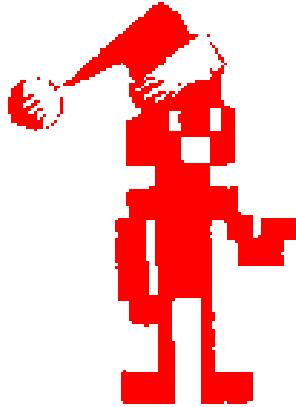


TRS8BIT

PRODUCED AT WWW.TRS-80.ORG.UK



HI EVERYONE
AND WELCOME TO THE
CHRISTMAS 2020
EDITION OF
TRS8BIT.

DEE AND I SEND YOU
ALL BEST WISHES
FOR XMAS AND THE
RAPIDLY
APPROACHING NEW
YEAR. WE WOULD
REMIND YOU ALL NOT

TO WEAKEN YOUR RESOLVE AND
CONTINUE THE SAFETY GUIDE
LINES OUR GOVERNMENTS HAVE
ISSUED AND TO KEEP SAFE UNTIL
VACCINATIONS ARE MORE READILY
AVAILABLE.

WHAT A YEAR THIS HAS
CERTAINLY TURNED OUT TO BE,
BUT, ON THE TRULY BRILLIANT
SIDE, JUST CHECK-OUT THE
ENTRIES (AND WINNER DETAILS)
OF THIS YEAR'S 'DOUBLE-DO'
COMPETITION. STARTING ON PAGE
4, THERE'S FULL DETAILS, WITH
PHOTOS. I AM TOTALLY 'WOW'D'
BY THE NUMBER AND QUALITY OF
THE ENTRIES WHICH MAV
RECEIVED.

MAV FELT THAT IT WAS
IMPOSSIBLE TO STICK TO THE
NORMAL PROCEDURE FOR THE
PRIZES, SO FOR THIS YEAR
THERE ARE 6 (YES SIX) BEING
AWARDED.

WELL DONE TO ALL CONTESTANTS.

IF YOU'VE A GOOD IDEA FOR THE
2021 COMPETITION, GET IN
TOUCH WITH EITHER MAV OR
MYSELF ASAP.

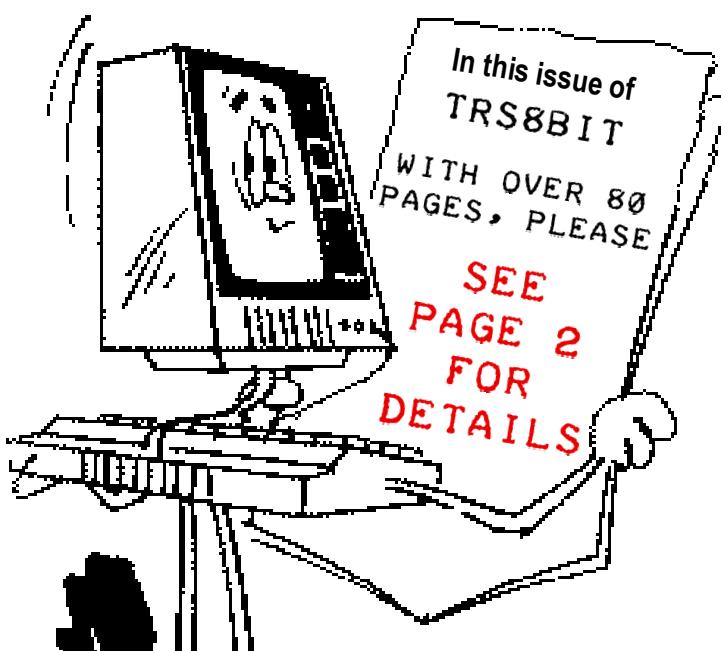
I THINK IT'S TRUE TO SAY,
THAT ALSO THIS YEAR WILL BE
SEEN AS REMARKABLE FOR THE
AMOUNT OF DEVELOPMENT, BOTH
HARD AND SOFTWARE FOR ALL
THINGS TANDY.

I THINK THE CONTENTS PAGE
SHOWS THIS UP FULLY.
WHEN YOU SEE THERE'S CP/M NOW
AVAILABLE FOR THE MODELS
100/102. A REVIEW OF A GAMES
TOURNAMENTS IN SPAIN. OLD
GNOMIC HARDWARE BEING GIVEN A
NEW LEASE OF LIFE. DETAILS ON
REPAIRS AND SMARTENING UP OLD
COMPUTER CASES. A NEW ONE-
LINER PROGRAM. "EVERYTHING
YOU NEED TO KNOW" (ACCORDING
TO THE ARTICLE, FROM THE
DAY), ABOUT CP/M. I LOVE GUY
KEWENY'S ARTICLE ON THE LAST
PAGE! I THINK HE'S STILL
CONTRIBUTING ARTICLE TO
MAGAZINES TODAY. THERE'S
DETAILS OF LAWRENCE'S WEBSITE
TO READ AND CHECK CASSETTE
FILE. AND FINALLY, MAV GIVES
US ALL A TASTE OF FUTURE
DEVELOPMENTS HOPEFULLY MAKING
AN APPEARANCE IN 2021. I, FOR
ONE, JUST CAN'T WAIT!

SO, UNTIL THE START OF OUR
15TH YEAR, NEXT
MARCH,

STAY SAFE

DUSTY





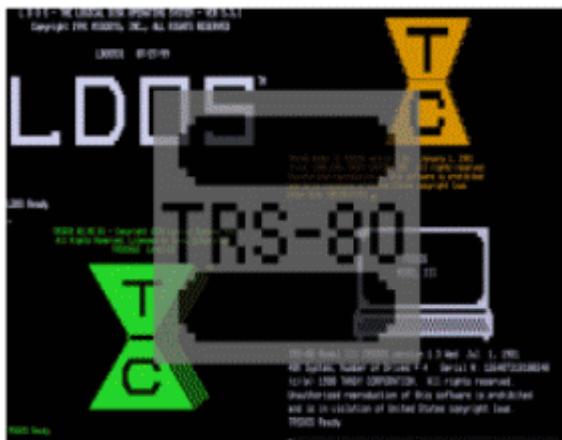
CONTENTS

- PAGE 4 2020 COMPETITION DETAILS & RESULTS
- PAGE 15 REXCPM
CP/M RUNNING ON THE MODEL 100! JUST UNBELIEVABLE BUT
BRILLIANT. IT'S A MUST HAVE FOR M100 FANS
- PAGE 19 PAINTING YOUR COMPUTER
PATRICK BUREAU (TTR)
BRIGHTEN UP YOUR OLD TANDY WITH THESE TIP FROM
PATRICK. HE REALLY MAKES A GREAT JOB OF IT
- PAGE 29 IN MAV'S WORKSHOP
IAN MAVRIC
MAV INTRODUCES SOME OF HIS NEW IDEAS FOR 2021
- PAGE 37 BACK TO THE FUTURE
AND THINKS BACK AND REMEMBERS WHEN THE WORLD WAS
QUITE A DIFFERENT PLACE
- PAGE 42 I.SANTUTXU TOURNAMENT
EGOITZ CAMPO
A REPORT AND PHOTOS FROM THE LATEST TRS-80
TOURNAMENT FROM SPAIN
- PAGE 45 ROMAN NUMERALS
ET FONEHUME
ET PRODUCES A RATHER NIFTY ONE-LINER TO CONVERT
DECIMAL NUMBER TO THEIR ROMAN EQUIVALENT!
- PAGE 47 GNOMIC - ALIVE AND KICKING (AGAIN)
SHANE FOSTER
SHANE HAS PROVIDED A REPORT, WITH PHOTOS, OF THE
WORK REQUIRED TO BRING BACK TO LIFE MY GNOMIC
DP2000 SYSTEM
- PAGE 53 STRETCH YOUR MIND
HAROLD FINCH
HAROLD HAS AN XMAS THEME QUIZ FOR US ALL
- PAGE 55 MERRY CHRISTMAS TO YOU ALL - FROM DEE AND MYSELF
- PAGE 57 TRS-80 CASSETTE READER WEBSITE
LAWRENCE KESTELOOT
CHECK OUT THIS FANTASTIC WEBSITE WHERE YOU CAN
JUST 'DROP' YOUR CASSETTE TYPE FILE AND CHECK IT
FOR ERRORS
- PAGE 60 THE WAY WE WERE
WITH CP/M AVAILABLE FOR THE M100, I CAME ACROSS THIS
ARTICLE IN 'PERSONAL COMPUTING' EVERYTHING YOU
NEED TO KNOW ABOUT CP/M, IT SAYS!
- PAGE 77 IN MAV'S WORKSHOP
IAN MAVRIC
MAV COMPLETES HIS SERIES OF THE CN80 MOUSE WITH PART
5 FOR HIS ARTICLE

VERSION 2.4 JUST RELEASED

Don't have a TRS-80?
Crazy prices on eBay?
Tired of RIFA caps blowing?
Of floppies shedding oxide?
Or just plain dead chips?

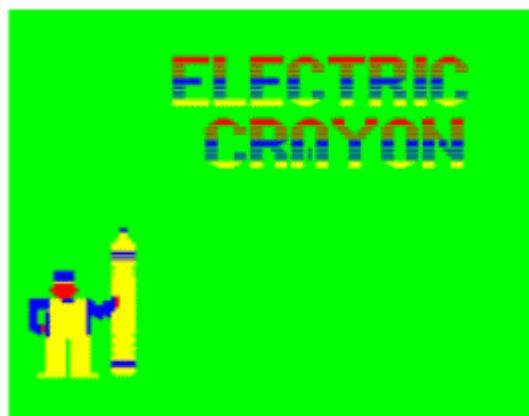
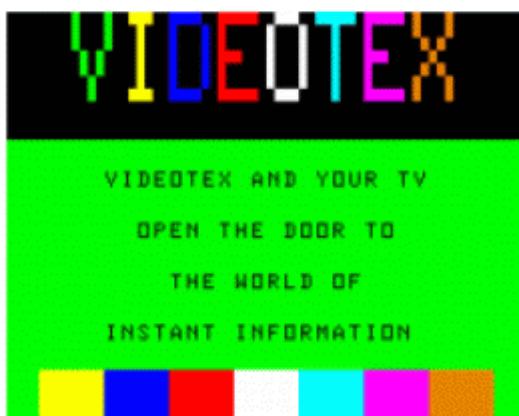
Then what you need is trs80gp.
Runs on Windows, macOS, Linux.
Emulates Model 1, 2, 3, 4, 12, 16, 6000; DT-1 and Videotex.



Just like a real TRS-80 with none of the hassles. Built-in debugger and other features great for programmers.
Get it now at <http://48k.ca/trs80gp.html>

New version 2.4 just released featuring:

- Videotex emulation.
- Electric Crayon emulation.
- Linux build beta release.



VERSION 2.4 JUST RELEASED

2020 COMPETITION RESULTS

THE DOUBLE-DO WITH 6 WINNERS!

by Ian Mavric



Finally some good news about 2020: we had a great response to the Double-Do competition and so I expanded the prize numbers from two to six. All the entries were for either the Model I/III/4 or the Coco. No entries were received for the Model II/12/16/6000, MS-DOS Tandys, or the Pocket Computer/Model 100-200. A competition of this nature makes it difficult to judge clear winners and we had a lot of entrants this time so the new categories and winners are.....

Monochrome category (Model I/III/4)

Winner: *Vicious Vipers In Love*

Kyle Wadsten - 3 votes

Runner-up: *Trek14*

Hugh Steers - 2 votes

Coloured category (Coco 1-2-3 and MC-10)

Winner: *Xenocide*

Alison deNu - 4 votes

Runner-up: *Decoy.BAS*

Jim Gerrie - 3 votes

Double-Do (all systems)

Hardware: *Talker/80 for the Model I/III/4*

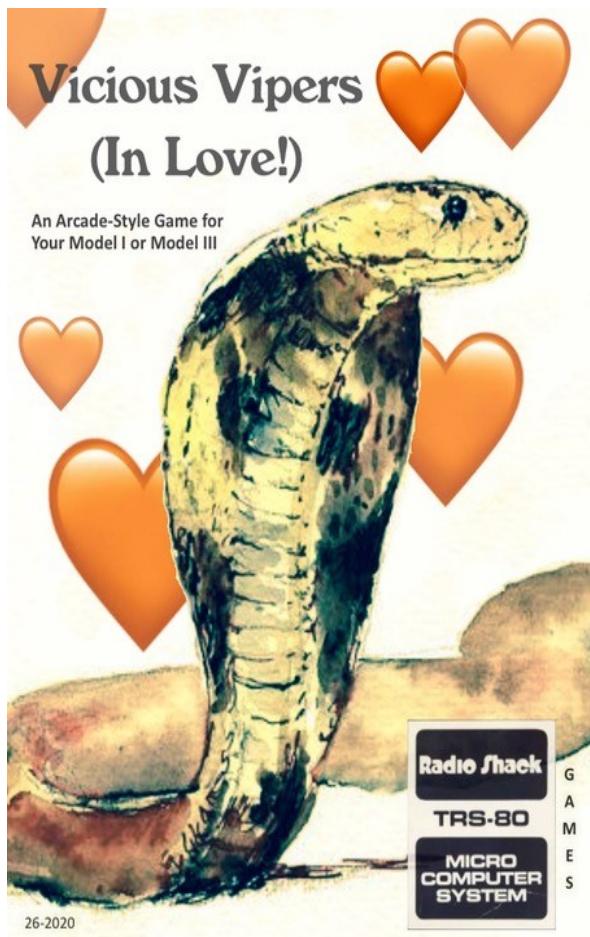
Michael Wessel - 4 votes

Software: *TRS80GP 2.3.2*

George Phillips - 4 votes

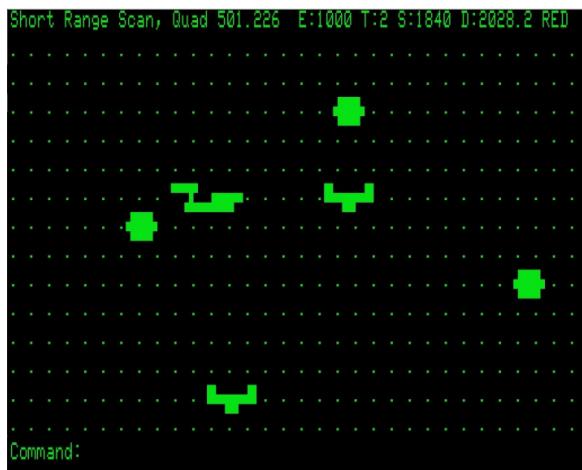
The winners have been contacted and should receive their prizes sometime in January. So let's take a closer look at them:

VICIOUS VIPERS IN LOVE by KYLE WADSTEN: is a Z80 assembly language program which runs on the Model I, III or 4. You snake around, eat eggs, collect keys, avoid things all trying to find Violet before you die. Like all good games it's easy to learn and hard to master. Kyle even provided us with some mock-up artwork matching the period games like this were being sold:



You can download it from Kyle's website: <https://plaidvest.com/>

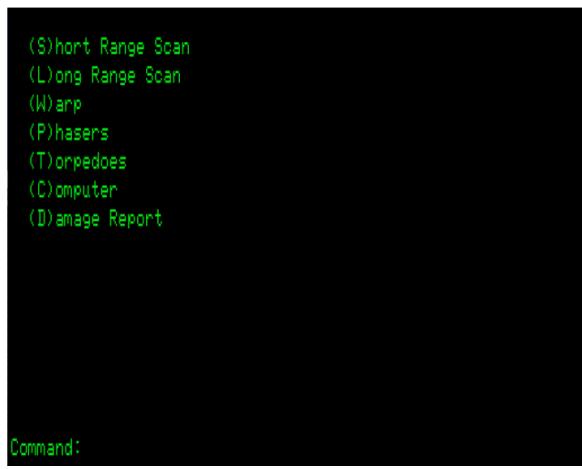
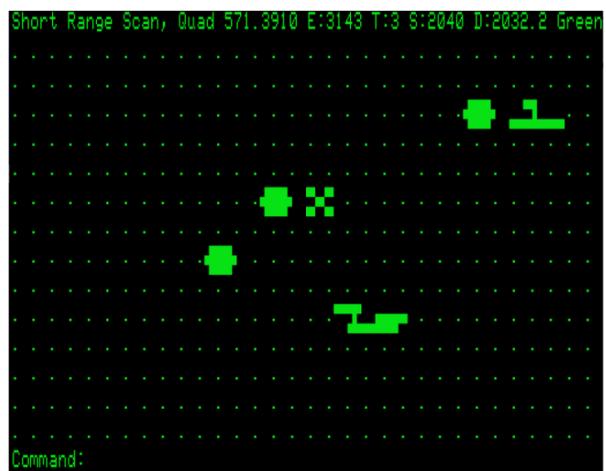
TREK14 by HUGH STEERS: is a Z80 assembly language strategy game. Think of it as a supercharged greatly expanded version of the Trek games of the past loosely based on that classic 60s TV Sci-Fi series. Hugh provides an extensive manual for his game, as well as graphics animations far beyond the previous generation Space Warp games



Long Range Scan from 6,6,1

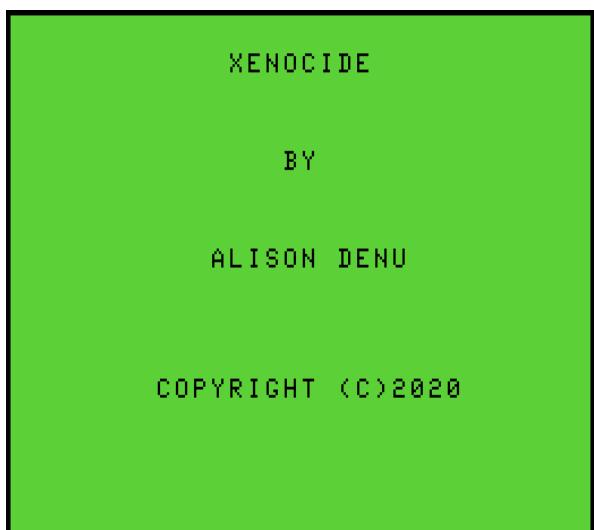
5	6	7	
S2P2		S2P1	0
S2P2	B1 S1	S1P3	1 5
			2
	F1	S1	1 6
		S1 K3	2
B1 S1P3	S2	B1	0 7
			1

Command:



You can download the game from [GitHub](#).

XENOCIDE by **ALISON deNU**: a Coco program written in Extended Color Basic and is surprisingly playable and addictive. System requirements are 32K Ram and a joystick.

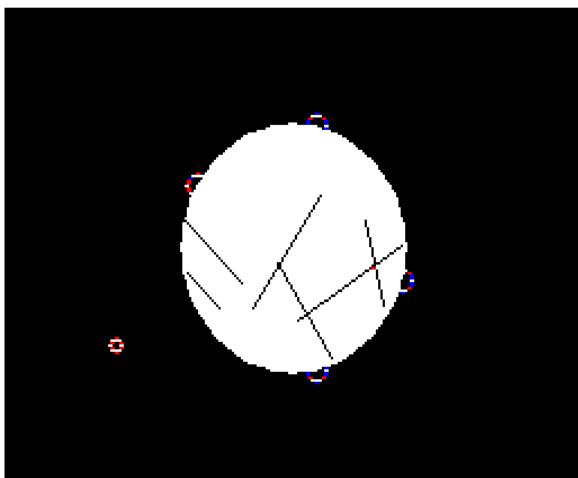


YOUR OBJECTIVE IS TO DESTROY ALL THIRTY-SIX OF THE CITIES ON AN ENEMY WORLD. EACH CITY IS EQUIPPED WITH A DEFENSIVE SHIELD AND A CORBOMITE MISSILE. WHEN A CITY IS DESTROYED, THE CITY WILL FIRE ITS MISSILE TO RETALIATE. UNLESS YOU DO MORE THAN 50% DAMAGE TO A CITY'S SHIELD, IT WILL REGENERATE IMMEDIATELY. PRESS ANY KEY TO CONTINUE...

TO OPEN THE SHIP'S CONSOLE, PRESS C. TO RETURN TO THE VIEWSCREEN, PRESS V. TO CHANGE ORBITS, USE THE LEFT AND RIGHT ARROW KEYS. TO DROP A BOMB, PRESS THE SPACEBAR.

TO DEFEND AGAINST INCOMING MISSILE ATTACKS, USE THE RIGHT JOYSTICK TO AIM AND FIRE.

PRESS ANY KEY TO CONTINUE...



