELP file.

Let's get printed information on the DIR command from the HELP file.

1. Set your printer or printer interface to transparent mode and perforation skipover, if possible. (See your printer or interface manual).
2. Insert the CP/M System Disk, side 1, in the drive.
3. At the A> prompt press the **CONTROL** key. While pressing it, also press the **P** key (P for printer). Apparently nothing has happened but you have actually activated the printer. Check Chapter 3 for information on Control-P.
4. At the A> prompt type:

   HELP DIR <return>

   and you will see the printer move some lines and print the first explanation. Notice that the bottom of the screen states:

ENTER .subtopic FOR INFORMATION ON THE FOLLOWING SUBTOPICS:
BUILT-IN WITHOPTIONS

This means that you can still get more information on these two subtopics of the DIR command.

5. At the HELP> prompt type:

   .built-in <return>

   It will print more information. The period before built-in should be there. Remember to press the **<return>** key to continue each time you are asked to do so.
6. As you can see, it even has another subtopic, so now type:

   .examples <return>

7. Since at step 4 the help displayed that it had two more topics, built-in and withoptions, let's now print the information on the DIR command withoptions. At the HELP> prompt type:

   dir withoptions <return>

   This is another way of getting information directly from the HELP file on a subtopic when you are at the HELP> prompt.
8. Since, it has two more subtopics, options and examples, type:

   .options <return>

9. In order to get the examples under the "withoptions" subtopic of DIR type at the HELP> prompt:

   dir withoptions examples <return>

Again, this is another way of obtaining information directly from the HELP file when you are at the HELP> prompt.

10. To finish using the HELP just hit the <**return**> key at the HELP> prompt.
11. You can also get the information from the HELP file directly when you are at the A> prompt as in step 9:

    help dir withoptions examples <return>

You have now printed all the information that the HELP file can provide you on using DIR. You can use this method for all of the other topics that appear at the main HELP menu.

Please note that DIR withoptions is not a resident command, that is, it is a program that needs to be loaded from the disk each time you want to use it, (System Disk, side 2) unlike DIR without options which always resides in memory.

Remember to toggle off the printer with another CONTROL-P otherwise it will print everything you type.

Method for the 1541 Drive.

This method uses the LST option of PIP.COM. Pip can be used to copy files, send a file to the printer or transfer a file from one peripheral to another, etc. By using LST, pip will LiST a file to the printer. For more information on PIP use HELP pip at the A> prompt with the System Disk, side 1, in the drive.

You should use this method ONLY if you have a 1541 disk drive, since this drive cannot handle a large file such as the HELP.HLP file. By using this method your printer might not give you a nice printout. The printout will depend on the type of printer.

To print the HELP file follow these steps:

1. Select transparent mode on your printer and perforation skipover, if possible.
2. Put the System Disk, side 1, in the disk drive.
3. Type:

   pip lst: = help.hlp <return>

   This will give about 40 pages with about 4 pages of garbage, that is, a bunch of random characters at the beginning.

If at any moment you decide to stop the printing, just press the NO SCROLL key to pause or CONTROL-C to abort the printing.

Method for the 1571 Drive.

This method will give you a very good printout, although it involves more steps than the previous method and will only work with the 1571 disk drive.

1. Select transparent mode on your printer and perforation skipover, if possible.
2. **FORMAT** a blank disk using the "C128 double sided" format. (Read the instructions under FORMAT at the beginning of this Chapter for details). Label this disk as your CP/M Kit Work Disk No.2.
3. To copy HELP.COM and HELP.HLP with pip, insert the System Disk, side 1, and type:

   pip e:=a:help.*[v] <return>

   the message:

   COPYING —
   HELP.COM

   will be displayed. Later at the bottom it will show:

   INSERT DISK E IN DRIVE A

   The asterisk in help.* in the command line is telling pip to copy all the files named HELP with ANY extension. This will copy the HELP-.COM and HELP.HLP. Notice that both have the same name, HELP, but different extension, .COM and .HLP.
4. Remove the System Disk and insert the destination disk, your CP/M Work Disk No.2 (disk E) and press the **<return>** key.
5. After a short while, the message:

   INSERT DISK A IN DRIVE A

   will be displayed at the bottom of the screen. Remove the destination disk (disk E) and insert the source disk (Disk A), your System Disk, same side.
6. Below the COPYING messages you will see the following message:

   HELP.HLP

   and a few seconds later at the bottom of the screen:

   INSERT DISK E IN DRIVE A

   Remove the source disk (disk A) and insert the destination disk (Disk E).
7. Follow the prompts that appear at the bottom of the screen. Remember that Disk A is the Source disk, in this case the System Disk, and Disk E is your destination disk.
8. When you see the A> prompt, insert in the drive your Work Disk No.2 and look at the directory by typing DIR. You should see the two HELP files, .COM and HLP. If not, repeat steps 2 thru 8.
9. Next type at the A> prompt:

   HELP [EXTRACT] <return>

then you will see the message:

Extracting data . . .

The Computer is extracting the information from the HELP.HLP file and converting it to a data file HELP.DAT.

10. After a couple of minutes you will see:

    Extraction completed
    HELP.DAT created

11. Remove the disk and insert the System Disk, side 1.
12. Next type:

    pip <return>

    and the * prompt appears. Remove the System Disk and insert Work Disk No.2.
13. Next to the * prompt type:

    lst: = help.dat <return>

    after a few seconds it will start listing the HELP file to the printer.

In printing the HELP file you have followed these steps:

- Formatted a disk.
- Copied two files using the * option in PIP.
- Extracted a .HLP file and converted it to .DAT.
- LiSTed the HELP file to the printer using PIP.

INSTALLING THE NEW SYSTEM.

Please note that when you boot CP/M+, at the top of the screen or by pressing the F8 key you will see a date. This date refers to the revision date, you should see 6 DEC. 1985 or later, if not, you need to update your system. Until this is done you will not be able to use your modem to download public domain software from bulletin boards, among other things.

If your CP/M is dated 6 DEC. 1985 or after, you do not need to update your system, but if you would like to practice follow these steps.

