

THE Clone Newsletter

DEDICATED TO FRUSTRATED DISK USERS



** SUPERCLONE FINALLY RELEASED **

A question that I'm sure has been on many of your minds is just when will the CLONE MACHINE be revised to handle the growing number of programs that will not succumb to its cloning talents. To be fair, the number of such programs is still quite small - most of our readers claim 95 to 98 percent of their own software can be cloned - however, due to the popularity of a number of the 'clone-proof' programs, we felt that an update was in order. Finally, after months of research and testing, we are happy to report that a new program has been developed. Aptly named SUPERCLONE we believe it to be the most comprehensive and user friendly program of its kind, barring none. To briefly describe some of the key points of SUPERCLONE:

Unlike the original CLONE MACHINE which required one to first copy the data on a disk and then reproduce the errors, SUPERCLONE is a one pass copier. In one simple fast, and quiet (yes no more rattling of the 1541's!) maneuver, this new program will automatically copy all the data AND errors on a disk and reproduce them exactly. No more headaches with mixed error tracks, etc. Error number 29 is no longer a problem, nor are any of the programs by ELECTRONIC ARTS, DATAMOST, and BLUE SKY SOFTWARE to name just a few. Forget about formatting your copy disk - SUPERCLONE will do it for you -WHILE ITS COPYING! SUPERCLONE will consist of three separate programs: SUPERCLONE, FASTCLONE, and ERROR DETECTOR. FASTCLONE as its name implies, is a speedy version of SUPERCLONE that trades a screen progress report for its swiftness. ERROR DETECTOR is a utility that we included in this package because we felt that many of you may have saved copy disks that never quite worked. This program will search a disk for errors allowing you to compare your copy disk to the original and note any differences.

\$100 Reward for your efforts

That's right!! We will pay from \$10 to \$100 or we will provide free merchandise for articles, short stories, news, etc. dealing with subjects that are of interest to owners of the Clone Machine. Send to:

EDITOR: Clone Newsletter
c/o Micro-W PO BOX 198
Butler, N.J. 07405

We are sorry that all submissions can't be acknowledged or returned. If possible, include your phone number so that we can contact you if we are interested in using your article. Thanks for your support.

This may sound like the old UNGUARD error locator except for two major differences - SUPERCLONE'S ERROR DETECTOR takes just 2.5 minutes to completely checkout a disk regardless of how many errors it may have, and never does it require the banging, clanging, and rattling that has shattered the nerves of more than one all-night cloner, not to mention his drive.

So if all this sounds as good to you as it does to me, then be sure to place an order for YOUR updated SUPERCLONE right away. As owners of the original CLONE MACHINE, you are entitled to receive this revision for the nominal fee of \$10.00 plus shipping and handling.

FINALLY..... UNGUARD UNGUARDED !!!!

As I'm sure many of you remember, it wasn't too long ago that we promised to solve the UNGUARD copy problem (how do I back-up my copy of TCM & UNGUARD???) for you. I decided to make it something of a challenge to our readers and suggested that the author with the first correct solution would be published and appropriately rewarded. Well I must admit, I was amazed at the response that was generated, both in terms of the number of correct solutions, and their almost infinite variety. It took quite a few hours to sift through the mail and test out the many likely solutions. The winner turned out to be the work of a duo of hackers, and it is fully reproduced inside this newsletter.

While reading my mail and searching for the perfect UNGUARD solution, I came across many interesting letters by CLONE MACHINE users that suggested new and unique ways of using the program. Feeling that many of you would like to read about what your colleagues are doing, I've decided to dedicate the major portion of this issue to report on the most inventive, unique, and creative ways that our readers have found to use TCM & UNGUARD. In future issues I will continue to publish this sort of user forum and so I hope to encourage the kind of correspondence that I have been receiving by offering both cash rewards and/or free products to our contributors.

To begin this special edition featuring the resourcefulness and creativity of our users, we think it appropriate to publish the following letter which will certainly be of interest to many of you.

UNPROTECTOR UNPROTECTED

We are sure many seasoned backup artists have been picking their brains, trying to secure their precious copy of the Unguard against the nasty disk-eating dog. Here's a way to do it.

First of all, you must note that there are two anti-copy safeguards in the program. The easy one is, of course, the check for error #27 on track 9. The tougher one is a short machine-language routine in the 'ugsyspk' which loads to \$C900. This checks the header of a particular track, and reads both the secret password ('UG'), and the key code (\$DC hex = 220 decimal) to unscramble the error-making routines.