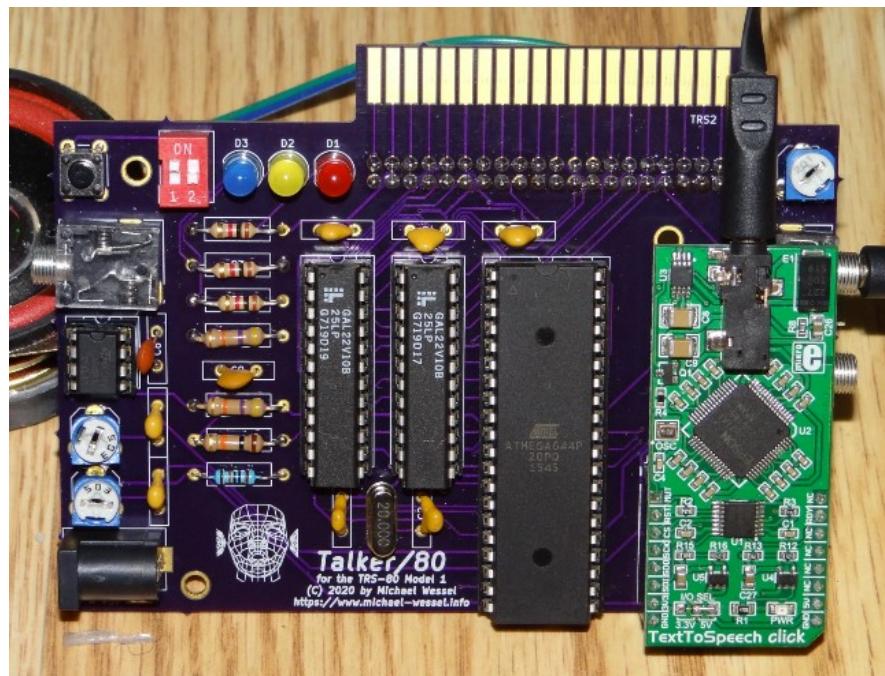
You can download it here: [XENOCIDE.DSK](#)

DECOY.BAS by JIM GERRIE: is an MC-10 game which is a surprisingly playable version of Scramble (or Penetrator on a Model I if you like). Jim submitted about 30 MC-10 games he had written, so we had to choose the one we thought best fit the competition objectives



You can play Decoy.Bas as well as all of Jim's other MC-10 games at his web site:
http://faculty.cbu.ca/jgerrie/MC10/JG_MC10.html

TALKER/80 by MICHAEL WESSELL: fascinating speech synthesiser (or synthesizer if you are in the USA) which works on the Model I, III and 4. While there have been voice synthesisers in the 1980s for the TRS-80s they were limited and in the case of the Radio Shack official unit, very expensive. When they come up on eBay or CL these days they are still very expensive and often don't work. The market was begging for a new product that improved on the originals and based on modern technology and Talker/80 certainly fits the bill.



For more information check this [Website](https://www.michael-wessel.info).

TRS80GP 2.3.2 by George Phillips: THE feature packed TRS-80 emulator covering not just 5.25in monochrome systems but the 8in systems as well. It's a FREE download that runs under Windows, or MacOS, or Linux. Platforms emulated: Model I, II, III, 4, 12, 16, 16B, 6000, DT-1.

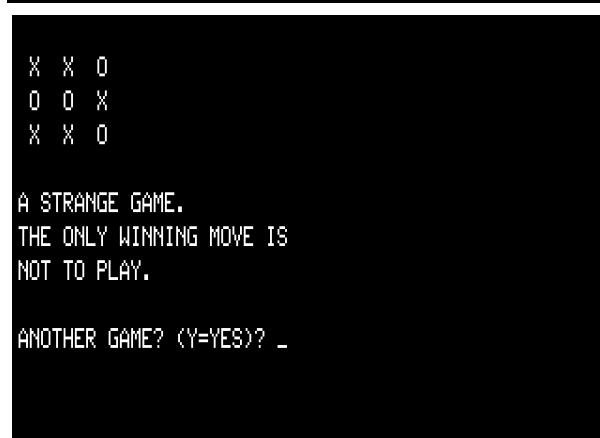
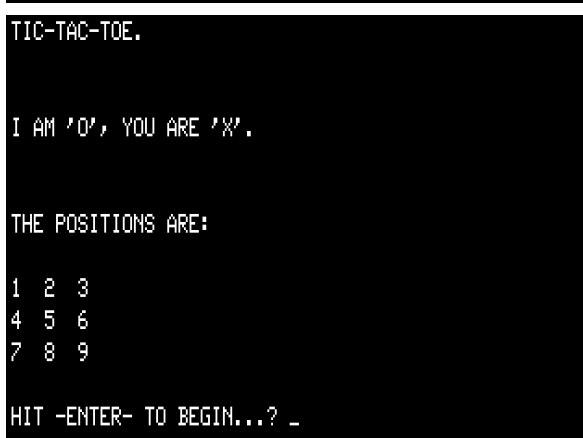
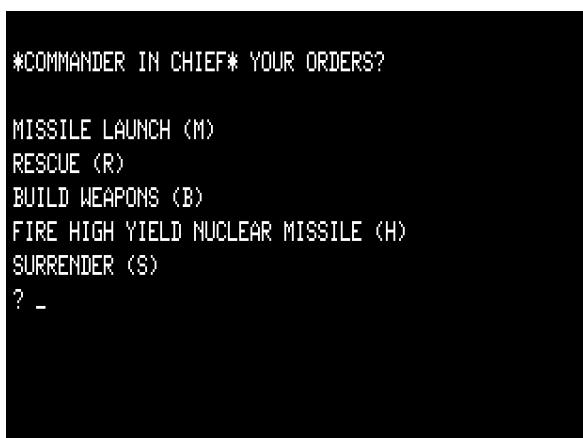
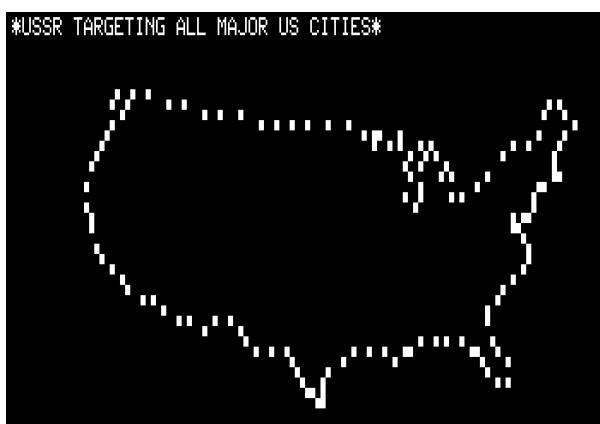
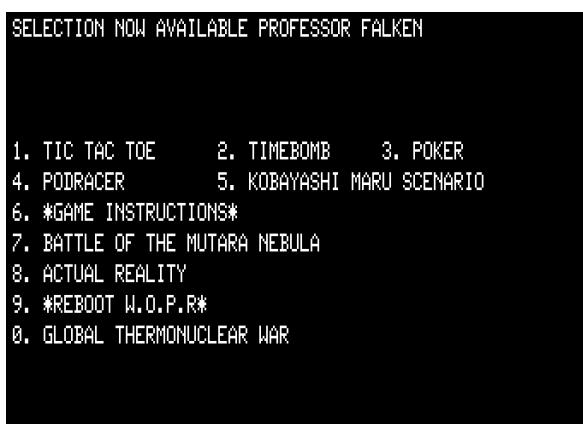


You can download it from here:

<http://48k.ca/trs80gp.html>

HONOURABLE MENTIONS

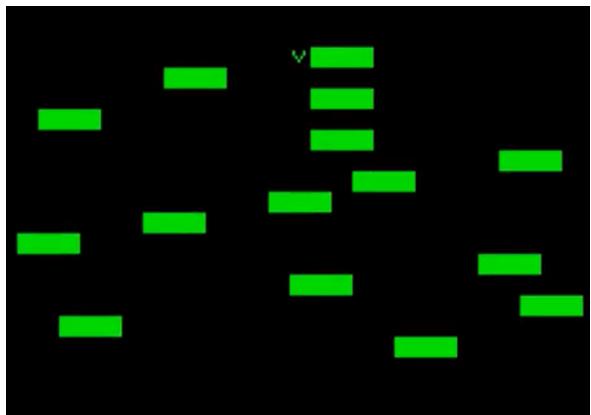
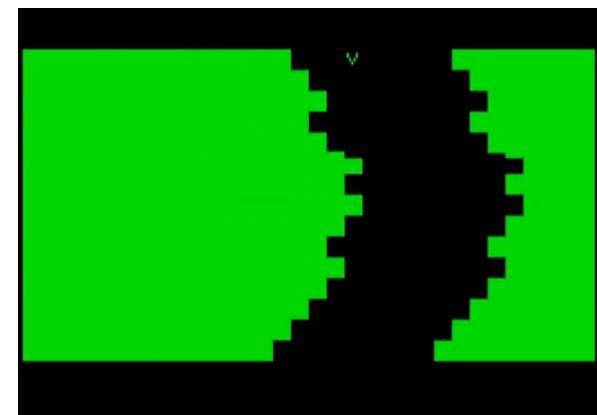
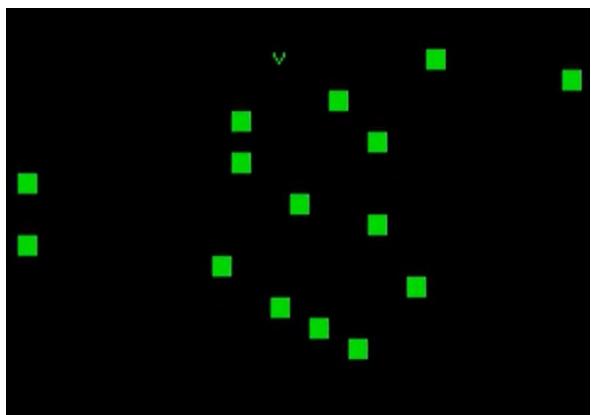
Cat Mantra as worked on a suite of programs still under development comprising a W.O.P.R simulator which brings the power of the malevolent mainframe computer in the 1983 film War Games to the Model I, without it's penchant for world destruction. To be released by Dreamland software in 2021 it's a great tip of the hat to a classic movie.



"Retro" Rick Kelly submitted a program he wrote in 1981 and updated in 2019/20 on the Coco written in Basic called N.A.E.R (Not Another Expressway Ripoff). It will be released in 2021 but here are some video snaps of the program running:



INITIALS	SECTOR	SHIPS
TMI	10	0
TMI	09	0
TMI	08	0
TMI	07	0
TMI	06	0
TMI	05	0
TMI	04	0
TMI	03	0



CONGRATULATIONS! YOU'RE AMONG THE "VERY BEST" PLAYERS!
USE THE ARROW KEYS AND SPACEBAR TO ENTER YOUR INITIALS.

RMK

-R V ABCDEFGHIJKLMNOPQRSTUVWXYZ!END

A full video of the game can be seen on [YouTube](#)

Paulo Garcia submitted a game he wrote called ANTEATER for the Model III running under LDOS. Paulo plans a proper release of the game in 2021 so here are some screen shots from a video he sent me:



THAT'S A WRAP ON 2020

With the success of this years contest our plan is to run another along similar lines starting in three months time to be announced in the March 2021 issue of TRS8Bit. So now is the time to dust off your Editor/Assemblers, BASIC manuals, Compilers, and other programming **SO** tools you use to create your masterpieces. The subject of the next contest has yet to be finalised but will probably have some relation to this last crazy year.

Ian Mavric

ianm@trs-80.com



Ian Mavric is an IT Specialist who also restores and collects TRS-80's and classic cars. He lives with his wife and kids in Melbourne, Australia.

REXCPM

What is REXCPM?

REXCPM is an add-on memory card that plugs into the Option ROM socket in a supported laptop, augmenting significantly the amount of memory in the laptop as well as what that memory can be used for. REXCPM changes the way the laptop memory works:

- * REXCPM provides up to 4MB of battery backed SRAM to the laptop.
- * Like REX, REXCPM puts bank switched memory into the OPTION ROM memory bank (1x32k bank)
- * In addition, REXCPM disables (while installed) the internal installed RAM, and replaces it with bank switched memory (2x16k banks)

Why?

CP/M. The main goal of REXCPM is to enable support for **Philip Avery's** port of CP/M 2.2 onto the M100 hardware. CP/M requires the full 64k address space to be RAM in order to operate, and so a RAM based capability is needed.

RAMdisk. CP/M is a disk based operating system. REXCPM, via the 3 bank-switched memory regions, is able to transform the majority of the SRAM resource into a RAM based, battery backed, ultra fast disk.

...and of course, all of the classic capabilities of REX can be supported using SRAM as well! So REXCPM is really all of the best aspects of REX, combined now with a custom, supported CP/M implementation, opening the door to a wide range of new applications!

Acknowledgements

A big thanks to those that have contributed to the project:

Philip Avery - for his commitment to this project and for the port of CP/M to the M100

John Hogerhuis - for all his technical support, and for this Wiki resource

Kenneth Pettit - for VirtualT as this project would not have happened without it

Brian White - for his innovative PCB2MOLEX carrier design



Installation instructions

Starting from a stock Model 100, power off, flip over, and open the Expansion port cover. Remove any components that may be installed.

Next, insert REXCPM into the Option ROM socket. The carrier only goes in one way, to make it easier. Ensure REXCPM is oriented correctly.

Now, insert the adapter board into the System Bus socket.

Lastly, connect the jumper cable, maintaining the color sequence from one connector to the other. What that means is, make sure the sequence from top to bottom is either Black-Red-White on BOTH the adapter and REXCPM, or White-Red-Black. Don't reverse the polarity.

All done! Reinstall the cover, flip over and turn on. The machine should boot with 32k RAM.

Notes:

- * It does not matter how much standard RAM is installed in the Model 100
- * REXCPM disables the internal ram and takes over the System RAM role.
- * That big yellow block is a 1000uF tantalum capacitor, that provides 5 min of "protection".

** if REXCPM is removed from the socket, the capacitor keeps the SRAM intact for 5 minutes or so **

Links for further, detailed, information

[Philip Avery's M100 CP/M Page](#)

[REX Products home page](#)

[REX Products ordering information](#)

[Hack to enable TTL serial data on the BCR port](#)

[Adapt the NSC800 CPU into the M100](#)





THE NEW TRS-80 CREATION FROM DREAMLAND SOFTWARE

IN ROCK STAR YOUR MANDATE IS: GET TO NUMBER ONE!
(IN THE ALBUM CHARTS.)

AND YOU HAVE ONE YEAR (52 WEEKS / TURNS) IN WHICH TO DO IT!
(AVERAGE GAME TIME 45 MINS.)

ROCK STAR IS A MANAGEMENT TYPE SIMULATION WITH ONE OR TWO PLAYER MODES.
AND IN ONE PLAYER, FOUR DIFFERENT LEVELS OF DIFFICULTY.
YOU MUST FIRST OF ALL MAKE SURE YOU'VE HAD ENOUGH REHEARSALS! AND THEN
CHOOSE CAREFULLY ON WHEN TO TOUR, WHEN TO RELEASE A SINGLE, AND WHEN TO
GO FOR AN OUTRAGEOUS PUBLICITY STUNT! (AND IF YOU STOP REHEARSING
ALTOGETHER, YOU'LL SOON BE GIGGING IN PUBS AGAIN..!)

AUTHOR CAT MANTRA'S INSPIRATION FOR THIS WAS A GAME THAT CAME OUT IN THE
EARLY 90'S FOR AMIGA/ATARI ST.

THAT GAME WAS CALLED 'ROCK STAR ATE MY HAMSTER'.
AND FOR CAT, IT ALWAYS ENDED IN FRUSTRATION AS THERE WAS NO WIN. RELEASE
A SINGLE OR TWO, AN ALBUM, AND FADE AWAY.. LIKE SO MANY HAVE HEHEH!
SO CAT PURPOSEFULLY CODED THIS WITH MEGASTARDOM VERY MUCH ON THE TABLE!
THE YOUTUBE LINK BELOW IS TO A FUN PROMO VIDEO. THE GAME PLAYED IN IT
(TWO PLAYER) WAS HOWEVER VERY REAL. AND IT CAME DOWN TO THE WIRE!
CAT PURPOSEFULLY CODED THE GAME TO FIT INTO 16K (JUST!), SO IT WILL RUN
ON ALL TRS-80 MODEL I/III/IV, (MODEL ONE WITH LEVEL II BASIC).

IT IS AVAILABLE ON CASSETTE, AND DISK FOR MODEL ONE ONLY.
IF YOU WANT THE DISK VERSION, ADD A NOTE TO SELLER. IT IS SENT IN
CASSETTE FORMAT AS STANDARD.

AND AS YOU CAN SEE, IN PROPER ORIGINAL TANDY / RADIO SHACK STYLE
PACKAGING JUST LIKE BACK IN THE DAY.

*IMPORTANT - THE CASSETTE VERSION HAS FANTASTIC SOUND EFFECTS! HOWEVER
DUE TO WHERE THE MACHINE CODE RUNS IN MEMORY IT DOES NOT WORK IN DISK
BASIC. SO THE DISK VERSION IS SILENT. (YOU DO GET THE CASSETTE VERSION
ON THE DISK THOUGH, SO SHOULD YOU WANT TO EXPERIENCE THE SOUND YOU CAN
SAVE TO TAPE..)

ONE OR TWO PLAYERS, FOUR LEVELS OF AI IN ONE PLAYER, IT'S AMAZING WHAT
CAN FIT INTO 16K! (AS MENTIONED EARLIER, JUST ABOUT!)

YOUTUBE LINK RIGHT BELOW HERE TO THE PROMO VIDEO.

ALL THE BEST ON YOUR MISSION TO TOP THE CHARTS.

[HTTPS://YOUTU.BE/XWFGFSXE7EI](https://youtu.be/xwfgfsxe7ei)

Painting your computer

©2020, Patrick Bureau, Texas Tandy Restorations, Houston, Texas

Introduction

I will start by stating I am not an expert paint master of any kind, simply a hobbyist that has some knowledge about what works. If you find a way to improve on this document, feel free to send me your addendum/changes, and it will be a pleasure to update it for all to have and learn. Email me a Word or text document or a simple email at

TexasTandyRestorations@gmail.com. Please make sure you give me your name and state so I can provide proper credits to changes.

This method could pretty much be applied to any ABS/plastic surface you want to paint. It is not about stripping all previous paint and redoing it from bare skin, but to give it a new, cleaner look and remove the decades of use it is showing.

Note: If your belief is that a scratched-up unit with original 1980s paint brings more value to your system, I will say this: sure, if you're a collector with a serial No. 000001 machine; otherwise, it's just a computer. If you feel differently, I respect your choice, but this is not about the debate over should you or should you not do this.

This is a document to help someone do it because they want to and, hopefully, to not get hideous results like the 8-bit guy and his Coco repaint video. If you have not seen the video, look it up on YouTube, then know that everything he explains in that video that is paint related *is wrong!* Please do not duplicate what he did unless you want the same crappy results.

Now, in my explanation I use two spray products: one is commercially available over the counter at most auto paint shops or, I assume, online; and the second is the paint primer. Priming the computer case (which I will refer to as "skins") properly is as important as the preparation to the priming you will do, leading to the actual painting of the skins.

If any base layer of the process is "cheaped out" during prepping, cleaning, sanding and priming, this will be reflected as faults at the paint level on the final product.

Period. If you're trying to do all this document entails in one day, then stop now; do it another time, please.

Ready? Let's proceed.

The process to paint the skins on your computer is not difficult once you understand the mistakes that are commonly made and do not perform them yourself.

Process to repainting:

Strip computer of everything that will not be painted

Remove all unwanted labels, stickers, and glue

Sand and remove scratches/dings

Final wiping/cleaning

Priming

Painting

Reassembly of hardware

Rest and beer

Tools needed:

Aside from the obvious screwdrivers and cutters you will need to remove the hardware from the computer lower and upper case, you will need a TROX 10 or 15 (I've seen both) to remove, if you have the luck of such a model as not all are removable, a removable bezel. If you have a non-removable bezel model, I will cover that in the prep section of this document. Just know your "taping" skills will be put to the test.

I use:

- 800, 2000, 3000 and 4000 grit "wet or dry" 3M Imperial sandpaper
- 99.99% isopropyl alcohol
- Blue painter tape
- Heat gun
- Sem #39133 Primer, «Flexible Primer Surface»
- Colour Match by Tasco Aerosol Spray Paint Can (or any other colour you want to do or use)
- Razor blade (*sometimes needed*)

Strip computer of everything that will not be painted

I assume you know how to take everything off your lower and upper portions of your case (if you don't, contact me). Before we move to the next step, I only have one mention:

If you have a screwed-in-place CRT bezel, read the following:

You will need to remove the CRT to remove your bezel because there are two hidden screws (see image) beneath the CRT. Then you will need to remove the five screws that are already removed in the image, and then gently remove the Radio Shack label between the disk drive to show the last three screws. The bezel will then come right out.



If you have a non-screwed-in-place CRT bezel, read the following:

If you are unfortunate to have one of the earlier cases that were NOT screwed-in-place but plastic welded-in-place, well, there isn't a way to remove it unless you break the welds and then "re-weld it," which I strongly suggest you DO NOT DO.