To update your system you should copy the CP/M operating system files from your System Disk to your Work Disk No.1 where you already have NEWSYS.COM, this command will actually do the upgrading to your system.

1. First, copy the CP/M+ operating system by inserting the CP/M System Disk, side 1, in the drive and typing:

   pip e: = a:cpm+.sys[v] <return>

2. After a short while the below message will be displayed:

   INSERT DISK E IN DRIVE A

Remove the source disk and insert your Work Disk No.1 and press the <**return**> key to continue.

3. Once finished, remove your Work Disk No.1, insert your System Disk, side 1, and type:

   pip e:=a: ccp.com[v] <return>

   This will copy CCP.COM, the Console Command Processor, which is a system program that presents a human-oriented interface to CP/M+ for the user.

   The following message will be displayed:

   INSERT DISK A IN DRIVE A

   hit the <**return**> key again.
4. Later, follow the instructions by inserting Work Disk No.1 (Disk E) and hitting the <**return**> key.
5. After you finish copying, check the directory of Work Disk No. 1 with DIR, and you should see:

   INSERT DISK A IN DRIVE A

   hit return again and type:

   A: newsys com : ccp sys : cpm+ sys
   A>
6. With your Work Disk No.1 in the drive, type:

   newsys c <return>

   a message will be displayed and at the end of the process you will have your new operating system ready to run.
7. Check the directory with DIR, you should get:

   A: newsys com : oldcpm+ sys : ccp com : cpm+ sys

   where OLDCPM+.COM is your old operating system.

If you would like to read about the differences between the new and old CP/M+, just type:

newsys <return>

Do not use the old CP/M+ disk anymore for booting CP/M. Use this new CP/M+ operating system and be sure to make an extra copy.

ERASING A FILE.

Since you no longer need the file OLDCPM+.SYS on your Work Disk No.1 you can now erase it.

1. With your Work Disk No.1 in the disk drive, list the directory. (Remember, to list the DIRectory type DIR and then hit <**return**>).
2. Next type:

   erase oldcpm+.sys <return>

3. After the drive has spun for a couple of seconds look at the directory with DIR. The file called OLDCPM+.SYS. should not appear.

Notice that we did not have to load the erase command from the disk to erase OLDCPM+.SYS, because ERASE is a resident command.

DISPLAYING .DOC FILES

A .DOC file is a file that usually documents information on a particular program or command.

Your CP/M Kit Disk No.1 contains a program called LTYPE.COM which allows you to read the .DOC files included in your CP/M Kit Disks. Let's practice using LTYPE by reading its own documentation:

1. Insert your CP/M Kit Disk No.1 in the drive.
2. Type:

   ltype **<return>**

   then the * prompt will appear, awaiting for the file name and .DOC extension you wish to read.
3. Type:

   ltype.doc **<return>**

In this case we are asking to see the contents of LTYPE.DOC, but you can specify any other .DOC or .TXT file. After you press the **<return>** key you will see the information being displayed on the screen.

Continue reading the file by pressing the return key every time you see the **[more]** prompt. To exit ltype just press the **<return>** key at the * prompt.

If you wish to print this .DOC file, add <space> $L after the filename in step 3 of the above example, that is ltype.doc $l (upper or lower case). Remember, the CP/M system can find the file regardless of the combination of cases you type in. Be sure to place a space between .doc and $l. Another way to print .DOC files is with PIP, in the same way you printed the HELP.HLP file. Try, as an example:

1. Select transparent mode on your printer and perforation skipover, if possible.
2. Insert the System Disk, side 1.
3. Type:

   pip <return>
4. Remove the System Disk and insert your CP/M Kit Disk No.2
5. Type:

   lst:=de-lbr.doc <return>

   (Note: the first is a lower case "l" not the numerical "1").

CHAPTER 3

SOME COMMODORE CP/M FEATURES AND DIFFERENCES

This chapter lists some of the Commodore features, differences and what your System Disk contains.

Some of these features are fully explained in the large HELP file. Consult it as you go along with this Chapter. The best way to learn about these features is to practice them on the computer and by following the examples where given. By following these two tips you will be able to, more easily, start using CP/M.

RESIDENT COMMANDS.

A resident command is a command that remains in the computer memory after the system boot, therefore it is not necessary to load a resident command from the disk every time it is to be used. Some of these resident commands have been used in the previous Chapter, such as DIR, others are described here.

Control-C

The CONTROL-C combination is used to break out of some programs and to do a disk reset. The important feature of CONTROL-C is its ability to stop the execution of programs. You can get out of most programs this way, rather than waiting for them to end.

Control-P

Pressing CONTROL-P will toggle the printer on and off (hold down the CONTROL key and press the "P" key). Most other CP/M systems also use this feature, but it is well worth mentioning. With this feature, you can have information sent to the printer, as well as to the screen, by sending it to the printer it can be read later. However, the CONTROL-P must be toggled on before you send the information. Entering another CONTROL-P afterwards will toggle the printer off.

Drive-E (Virtual Drive)

This is one of the most useful differences in C128 CP/M. It is used to simulate two drives in a one drive system. When copying, give the command to copy from the current drive (A) to the simulated drive (E). Then, when the time comes to actually write to drive (E), you take out the disk that is being copied and put in the destination disk. The message "INSERT DISK E INTO DRIVE A" will appear at the bottom of the screen to let you know when to swap disks. Later you will be asked to put the original disk back into the drive with the message "INSERT DISK A IN DRIVE A". Read more about the virtual drive in the HELP file, just type "help c128 virtual" with the System Disk, side 1 in the drive. For more information see the Commodore 128 System Guide (page 198).

Drive-M

Most CP/M systems, including Commodore's, have the ability to use memory expansion as an extra drive. Your CP/M system is already set up to handle this feature. If you plug one of the memory expansion units into the computer, CP/M recognizes it automatically. You can use this memory area as a second drive. TIP: Copy all of your favorite utilities into this memory area and have them almost instantly available at any time.

MFM Formats

The 1571 disk drive is capable of reading and writing Kaypro II, Kaypro IV and Osborne single sided double density disks. Since many of the public domain programs available from Kaypro and Osborne User Groups are in these disk formats, being able to read them can be very advantageous. The 1541 disk drive, it should be noted, can only read and write Commodore single sided CP/M disks.