Getting rid of the first check is easy. Load the BASIC part of the program (filename 'ugrd'), and delete the statement:

```
GOSUB8300
```

form line 8210. You may also delete lines 8300, 8310, and 8399.

The second part requires a little knowledge of assembly language. First, load the m.l. part of the program (filename 'ugsyspk') to the correct address. Second, execute a small subroutine within this by typing:

```
SYS 51613 (that is, $C990 hex)
```

This will unscramble the subroutine at \$C900 to \$C99C. Now delete the seven instructions from \$C95A to \$C96A (replacing them with NOP instructions). Next, add the instruction

```
LDA #$DC
```

somewhere in the cleared area. (Don't forget to save your updated version of the 'ugsyspk'.) Finally, go back to the BASIC part of the program, and delete the twin

```
SYS 51613
```

statements from line 8400. While you are at it, you may also wish to delete from line 110 the statement:

```
POKE 808, 225.
```

This statement disables the RUN/STOP key. Now you can backup the Unguard (make sure you copy all three parts of it) on any disk you like, without bothering about error tracks and all that fuss.

Sevan Nisanyan

Sabit Say

New York, New York

**FOLLOW
DIRECTIONS**

Ed. Note: Congratulations to Sevan and Sabit! As was mentioned in the cover story, quite a few of our readers had sent us correct solutions to the UNGUARD puzzle, and we're sorry we can't give credit to all who did.

By the way, if you're not a machine language programmer, and all of the above reads as GREEK to you, don't despair. The new SUPERCLONE program will easily backup UNGUARD.

FORT APOCALYPSE

The errors for 'Fort Apocalypse' are as follows:

Track 22

Block 14

Type 20

This may seem silly but what I did was, load the program normally and listen to how many times the program searched for an error. Then I loaded it again and when it got about half way into the ratchet I unplugged the disk drive interface cord. This leaves the drive blinking away with the type of error stored in memory of the drive. Then I cleared the - 64 and typed in this program to read the error

```
OPEN15,8,15
```

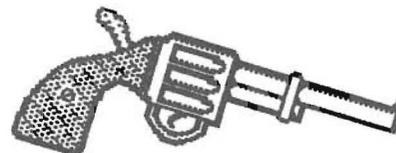
```
INPUT#15,A$,B$,C$,D$
```

```
PRINTA$,B$,C$,D$
```

Plug the disk cord back in and then run the error read program. Repeat if the original reads more than one error during loading. This also saves wear and tear on your drive.

Kevin C Molloy

Vincentown, NJ



Ed. Note: Excellent suggestions Kevin!

MIRAGE: DATA BASE MANAGER

This Business oriented data management program seems, at least at first glance, to be copy-protected by a complex arrangement of errors on tracks 1 thru 7. All sectors on these tracks are coded with error #20 with the exception of certain blocks which contain error #27.

Error #27: 2/0,1,6,7,11,12,20

3/3

4/5,14,16

5/2,3,8

6/2,5,14

Error #20: all blocks on tracks 1 thru 7 not coded with error #27.

My attempts at copying this maze of errors was, after many tests and trials, unsuccessful. I was quite surprised to ultimately discover that these error tracks are apparently intended to discourage only simple disk backup without the use of a utility such as THE CLONE MACHINE. In other words, a working backup copy of this program does not require the presence of any error tracks whatsoever...NONE...ZERO.

Since the BAM on the program disk was erased so as not to reveal which tracks contained program information, it took a little extra detective work to come up with the shortest copy plan. So here it is; no fancy stuff, no tricks, and you don't even have to use UNGUARD or copy 18/0 last...

Init.

Copy 12/0 - 24

Patrick J. Bryk

Santa Cruz, Ca.

Ed. Note: Terrific Pat. Your story gives a perfect example of how often times a seemingly complex problem can be solved by the simplest of solutions! Many thanks to you and all of our contributors.