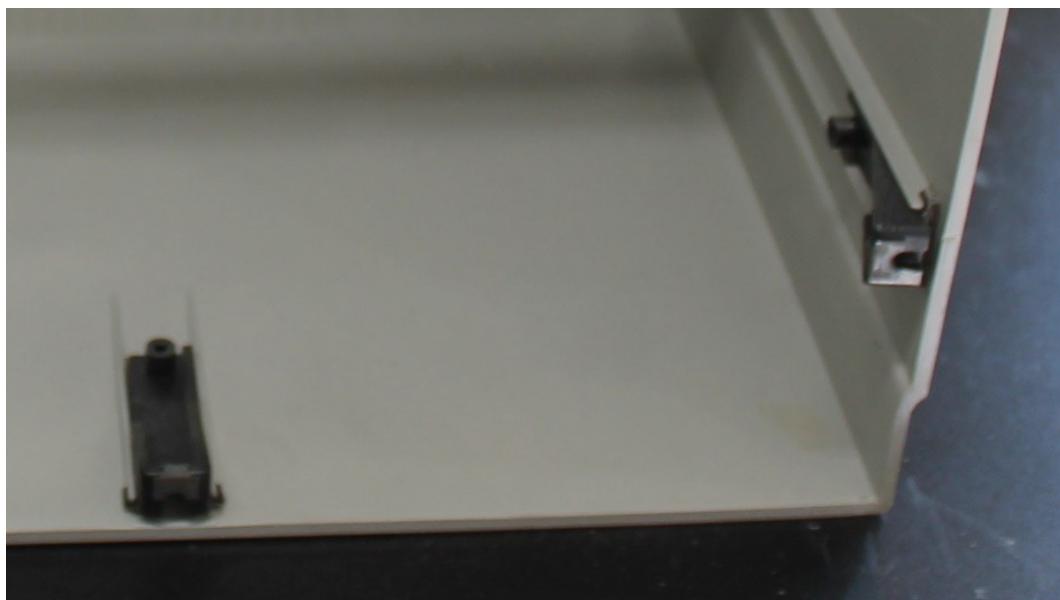
This is where taping skills come in handy. The easier way out of this is to basically block the bezel from being painted by using blue painter's tape. Also, since you cannot remove the bezel, you can just leave the CRT in place. Tape it from edge to edge using the CRT as surface to make your taping easier. If it goes past the bezel edge, just cut it off by sliding the razor blade between skin and bezel and voila!

(NOTE: this photo was taken for another job I did that had a non-removable bezel. Notice no screws between floppy drive bays.)

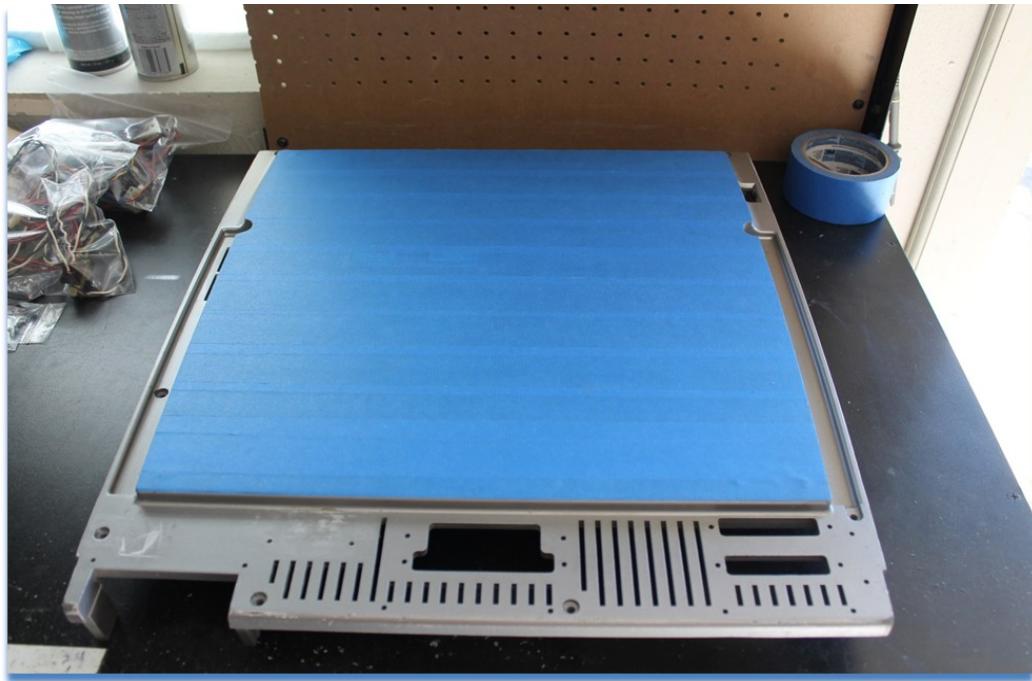


You do not need to remove anything else. The pillars are glued in place, so do not take them off; it does not matter for a paint job.

Next, turn over your base and remove the feet from it, and tape the center part. Why? Well, first, it means less painting, but, if you observe your base, you will notice this is how it was



done at the factory. The ABS plastic is bare in the middle where labels are located.



Now is your chance to address scratches and dings, using your 800 and 2000 grit sandpaper. You should run it lightly on the existing paint to permit better adherence to the old base. I normally sand the entire skin's surface (aside blacked-off areas).

The idea is to score the old paint and wear out the scratches into a smooth surface. Deeper dings I usually leave alone; it's a choice. If you want or have a ding deep enough that requires "bondo," then this would be the time to do it. Make sure it cures 24 hours and then sand to level with the rest of the skin before priming it.

Below is side-by-side image of the same computer, before and after sanding.

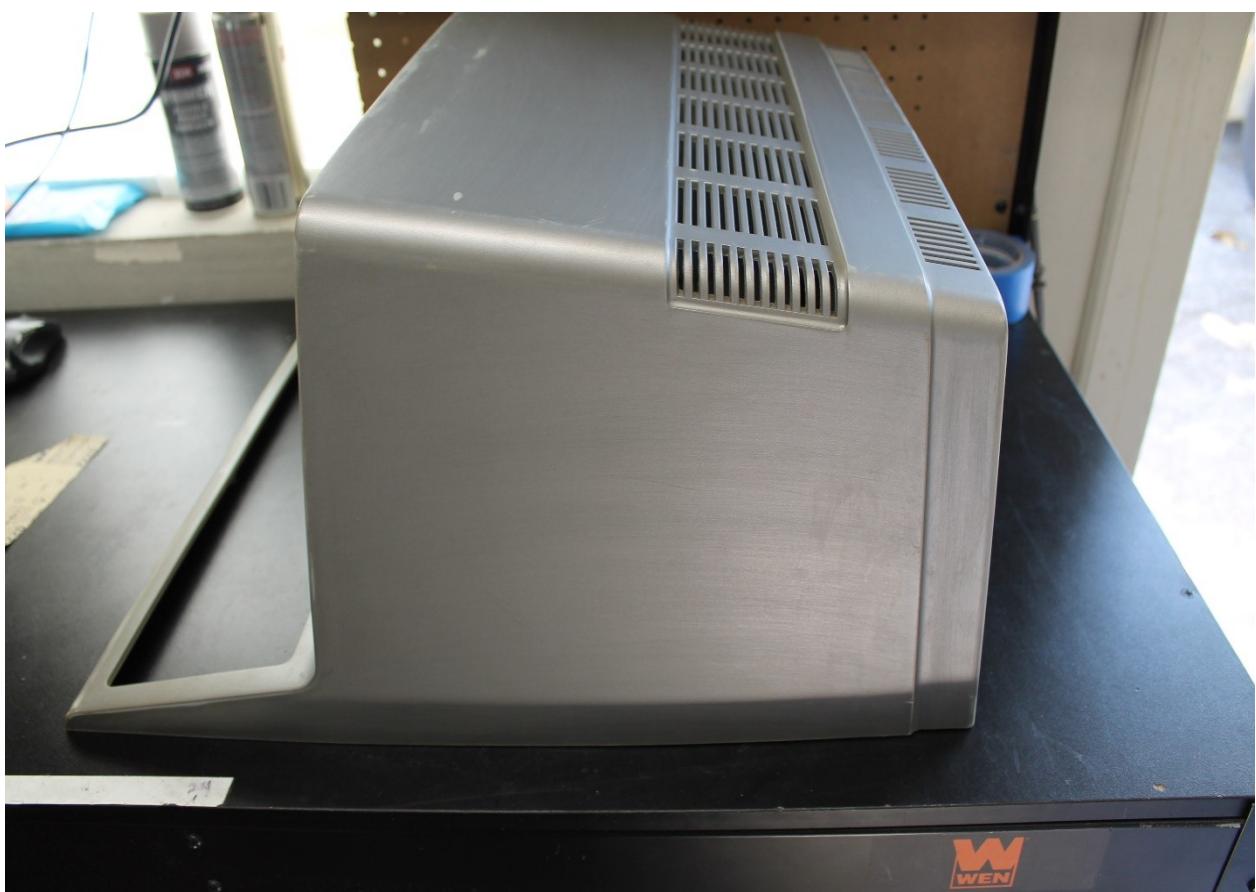




So, no matter how bad you think it is, it's likely only surface issues which, with a bit of patience, will become better.

With ABS, how you sand depends little on if you do circle or straight lines, but more on pressure. It will make the difference between looking sanded or scarred. So easygoing takes longer but gives the best results.

This is plastic, not steel. The harder you press into it, the more heat you generate. The more the plastic softens, the more the sandpaper rips into it, causing "micro shredding," making the surface worse than before rough to the hand versus smooth.



As the examples above show, with a bit of sanding and patience, you can improve on the faults, moving the skins from the rough look to a ready-to-be-repainted surface. Now, once you are happy with the results, get a clean rag and wipe it all down twice.

Removing sanding dust is important because it contains silica broken beads, and that will hinder the quality of your priming job that is to follow.

My habit is to wipe it down with a dry cloth, and then I use 99.99% isopropyl alcohol and give it a once over. Why? Because it dries extremely fast, leaves no traces of itself and the wetness will pull the micro dust from the scoring you have been doing with your sandpaper. This preps the surface for maximum adherence so the primer will get the best possible grip on it.

In general, you will find the lower portion of your skin is usually less damaged than the upper portion because the rubber feet take most of the hits, but you need to sand/clean it as well or the primer will bubble on the old paintjob.

When done, have a beer and read the rest on paint principals. This will save you endless hours of problems and fixing it later.

Before any priming or painting, shake the aerosol can. Not one minute, not until you hear the ball bearings inside the can move about or guess it's flowing around freely enough... Your guesses, all of them, are wrong. Period.

Aerosol is composed of three things, paint, thinner and propellant, and they will set in layers when the can is not in use. So that can of paint/primer that has been sitting in the store for weeks is surely now in a petrified version that state.

Shake the can, horizontally and vertically, inverting it head down and back up, for at least five to six minutes; 10-12 for one with flakes in it (such as I use).

Failure to "mix" the paint properly will lead to clogged nozzles, spitting, inconsistent layering and change of pressure, causing heavy applications then light and "puddling" on the surface you're trying to apply it to.

Spray painting do's and do not's

How to spray

Spray paint distance is recommended eight to ten inches away, perpendicularly from surface to the nozzle. You begin to spray outside the area and move left to right, or right to left, in a single pass, ending the spray outside the surface you are painting. You are trying to lay an even surface of paint each pass.

DO NOT perform the swing-of-the-wrist quick spray so many people do. All you're achieving is maximum application of paint in the center of the arch you're creating with your winging wrist (nearest point to surface). This causes uneven application of paint and, in almost all cases, running paint occurs.

Bob Vila explains it in these terms: "*Imagine that your arm is a paintbrush and the spray can in your hand, the bristles. Proceed to paint in a sweeping motion, stroking across the surface and then back again, letting the spray fall a few inches past each side of the workpiece. Depress the valve slightly as you hit the first edge, then completely as you go over the opposite edge. You should hear short bursts of air, not a prolonged hiss. If you just wave the can back and forth, spraying constantly, you are bound to end up with a heavy, dripping, unsatisfactory result.*"

Is it too cold to paint?

The temperature where you paint makes all the difference between a nice paint job and a terrible, sandy feeling when painted on the surface.

Spray paint does not work well in very cold weather. Anything under 65°F is risky; under 50°F, your paint will crack before it dries completely.

Why? Simple. It's coming out of the nozzle at about 40 mph as tiny droplets and, if the surface or air through which it has to travel is cold, it will form a "shell" before it hits the surface and will not "apply" properly; it feels rough like sandpaper to the touch.

My hand hurts after a few minutes of painting.

Some people have a hard time holding the pressure consistently on the nozzle. A quick and

simple solution is a device that sells for a few dollars, and most hardware stores will have a version of this “spray can handle.”

Rust-oleum makes a very good one that they sell on Amazon for 8\$ called the **“Rust-oleum 241526 comfort grip.”**



So you have sanded the surface and everything is ready to begin the paint process. Yes, primer is also painting, so you paint one layer, let it dry about 30-60 minutes (depending on temperature: the hotter the weather, the less time) and then do a second pass, then a third. At this point, it is beer time again. You need this primer to rest and bond with the old underneath it. I suggest 24 hours, but eight is usually plenty.

Like I do each time, you begin to admire your work and go, “Man, this is going to be nice,” Invite your wife, who doesn’t really care about your hobby, to come and see how good it is looking. Yeah, we are all like that. Pride in our work shows in the result.



Note: do not leave this in barn or shed. The morning dew will stick to the paint and you will have to “dry it out.” Indoors or in an enclosed area is best to let this rest.

The following morning, you will examine it in the light of day preferably, as the sun will show defects more than standard neon lights. It is possible you will see a “shading” of the primer on the case. If you applied every layer evenly, this is not your fault; it is the primer being absorbed by the under layer.

I would suggest retouching the area with a pass or two to make sure it looks even across the whole area. Why? Because it can cause shading in the paint afterward.

From this point, I prep again for the paint.

Taking a 3000 grit sandpaper and a bowl of cold water, I dip it in to wet it and then lightly sand the whole case again, running my hand over each place I sand to make sure the primer roughness is gone, Yes, sand in a circular motion here.

Once you are done, rinse the case with fresh water and let it dry completely by either wiping it down or using your compressor to blow it dry.

It is time to proceed with the paint.

No matter what brand, type or colour you're painting your case, the same method applies; eight to ten-inch brushing passes in layers, slightly overlapping (1/8") to make complete coverage.

Note: a computer case is not a square or flat surface, especially true of the bottom case of a TRS-80 Model 3, so be aware that painting in one direction may not cover every angle or corner of your case. I use stacked boxes and walk around my case when I paint to ensure I get everything evenly laid out.

After the first coat, wait 30 minutes to one hour and paint the second coat. Wait the same amount of time again, then paint the final coat.

It's beer time once again. Rest and let the paint bond and dry at least 24 hours.

If you rush this part, you will quickly discover that the final polishing will end up in a mess if you do not let the paint dry and cure completely.

Yes, you're excited. I understand. Go ahead and call your wife to admire your work again. She will surely lavish you with "wow, looks new, well done."

This image shows the first coat of paint being applied. You can see the overlapping lines. Once this, dries, the lines will disappear.

The last step is 4000 grit or higher wet sandpaper work.

This is ONLY to polish the surface of any tactile ridges that occurred during painting, to make it soft as a baby's bottom. This is an exercise in pressure, slow round circles, barely pressing on the paper with fingers or device. You are not here to remove paint. If it does remove some paint, then step back and touch up the area, let it dry another 24 hours and restart the polishing.

Mostly, you will feel the light grit surface on the flat surfaces, like a speckle of sand as you run your hand on it.

Once you're done, rinse with fresh water and let it dry. You're done unless, like some people prefer, you can apply ion the same way as previously mentioned in this document. Get a clear coat and apply it over the final paint job.

I do not, as the paint I acquire is from a PPG dealer. They colour matched from a Model 3 case make the paint with clear coat in it.

I hope you enjoyed this document and found it useful in one way or another.

Oh yeah... You're final project? You need to show us all! We love to see someone accomplish something so involved, yet so rewarding.

And now that your case is done and dry, time to reassemble it.



©2020, Patrick Bureau, Texas Tandy Restorations, Houston, Texas

Have fun and games this Christmastide-with Kansas

Games for the TRS-80 and Video Genie:

SWORDS AND SORCERY

An 'Adventure' type program, with much, much, much more – and graphics!

Meet the great oracle, nymph, trolls, maidens, yerb, farble warfer, slave girls, rats, snakes, spiders, dragons, goblins and the necromancer in the fight to save the princess – then get out quick!

A full 16K of superb entertainment needing skill, strategy and cunning. Only available from Kansas. £9.50

INFINITE STAR TREK

Upgraded yet again to give fast Warp and Impulse. It really is by far the best, requiring no little skill and awareness to destroy the Klingons before they destroy you. £9.50

PLAY THE MICRO

CHESS Seven levels of skill and plays to correct rules. Far ahead ahead of Microchess in speed and play.

BRIDGE four hand and dummy contract bridge, with all the facilities to give a hard game.

PONTOON The micro plays a clever hand and you'll need your wits about you here.

BACKGAMMON Try to beat this one, you'll need all your skill.

DOMINOES It's not just luck as this program plays a clever game indeed.

Any of these at a remarkable £8.50 each

DOUBLE GAMES PACKS

Maze Runner and Shatter. Pot Black and Breakthrough. Pin Ball Bounce and Robots. Build High and Knights Tour.

Amazing Maze and Touchdown. Suicide Plane and Fire One.

All entertaining full graphic games at two for the price of one. £6.50 per pack.

Prices are VAT paid post free. First class return post service. Telephone your Barclaycard or Trustcard number for same day despatch. (You can order after 6pm using our answering machine with programs sent the following morning). Despatch world-wide but add for postage in this case. Full catalogue sent free upon request.

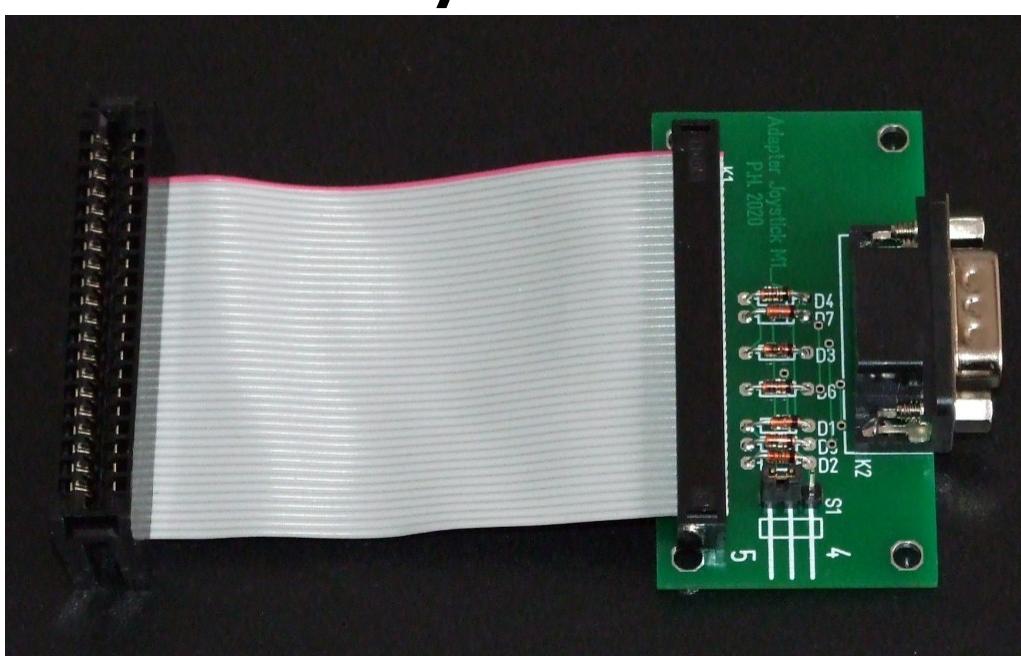
Kansas

Kansas City Systems, Unit 3, Sutton Springs Wood Chesterfield, Derbyshire Tel 0246-850357

IN MAV'S WORKSHOP

New Products for 2021

by Ian Mavric



2020 WAS A 'BIG' YEAR

The thing I'll remember most about 2020 (apart from the C-19 China virus craziness) was that I managed to bring to the TRS-80 world some large projects which I've had planned for long time. 4cellerator, ChromaTRS, and F48/Type-II HDA were all large and complex products with limited appeal, but I'm glad they're out there for those interested in them.

I also released the Sprinter speed up kits for the Model I and III, and all of these items are available to anyone keen to experiment with some of these decidedly specialty devices.