Reading a "foreign" disk format with the 1571 drive is accomplished by:

1. First booting CP/M.
2. Waiting for the A> prompt.
3. Inserting the foreign disk into the 1571.
4. Then trying to access it by reading its directory, with DIR.

The system senses the disk format automatically and will either read the disk and display the directory or will display a box at the bottom of the screen showing which disk type you are accessing. The box might show, for example, Kaypro II or Kaypro IV and you must either know or guess at the format of the foreign disk you wish to read. The system requires you to select the specific disk type by scrolling through the choices which appear one by one in the box as you press the left or right arrow keys on the upper row of the keyboard. For example, if you believe that the foreign disk has a Kaypro II format you should press the return key when Kaypro II appears in the box. The 1571 drive will then read the disk as if it is indeed a Kaypro II. If not, you will see the following error message:

CP/M Error on A: Disk I/O
BDOS Function = 17 File = ????????.???

Followed by the A> prompt. Before attempting to read the disk again you should do a warm boot (Control-C, pressing the Control and the C simultaneously). Now you know your disk is not a Kaypro II format but might be a Kaypro IV so at the A> prompt try to access the disk again by typing DIR, return. If Kaypro II appears again in the box press either the left or right arrow keys until the characters Kaypro IV appear in the box. Pressing return again will now produce a directory of a Kaypro IV, if indeed you have a Kaypro IV disk in the drive. Pressing the Control key and return simultaneously will lock the foreign disk format so that you will not be forced to reselect each time another disk is inserted in the drive.

Exchanging your Commodore CP/M format public domain programs with friends who have Osborne or Kaypro computers is possible with the 1571 drive if you have the utility CBMFORMAT.COM. This file, however, is not included in this kit.

Pause Display

To stop the screen from scrolling up, use the "NO SCROLL" key on the top row keys of the keyboard. It is used to stop and continue any information that is sent to the screen. Many programs automatically send one screenful of data then wait for a RETURN to continue. But some programs do not have this feature. For those cases use the NO SCROLL key to stop it so you can read the screen. Press it again to continue.

SYSTEM DISK, SIDE 1

Your System Disk contains several useful CP/M programs. What follows is a brief explanation of those which have not already been described in the previous chapter.

It cannot be overstressed that you should make use of the HELP file for a more detailed explanation.

Copysys

C128 users do not need this program and it is not implemented in the CP/M C128 version. On other CP/M machines, it is used to copy the system programs. With C128 the system programs (called CCP.COM and CPM+.SYS) can be copied with PIP, see Chapter 2 under Installing the New System, or with any CP/M copy utility.

Format

A new disk must be formatted before it can be used. Formatting a disk organizes it so that it may be orderly written to and read by the computer. Previously used disks may be formatted and used again. CAUTION: Formatting a used disk will erase ALL programs and files on that disk. See the HELP file for an explanation of FORMAT and Chapter 2 for an example under Formatting a Disk.

Keyfig

Used to redefine almost any key on the keyboard. Read about this in the HELP program on the System Disk. The program KEYFIG also has its own tutorial:

1. Put the CP/M System Disk, side 1, in the drive.
2. At the A> prompt type **KEYFIG <return>**.
3. When asked if you want help press the **Y** key.

4. Select the information you want to read by moving the bar with the up and down arrows at the top row of the keyboard.

Pip

PIP.COM is a very powerful command that allows you to do a large variety of operations in CP/M. The main use of PIP is to copy or to transfer files. PIP works between two devices. PIP will transfer the files and at the same time it can process or redo them during transfer. For more information see your HELP file and for examples see Chapter 2.

Screen40

This command is used to turn the 40 column display ON or OFF. The 40 column display slows the system down about 10%. To increase system speed when using the 80 column screen just type screen 40 <return> and follow the instructions. If this file was not included on the System Disk packed with your C128 you may use the CONF.COM file on your CP/M Kit Disk No. 1 to obtain the same increase in system speed.

SYSTEM DISK, SIDE 2

This is the back side of your System Disk.

Date

This utility will keep track of the time and date. To set it, type DATE SET with the System Disk, side 2, in the drive and just follow the instructions.

Dir

An enhanced version of the resident command DIR.

1. With System Disk, side 2, in the drive try:

   dir e: [full] <return>

2. At the message, exchange the disk with your CP/M Kit Disk No.3 and hit the **<return>** key.

Again, more information can be found in the HELP file.

Dump

The DUMP command loads onto the screen any file on the disk in hexadecimal format. This is a form of notation that will list 16 bytes of the program at one time per line with the memory address of each line indicated. Try it with your System Disk, side 2, in the drive:

A> DUMP save.com <return>

More information can be found in the HELP file.

Ed

Your CP/M System disk contains a full editing program called ED, which is better suited to assembly language programming than to text editing. For text editing we have included VDE13 in this kit. Let's try ED on the LRUN.DOC, which is on your CP/M Kit Disk No.1.

1. Copy LRUN.DOC to your Work Disk No.1 using PIP.

   e:=a:lrun.doc[v] <return>

2. Insert the System Disk, side 2, and type:

   ed <return>

3. The following message is displayed:

   Enter Input file:

   first insert your Work Disk No.1 and then enter at the question lrun-.doc and hit **<return>**.
4. The computer then will ask you for the output file, enter mylrun.doc and enter **<return>**.
5. Next append the lrun.doc to the buffer of the computer by typing **#a** at the : * prompt.
6. Read the text by typing **#t** at the 1: prompt.
7. Move to the last line, line 41 by typing **41: at the 1:** prompt, the prompt **: *** will be displayed.
8. To insert text at this line type **i**, and **41:** appears.
9. Press the – minus key until you get a similar display as line 38, then hit **<return>**, and **42:** appears.
10. Pressing **CONTROL-Z** will quit the insert mode.
11. At the :* prompt type **1:** then type **#t** to view the text again. You should now see the extra line you have inserted at the end of the .DOC file.
12. To save the file onto your Work Disk type the letter **e** at the prompt. This will save the file.
13. Read the .DOC file with ltype.

For more information on ED, look at the HELP file.