The 1541 disk drive has gone through a number of incarnations since it was first introduced, however its most important features have remained (thankfully for us M.L. programmers) unchanged. I am assuming that for most of you, the internal workings of this drive are, if not a mystery, then certainly not crystal clear. The only two books that I am aware of that describe the unit in anything more than the most basic way are THE ANATOMY OF THE 1541 DISK DRIVE by ABACUS SOFTWARE and THE 1541 MAINTENANCE MANUAL by David Peltier. The former contains complete ROM listings with much of it commented, while the latter describes the 1541 in terms of its hardware operating systems. Both books are highly recommended though the second may be difficult for anyone without an electronics background to understand. Anyone knowing of another source of solid information should notify me and I'll pass the reference on to our readers. In this first installment of 1541 WORKSHOPPE, I'm going to just give an overview of the drive's operation and memory map. Future articles will go into more detail if interests warrant it.

To begin with, the 1541 is a 'smart' peripheral - meaning that it is controlled by its own microprocessor (a 6502 just like the 64) which executes instructions contained in both its ROM operating system and RAM memory. In addition, two very important other devices it contains are dual 6522 VIA's (Versatile Interface Adapters). These two chips are used to control the serial bus communications and the motor functions.

The 1541 performs its various duties in a time-multiplexed fashion, which simply means that a number of jobs are executed simultaneously. This may sound impossible for a conventional computer to accomplish and in truth it is, however the result is close enough to be considered simultaneous. The key to its operation is through its use of interrupts. Multi-tasking, interrupt driven software is the term usually used to describe this type of operation. Basically, what happens is that at regular intervals a special subroutine interrupts 'normal' program flow and a number of tasks are performed. This is very similar to the IRQ interrupt in the 64. Only in the 1541, the progress of actual jobs are tracked and action is taken depending upon what stage a particular job is at.

Located in low RAM memory from \$00 to \$05 is something known as a job queue. This can be compared to a waiting line for the jobs. During every interrupt cycle, this queue is checked for new jobs and also amended to reflect changes in the status of old jobs. For example, if there aren't any jobs pending and you write a number \$C0 into address \$05, this is what happens: At the next occurrence of an interrupt, the job queue is checked and the \$C0 is noted. The number \$C0 describes a 'bump' job - you know, where the head slams back against the track 1 stop and rattles as when an error is detected. Immediately the job is initiated with the head starting its travel toward track one. After many more interrupts have occurred, the head will have finally reached its destination and the job will be completed. At this point, the next interrupt to occur will mark the job completed by setting bit seven of \$05 to a zero. During the time that the head is traveling toward track one, other jobs can also be initiated in the same manner. This leads to the very efficient and almost simultaneous performance that was mentioned previously.

In the next installment, more jobs will be described along with some practical examples of how to use the job queue in you own programs.

BACKING-UP 'SUMMER GAMES'

To backup SUMMER GAMES, format a blank diskette and turn off the power. Remove the four bottom screws (Phillips head) and take off the plastic cover. Remove the two screws holding the large metal plate and remove the plate. Power up the drive and insert the formatted diskette. Type in the following:

```
OPEN15,8,15,'I'  
OPEN5,8,'#'  
PRINT#15,'U1:'5;0;35;0
```

Carefully pull the white connector on the top left and closest to the front. There are three white connectors in a row and a black one in front of them.* Now, with the drive head at track 35, reformat the disk with a different ID. You will be formatting only track 35. Type the following:

```
PRINT#15,'N0:name,id'  
CLOSE15
```

When the drive stops, the error light will be flashing. Don't worry about it! Remove the diskette and power down. Put the connector back and put the covers back on. You now have a formatted diskette with an error #29, ID MISMATCH on track 35. When it is all back together, power up the system and use TCM to copy tracks 4-30 of SUMMER GAMES to your special disk.

Michael Casella
San Leandro , Ca.

Ed. Note: This is on the new 'short-board' 1541. On the older long board, disconnect the third white connector from the rear on the left side.

I would rather try and copy a program and disable the bad sector hunting. Whenever the disk drive head is made to reset because of an error, the risk is there of causing the head to become mis-aligned.

FLIGHT SIMULATOR II

```
Init.  
Copy 1/0 - 2  
Copy 4/0 - 35  
Edit T/S: 1/5 , byte $3B from $21 to $00
```



The byte that is changed is part of a look-up table of tracks to check for errors. The track is given first, then the error code is given after the particular track. In this case, tracks 0 through 9 are checked (sector 0 is used), with track 3 having error code 21.

The above fix doesn't stop the program from looking for the error, but the error is changed to a 'no-error'. So when the diskette is copied, the error is NOT created on the copy.

All of the diskette must be copied, as the screen data used for the various landmarks is stored everywhere.