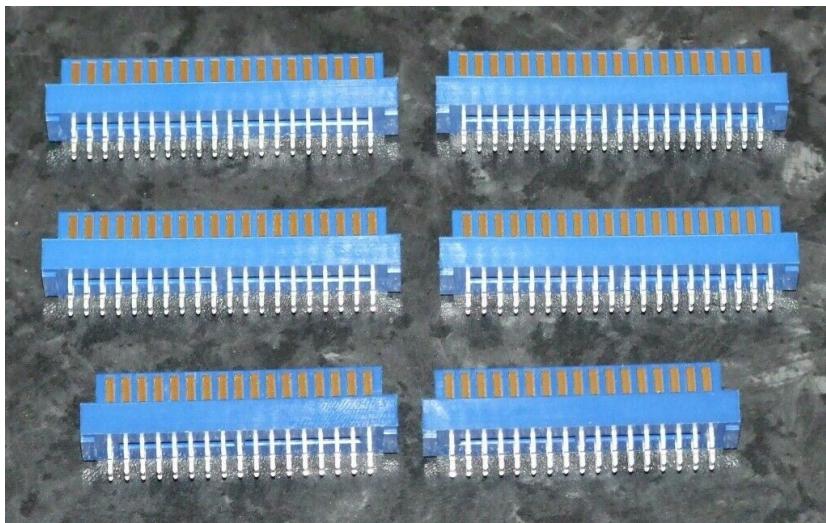
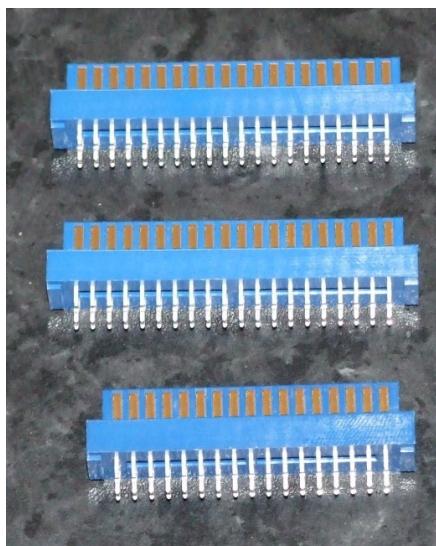
All were quite expensive, over the \$US100.00 mark, so I got to thinking I need to release a few more products with broader appeal and a lower price point.

GOLDPLUG-'21

It's been written about for decades that one of the reason for the unreliability of the Model I, once you added an Expansion Interface and disk drive, was the solder-coated edge connectors.

Basically Tandy was being cheap in not gold-plating them and so they oxidised, and people found if you cleaned them with a pink-pearl eraser every few months the system was a lot easier to live with.

Eap Co. came up with a solution called the Goldplug-80 which soldered gold-plated extensions onto the existing connectors thus eliminating the oxidation problem. You may even remember the ads in 80micro. Unavailable since the mid-1980s, I found a place could make a similar product for me and I've placed a large order.



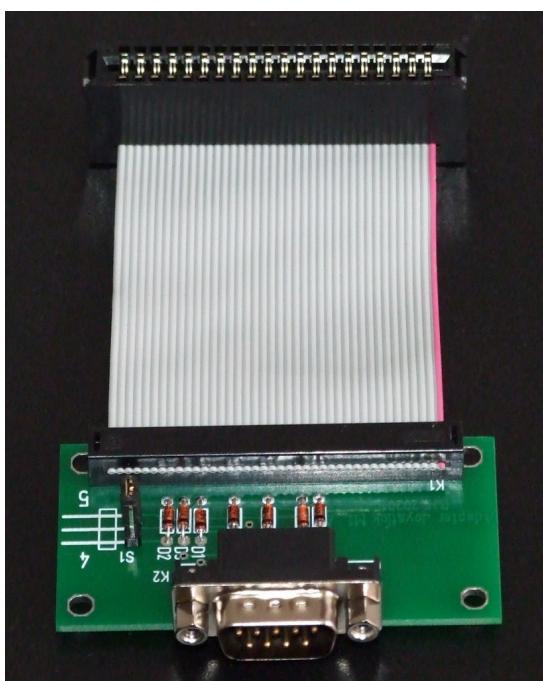
Picture: Goldplug'21 3pc and 6pc sets for the Model I

Like when Eap Co. sold them I sell them in two forms, a 6 connector set and a 3 connector set. The \$70 6pc set has 4 40-pin connectors and 2 34-pin connectors. That's one for the Model I, and one for each on the EI: System Bus, Screen Printer (a.k.a Hard Drive) port, printer port, RS232 port, and disk drive port. The \$40 3pc set has 2 40-pin connectors and 1 34-pin connector. For many people who have a basic Model I with 48K Ram, Expansion Interface and disk drives, this is all they need.

Model III and 4 versions? Eap Co. did make Model III and 4 kits because those computers had solder-coated connectors like the Model I, but were generally less troublesome. I may look into making Model III and 4 versions in the future if there is demand. The number of people who have problems with those computers' edge connectors oxidising is pretty low.

a-THING ATARI JOYSTICK INTERFACE FOR THE MODEL I

Alpha Products made a joystick for the Model I in the 1980s and most of the games released for the Model I utilised it. Alpha Stick plugged into the bus on the back of the Model I keyboard or the Screen Printer port on the EI and was hard wired to an Atari joystick. I was never really pleased with that design as I remember from my childhood we had the Atari 2600 VCS and it was easy to wear out a joystick over the summer holidays necessitating buying a new set of joysticks a couple times a year. No doubt the bean counters at Atari loved that about them. Prof-80 from France drew up a repro of it but included a DB9M connector so now any Atari-type joystick can be plugged in and used. And if you break the joystick just unplug it and plug in a new one.



Picture: Alpha-Thing Atari joystick adapter for the Model I is \$35

You may be surprised to know that many games you have played for years like Galaxy Invasion, Robot Attack and Zaxxon have joystick functionality but never knew it.

Model III/4? Alpha Products did make a Model III version which has been much harder to buy on eBay... Model I versions of the original come up a few times a year, but the Model III version may only show up once every 2-3 years. I have one now and depending on the success of the Model I a-Thing a Model III version might be ready by mid-2021.

F48 NOW AVAILABLE FOR \$99

The F48 has been covered in a few previous issues of TRS8bit so I won't cover old ground in too much detail, except to say that it's a FreHD for 8in TRS-80 and runs TRSDOS-II 4.2.6, Pickles & Trout CP/M 2.2 and Digital Research CP/M Plus 3.0, but not Xenix.

It needs to be connected to a Type-II HDA (hard disk adapter) however there seem to be a large number of people out there with the necessary adapter and eagerness to use F48 even without Xenix.

The new F48 is a redesign based on the work of Frédéric Vecoven and updated by Prof-80 to distinguish it from the traditional FreHD. Quieter (electronically) operation is achieved with additional resistor pull-ups and removal of unneeded serial and RTC are the main differences of the new F48.



Picture: New F48 runs TRSDOS-II, CP/M 2.2 and CP/M Plus

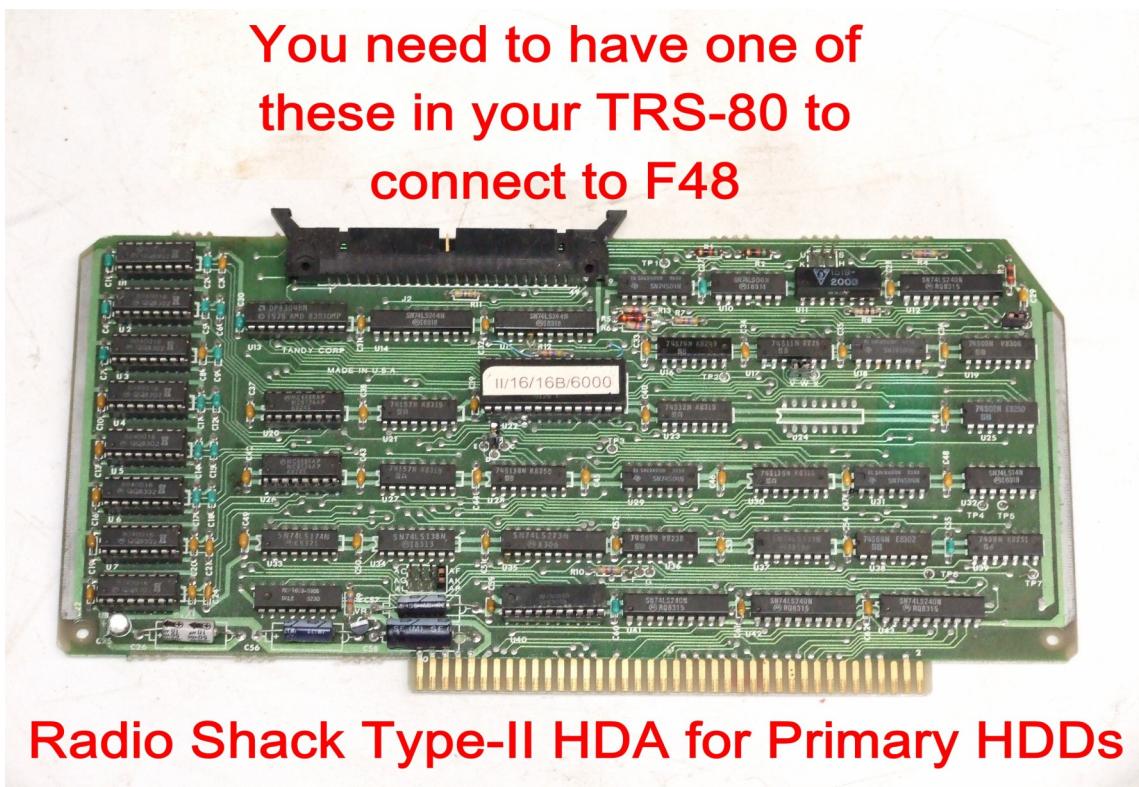
Comes with one SD card and a CD with information and images for all three operating systems. F48 auto boots, but is limited to one operating system image per SD card.



Picture: F48 kit (for owners of the Type-II HDA) \$99

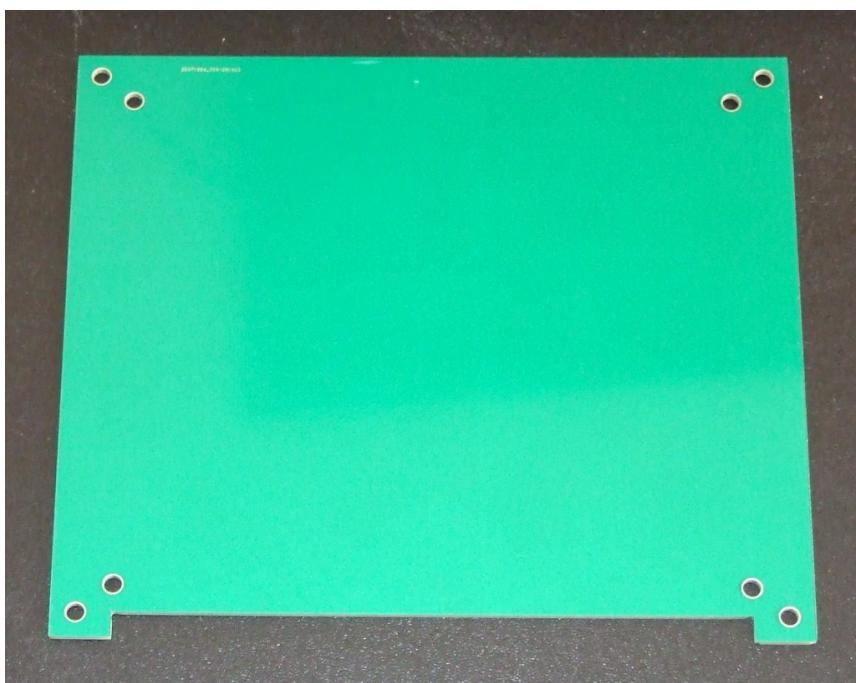
I DON'T KNOW IF I HAVE A TYPE-II HDA - WHAT DOES IT LOOK LIKE?

This picture is a frame from my YouTube video demonstrating the F48, so if you have the card in the picture then you are good to go:

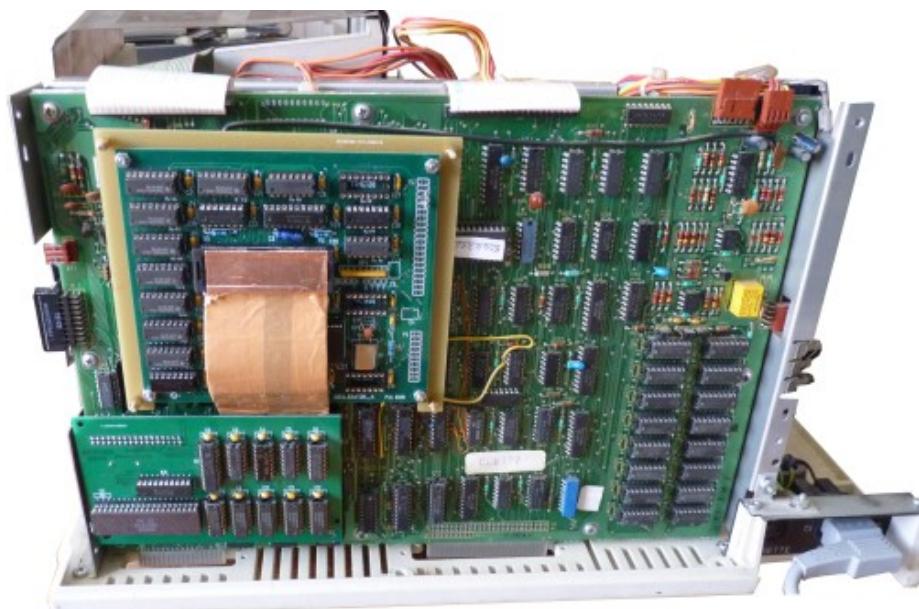


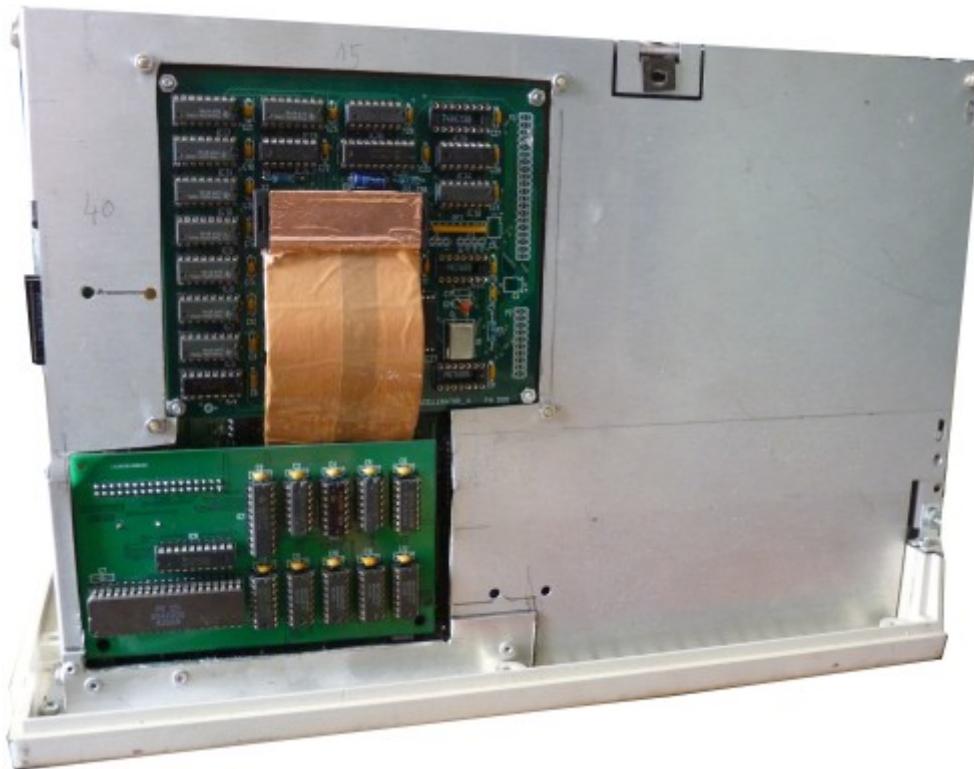
RFI SHIELD FOR 4CELLERATOR ON MODEL 4

The 4cellerator, and it's predecessor the original XLR8er, are susceptible to parasitic noise within the TRS-80 which can hamper operation. A large copper shield was the solution the original designers came up with and I have a reproduction made which sell for \$25. You mount the 4cellerator to it and then mount this to the existing RFI shield or with help of adhesive tape, to the motherboard on the Model 4.



Here are some pictures which show ways it's installed:





Photos courtesy of www.prof-80.fr

If interested in any of these items send me an email, as I'm not so great at keeping my website up to date. A simple email like "I read about this item in TRS8Bit and wondered how to go about ordering one?"

Ian Mavric

ianm@trs-80.com



Ian Mavric is an IT Specialist who also restores and collects TRS-80's and classic cars. He lives with his wife and kids in Melbourne, Australia.

VIDEO GENIE **TRS-80.LI.11.16K**

**PLAY THE WORLD FAMOUS BOARD GAME
MONOPOLY
AGAINST YOUR COMPUTER**

Your computer will be programmed to play Monopoly as a player, so you can play this game by yourself or up to five other players against the computer. With easy fool-proof entry making it ideal even for children to use.

Among its many features is THE COMPUTER'S SKILL AUTOMATICALLY ADJUST throughout the game to that of the best player, keeping the game close and exciting, but always remaining a real challenge.

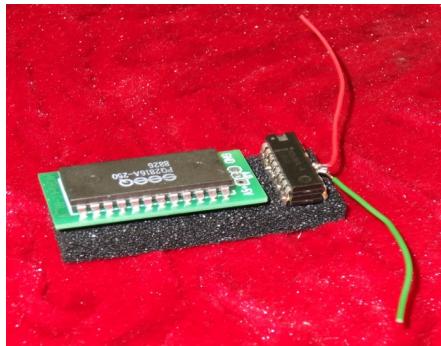
The game can also be 'SAVED' on tape to be continued, from where you left off, at another time. This program ACHIEVES AN INTELLIGENCE from your computer and will keep it busy for many hours, giving you, your family and friends a great deal of FUN.

COMPUTICS **MICROSOFT** **A great deal for £11.95 inclusive.** **1BELL LANE**
WHEATLEY **OXFORD OX8 1XY**

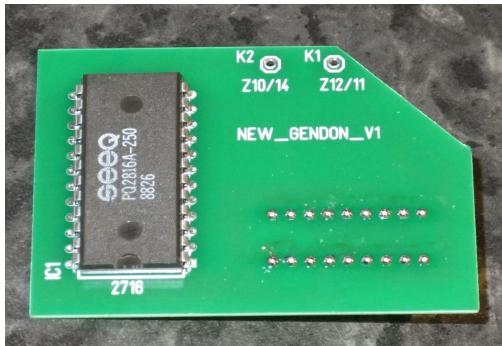
ADVERTISEMENT

WANT LOWERCASE? got lowercase!

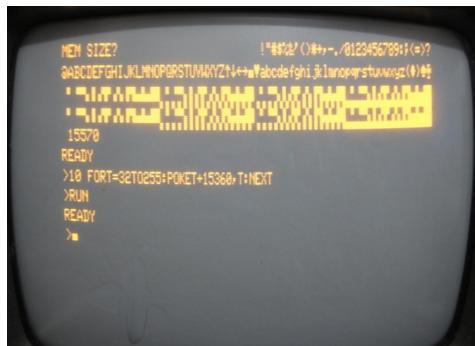
**Two new lowercase modifications for the TRS-80 Model I
only \$45ea!**



Single line descenders



3-line descenders



Which do I need? Micro-LC-80 requires one trace cut and two wires soldered (just like Tandy's old kit).

New Gendon requires more cuts and soldering but the result is the more pleasing 3-line descenders.

Instructions included for both.

ORDER YOURS TO-DAY! ianm@trs-80.com



ANDY

It was 1979, and what was otherwise an ordinary day in the office was about to be spoiled when an idiot, in response to a complaint that some complex maths was taking longer than it should to get done, suggested that what we really should do, was get 'one of those new-fangled computer things'.

At the time, I was an acoustics engineer, and the reluctant maths was at the core of a new transmission-line studio loudspeaker system, and of course the idiot was, as you will come to guess, me.

Little did I know how much that suggestion was going to change my life!

In the absence of the internet, which had not yet been invented and was thus not available for even simple research, the second purchase after the computer, was a book with the rather fetching title of 'Now You Bought One, What Do You Do With It?' As it turned out, a good question, and it led to the third purchase in my quickly expanding experience of computing, a book on programming. Necessary because not only was the internet missing from daily life in those days, but so was the whole software industry we rather take for granted now.

So I set to, learning how to make this mysterious box work, as it pretended to uninitiated visitors to be the broken-off front half of a typewriter. They were curious where the paper came out.

That was a TRS-80 Model 1. It was my first (computer) love, and caused a change of career to what we now know as 'I.T.', first writing software, then eventually to the soul-destroying self-flagellation of user support, and eventually, via the dark side.... managing Windows servers and networks, to the diversions and cul-de-sacs of information security.

But what I never forgot were those early days with the Model 1, the manuals, the programming books, and the all-night-turned-into-several-days of time spent at the keyboard, staring intently at the screen (a rather fuzzy-imaged monitor which had a tendency to go a bit wavy during damp weather - which happens a lot in the UK), trying to debug the latest piece of genius, which sadly wasn't quite so clever as I'd hoped.