Rename

This command is used to change the name of a file. Any file name can be changed to be a new name. Let's try changing the name of NEWSYS.COM to NEWCPM.COM:

1. Insert your System Disk, side 2, in the drive.
2. Type:

   rename <return>

3. Remove the disk and insert your Work Disk No.1

4. Type at the first question:

   NEWCPM.COM **<return>**

5. As the old name type:

   NEWSYS.COM **<return>**

6. Next, read the directory and verify the change in the name of the file.
7. Rename this file back to NEWSYS.COM by repeating steps 1 thru 6.

CHAPTER 4

TELECOMMUNICATIONS IN CP/M MODE

INTRODUCTION

C128 users now have the ability to use their computers to communicate, to "talk", with other computers while in the CP/M mode. This chapter will give you some background on RCP/M systems, how to use MEX128 and how to download public domain software.

The first two releases of CP/M for the C128 did not have the capability of using modems, the peripherals that allow computer to computer communication. If you have a CP/M operating system version dated earlier than 6 Dec 85, the necessary system changes have to be made using NEWSYS.COM which is provided on your CP/M Kit Disk No.1 and described in Chapter 2.

EQUIPMENT REQUIRED

- Same equipment as in Chapter 2.
- A 300 or 1200 baud rate modem, such as the 1660 or the 1670, any other Commodore compatible modem, or a Hayes compatible and an RS-232 interface.

ELECTRONIC BULLETIN BOARDS

Electronic bulletin boards, simply known as bulletin board systems (BBS) are services made available to enthusiastic users by dedicated system operators (sysops). They allow us to exchange public domain software and obtain hardware information such as answers to our computer questions. All of this is done just by dialing a phone number and connecting the computers via modem and appropriate terminal software, such as MEX128.

The CP/M bulletin boards are usually called RCP/M systems. This is because you become the Remote operator of the computer at the other end of the phone connection. For instance, to get a directory of the remote computer disk drive, just type **DIR <return>** as you would on your own computer. This also applies to reading a document file and many other features.

Using an RCP/M is somewhat different than using a Commodore 64/128 oriented board. This is because it operates with almost the same commands as your CP/M operating system. Also you will be sharing software with owners of computers other than Commodore. Many RCP/M systems are set up as distributors of information and there is likely to be a vast library of public domain programs available to you for downloading.

There are many CP/M bulletin boards out there. To find them, check with your local computer store or users group (try Commodore, Kaypro or Osborne) for information on how to get in touch with these boards. Once you find one RCP/M, they usually refer you to other local bulletin board systems. MEX128 will work with any bulletin board. On most boards you should read their help file for using the system.

MEX 128

Mex128 is one of the best CP/M terminal program available in the public domain. It was selected for inclusion in this CP/M Kit because of its ease of use and complete documentation. Let us first make a hard copy of this documentation, a help file with the filename MEX.HLP.

1. Format a disk. See Formatting a disk in Chapter 2 and label this disk as CP/M Kit Work Disk No.3.
2. Copy the MEX128 files by first inserting the System Disk, side 1, and typing:

   pip <return>

3. Once stopped, remove the System Disk and insert your CP/M Kit Disk No.2 and type:

   e:=a:mex*.* [v] <return>

   follow the prompts and this will copy MEX128.COM and MEX.HLP.
4. Next type:

   lst:=mex.hlp[o] <return>

This will print about 20 pages of text. Please note that some "garbage" will be printed in the first couple of pages. This is normal when you use PIP to print a help file.

RUNNING MEX128

Before you continue, it is highly recommended that you read the printout on the MEX.HLP file so that you will understand this section better.

It should be noted that these steps are generalized because of the wide range of modems available and differences among the RCP/M systems; therefore, some experimentation will be required of you. Again, consult your MEX-.HLP printout and your modem manual.

To use MEX128 you should first set it up to work with your modem.

Starting-up MEX128

1. Install your modem according to its Owner's Manual. Be sure your computer is OFF.
2. Boot the CP/M operating system. (6 Dec 1985 or later)

3. Remove your System Disk and insert either your Work Disk No.3 or your CP/M Kit Disk No.2.
4. Type:

MEX128 <return>

The disk will spin and then you will see the modem model for which MEX128 is set up to work with, the copyright notice of MEX128 and the prompt **MEX A0>>**.

5. If at the prompt you type:

HELP or press the **HELP** key

and hit **<return>** you will get a menu of the commands available.

The first time you use MEX128 follow the instructions to set the modem type, the baud rate and make your own working copy. The next time you use MEX128 go from here to the Dialing section.

Modem Selection

If you are using a Hayes or a Hayes compatible modem, such as the 1670 or the Avatex 1200, no adjustments are necessary, otherwise follow these steps.

1. Type:

SSET <return>

to see what the current setting is and a list of the most common modems available for the C128.

2. To change the modem type setting, use the following syntax

SSET XXXX <return>

where xxxx is one of the modems selected from the list displayed and it is the modem you will be using.

You may have to experiment to determine which modem type setting works best with your brand of modem. For example, if you are using a Westridge or Total Telecommunications modem, use the modem type setting of 1660 or 1660CD.

Baud rate selection

The selection of the baud rate, that is, the speed at which the computers will "talk", is controlled by the SET command.

1. Type:

SET <return>

to see what the current baud rate is.

2. Next enter the baud rate you wish by typing:

SET 300 <return> or **SET 1200 <return>**

Your MEX128

Now that you have made these changes to MEX128 save them so you will not have to repeat them every time you use MEX128.

1. At the [MEX] A0>> prompt type:

   clone mymex128.com <return>

   this will make a copy of the MEX128 as you set it up. Use the clone command every time you make any changes in MEX128, including adding phone numbers to the phone section. Read more about this in your printed MEX.HLP file.
2. To ERAse MEX128 from your Work Disk No.3 use:

   era mex128.com <return>
3. Now RENname MYMEX128.COM to MEX128.COM:

   ren mex128.com = mymex128.com <return>

Dialing the Phone Number

If you have a Hayes modem, a Hayes Compatible or the 1670 modem you have the ability to auto-dial, that is, the computer will dial or re-dial the phone number given it for you.