COMMODORE LOGO

Init.
Copy 11/0 - 18
Edit T/S: 17/11 , byte \$5C from \$F0 to \$4C
\$5D from \$14 to \$6D
\$5E from \$60 to \$09
\$98 from \$20 to \$4C
\$99 from \$C6 to \$AB
\$9A from \$FF to \$09



COMMODORE LOGO looks for two things; a bad sector, and a sector with some text. The above fix cancels both operations.

You made a little comment about dongles. PAPERCLIP is such a program. I was able to figure out the dongle. When I figured it out, I didn't have the tools to go looking into the program. I have the tools now, but I just haven't gone back and figured out the code. They tried to keep people from figuring it out by scraping off the part numbers from the IC's. All of the IC's but one were standard NAND and exclusive-OR gates, easy to figure out. But one part was more complex. However, they forgot to scrape off the part number from the bottom of it!

Michael L. Brown
Madison, WI.

Here's a few tips on using the track/block editor. If you accidentally scratch a file and would like to 'unscratch' it you can do it with the track/block editor. This will only work however if nothing else has been recorded over the deleted file. Start by finding the program name on track 18 (in the ASCII mode). Move to the line with the deleted program name on it and position the cursor on the 3rd dot before the name. Press 'F7' to enter the Hexadecimal mode. You should now see 00 where the cursor is. That's the code for a deleted file. To change it to another file enter in one of the following:

81 for sequential
82 for program
83 for user
84 for relative

After this is done press RETURN and you now have your file back.

Another thing you can use the track/block editor for is to find where a machine language program is loaded into memory. First of all, find the track and block where the program starts by using Option 3 on the Main Menu (Disk Directory Functions) and Option 2 on the following menu (Display/Modify Disk Directory). After finding the starting track and block enter the track/block editor and look at the starting block in the Hex mode. The 4th byte in the block is the first part of the starting address, and the 3rd byte is the second part of the address. Most basic programs will start at \$0801 so if you look at the starting address of a basic program you will see 01 as the third byte and 08 as the fourth byte. With this knowledge you can investigate your favorite machine language programs by finding where they start in memory.

Gordon W Moore
Ashland, Ky

LETTERS TO THE EDITOR

I have also backed-up Unguard, but I won't tell you how.....yet! I do have one complaint about Unguard. It is IMPOSSIBLE to break out of any function once you have started it. This should be possible. The constant head resetting of the 1541 is what makes it prone to misalignment. After it's checked 5 errors on a track you should be able to stop the check, since odds are the rest of the track has errors also. But having to sit and wait while it grinds away is painful. I have since made my own hybrid of Unguard for my own use that checks the keyboard for input after each sector. You should look into this. It wasn't that hard to do.

Thank you for a nice product!

Chris Hebert
Sunnyvale, CA

Ed.Note: No more head resetting (banging) with the new SUPER CLONE program!

Dear Sirs:

I have had my copy of THE CLONE MACHINE with UNGUARD for a while now, and I am extremely impressed with the way it works. The reason I am writing this letter is to let other CLONE users know of the success that I have had with the CLONE MACHINE with UNGUARD.

Results with CLONE/UNGUARD - I have successfully been able to back up 98% of ALL of my computer software such as:
LODE RUNNER, SHAMUS, NECROMANCER, SAM, PHARDOAH'S CURSE, CHOPLIFTER, ZEPPLIN, SOLO FLIGHT, and FLIGHT SIMULATOR II.

1) LODE RUNNER - BRODERBUND

- a) Initialization
- b) Copy 01/00 - 01
- c) Copy 03/00 - 17
- d) Copy 18/01 - 33
- e) Copy 35/00 - 35
- f) Set Errors 02/0-20 E!#, 34/0-1
(Error 23 has to be placed on
time.)
- g) Copy 18/0



6 E27
Track 2 one block at a

2) SHAMUS - SYNAPSE

- a) Initialization
- b) Copy 01/00 - 17
- c) Copy 18/01 - 24
- d) Set Errors 01/00 E20, 06/00 E20, 13/00 E20, 17/00 E20, 21/17 E23, 22/00 E23, 23/02 E23, 24/04 E20
(There is an error 21 on tracks 25-35 that is not needed.)
- e) Copy 18/0

3) NECROMANCER - SYNAPSE

- a) Initialization
- b) Copy 01/00 - 17
- c) Copy 18/01 - 18
- d) Set Error 03/10 E23
(There is an error 21 on tracks 19-35 that is not needed.)
- e) Copy 18/0