But what I *have* forgotten, in amongst the years of workstation installations, hardware repairs, server builds, training courses delivered, the not-so-silent curses to the evil Microsoft gods over Windows features not-quite done right, and systems which never really were what users need, and then the SIEMS and threat intelligence platforms full of joyous reports of ransomware and spearfishing, were the roots of why I switched careers, and the sheer joy of knowing that I was working in a field where these things could, and really should, change the world as we knew it then.

Which brings me to now. Or almost-now. Because this year, while I was forced to work from home - which ought not to be a challenge for a systems-guy who sets up remote access portals - one day I tripped over eBay, and a listing for a long-forgotten computer that I used to treasure as the first truly productive laptop. A Z88.

Snigger all you want, but Sir Clive made something quite remarkable in 1987, and it wasn't an electric tricycle that couldn't actually succeed in overtaking a pedestrian. The Z88 - or at least *my* Z88 - went everywhere with me, and took notes in meetings, digested numerous training course outlines and plans, allowed me to be productive on long train journeys, and even made it possible to compose legal briefings while stuck in a truck, half-way up a Welsh mountain. Twice.

So, despite the quirky keyboard made of the unmentionable pieces of a dead whale, and the reliability issues, not to mention the oddly-capable software that was something rather like an export from a three-headed be-tentacled programmer from Neptune, I put in a bid, and after a few days, a new Z88 entered my modern-day world.

And being a Sir Clive invention, none of this would be of any interest here if it hadn't been for the fact that I took a second, third, and fourth look at eBay too. The result is my pride and joy, a TRS-80 Model 4P - the computer I always wanted, but which I never had because while I was drooling over it, the market had moved on, into MS-DOS and Windows, by the time I was beginning to regret buying MS-DOS and Windows systems.

In between, I also acquired an Apple IIc, PowerBook 1400, a TRS-80 Model 100 and eMate 300 to add to some bits I discovered I still had, such as an Amstrad NC100, Newton 130, and an old Mitac 'Pocket' PC, which is about as pocketable as the TRS-80 PC-2 Pocket Computer that also arrived, courtesy of an eBay listing.

So, I like old computers? Not so fast, because if there's one thing I am learning, it's that all that is old and yellowing is not gold.

My IIc was excellent, except it refused to boot a ProDOS disk - any ProDOS disk. And the TRS-80 4P sometimes boots, sometimes doesn't. I have two boot disks for it, and sometimes one works and the other doesn't, sometimes both, sometimes neither. Sometimes I can boot it up and launch BASIC and sometimes not. Sometimes I can run DeskMate (I know, who'd want to do that?) and sometimes I can't. And even if I can, sometimes I can read my data disk, and sometimes not.

The only thing that's consistent is that it won't copy any floppy disk, even though it flawlessly succeeds in formatting them.

As of today, I am awaiting a FreHD, ordered last month, which will either help, or not, but I really would like to get the machine working as originally intended anyway.

Meanwhile, my IIc had to be opened up, and when I did that, both the MMU and CPU fell out onto the table. They had, as happens a lot with no exercise over the years, simply walked out of the sockets. Pressed back in, and the system performs as perfectly as an Apple IIc ever did.

Also meanwhile, my carefully obtained One Laptop Per Child XO-1 wouldn't talk to the internet, though it's quite unique mesh wifi chip was trying to strike up a rather one-sided conversation with a 2002-vintage Apple TiBook. All the while, the Z88 took that moment to refuse keyboard input and not even power-off.

This retro-computing business is fraught! It is actually harder to get a 1985-era Model 4P up and running than it is to design, build, implement and manage a 21st-century server farm. All for 5.25 inches of floppy disk, or drive, or both. Possibly.

But, while you're still sniggering no doubt from the revelation that I hankered after, and spent good money on a Z88, only to see it go the way of all-things-Sinclair, because after all, everything he touched was just *almost* great, but not quite, I can smirk a bit myself, because despite everything, the one piece of old computing that I possess and which works pretty much exactly as it should, is the Z88. It's still actively supported! This was even typed, corrected and edited on it, before squirting up a simple cable, via simple software, to a Windows 10 PC, which didn't even have time to scoff and spit it back out before I'd got it into Word.

Whereupon, of course, the PC crashed, because, well, because it can. That's its job. So, same cable, same software, same Z88, I squirted it to a Mac, which is how come you're able to read it in the first place.

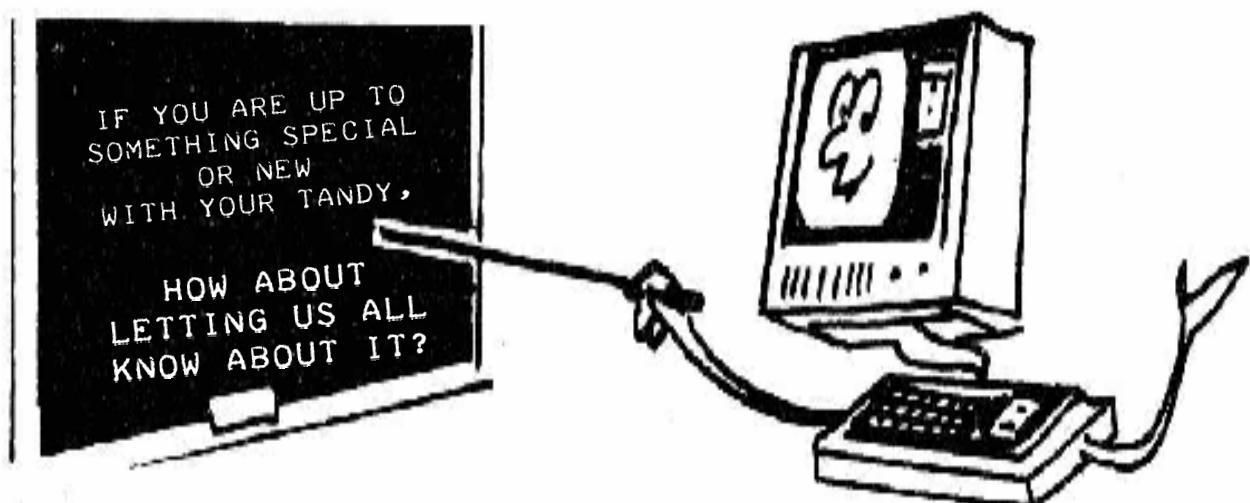
Ultimately though, the idea is to use old systems such as the 4P to go back to my computing roots - or thereabouts - and relearn programming, and once again experience the pleasures of using systems for those tasks for which modern systems are simply too complicated and frustrating, and often just too obstructive to bother with.

Already the experience of settling down to a computer which has no internet, no email, no clutter of icons and apps, and no long-tediously-unnecessary boot ups has proven highly productive, and with fewer distractions and complications, far more satisfying too.

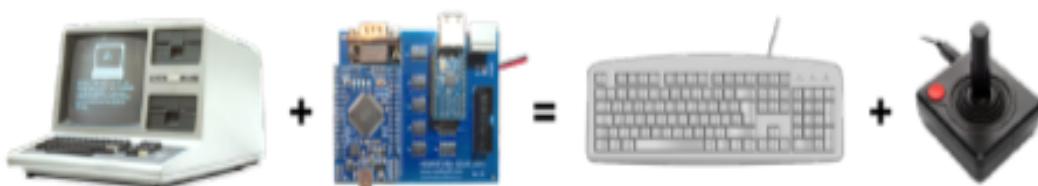
I hesitate to think how the IT revolution would have fared, and maybe even failed completely if, back in 1979 we were presented with Windows, with the incessant updates and patches, and the constant demands of systems that needed our attention for themselves rather than the job in hand. Not to mention the bloatware, the too-muchness of it all. And the fact that to make them work for us, is just too much hard work.

As it is, I can now draft a training outline on the TRS-80 M100 or Z88 in less time than it takes to check the monthly patches and run and install essential updates on the 'big' machine. That's progress, actual progress, using old-tech to make working a pleasure, and efficient.

So if I have to go back in time to the early machines to make the future a better place... even if just for me and my workload, then so be it!



NEWKEY/80 Keyboard & Joystick Adapter for the TRS80 Model 3/4



WWW.NEWKEY80.COM

Why NEWKEY/80?

- Replace your broken or poorly functioning TRS-80 keyboard
- More familiar PC keyboard layout
- Use your favorite USB or PS/2 keyboard on your TRS-80
- Play games using an Atari Joystick!

Features:

- USB and PS/2 keyboard interfaces (active port based on currently loaded firmware)
- Atari 9-pin Joystick port
- Compatible with TRS80 Model 3 and Model 4
- Can work simultaneously with existing keyboard, if desired
- **Works with wireless 2.4Ghz USB keyboards**
- Compact size. Mounts inside TRS80 case
- Compatible with most standard PC keyboards
- Fast and accurate key response
- Native TRS-80 key repeat
- Handles special keys independently (arrows, space, control, break, shift, @) for excellent compatibility
- Works great with games and applications
- Supports TRS80 Control key sequences
- Easily upgradable firmware to allow for enhancements and bug fixes

I.Santutxu Tournament of TRS-80

Egoitz Campo

On the 25th of October, we gathered 4 players to play another tournament of TRS-80 in Bilbao (Basque Country).

This time we played the I. Santutxu Tournament of TRS-80 in the middle of this terrible crisis.

I have not been able to buy new TRS-80 games, therefore we played the same games that we played in July but the results were better. We first played Canyon Climber, then Crazy Maze and finally Downland.

Egoitz and Álvar started first because Luis and Andi arrived later.

The tournament was exciting because everyone worked hard and improved the points obtained in the I. Basque TRS-80 Tournament held in July.

Finally Egoitz was the winner.

This Christmas I will try to buy another 4 games for the COCO II, possibly; skiing, Dragon Fire, Star Blaze and Demolition car. In this way, in the next tournament we will change games.

Here we leave you the final results.

Canyon Climber

- 1-Luis Getxo 15.400 score – 3 points
- 2-Egoitz Campo 14.000 score – 2 points
- 3-Álvar de la Prada 3000 score – 1 points

Crazy Maze

- 1-Egoitz Campo 1.500 score – 4 points
- 2-Álvar de la Prada 1180 score – 3 points
- 3-Luis Getxo 800 score – 2 points
- 4-Andi Erromo 150 score – 1 points

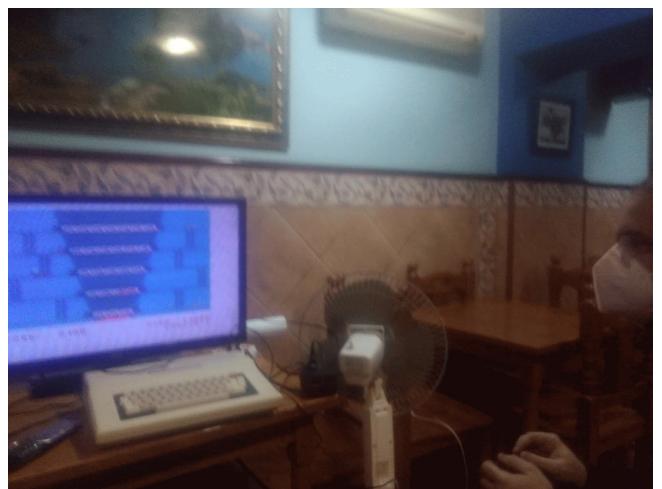
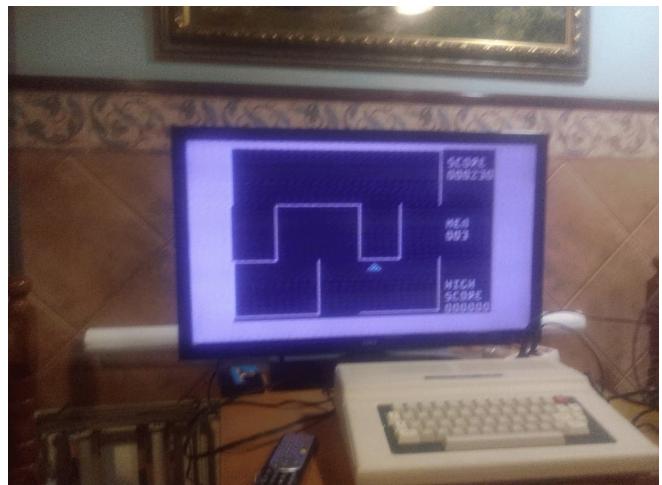
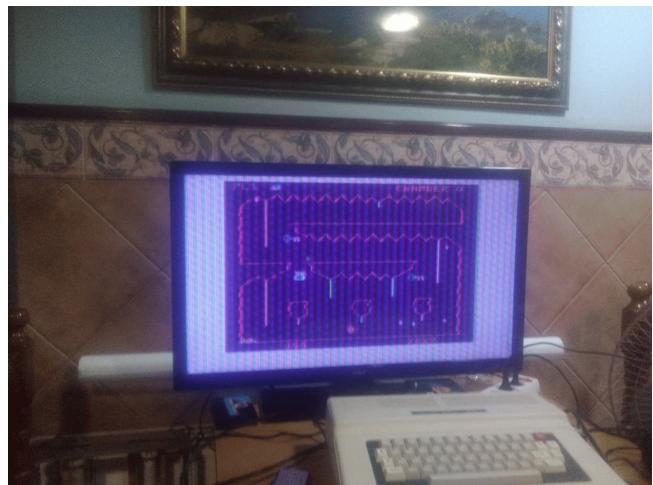
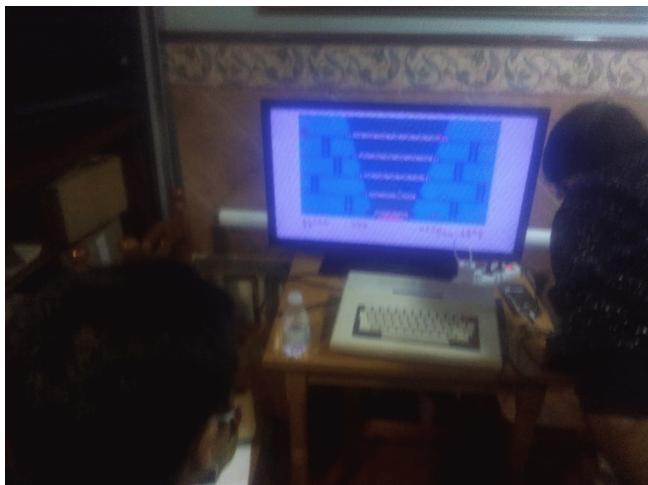
Downland

- 1-Egoitz Campo 3.600 – 4 points
- 2-Álvar de la Prada 3.400 – 3 points
- 3-Luis Getxo 1.000 – 2 points
- 4-Andi Erromo 300 – 1 points

Final Classification

1-Egoitz Campo 10 points (Basque Country)

- 2-Luis Getxo 7 points (Basque Country)
- 3-Álvar de la Prada 7 points (Basque Country)
- 4-Andi Erromo 2 points (Basque Country)

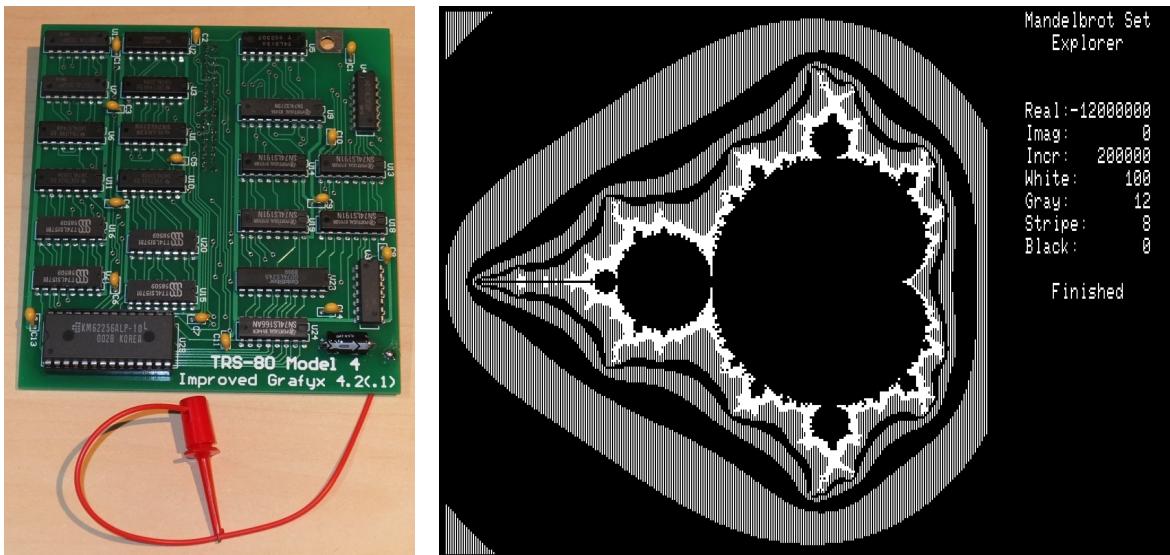


MANY THANKS TO EGOITZ FOR SUPPLYING THE PHOTOS

LOOKING FOR HIGH-RESOLUTION GRAPHICS FOR YOUR TRS-80 MODEL 4/4P/4D?

Then you simply must have the

"Improved Grafyx Resolution Solution!"



- Improved version of the established Grafyx Solution GX 4.2 board
- 640x240 resolution for a total of 153,600 pixels, High Bandwidth
- Easy install in minutes inside your Model 4/Gate-Array Model 4/4P/4D
- Compatible with most M3 and M4 Hi-Res software for Radio Shack HRG
- Designed in Belgium and proudly built and shipped from Australia or UK

Order yours today exclusively from:

UK and EU: [BetaGamma Computing: bgialopsos@aol.com](mailto:bgialopsos@aol.com)

Rest of the world: <http://members.iinet.net.au/~ianmav/hires/hires.htm>

**NEW REDUCED PRICE \$USD99
(DUE TO AU\$ EXCHANGE RATE CHANGES)
WITH ADDITIONAL DISCOUNT FOR FURTHER PURCHASES.**



ROMAN NUMERALS

E.T. FONEHUME

HI DUSTY, I HOPE THINGS ARE GOING OK WITH YOU, DEE AND FAMILY. IT'S STARTING TO LOOK VERY MUCH LIKE A 'ZOOM' CHRISTMAS FOR US ALL HERE!

I CAME ACROSS A RATHER INTERESTING LITTLE PROGRAM THE OTHER DAY WHILE BROWSING THROUGH AN OLD MAGAZINE. IT WAS ONE WHICH CONVERTED DECIMAL NUMBERS TO ROMAN NUMERALS. AN OLD CHESTNUT I KNOW, BUT THIS WAS RATHER DIFFERENT IN THE WAY IT DIDN'T USE STRING MANIPULATION. IT WAS RATHER LONG Winded, I THOUGHT, AT OVER 20 LINES LONG SO I WONDERED, AS USUAL, COULD IT BE DONE IN A ONE-LINER. SO, HERE'S MY EFFORT WHICH I HOPE YOU AND OTHERS MIGHT FIND AMUSING, IF NOTHING ELSE. THANKS FOR PRODUCING YET ANOTHER YEAR OF TRS8BIT. I'M LOOKING FORWARD TO THE 15TH VOLUME IN 2021!

MERRY CHRISTMAS EVERYONE

READY

>RUN

? 2020

MMXX

READY

>RUN

? 1967

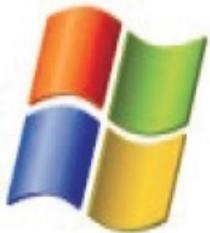
MCMXLVII

READY

```
0 DATA M,1000,CM,900,D,500,CD,400,C,100,XC,90,L,50,XL,40,X,10,IX
,9,V,5,IV,4,I,1:INPUTN:FORI=1TO13:READR$,D:FORZ=0TO1STEP0:IFN=0T
HENENDELSEIFN>DTHENNEXTIELSEPRINTR$,:N=N-D:NEXTZ
```



BetaGamma Computing



Specialists in
all things
that compute



Based in Corfu Greece

- Qualified IT Engineers
- Repair of all PC's and Laptops
- Software and Hardware Upgrades and Installation
- Broadband and Network Installation
- Supply of Custom built to order PC solutions



RETRO RESTORATION SPECIALISTS



Call Corfu 26610 26358

Mobile 698 755 8427

Email: bgcompute@aol.com • www.betagammacomputing.com

GENERAL NORTHERN MICROCOMPUTERS LTD.

Dept. WM 584, 2 Whitworth Road, South West Industrial Estate, Peterlee, Co. Durham, SR8 2JJ.

ALIVE & RUNNING AGAIN!



The DP2000 combines a Canon disk drive with disk controller, parallel printer interface and power supply in a sleek but sturdy steel case. Compatible with "TRS" disc operating systems. Complete with cable to computer, mains lead, 13A plug, and manual. All you need is the disc operating system and your computer.