1. At the A0>> prompt type:

   call 5551234 # <return>

   where 5551234 is a fictitious RCP/M phone number; replace it with your RCP/M phone number. The # at the end is telling MEX128 to re-dial until it gets an answer.
2. Once the other computer answers, press the **<return>** key to go on line.

For those using a non-Hayes compatible modem, the AUTO-DIAL feature of MEX128 is not available. All the other features are supported. Therefore, just follow these steps for dialing:

1. Using the phone set, manually dial the RCP/M phone number.
2. When the other computer answers you will hear a high pitched squeal, then type **T** to go to terminal mode.
3. Flip the TALK/DATA switch on the modem to DATA.
4. Next press the **<return>** key.

Connecting the Computers

Normally most RCP/M systems require that you press the <return> key once, twice or several times. This enables the RCP/M to detect whether you are at the 300 or 1200 baud rate.

When you log onto an RCP/M board, one of the first questions they will ask is HOW MANY NULLS DO YOU NEED?. This is for timing purposes, just answer 0 (zero). Then you will probably be asked to register. Give your correct name and other requested information or you won't be able to relog onto that RCP/M board.

Keep track of your password and change it every other month.

Using a RCP/M

Every board has a HELP area. This is where you should go immediately. A message should appear telling you how to get to the HELP area. Read about the commands available to you and how to operate that particular RCP/M board. You should be able to learn how to download most of the other information you will need. READ THIS AREA THOROUGHLY!

Capturing Text

Let's assume that you have found the help section of the RCP/M you are calling and have started reading it. Wouldn't it be nice to have a hard copy on hand instead of having to read it while on-line? Well, MEX128 has a memory section that can be used to save whatever you are sending and receiving. This memory section is called the buffer. It can be saved onto the disk, printed or redisplayed. To use it follow these steps, assuming that you are already connected.

1. Exit from the terminal mode by pressing **ESC E**.
2. Type:

   t buffer.doc <return)

   here you are telling MEX128 to go to terminal mode and open a disk file called buffer.doc or whatever you want to call it. Once you hit the <return> key it will go to terminal mode and the message:

   ASCII capture ON

   and a colon (:) will be printed in the leftmost column to remind you that whatever is being displayed is also being saved in the buffer.
3. If you want to momentarily stop the buffer from saving the data while continuing to use the RCP/M, press **ESC U** (press the ESC key, release it and then press U key). The message:

   ASCII capture OFF

   will be displayed and the : will disappear.

   Later, if you want to resume saving to the buffer, press **ESC S.** The following message will be displayed:

   ASCII capture ON
4. In order to properly close the file and save it to disk before you turn off the computer, press **ESC E** to exit from the terminal mode. Next Type:

   wrt <return>

   this will close the file and save the data stored in the buffer.

For more information on the buffer you can read the printed MEX.HLP file.

Downloading Software

Most programs have a corresponding documentation file. Look for a file with the same filename but ending with a file extension of .DOC, .TXT or .HLP. Get the documentation for every program you download and keep them together.

Sometimes programs are squeezed in order to save disk space and downloading time. To unsqueeze these files after downloading use USQ.COM which is included in your CP/M Disk Kit No.2.

Another possible way you may find a program is as a set of programs combined into a single file with an extension of .LBR (LiBRary). The library would likely contain the runnable .COM file and the documentation .DOC or .DQC files plus other files of related interest. Utilities to work with .LBR files are provided on the kit disks, see DE-LBR, LTYPE and LDIR.

Check if this particular RCP/M is capable of sending programs using the XMODEM, MODEM7 or Christiansen protocol. This is a standard method for sending programs which ensures that the program is sent exactly as it should be.

Next go to the library section of this RCP/M and select those programs that you are interested in, write down their filenames exactly and then follow these steps:

1. Place in the drive a CP/M formatted disk or a disk that has enough space for the file you will be downloading. Remember you can check the space available on a disk with DD.COM.
2. Depending on the the RCP/M, type D for downloading and the RCP/M should ask you for the name and extension of the file you want to download, type it in EXACTLY.
3. Then the RCP/M will prompt you with something like "READY TO SEND". Exit terminal mode with:

   ESC E

4. Immediately type:

   r filename <return>

   where r stands for receive and the filename is the name of the file to be received. Once you hit the **<return>** key the transmission will begin.

If all goes well the RCP/M might send the message "File Sent".

Unsqueezing a file

Let's practice unsqueezing a file. On your CP/M Kit Disks there are some files that are squeezed in order to provide you with the experience of unsqueezing. As mentioned previously they can be identified by the "Q" as the middle letter of the filename extension.

1. Exit from MEX128, if still in it, with:

   CPM <return>

   you should then see the familiar A>.
2. Insert in the disk drive the BACK-UP COPY of your CP/M Kit Disk No.3. Be sure that it is not write protected, and that is NOT your original copy!!
3. Next type:

   usq edfile.dqc <return>
4. Now type:

   dd <return>

   to see the directory. Notice that you should now have 3 EDFILEs. One is the EDFILE.COM, the unsqueezed EDFILE.DOC with 18K and the squeezed EDFILE.DQC with 12K.

Please note that not all programs from these bulletin boards will work on our C128, but a good percentage will. Programs made for the KAYPRO or OSBORNE seem to have the best chance of running on the C128. However a program that redefines the function keys on a KAYPRO is not likely to run on the C128 because the keyboards are not set up the same way.

Reading the document file before you try to download may tell you whether the program is likely to run or if you would be interested in downloading it. If you plan to learn Z80 machine language programming, getting the source file (.ASM extension) may also help, as you could then try to modify the program if it needs it. Some of the BEST utilities are found in these public domain libraries.

You will soon get a feel for what kind of programs will and will not run. KEEP TRYING! Don't be discouraged, just save on a separate disk those programs that did not run. Save them until you acquire more experience and are able to "fix" them.

Uploading software

Don't forget to follow all the usual courtesy procedures including UPLOADING to the boards once in a while. You could upload a program that they already have but that you have modified to run better on the C128. Just leave a note to the SYSOP telling what has been done and show some difference in the name so people will know this version is for the C128, like MEX128. Or write a documentation file for a program to help other C128 users understand the program better.