LETTERS TO THE EDITOR

- 4) SAM - TRONIX
- a) Initialization
 - b) Copy 2/0 - 35
(Don't worry about copying 18/0 last.)
 - c) Set Error 01/00 E21 TC=99
- 5) PHAROAH'S CURSE - SYNAPSE
- a) Initialization
 - b) Copy 01/00 - 17
 - c) Copy 18/01 - 18
 - d) Set Errors 04/11 E23, 17/01 E23
(There is an error 21 on tracks 19-35 that is not needed.)
 - e) Copy 18/0
- 6) CHOPLIFTER - BRODERBUND
- a) Initialization
 - b) Copy 01/00 - 17
 - c) Copy 18/01 - 33
 - d) Copy 35/00 - 35
 - e) Set Errors 02/0-20 E23, 34/0-16 E27
(Error 23 has to be placed on track 2 one block at a time.)
 - f) Copy 18/0
- 
- 7) ZEPPLIN - SYNAPSE
- a) Initialization
 - b) Copy 01/00 - 17
 - c) Copy 18/01 - 18
 - d) Set Errors 02/09 E23
 - e) Copy 18/0
- 8) SOLO FLIGHT - MICRO-PROSE
- a) Initialization
 - b) Copy 01/00 - 01
 - c) Copy 04/01 - 17
 - d) Copy 18/01 - 35
 - e) Set Errors 02/0-20 E23, 03/0-20 E27
(Error 23 has to be placed on track 2 one block at a time.)
 - f) Copy 18/0
- 
- 9) FLIGHT SIMULATOR II - SUBLOGIC
- a) Initialization
 - b) Copy 01/00 - 02
 - c) Copy 04/00 - 17
 - d) Copy 18/01 - 35
 - e) Set Error 03/0-20 E21 TC=99
 - f) Copy 18/0

Larry Primas
Tickfaw, La.

LETTERS TO THE EDITOR

Sirs:

I believe The Clone Machine/Unguard to be a truly powerful and useful software product. I hope to gain an even greater appreciation of its potential by following your CLONE NEWSLETTER.

To date, I have used TCM/Unguard to back-up three of my protected disks: 'WordPro 3 Plus/64', 'SpellRight Plus/64', and 'PractiCalc'. Although these three pieces of software are relatively easy to analyze and copy, I will reveal my copy plan for each. This may save other users unnecessary wear on their disk drive read/write head shuttle mechanism (it is repeatedly forced against its stops while analyzing some types of errors).

Here is the Copy Plan for WordPro:

```
Init.  
Copy 2/1-17  
Copy 18/1-35  
Set Errors: Track 1, Blocks 0 thru 20 E21  
(use timing constant of 99)  
Copy 18/0
```



Here is the Copy Plan for SpellRight:

```
Init.  
Copy 1/0-17  
Copy 18/1-35  
Set Errors: 35/9 E22  
Copy 18/0
```

Here is the Copy Plan for PractiCalc:

```
Init.  
Copy 1/0-17  
Copy 18/1-35  
Set Errors: 35/12 E23  
Copy 18/0
```

PractiCalc may be duplicated more quickly as given below:

```
Init.  
Copy Program Files (use TCM File/ Program Copy Option)  
Set Errors: 35/12 E23  
Copy 18/0
```

Since I purchased WordPro and SpellRight separately, I have found it very helpful to back-up each on opposite sides of a double-sided disk. Alternatively, SpellRight can be copied onto the opposite side of your textfile disk. Either method simplifies disk handling when performing word processing and proofreading with these programs.

Two disks which I have so far been unable to back-up are 'Archon' by Electronic Arts and your own TCM/Unguard. Although from your newsletter I know it is possible to back-up TCM/Unguard, my attempts to date have been unsuccessful. Any information/hints you can provide concerning either of these two software packages would be greatly appreciated.



It would be helpful if future enhancements of TCM/Unguard included a correction to the CardCo printer interface incompatibility bug. It is sometimes difficult to remember to disconnect the power lead to the cassette port before running TCM/Unguard.

Michael Brasher
North Ridgeville, OH

Ed.Note: The Cardco 'bug' resides in their interface, not our software. It's a problem involving electronic feedback through the power line. Archon, as well as all the other programs by Electronic Arts can be copied successfully by Super Clone (See cover story).