COMPUTER AND WITH PROMPT SERVICE AND VERY REASONABLE RATES; WITHIN A COUPLE OF WEEKS, BOTH THE MODEL 1 AND THE DP2000 WERE PERFORMING LIKE NEW. JUST IMAGINE MY EXCITEMENT, MY OWN, FIRST EVER, UP AND RUNNING DISK SYSTEM.

SHANE ALSO, VERY KINDLY, SUPPLIED DETAILS OF HIS REPAIRS TOGETHER WITH A SUPER SELECTION OF PHOTOS MANY OF WHICH I'VE USED FOR THIS ARTICLE.

FIRSTLY, THE MODEL 1.

Hi Dusty,

Just wanted to give you an update on your Model I.

The red power LED pulsing on and off was caused by a one of the ROMs having an internal fault and pulling the 5V rail down.

The 5V now stays up, but the processor isn't doing much. The 1.77MHz CPU clock is there, so probably related to the address lines.

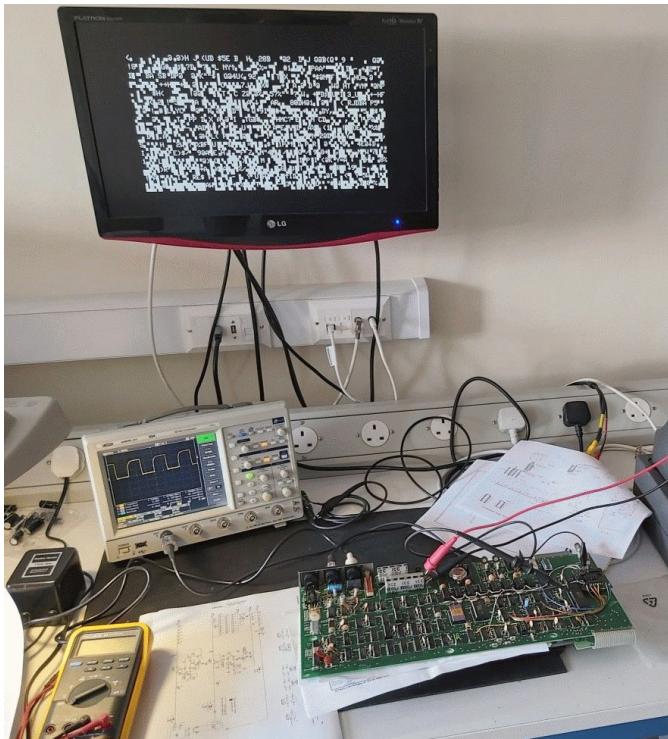
I've now got a screen full of garbage characters, which is actually a good sign at this stage because a large chunk of the circuit has to be working to produce that.

I've attached a picture of work in progress.

AS PROMISED IN THE SEPTEMBER ISSUE, IF THINGS WENT TO PLAN, I HOPED TO SHOW DETAILS OF MY 'FACEBOOK' PURCHASE OF A MODEL 1 SETUP WITH THE GNOMIC DP2000 DISK SYSTEM.

NEITHER ITEMS RAN ON POWER-UP SO I WAS STUCK! AS THE TOTAL WEIGHT OF THE SYSTEM WAS SOMEWHAT OVER 10 KILOS, IT WAS NOT ECONOMICALLY VIABLE TO POST OFF TO BAS, IN CORFU, SO I WAS STUCK.

HOWEVER, I'M PLEASE TO REPORT THAT SHANE FOSTER (SEE HIS ADVERT ON PAGE 56) CAME TO MY RESCUE. HE HAS MANY YEAR OF EXPERIENCE DEALING WITH CLASSIC

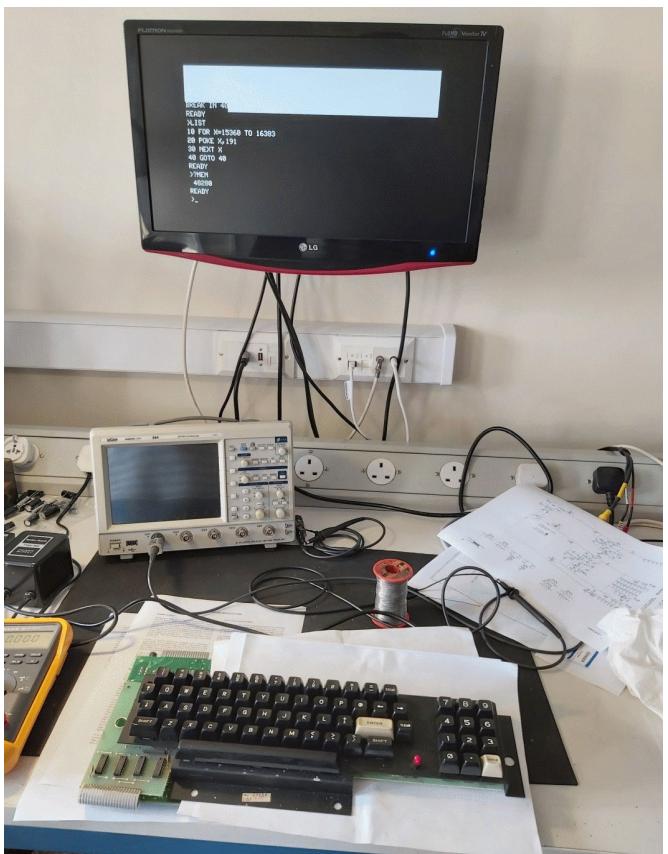


Hi Dusty,
Pleased to report that the model I is alive and kicking. In addition to the ROM, Z53 (74LS132) was faulty. This forms part of the CPU reset circuit.

I also had to replace the power transistor Q4 in the 5V regulator circuit. I guess it had been damaged by the excess current drawn by the faulty ROM. I was able to use components from one of the two spare boards you sent to replace all three faulty parts on your Model I. The memory upgrade modification seems to work fine. ?Mem reports 48338, as

stated in the modification instructions.

I have tacked the wiring to the decoder PCB with a couple of small blobs of hot-melt glue to prevent the connections moving and possibly breaking.



I did look at the possibility of replicating the memory modification, but the underside of the decoder PCB is covered with resin so I can't see how it is connected.

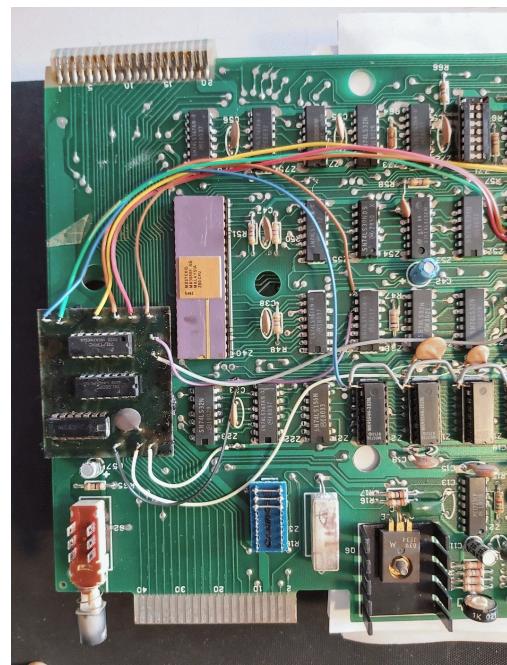
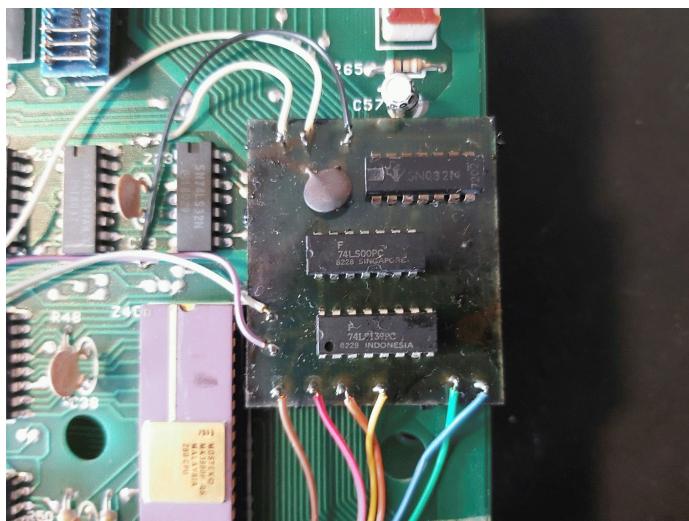
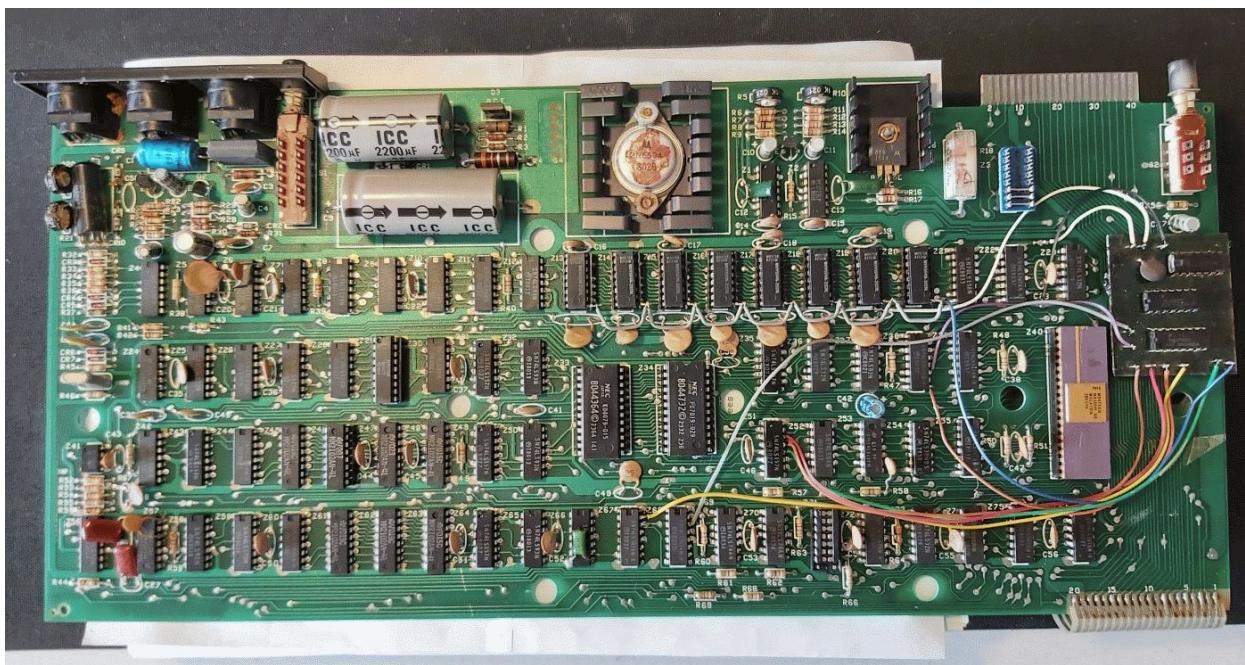
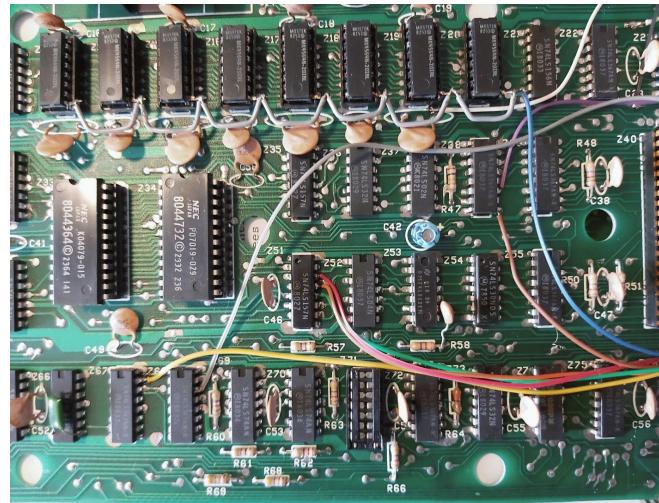
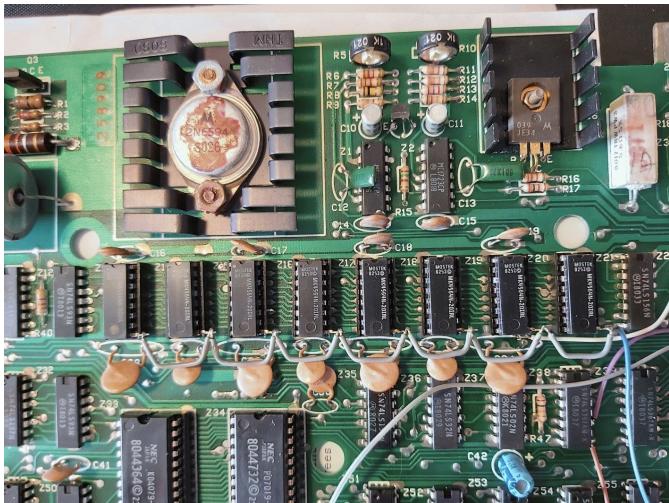
I've left the machine running for a couple of hours and all seems well.

What I haven't done is to try connecting it to an expansion interface.

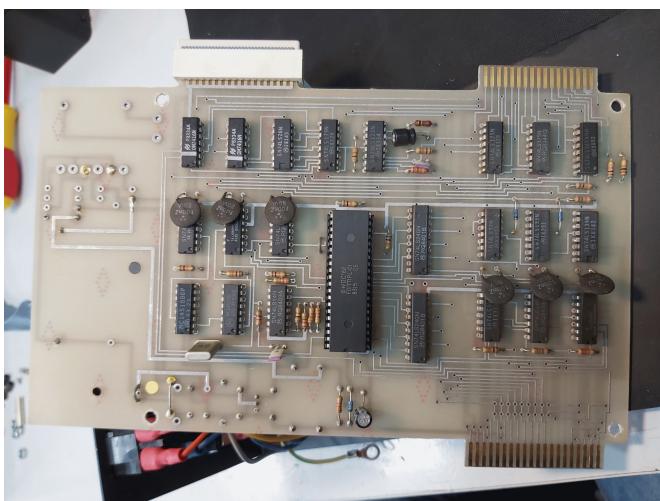
I would normally do that when I repair a Model I, but given the modification changes to the memory decoding logic I am reluctant to connect it to a 'standard' EI.

Hopefully it will work with the intended unit.

IT GOES WITHOUT SAYING, THE UNIT DIDN'T WORK FIRST TIME, BUT OVERLEAF ARE SOME PHOTOS OF THE UNIQUE M1'S 48K RAM UPGRADE.



SO SHANE STARTED CHECKING OUT THE GNOMIC DP2000



The main issue with the GNOMIC unit turned out to be a problem with the cable, not the unit itself.

One of the 40 way IDC edge connectors on the end of the ribbon cable had some damaged pins. This wasn't at all obvious at first. I knew that two of the lines were shorted, but initially thought it was a fault with the electronics.

Having failed to find any faults I tried connecting the Model I to the interface using a standard Radio Shack Model I Expansion Interface cable - the short was cleared.

At this stage I was able to get the Model I to power up normally and successfully boot from disk, using a substitute disk drive.

I don't know if you noticed, but one of the connectors did not engage fully with the PCB at one end. Three of the pins in the connector had metal contact 'fingers' displaced, two of which were shorting together at the back of the connector slot.

I've included a picture of the damaged connector, but it's not that easy to see without looking at the connector itself without a magnifier.

The cable doesn't actually have any wires crossed, it's wired straight through. I'm not really sure why it was made with four of the lines in a separate cable. Perhaps the manufacturer just didn't have any 40 way ribbon cable?

I replaced the damaged connector with a new, blue coloured one. The new connector is actually new (old) stock from Tandy. 40 way IDC edge connectors were never commonly used. There were lots of 34 way (floppy drive) and 50 way (SCSI) ones made, but not many manufacturers ever used 40 way ones. Tandy were one of the few places that stocked them. I acquired a stock of them while working there. Sadly they are nearly all used now.

The system booted correctly with its own cable once the damaged connector was replaced.

The next issue was the disk drive.

The drive belt was perished and slack. This is common with old drive belts. I have a stock of VCR drive belt kits from my days as a TV / video engineer. I found that the capstan drive belt from a Sony C6 Betamax VCR is a perfect fit for a Shugart SA200 floppy disk drive!

Having replaced the belt, the drive worked perfectly after a head clean and some oil on the carriage rails. It's a unusual size drive; standard 5 1/4" width but taller than a standard half-height drive. It's also the only drive I've ever seen that doesn't have an activity light.

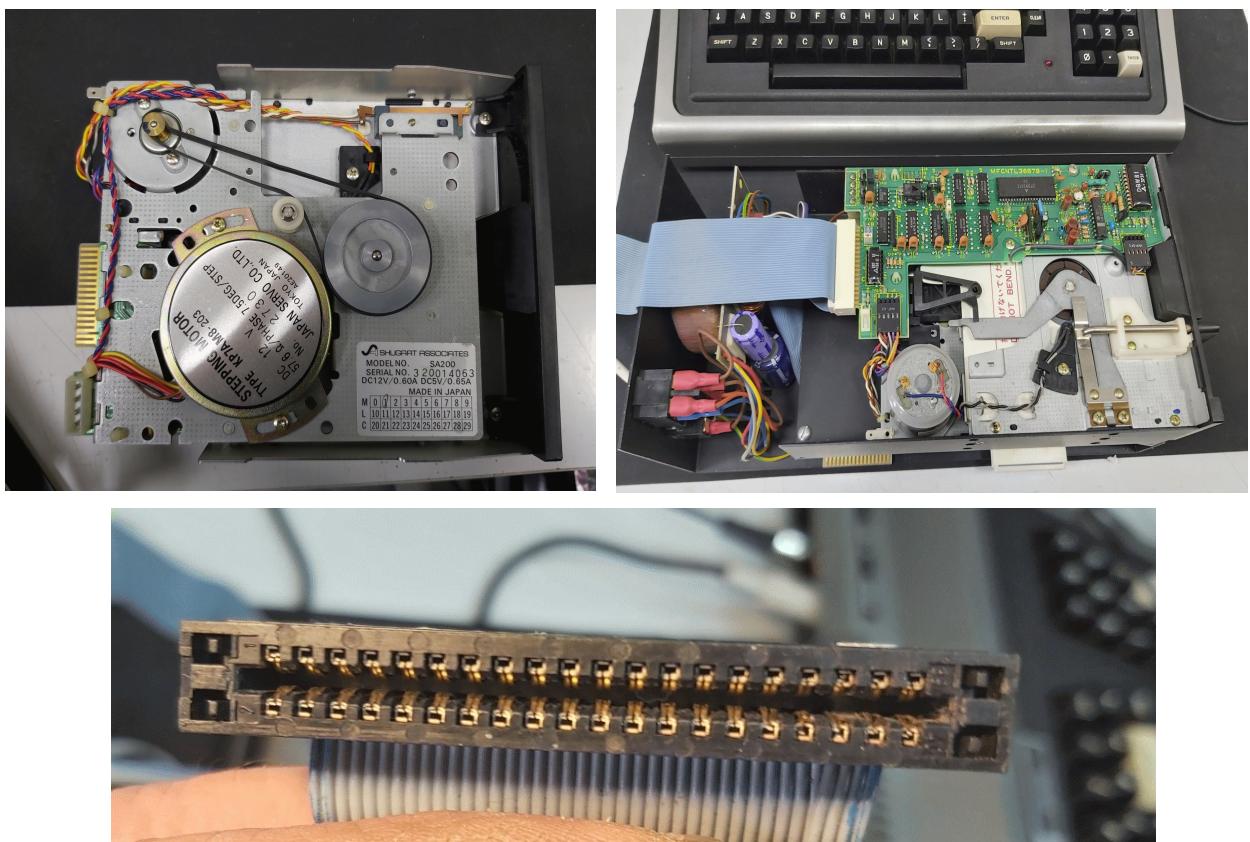
I have also replaced the rather short mains cable with a longer one. I made an assumption that you probably didn't want it with a short mains cable. It would have been quite inconvenient to plug it in like that.