To upload a file:

1. Insert in the drive the disk that contains the file you want to send.
2. Tell the RCP/M that you are ready to upload a file. Read the instructions in MEX.HLP and from the RCP/M. It should tell you something like "READY TO RECEIVE".
3. Type:

   s filename <return>

where s stands for sending and the filename is the name of the file that you have in your disk drive.

With the information given in this chapter you should now be able to use your modem and obtain as much public domain software as you may wish. Table 4.1 details some of the possible problems you might encounter and what the solutions might be.

TABLE 4.1

PROBLEMS	CHECK	SOLUTION
No connection	1. Is the modem plugged to the computer?	Turn OFF the computer and plug in the modem.
	2. Is the modem turned on?	Turn it on, if that is the case.
	3. Is the cable from the wall connected to the modem where it is labeled LINE?	Remove the cable from the connection labeled PHONE and connect it to the jack labeled LINE.
	4. Have you selected the right type of modem?	Check SSET and select the correct one.
	5. Is the baud rate the same as the other computer?	Try SET 300 to check if you can use 1200.
	6. Is your modem switch set at Originate?	Flip it from A, answer, to O, originate.
	7. Are you dialing the correct number?	Pick up the phone and check if you hear a squeal or a human voice.
	8. Is your computer auto-dialing with tone?	Change to pulse dialing, maybe your local phone company does not allow tone dialing
	9. Are you manually dialing with the modem switch in the T position?	Switch to T for Talk.
	10. After the other computer answers, do you switch from T to D?	Read the instructions in your modem Owner's Manual.
	11. Are you in half duplex or in no echo?	Turn the echo on. Check the MEX.HLP file
Garbage received	1. Is the other computer sending you a clear and loud squeal?	Pick up the phone and listen; if you do not have a clear line then redial.
	2. Is your system set to 8 bit, 1 stop bit and no parity?	Check your modem Owner's Manual.

TABLE 4.1

PROBLEMS	CHECK	SOLUTION
Double letters	1. Are you receiving ddoouubbllee lleetttteerrss?	Turn the echo off or change the full duplex to half duplex. Check MEX.HLP.
Reversed lower/upper case letters	1. Are you using true ASCII?	Change to Commodore ASCII also known as PET ASCII. See your MEX.HLP file.
Double spaced lines	2. Are you receiving your messages with double space between the text lines?	Turn off the line feeds from the RCP/M.
Messages Overwritten	1. Are you receiving your messages over and over the same line?	Turn on the line feeds from the RCP/M.

APPENDIX A

CP/M KIT PROGRAMS

This appendix gives a brief description of each of the programs included on your CP/M Kit Disks 1, 2 and 3. The description includes information on to use each particular program.

This listing is in alphabetic order. Notice, also that some files are squeezed in order to save disk space.

C1571 Speeds up some disk drive operations. Type **C1571 <return>** for more information. Disk No.1 (.COM only, no .DOC).

CONF Sets system parameters. Example: **CONF 40COL=OFF**. This example will turn off the 40 column screen which will speed up the computer. Type CONF HELP <return> for more information. Disk No.1 (.COM and.HLP).

DD Provides a quick directory listing with file sizes and space remaining on the disk. Also has some other options that are listed in the documentation file. This program is recommended for printing the directory of the disk on its sleeve. Type **LTYPE DD.DOC <return>** for more information. Disk No.1, 2 and 3 (.COM on all disks, .DOC only on Disk No.1).

DE-LBR Separates libraries into their individual files. Type **LTYPE DE-LBR.DOC <return>** for more information. Disk No.2 (.COM and .DOC).

EDFILE This file editor is easier to use than ED, the file editor included in your System Disk, side 2. This can be used to edit any kind of file, including a runnable (.COM) file. Type **LTYPE EDFILE.DQC <return>** for more information. Disk No.3 (.COM and .DQC).

LDIR Gives a directory listing of individual programs inside of a library. Type **LDIR <return>** for information. Disk No.1 (.COM only, no .DOC).

LRUN Allows programs to be loaded and run while still contained inside of a library. Use LDIR or SD50 to get the exact name of the file. Type **LRUN <return>** for information. Also, typing **LTYPE LRUN.DOC <return>** will give you also more information. Disk No.1 (.COM and .DOC).

LTYPE Displays any ASCII file on the screen whether it is squeezed or not. Also will let you view a file still contained in a library. LTYPE is used mainly to read document files. Type **LTYPE LTYPE.DOC <return>** to read how to use it. Disk No.1, 2 and 3 (.COM on all disks and .DOC only on Disk No.1).

MAST.CAT This is the master catalog used by MCAT43. See MCAT43 for information. Disk No.3.

MCAT43 Disk cataloging program that keeps track of your CP/M disks by disk number. XCAT40 will then print this information either on paper or on disk. Gives you a very handy alphabetical list of all your programs and tells you on which disk they can be found. Easily updated! Type **LTYPE MCAT43.DQC <return>** or **MCAT43 ? <return>** for more information. Disk No.3 (.COM and .DQC).

MEX128 CP/M terminal program. Type **MEX HELP <return>** for more information. Disk No.2 (.COM and .HLP) See Chapter 4.

NEWSWEEP Disk utility that will copy single files, multiple files of your choice, delete, print, view, squeeze, unsqueeze, rename and much more. Type **LTYPE NEWSWEEP.DQC <return>** for more information. While using NEWSWEEP, typing **? <return>** will give you a menu of the commands available. Disk No.1 (.COM and .DQC).

NEWSYS Use this program to update any version of the CP/M system prior to 6 DEC 85. Type **NEWSYS <return>** for more information. For a detailed application, see Chapter 2 under Installing the New System. Disk No.1 (.COM only, no .DOC).

NULU12 Specifically designed to work with library (.LBR) files. Lets you make them, separate them, read documentation files in them, and much more. Type **LTYPE NULU12.DQC <return>** for more information. Disk No.3 (.COM and .DQC).