Dear Editor:

I have used your TCM and Unguard for quite some time now and would like to share with you some of the programs I have backed up, the errors on the discs, and some of the more interesting protection schemes I have come across.

As to the question posed in your firstnewsletter: EasyScript only has pertinent information on the disc from track 14 to track 22. I haven't gone to the trouble of looking for the exact sectors it starts on but the above tracks are correct.

I have found three programs with very intriguing error designs:

Software Automatic Mouth:

Has E23 on 1/1 and E29 from 21/0 thru 35/16. Luckily you only have to copy from 1/0 to 17; copy 18/1 to 20; copy 18/0 and set E23 on 1/1 and it will run fine. The program doesn't look for any E29's.

Choplifter:

Has E23 from 2/0 to 2/3; E21 from 2/4 to 2/8; E23 from 2/9 to 2/20; and E27 from 34/0 to 34/16. Copy 1/1 to 1; copy 3/0 to 17; copy 18,1 to 33; copy 35/0 to 35; copy 18/0; set E27 from 34/0 to 34/16 and E23 on 2/2 and it will run fine. The rest aren't necessary.

Cardco Printer Utilities:

Has no errors on the disc but track 2 does not exist! If you have the drive try to read any part of track 2 the drive will spin and spin and never stop. Copy 1/0 to 1; copy 3/0 to the end and it's OK.

Other program errors:

Multiplan: E23 on 1/1

Superbase: E23 on 1/0 and 28/4

(some discs of Superbase are different!)

OmniWriter: E23 on 31/10 and 31/14

Ultima II: E23 on 18/18

Pharoah's Curse: E23 on 4/11

Dragon Riders of Pern: E23 on 1/1

Lunar Outpost: E23 on 1/1

Beach-Head: E23 on 18/18

LETTERS TO THE EDITOR

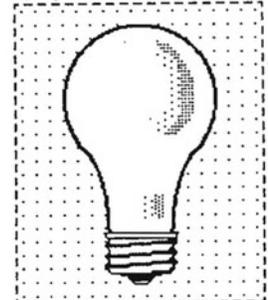
Dear Sirs,

Here's a solution to 'IN SEARCH OF THE MOST AMAZING THING' by SPINNAKER SOFTWARE.

Init.
Copy 4/0 - 17
Copy 18/1 - 29
Set Errors:
 track 2 - error 23
 track 3 - error 27
Copy 18/0

James H. Otzman
Lafayette, Co.

Dragonriders of Pern



Bright Ideas:

Initialize
Copy 1/0 - 22
Copy 28/0 - 30
Set error #23 at 1/1

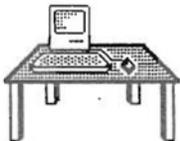
To copy Broderbund's Mask of the Sun took a little investigating. It's littered with errors (about 2 or 3 screens full) on both sides of the disk. As is typical of most copy protection schemes only a few errors are really needed. You can copy each side on a separate disk but it's easier to use both sides of one disk. You can do this by punching a hole in it opposite the hole on the other side (a regular hole punch is fine).

Side 1
Initialize
Copy 6/0 - 30
Set error #27 at 34/0
Set error #21 at 2/1 with timing constant 18
Set error #23 at 2/0, 2/17, 2/18, 2/19, 2/20

Side 2
Initialize
Copy 5/0 - 31

Gordon W. Moore
Ashland, Ky.

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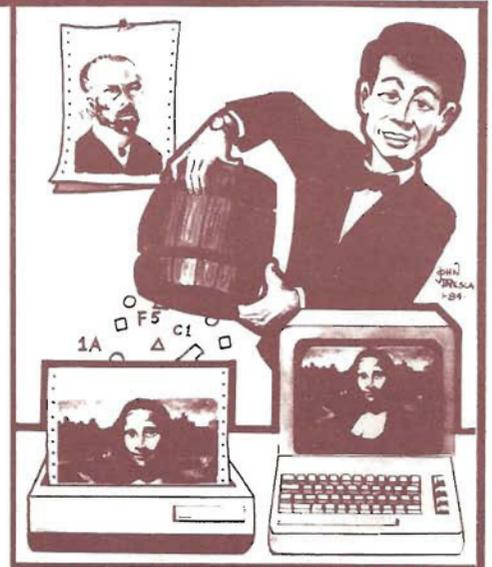
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