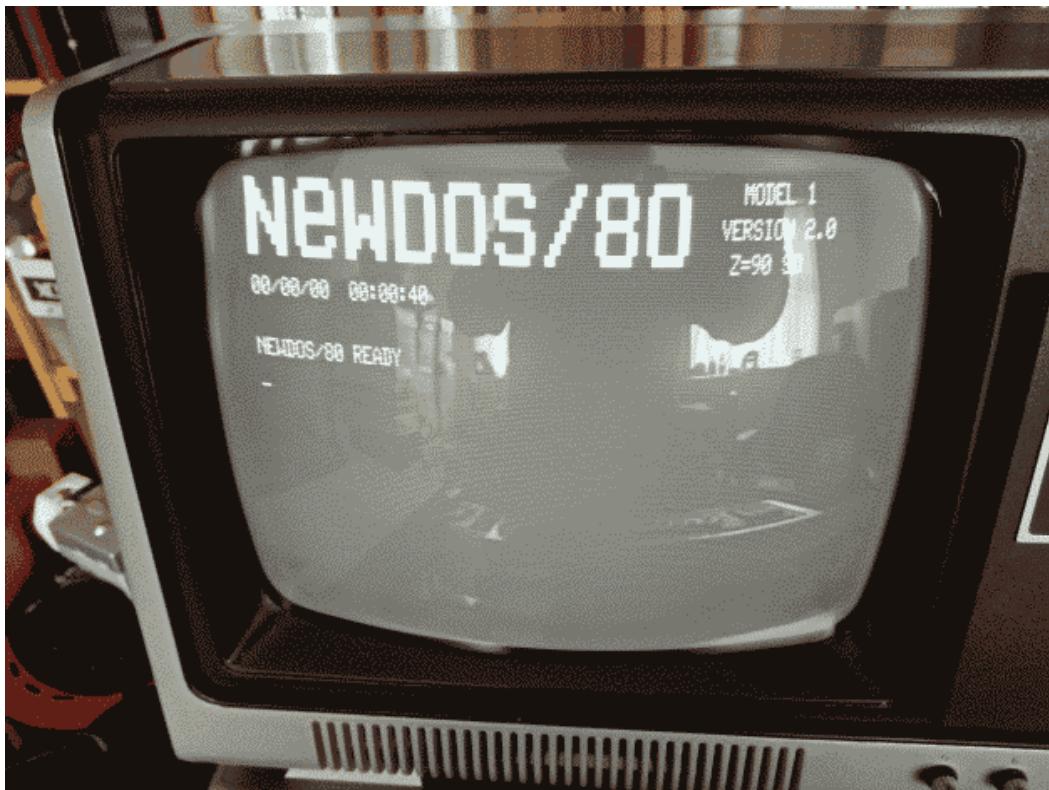
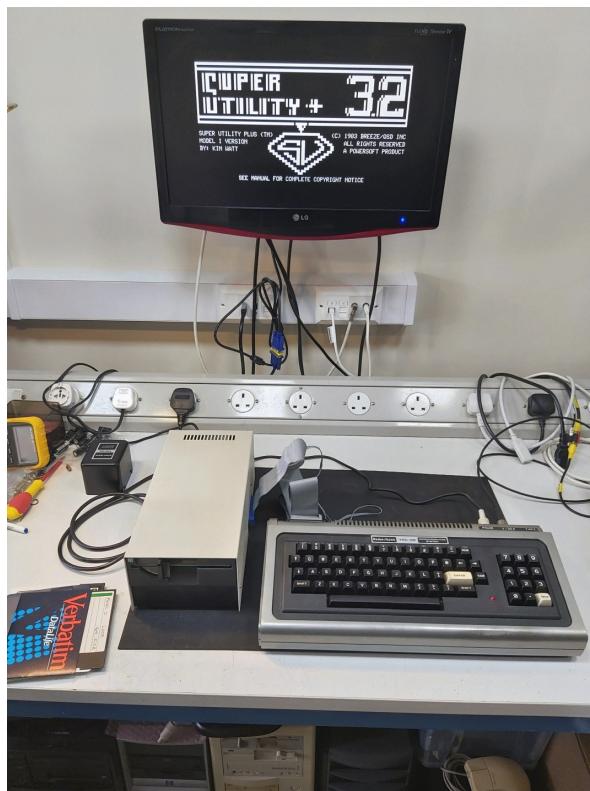
I have put (peel-able) labels on the back of the computer and the side of the GNOMIC expansion unit to indicate which way the cable should exit the connector (upwards or downwards) to avoid any possible confusion about cable orientation.

The ribbon cable at the back of the GNOMIC unit is a continuation of the floppy drive cable, for connecting a second drive as you suspected. If you want to use a second drive it will need to be jumpered as DS1 (drive select). This cable doesn't have any pins pulled out for drive select.

The system seems to work very well. I tried a number of disks, including your LDOS disk, all with no problems.

The other 34 way edge connector on the GNOMIC unit appears to be a printer port, wired as a standard Expansion Interface printer port.





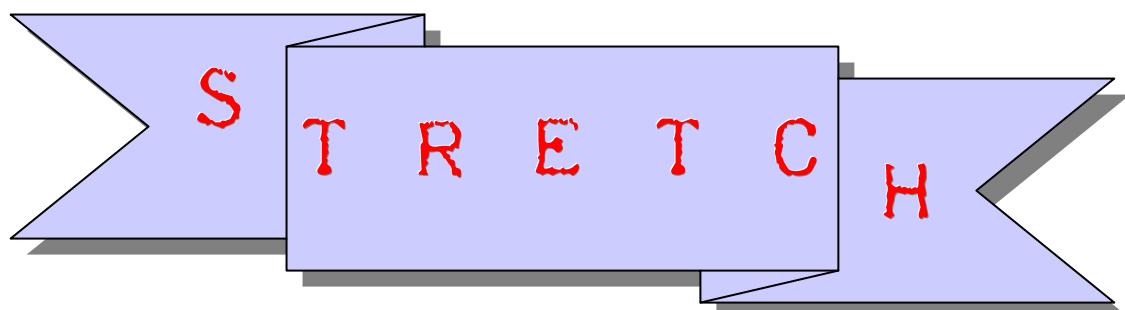
AND FINALLY, HERE'S A COUPLE OF PICTURES OF THE SYSTEM, UP AND RUNNING.

ONCE AGAIN, I MUST EXPRESS MY THANKS TO SHANE, WHO I CAN HIGHLY RECOMMEND, FOR ALL HIS TIME, EFFORT AND SUPPORT. IT GOES WITHOUT SAYING, I DEFINITELY COULDN'T HAVE DONE IT WITHOUT HIM!

HI DUSTY,

YET ANOTHER LITTLE QUIZ, BUT THIS TIME, JUST FOR A CHANGE,
AS IT'S FOR THE CHRISTMAS SEASON IT FEATURES SANTA !
I HOPE IT GETS THE 'GREY MATTER' WHIRLING,

HAROLD



YOUR MIND



CAN YOU TURN ALL FOUR OF THESE SANTA
CARDS UPSIDE DOWN BY TURNING
THREE AT A TIME?

WHAT IS THE MINIMUM NUMBER OF GOES YOU
CAN DO IT IN?

HAVE A HAPPY CHRISTMAS EVERYONE

THE ANSWER IS ON PAGE 87

TRS-80 Emulators . com

TRS32: A Model I/III/4/4P Emulator For Windows

written by Matthew Reed

Unregistered Shareware Version:

- Works under all current versions of Windows
- Full Windows application – no low-level hardware conflicts!
- Model I, Model III, Model 4, and Model 4P emulation
- Four floppy disk drives (with optional realistic disk drive sound)
- Cassette tape drive with graphical on-screen controls
- Exatron Stringy Floppy emulation
- Printer support
- Serial port for RS-232 communications
- Joystick support (using a Windows joystick – TRISSTICK and Alpha Products joysticks are emulated)

Registered Version:

- All features included in the shareware version
- Built-in emulation of an Epson FX-80 dot matrix printer (including graphics and control codes)
- High resolution graphics (Radio Shack and Micro-Labs)
- Up to 1 megabyte of additional memory in Model 4 and 4P modes
- Hard disk support
- Orchestra 85/90 music generation

Interested?

- Read the TRS32 emulator documentation
- Download the shareware version
- Register online



MERRYXMASMERRYXMASMERRYXMASMERRY

ERRYXMA

X^M

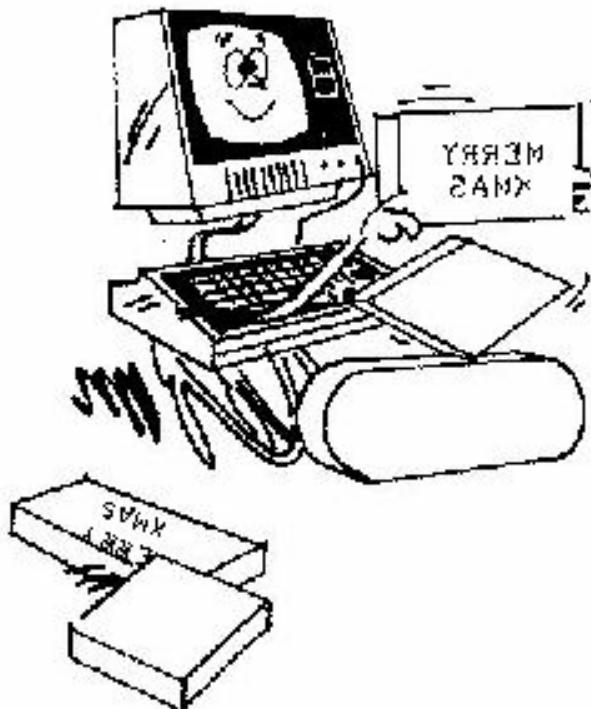
YX	MERRY	SMERR	MAS	RRY
RY	SM	YX AS	RY M S	R Y
RR	SM	YX AS	RY M	ME Y
ER	SM	YX AS	RY M	ME Y
MERRYXM		MERRY	SMERR	M ME Y

MERRYXMASMERRYXMASMERRYXMASMERRY

AS USUAL AT THIS TIME OF THE YEAR, DEE AND I SEND YOU ALL, CHRISTMAS GREETINGS WISHING YOU ALL HAPPINESS FOR THE COMING FESTIVE SEASON AND THE NEW YEAR.

HOWEVER, AS THINGS ARE SOMEWHAT DIFFERENT FOR CHRISTMAS 2020, WE BOTH THOUGHT THE ABOVE GREETING WAS MORE APPROPRIATE THAN THE NORMAL SELECTION OF IMAGES.

ONCE AGAIN, MANY THANKS TO ALL OF YOU WHO HAVE CONTRIBUTED ARTICLE AND ENCOURAGEMENT THROUGHOUT THE LAST 14 YEARS. I COULDN'T HAVE DONE IT WITHOUT YOU!! LET'S ALL HOPE THAT 2021 IS AN EVEN MORE AMAZING YEAR FOR ALL US TANDY FANS.



JUST IN CASE YOU WISH TO AMAZE YOUR FRIENDS WITH THE PRINT OVERLEAF, HERE'S A COPY OF THE PROGRAM.

```
10 REM XMAS1304/BAS
20 CLEAR500
30 M$="MERRYXMASMERRYXMASMERRYXMASMERRYXMASMERRYXMASMERRYXMAS"
40 GOSUB 220
50 READ S
60 IF S=0 GOSUB 160
70 READ L
80 T$=MID$(M$,S,L)
90     X=PEEK(VARPTR(P$)+1)+PEEK(VARPTR(P$)+2)*256
100 REM THIS AND THE NEXT LINE ARE NOT NEEDED ON 16K SYSTEMS
110     IF X>32767 THEN X=X-65536
120     FOR Y=1TO1
130         POKE X+S+Y,ASC(MID$(T$,Y,1))
140     NEXT Y
150 GOTO 50
160 LPRINT P$
170 GOSUB220
180 READ S
190 IFS=0THENLPRINTP$:READS
200 IF S=99 THEN END
210 RETURN
220 P$=STRING$(81,32)
230 RETURN
260 DATA 1,32,0,0,2,7,0,6,2,0,5,2,10,5,18,5,25,3,30,3,0
270 DATA 4,2,9,2,14,2,17,2,22,2,25,1,27,1,30,1,32,1,0
280 DATA 3,2,9,2,14,2,17,2,22,2,25,1,28,2,32,1,0
290 DATA 2,2,9,2,14,2,17,2,22,2,25,1,28,2,32,1,0
300 DATA 1,7,10,5,18,5,25,1,28,2,32,1,0,0,1,32,0
330 DATA 99
```

TRS-80

Repairs & Upgrades

HNC qualified electronics engineer
with 40 years TRS-80 experience.

Enquiries to: trs80@shanefoster.co.uk

TRS-80 Cassette Reader



Drop a WAV, CAS, or BAS file here
or click to select a file

Or use one of these test files: [C-1-1](#) [LOAD80 Feb 82, side 1](#) [LOAD80 Feb 82, side 2](#)

[Export Data](#) [Import Data](#) [Browse Data](#) [Run Tests](#)

This app parses and cleans up TRS-80 Model I and Model III cassette audio files,
and generates clean audio for importing into emulators. [Source code](#)

Lawrence Kesteloot gave a demonstration of his cassette reader program on Trashtalk Live the other evening. He has written an truly brilliant web site which permits you to drag and drop WAV CAS or BAS files into the web page and it will attempt to clean up the WAV but also let you view the reconstructed BASIC code as ASCII (and CMD code as a disassembly) and show you the corresponding tape contents.

You can visit the site at -

<https://lkesteloot.github.io/trs80-cassette-reader-js/>

LOAD80-Feb82-s2

WHOLE TAPE
0:00 to 12:17
Emulator

TRACK 1, COPY 1, LOW SPEED (ANTEO)
0:04 to 2:10 (2:05)
Binary
Reconstructed
Basic program
Emulator (original, low speed)
Emulator (reconstructed, low speed)

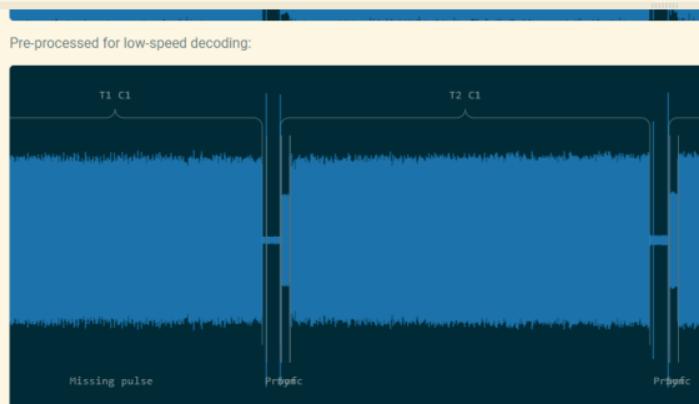
TRACK 2, COPY 1, LOW SPEED (ANTEO)
2:17 to 4:54 (2:37)
Binary
Reconstructed
Basic program
Emulator (original, low speed)
Emulator (reconstructed, low speed)

TRACK 3, COPY 1, LOW SPEED (ANTEO)
5:03 to 8:56 (3:53)
Binary
Reconstructed
Basic program
Emulator (original, low speed)
Emulator (reconstructed, low speed)

TRACK 4, COPY 1, LOW SPEED (ANTEO)
9:09 to 10:11 (1:02)
Binary
Reconstructed
Basic program
Emulator (original, low speed)
Emulator (reconstructed, low speed)

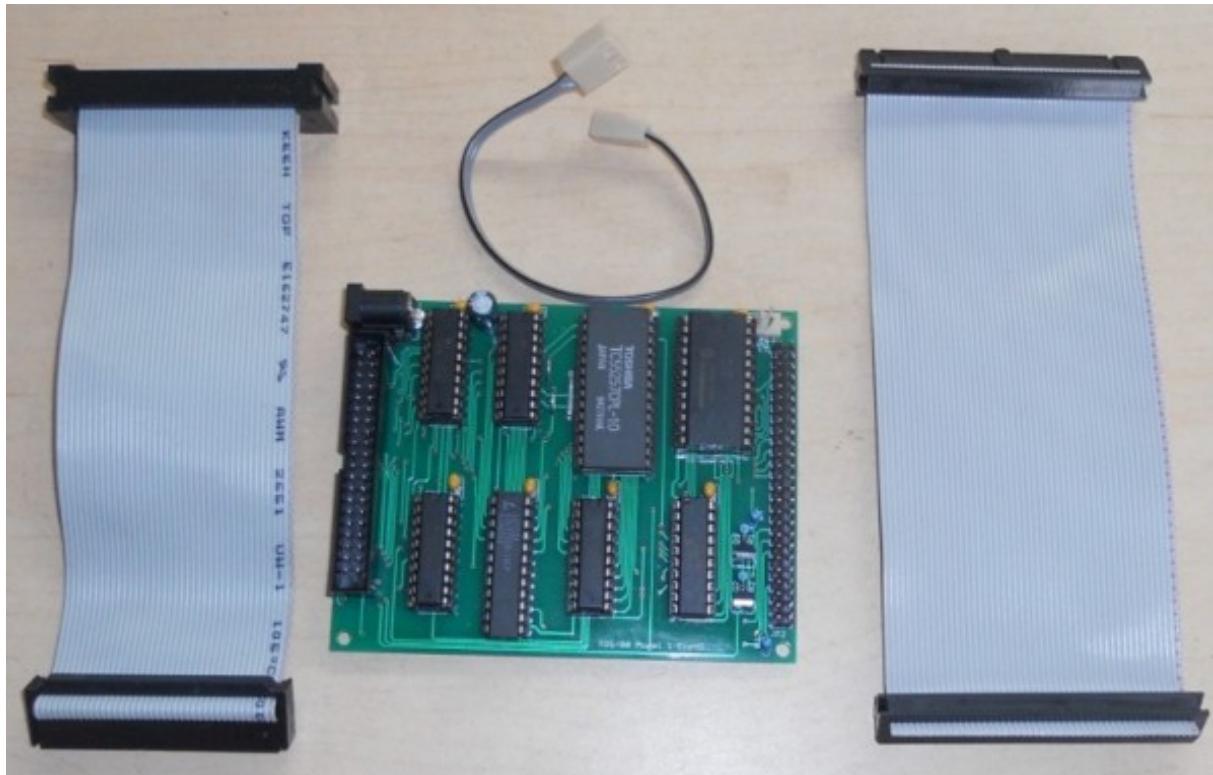
Whole Tape

Start time: 0:00:00.000 (frame 0)
End time: 0:12:17.697 (frame 32,532,480)
Duration: 12:17
Notes:



"Quinnterface" Mini Expansion Interface for 16K Model 1 FreHD users.

- COMPLETELY ASSEMBLED AND TESTED -



This is THE perfect device for all Model 1 users who own a 16K Level II unit, (which is most of us!), but no Expansion Interface or disk drives, especially if you don't want to modify your M1 with upgraded boot ROM or memory upgrade.

The 'Quinnterface', developed by J. Andrew Quinn from New Zealand, adds 32K RAM and auto-boot functionality to your FreHD.

U.K. And Europe, contact Bas. at BetaGamma Computing.
U.S.A. And rest of the world, contact Mav. At "The Right Stuff"

LOOKING FOR FAST, INEXPENSIVE, UNLIMITED MASS STORAGE FOR YOUR TRS-80 MODEL I/III/4/4P/4D?

The amazing

"*FreHD*"



- Emulates a TRS-80 hard drive, but faster than any hard drive!
- Works with your favourite DOS (LS-DOS, LDOS, CP/M, Newdos/80 2.5)
- Uses SD card for storage medium
- Bonus free Real Time Clock function!
- Designed in Belgium and proudly built and shipped from Australia
- Kit form or fully assembled

Order yours today
<http://members.iinet.net.au/~ianmav/trs80/>

THE WAY WE WERE



PCALC-The Spreadsheet for the NEC PC-8201A, Olivetti M10, Tandy 100.

Now your portable computer can be a complete system - with PCALC, a powerful spreadsheet program specially designed to make the most of your NEC PC-8201A, Tandy Model 100 or Olivetti M-10 (16K RAM required). Supplied on cassette, complete with an easy-to-understand manual. Priced at only £25.00, PCALC is the low cost alternative to expensive ROM based software.

CAPRA-CINDERSTAN ASSOCIATES
5 OLIVER COURT
SOUTH HILL PARK GARDENS
HAMPSTEAD, LONDON NW3 2TE

SPORTING FORECASTS

Professor Frank George's well-known Football Pools Forecasting program is now available on the

SINCLAIR ZX81 16K

as well as:

APPLE II 32K

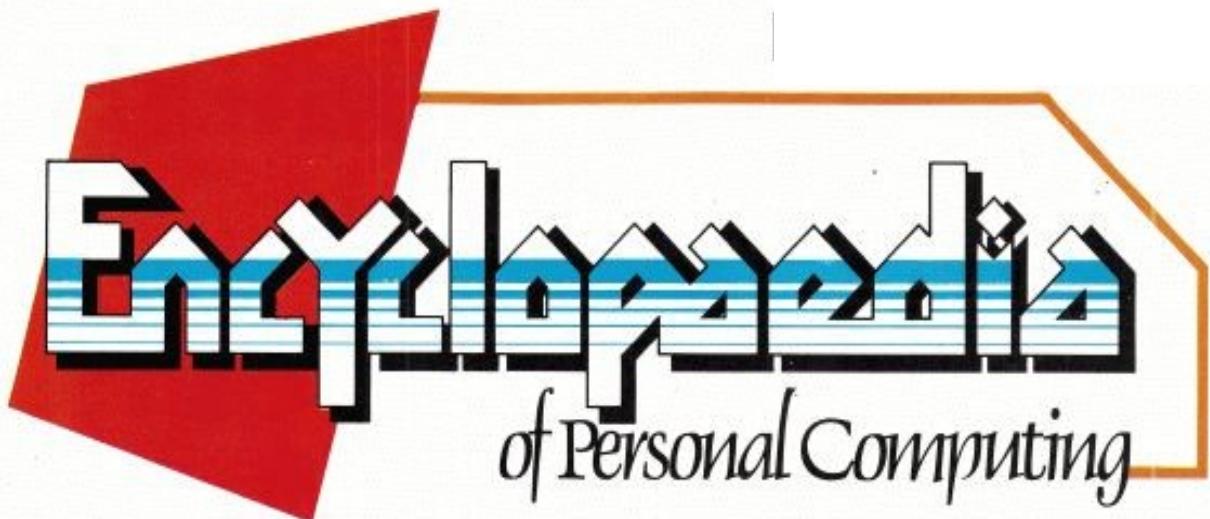
PET 32K

SHARP MZ80K 36K

Versions coming soon for:
Video Genie, BBC-micro, TI 99/4

*A Horse-Race Forecast Program
in preparation.*

Write to: Professor F.H. George
Bureau of Information Science
Commerce House, High Street,
Chalfont St. Giles, Bucks.