SCAN12 View documentation files forwards or backwards. While it is running, typing a wrong command will give a HELP screen of available commands. Documentation files may be read while still contained inside of a library. Type **SCAN12 SCAN12.DQC <return>** or **LTYPE SCAN12.DQC <return>** for more information. Disk No.1 (.COM and .DQC).

SD-50 Quick directory with file sizes and amount of disk space remaining on disk. Also gives a directory of what files are inside any library on the disk. Syntax for this feature is **SD50 $L <return>**. Use **SD50 <return>** for a directory listing without breaking up libraries. Disk No.1, 2 and 3 (.COM only, no .DOC).

SQ Is used to produce a compressed (squeezed) copy of a file thereby saving disk space. This is typically done to documentation files. A squeezed file can be recognized by a Q as the middle letter of the file extension. For example: NULU12.DQC. Use USQ.COM to reverse this process. Type **LTYPE SQ.DOC <return>** for more information. Disk No.1 (.COM and .DOC).

USQ Is used to unsqueeze a file that has been compressed using SQ.COM. This program will write the unsqueezed file back to disk. Be sure there is enough room on the disk and the disk is not write protected. Use SD or DD to check how much room is left on

the disk. Unsqueezing may produce a file that is about twice as large as the squeezed version. Type **LTYPE USQ.DOC <return>** for more information. Disk 1, 2 and 3 (.COM on all disks and .DOC only on Disk No.1).

VDE13 Word processor. Will hold a very large file (about 50K) in memory all at once. This is a very nice word processor and is fairly easy to use. Type **LTYPE VDE13.DQC <return>** for more information. While using VDE13, typing ESC then ? will give you a list of commands available. Disk No.3 (.COM and .DOC).

XCAT40 This is the companion file to MCAT43. It is used to produce the disk or paper copies of your sorted directory listing. Type **LTYPE XCAT40.DQC <return>** for more information. Disk No.3 (.COM and .DOC).

ZCHESS Chess in CP/M mode. This version has a board but does not have any graphics, plays a good game of chess at a reasonable speed. Rules can be read from inside of the program. Type **LTYPE ZCHESS.DQC <return>** for more information. Disk No.3 (.COM and .DQC).

APPENDIX B

CP/M KIT DISKS DIRECTORIES

The following directories were printed by pressing CTRL-P and then typing **DIR <return>** for each disk.

CP/M KIT DISK No.1:

A: DD	COM	:	SD50	COM	:	LTYPE	COM	:	DD	DOC	: LTYPE	DOC
A: LDIR	COM	:	LRUN	COM	:	SCAN12	COM	:	C1571	COM	: CONF	COM
A: CONF	HLP	:	NEWSYS	COM	:	SQ	COM	:	USQ	COM	: SQ	DOC
A: USQ	DOC	:	SCAN12	DQC	:	LRUN	DOC	:	NEWSWEEP	COM	: NEWSWEEP	DQC

CP/M KIT DISK No.2:

A: DD	COM	:	SD50	COM	:	LTYPE	COM	:	MEX128	COM	: MEX	HLP
A: USQ	COM	:	DE-LBR	COM	:	DE-LBR	DOC					

CP/M KIT DISK No.3:

A: DD	COM	:	SD50	COM	:	LTYPE	COM	:	VDE13	COM	: ZCHESS	COM
A: EDFILE	COM	:	NULU12	DQC	:	MCAT43	COM	:	ZCHESS	DQC	: MCAT43	DQC
A: NULU12	COM	:	EDFILE	DQC	:	XCAT40	COM	:	XCAT40	DQC	: USQ	COM
A: VDE13	DQC	:	MAST	CAT	:	EDFILE	DOC					

APPENDIX C

OTHER SOURCES OF INFORMATION

As mentioned, this material will do the most good as a supplement to a good CP/M book. There are so many books published in CP/M that is hard to select the best ones. Some of them are listed in this Appendix.

Remember that one of the best sources of information that applies directly to the C128 is the large HELP program that comes on the CP/M System Disk, side 1. Several ways to make a hardcopy of the HELP file are described in Chapter 2.

CP/M BOOKS

1. **CP/M User Guide, Third Edition;** Thom Hogan
   Osborne/McGraw-Hill
   2600 Tenth St., Berkeley, CA 94710
   $19.95

2. **Inside CP/M Plus;** David E. Cortesi
   CBS College Publishing
   384 Madison Ave. New York, N.Y. 10017
   $18.45

3. **The CP/M Plus Handbook;** Alan R. Miller,
   SYBEX Inc.
   2344 Sixth Street, Berkeley, CA 94710
   $19.95

4. **CP/M Plus User's Guide, Programmer's Guide System Guide**
   Commodore Direct Marketing
   Digital Research, Inc. Offer C-2651
   West Chester, Pennsylvania 19380
   $19.95 (includes two disks)
   This book can be obtained by sending the order form in your C128 System Guide, between pages 220 and 221, along with $19.95 to the address listed on that form. In return you will receive this book and two disks (or one double sided) containing some useful programs for the advancing CP/M user. Although not written exclusively for the C128 it has a lot of information on CP/M Plus.

5. **Free Software;** Bove, Rhodes and Smith
   Simon & Schuster
   1230 Ave of the Americas, New York, N.Y.
   $9.95

6. **C-128 CP/M User's Guide;**
   Abacus Software
   P.O. Box 7211
   Grand Rapids, Michigan 49510
   $19.95

7. **Mastering Disk Operations on the Commodore 128**; Alan R. Miller
   SYBEX Inc.
   2344 Sixth Street, Berkeley, CA 94710
   $15.95

CP/M PUBLIC DOMAIN PROGRAM SOURCES

Besides being able to download public domain software from bulletin boards, there are companies that have a large library of CP/M programs. But, some of this software might not run on the Commodore 128, because it was written for a specific machine. Check the dealer's catalog to see if they have a library section for the Commodore 128, and compare prices also.

Here is a list of the major suppliers of CP/M software:

1. **INNOVATIVE COMPUTER ACCESSORIES, INCA.**
   PO Box 789
   Imperial Beach, CA 92032-0837
   (available in 1541, 1571, or 1581 formats)

2. **Canada Remote Systems**
   4198 Dundas St. West
   Toronto, Ontario
   Canada M8X 1Y6

3. **First Osborne Group (FOG)**
   PO Box 3474
   Daly City, CA 94015

4. **Special Interest Group for Microcomputers (SIG/M)**
   PO Box 97
   Iselin, NJ 08830

5. **Poseidon Electronics**
   Ralph S. Lees, Jr.
   103 Waverly Place
   New York, NY 10011

6. **Elliam Electronics**
   6101 Kentland Ave.
   Woodland, CA 91367

APPENDIX D

COMPUTER GLOSSARY

A>. CP/M prompt, waits for your entry parameter.
Application Software. Software designed for a specific purpose, such as accounts payable or receivable, payroll, word processor.
ASCII. American Standard Code for Information Interchange.
Assembly Language. A language made up of mnemonics and symbols. Special groupings do special functions.
Auto-dial. ability of a modem to dial a number from the modem program.
B>. CP/M prompt, waits for your entry parameter. This prompt occurs when you are using a second drive.
Backup. An extra copy of software, normally kept on file in case the original program is damaged or lost.
BIOS. Input/Output system allocation for CP/M.
Boot. To initialize a system from 'power-off' condition.
B-Protocol. Method of transferring files, via modem, from Compuserve.
Buffer. An area in the computer's memory used to temporarily store information.
Bulletin Board. Private hobby board letting users with a modem access it to share information or programs.
Code. A way of expressing quantities in another form. As an example, the ASCII code represents characters as binary numbers.
Cold-Start. A start-up operation from a 'power-off' state. See boot.
Concatenate. To join or merge files or data into a new composite entity.
Control. In the ASCII character set there are characters which have no graphic symbol and are used to control or direct various functions. A BREAK character, for example, aborts execution.
CP/M. Acronym for Control Program for Microprocessors. One of the oldest operating system for small computers.
Cursor. A position indicator on a CRT or monitor which tells the operator where display text is to be entered. It is normally a flashing square.
Database. A collection of related data that can be retrieved by the computer.
Destination Disk. The formatted disk that is to receive data.
Directory. An orderly section of the diskette that stores the name and location of a stored file on the disk.
Disassembler. A program which analyzes machine language and converts it into assembly language.
Display. A method of representing information in visible form. The most common displays used with computers are CRT's or monitors.
Download. Receiving a file from another computer using a modem and the phone line.
File Extension. Also known as a file type. These are the three letters after the period (.) in the filename.
Filename. The name of a specific software.
Format. Used to prepare a disk to hold data. Also the particular format of a file.
Hardcopy. A printout of information produced by the computer.

Interpreter. A computer program which translates a single line of high-level language at a time for the computer. Interpreters are more convenient but less efficient than compilers.

Interrupt. Interrupts are used to signal the computer that an external device has a status or some data for the computer to process.

K. In common use in a computer, 'K', Kilobytes, usually represents 1024 bytes.

Kernal. Machine language ROM that controls the input/output of a microcomputer.

Library. 1. A collection of public domain software. 2. A group of files put into one single file called a LIBRARY. This is done to keep related programs together and to save disk space.

MAC. (tm) The CP/M Plus macro assembler.

Memory Expansion. Additional memory added to the computer by means of a RAM expander cartridge.

Monitor. 1. A computer controlled television CRT or other display receiver. 2. A program which permits the user to access the computer's architecture at the byte level.

On-line. When two computers (or Terminals) are connected via modem.

Opcode. A binary machine language command; mnemonic for each machine code command.

Operating System. Is the 'traffic cop' software that oversees the overall operation of a computer system.

Public Domain. Software that has been distributed freely for everyone's use by the author.

Punter Protocol. Popular method for transferring Commodore files via modem from a Commodore-based BBS.

RAM. Random Access Memory.

RCP/M. CP/M bulletin boards. Stands for Remote CP/M board.

Squeezed File. A file that has been compressed using the SQ program. This is to save disk space. A squeezed file can be unsqueezed to its normal size with the program called USQ.

Subtopic. Usually an extension of the original topic. Used to find more information in a help file.

Sysop. SYStem OPerator, the operator of a bulletin board.

System Disk. A special diskette usually provided with the system that contains the operating system, languages, utilities, monitors, diagnostics, and other software for system use and initialization.

Telecommunication. Transmission of data between a computer and another computer or terminal in different location. This transmission is normally done with phone lines.

Unsqueezed. Writing a file back to disk that has been squeezed to save space.

Upload. Sending a file to another computer using a modem.

Utilities. Software written to perform various functions such as diagnostic programs.

Warm-start. A restart of the computer system after an abortion of the operating control, achieved by pressing the reset button.

X-Modem Protocol. Most popular error checking process for transferring data via modem, therefore transferring files more accurately. Also known as the Christiansen Protocol.

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We would like to extend special thanks to Mr. Ron Fowler for his contribution of MEX128 to the public domain and to this CP/M Kit, thereby enabling C128 owners to exchange their public domain CP/M software via modem.

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Finally, our much deserved thanks to the authors of the rest of the Public Domain programs included in this CP/M Kit. Thanks, too, to the countless number of authors who write programs and put them into the Public Domain library of the world. Without these hardworking people, computing would not be nearly as much fun as it is now. On the behalf of the many who enjoy your programs . . . **THANK YOU!**

CP/M™ KIT

This CP/M kit consists of three disks of public domain programs and a booklet that will encourage the Commodore 128 owner to use the CP/M mode.

The booklet is written with the beginner in mind, assuming no previous knowledge of CP/M. Each of the programs is fully documented and tested to run on the Commodore 128 with either the 1541 or 1571 disk drive.

With the programs included in this kit the user can:

- Manipulate libraries
- Do word processing
- Play chess
- Catalog CP/M disk collections
- Utilize a modem in CP/M mode
- Edit files
- Manage and maintain disk files
- View or print 134 pages of additional documentation
- And much, much more

INNOVATIVE COMPUTER ACCESSORIES
P.O. Box 789
Imperial Beach, Calif. 92032-0837

Required Equipment:

Commodore 128
1541 or 1571 Disk Drive
Monitor or TV
Printer (Optional)
Modem (Optional)

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CP/M™ KIT for the Commodore 128

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