A large black rectangular box contains a white rectangular area with the text "CP/M OPERATING SYSTEM" in red and blue. Below this is a graphic of a computer diskette with a central hole and a grey oval at the bottom. To the right of the diskette is a column of text.

CP/M is quite simply the most widely used computer operating system in the world. No-one interested in microcomputers can afford to ignore it.

In this special Encyclopaedia the editors of *MicroComputerPrintout* have assembled a comprehensive briefing on CP/M. In the following pages **John Gowans** examines the curious history of CP/M, reports on the machines that can run it, and the most popular programs for it. To balance the picture, **Guy Kewney** examines the disadvantages of CP/M.

**Everything you need to know about the world's
most popular operating system.**

CP/M: THE STORY SO FAR

"Microprocessors and CP/M:... Where they came from is history, what they are today is fact, and what they will become is...pure science fiction speculation."

—Gary Kildall, president of Digital Research.

Reluctantly leaving aside the science fiction bit, Kildall's statement is unarguable. CP/M has a history, and it is now just about *the* fact in microcomputer operating systems; almost every manufacturer is following the Henry Fordish principle that you can have any operating system you like as long as it's CP/M.

But Digital Research and Kildall himself seem still to be lurking in the shadows. Interviews with founder Kildall are rare, and photographs of him are rarer — I have to admit that I have no idea what he looks like. Sometimes there is even the feeling that he doesn't exist at all, as when he mysteriously failed to show up at a UK CP/M User Group seminar last Autumn.

Despite all this reticence, Kildall's company has certainly made its mark in the business. One anonymous Digital Research executive (aren't they all?) has even gone so far as to call his employer "the IBM of the operating system world." But there were few hints of that in 1972, when microprocessors were young, and expanding a mini to 32k of core memory was still cause for celebration...

Dateline: Santa Clara, California, 10 years ago. In a dark and smoky room, a small group of financially motivated men set their square jaws and wrinkled their clean-cut American brows — this was serious. Or to put it another way, the high-flying engineers of Intel Corp.'s budding microprocessor division had a problem. The division was new and small, as indeed was Intel itself, and although the engineers had done a good job in upgrading the primitive 4-bit 4004 processor to a 'real' 8-bit chip, the 8008, programming it was another matter. The jaw-setting and brow-wrinkling was caused by the prospect of having to program the thing in machine code for all eternity.

The obvious solution was to write a high-level language compiler for Intel's mainframe, and use the big computer to develop machine code programs for the new chip. But Intel was a hardware firm, set up to make memory chips, and software skills were in short supply. The company started to look around for outside help.

Fortunately Gary Kildall and his one-programmer-and-a-dog company Microcomputer Applications Associates were at hand, and Intel signed up MAA to produce the language compiler the engineers needed. Kildall took big lumps from XPL, a compiler-writing language itself developed from Algol and IBM's PL/I, and eventually came up with a language called PL/M — Programming Language/Microcomputers — for the new 8008 chip.

Creating a standard

He must have done a good job, since PL/M is still the standard development language for Intel microprocessors up to and including the 16-bit IAPX 86 family. But that was in the future... Meanwhile, back in the past, MAA got on with producing PL/M programs for the 8008, starting with a paper-tape editor to help the engineers manipulate the only storage medium they had for the processor programs they were developing.

But as Intel moved on to develop the famous

8080 chip from the 8008, another small company down the road came up with a new storage medium for small computer systems. IBM has defined a standard format for the new 8in. floppy disk, and Jack Shugart's Shugart Associates had started producing cheap floppy drives that for \$500 apiece could store on one 5 disk as much data as 200ft of paper tape.

Kildall immediately realised that you could put together a complete system with an 8080, 16k bytes of RAM, and a floppy drive at a price low enough for Intel to give each engineer one to run PL/M. The only thing needed, apart from a bit of hardware fiddling, was an operating system program that could handle floppies; and Kildall presented Intel with a proposal for just such a program. It would be written — naturally — in PL/M, and by analogy would be called Control Program/Microcomputers. At last we come to the famous initials.

But in a decision reminiscent of Apple's not to take on VisiCalc, and that of the several record companies who turned down the Beatles, Intel



passed on CP/M. What was the point, the company argued, in giving engineers a computer each when they could all use PL/M on a big timesharing mainframe? And as Intel religiously stuck to this line, Kildall decided to go it alone. An 8080 processor board and memory came from Intel, along with a Teletype ASR 33 printer terminal; an 8in. floppy disk drive was spirited out of Shugart by various and devious means, and the basic system components had been assembled in the traditional Californian garage (where do they park in Silicon Valley?).

Now Kildall had Intel's original problem in reverse. He could provide the software, but needed some hardware skills to tack all the bits together — and these came from an old friend, Berkeley professor John Torode. In the garage, Torode tied the memory to the processor and the Teletype to the box, and then put together a controller board to connect the processor to the Shugart drive. Meanwhile, in the living room one assumes, Kildall wrestled with PL/M code to finish CP/M, taking things like the paper-tape editor developed earlier and building them in.

Finally, during 1974, CP/M was up and running on Torode's Heath Robinson — or Rube Goldberg, for US readers — contraption, which surprised everybody. Still, nobody in the business took much notice. Intel's nose remained firmly in the air, and although MAA sold a few licences to the program to microcomputer start-ups there was little action until 1975, when Glenn Ewing of Imsai went to Kildall to negotiate a license. According to the mythology, Ewing and Kildall between them came up with the idea of taking all the hardware-dependent bits of CP/M — the bits that would only run on particular hardware configurations — and sticking them in a separate section that could be modified by the licensee to suit his

machine.

The rush was on. For the micro makers, the chance to get hold of a standard operating system just by modifying some of the machine-code system calls in CP/M — there are only 15 such calls — was a godsend, since it meant that their machine could run any software written for other CP/M systems. And for the software companies, writing programs for CP/M meant that their market was much bigger than it would be if they wrote for just one obscure operating system on an even more obscure micro.

Unfriendly

There were problems in going for CP/M though. For a start, it would only run on Intel's 8080 processor using IBM-Format 8in. floppies; and remember that it was originally designed for computer engineers to write programs with, and so was a bit unfriendly for the naive user. The second point wasn't too bad, since the early home computers were being sold to enthusiasts who actively enjoyed digging into the entrails of the machine and making it go — and the first software products written for CP/M by MAA and others were programmers' aids like language compilers, machine code assemblers and debuggers, and so on. And the first problem was helped by Zilog's decision to build the Z80.

When the Z80 came out, it was obvious where Zilog had got its ideas from. The instruction set, the list of machine codes that the processor understands, was made up of the 8080 set plus more than 50 others — so the Z80 would run 8080 code while allowing programmers to add on extra facilities. In particular, the Z80 would run CP/M without alteration.

So although Intel produced the 8085, a souped-up 8080, the Z80 was really a much neater chip; and CP/M systems based on Zilog's product started to outstrip the 8080 machines.

Meanwhile, Kildall and MAA began to think big. By 1976 it was clear that CP/M was going to be a major factor in the personal computer business, and that Kildall needed a new operation to handle the demand. So in typical Californian style Kildall and associate Dorothy McEwen set up a new company modestly called Intergalactic Digital Research — soon stripped of the cosmic tag as the business grew and became more commercially-minded than communally-minded.

And so things would have stood, with Digital Research licensing more and more manufacturers to sell CP/M and more and more software firms coming out with compatible products, if technology had done the decent thing and stood still; and if the personal computer market had stayed with the enthusiasts. But neither of these things happened. Microprocessor and memory chips got faster, denser, and cheaper; the 5 1/4 in. disk drive came in as a cheap alternative to the IBM-format 8in.; the Winchester hard disk was under development; and in 1978 the age of CP/M business packages opened with the release of Wordmaster (WordStar's predecessor) from MicroPro and a range of business accounting

programs from Osborne (yes, *that* Osborne).

The new host of prospective business computer users wanted the new and cheap technology to go with the applications packages that started to flood out from the software housing; Digital Research had to make a move, and duly made it in 1979. CP/M was completely re-written.

The purpose of this was similar to the purpose of the earlier revision after Ewing's intervention. But this time storage, not Input/Output, was the problem — so Kildall took the disk parameters out of the operating system and put them in a table that the manufacturer could get at, alongside the I/O section that could already be altered. By altering the numbers in the tables, the micro firms could configure CP/M to go with any combination of 5 1/4 in. and 8in. floppies or big Winchester hards. The version number you started to see on CP/M systems from 1979 onwards was 2.2 — still the current one — with all this written in.

Still, Kildall was lucky. If he had originally designed CP/M in a different way, it would not have been able to cope with faster processors, bigger memory spaces than the planned 16k, and faster disk access times. But because CP/M is what Kildall himself calls 'Spartan', a synonym for simple, rough, and ready, increasing speeds in the system just improve CP/M performance. And to cope with bigger memories, the user can simply tell CP/M to spread its boundaries and allow more room for programs.; the user can do this, buying more memory when necessary and adapting CP/M without going back to the supplier.

The march of the new table-driven CP/M continued, until around 300,000 users were using it on around 3,000 different hardware configurations — 'estimated' because Digital Research licenses the product to manufacturers who don't have to tell who they

sell it on to, and 'different' in the sense of various disk types and memory sizes on the systems.

16 bit Problems

All well and good, and Kildall's income escalated steadily. But then the market and technology intervened again; and this time Digital Research could not do a quick software fix. Business users started to feel inhibited by the fact that CP/M is very strictly a single-user system (for one engineer, remember?), and wanted a way of running CP/M applications programs on a multi-user system, with various users sharing a single computer. And the never-satisfied chip makers took the next logical step, and started to launch mass-market 16-bit processor chips in 1978 and 1979.

This could have caused some trouble for Digital Research. There was no way to re-write CP/M as it stood for multi-user operation, and of course it would not work on 16-bit processors. As Kildall says, "if you look at the 8080 and at what it can do, CP/M just about fits it", or in other words even the Z80 is really under-utilised. So completely new products were needed, one or more doing multi-user operation while maintaining CP/M compatibility, and one to work on a 16-bit chip. The 16-bit version could not maintain compatibility with 8-bit CP/M, so Digital Research could pick whichever 16-bit processor chip it wanted to support.

It was an easy choice to make. Kildall's old employers at Intel had come up with the 8086 (later re-named iAPX 86) slightly ahead of the field in 1978, and had inevitably supported PL/M on it by re-hosting the language from the 8080 and calling the result PL/M-86. Using this product Digital Research could re-write CP/M for the 8086 in quick time, and so that 8086 was the choice; besides, Kildall still had a close

relationship with Intel. Work started on the 16-bit CP/M, and, maintaining the PL/M connection, the name chosen for it was CP/M-86.

While all this was going on, Digital Research approached the multi-user problem from two directions; one method was to share a single Z80 computer between various users, and the other was to allow various Z80 CP/M computers to share files amongst themselves. First came the shared single computer, and keeping the names roughly in line Digital Research called this one MP/M for Multiprogramming Monitor/Microcomputers (I know it doesn't fit the initials, but my source is the man Kildall). The first release of this was, I am sorry to say, a disaster. Digital Research said you could hook 16 users into a Z80 CP/M machine, each having the impression that he was running the CP/M applications programs on the machine's disk. But as the number of users was increased, MP/M users found that response time degraded very quickly indeed and a user could hit a key and sit around for minutes waiting for something to happen.

MP/M 1 was quickly withdrawn, because of this problem and because of doubts about security of each user's file. A heftier MP/M 2 has now been released, which is supposed to have fixed everything. But one MP/M supplier, Casu, has done some extra fixes — including adding an extra 16k memory board, since MP/M grabs almost this amount from one unspecified and unfortunate user — and will only recommend a maximum of six users. And there are still doubts about file security... The industry is still only tentatively looking at MP/M.

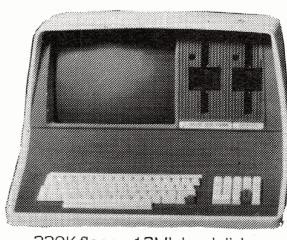
Networks

The second multi-user solution, the network one, is called CP/Net (Control Program/Network)

GOTO PAGE 70

CP/M MICROCOMPUTERS IN BRISTOL

SUPERBRAIN



320K floppy-12Mb hard disk

TELEVIDEO



Single and multi-user
750K floppy-18Mb hard disk

SIRIUS



16-bit, 128K Memory,
1Mb floppy

Hardware

Superbrain 1800-3850
Televideo 1600-3850
Tandy 2300-4200
ABC 3300-4250

Printers

Epson 389-620
Oki 400-699
Prism 660-840
TEC 1300
Qume 1950
NEC 1950

Software

Accounts
Word processing
Graphics
Tailored programs

Languages

Basic
Fortran
PL1
Cobol
DBase II

Supplies

Floppy disks
Paper
Labels
Ribbons
Daisywheels

Maintenance

Annual contracts
Preventative maintenance
Call-outs

Complete Business systems from 3500
Word Processing systems from 4000
Two-screen Multi-user systems from 6650

Software has been developed by Mercator's own staff.
Specialist software for accounts, architects,
solicitors, work study, market research, auctioneers

MERCATOR COMPUTER SYSTEMS

3 WHITELADIES ROAD, CLIFTON, BRISTOL BS8 1NU
Telephone 0272-731079



CP/M: HOW TO USE IT

The popularity of CP/M has been caused by the vast amount of applications programs written for it that are available off-the-shelf. But this in turn means that many users of CP/M are buying computers for the packages, and would not know an operating system if it was served to them on a plate with watercress round it. To these users, CP/M first makes its presence felt as a sign on the screen cryptically saying 'A>'. What is really going on?

What the user is seeing is a prompt from CP/M saying that it expects something to happen on the keyboard, a prompt that comes up once CP/M has been loaded into the machine successfully. But perhaps we are jumping too far ahead. An operating system is used by the computer to load things from disk, and CP/M is supplied on a disk, and CP/M is supposed to be the operating system, so... this could go round in circles for ever.

What CP/M needs is for the manufacturer to supply a little program in ROM to load in a bit of CP/M, which then loads in some more and so on. This process, so reminiscent of pulling yourself up by the bootstraps, is not surprisingly called bootstrapping or simply booting the disk. All you need to do this is to put the CP/M disk in the drive the manufacturer tells you is the boot drive, and hit reset; a message something like '64k CP/M Version 2.2' followed by that prompt will shortly appear.

The 'A' in the prompt tells you that the disk drive you are working on is drive A, the boot drive. CP/M always expects to be booted on drive A, and any other drives in the system

are given letters B, C, D, and so on.

What do you type next? Try 'DIR'. This is one of the five commands that is loaded into the computer's RAM at boot time; the others are 'REN', for re-naming files, 'ERA', to erase files, 'TYPE', which prints the contents of a file on the screen or printer if one is attached, and 'SAVE', which saves the memory contents as a file on the current disk. The current disk is always drive A unless you tell it differently by typing 'B:', 'C:', or the letter of any other drive followed by a colon. If you do this, CP/M responds with 'B>', 'C>' or whatever, and then you are working on whichever disk you have specified.

After typing DIR, CP/M will put the file directory on the screen, telling you the names of the files that are on the current disk. CP/M file names always have the same format of up to eight characters optionally followed by a full-stop and a three-letter file type. The file type section specifies what sort of file each file is; for instance a file ending in '.BAS' is a Basic program, one ending in '.ASM' is an assembler or machine code program, one ending in '.TXT' is a file full of text, and one ending in '.COM' is a command file.

If you do a DIR on your CP/M disk you will see lots of files ending in that '.COM' type. These are utilities that come with CP/M to do useful things around the computer, some provided by Digital Research and some by the system manufacturer. This brings up a nice feature and a bad feature about CP/M, since it is nice for the manufacturer to be able to add the utilities he likes to the operating system, but bad for the

user since whenever he wants to use one of these useful utilities it has to be dragged off the system disk into RAM and executed. If you have a Winchester you wouldn't even notice, but on some floppies it is tedious. The Tandy Model II has just sprung to mind for some reason...

Utilities

The Digital Research utilities are the really essential ones, and include PIP, FORMAT, MOVCPU, SYSGEN, ED, and ASM, all followed by the '.COM', but I'm bored with typing that. PIP is the Peripheral Interchange Program, which basically lets you switch files from disk to disk; FORMAT is used to format blank disks, and is suitably doctored by the manufacturer to suit its drives; SYSGEN puts a copy of the operating system on the formatted disk so it will boot; MOVCPU alters the boundaries of the operating system so that you can add more memory and get more programming space; ED is the editor, a kind of primitive word processor; and ASM is the machine code program assembler. These are the important ones, although STAT, which tells you how much space is left on disk, and DDT, the Dynamic Debugging Tool for machine code program debugging, also have their points.

Now, to get any of these working all you have to do is type its name after the A> prompt and follow the instructions on the screen if there are any. Often there aren't, since CP/M was designed for people who knew what they were doing, and ploughing through the turgid manuals is the only unsatisfactory answer. PIP is particularly bad in this respect.

And then there is ED, 'your friendly text editor', which is dreadful. The reason for this is

GOTO PAGE 70

DEALERS CP/M SOFTWARE

DIGITAL RESEARCH

Operating Systems

CP/M 2.2 ● CP/M-86 ● CP/M-86 for SBC ● MP/MII ● MP/M-86 ● CP/M-86 for Displaywriter CP/NET ● CP/M-86 + CBASIC-86 DW

Languages and Programming Tools

PL/I-80 ● CBASIC ● CBASIC-86 ● CB-80
PASCAL/MT+ ● PASCAL/MT+ with SPP
● RMAC, LINKLIB & XREF
● LINK-80, PLILIB & XREF
BT-80 ● XLT 86 ● SID ● ZSID



Wordstar - Word Processing
Spellstar - Proof Reading
Mailmerge - Merge-Print
Datastar - Data Base
Supersort - Data File Sort
Calcstar - Spreadsheet
Coming shortly: Infostar

Other Products

Byrom BSTAM & BSTMS for communications
Ecosoft MICROSTAT statistics package
(needs MBASIC)

WP Workshop Wordstar training guide

CPFILT, CDOS simulator for CP/M

Avocet cross-assemblers for CP/M

Sapphire MARS Management Accounting
and Report System

Xitan XBASIC - our very own Basic

Most products are supplied on IBM 8", CDOS 5.25", SS/SD, CP/M 5.25", CP100 and NSDD formats. A wider range will be available in the near future, and every effort will be made to meet your specific format requirements.

Established dealers wishing to become registered Xitan Software Dealers are invited to write or phone for full details.

* CP/M is the registered trademark of Digital Research Inc.

XITAN

Xitan Systems Limited 23 Cumberland Place
Southampton SO1 2BB Telephone 0703 38740

CP/M: THE COMPUTERS THAT USE IT

"Refinements? My friend, they're up to you".

— Gary Kildall, Digital Research

Well, they're not up to me exactly. The 'refinements' to CP/M, things like making it run on systems with odd disks, screens, and maybe colour graphics were up to our friends in the microcomputer business, and they took to the task with enthusiasm. Running on over 3,000 different hardware configurations, CP/M and its associated software packages are far and away the most common products in the micro field — if you ignore Apple, Commodore, Tandy, and that well-known anomaly Clive Sinclair that is.

It might seem odd that the 'Big Three' have stayed off the CP/M bandwagon, but the explanation is simple; Apple and Commodore chose the wrong microprocessor and Tandy, although it chose right with the processor chip, couldn't be bothered to support the operating system on its machines.

From this you might have gathered that talking about CP/M hardware means talking about microprocessors and buses, but for those of a nervous disposition I will steer clear of any technical excesses. It is really very easy. If a company wants to make a CP/M micro there is only a very limited number of microprocessors to base it on, namely Intel's 8080 and 8085 and Zilog's Z80. Even if you want to build a 16-bit machine, the choice is cut to Intel's 8086 and 8088 if you need to use CP/M-86.

Of course, in saying that Commodore and Apple chose the wrong chip in MOS Technology's 6502 I am not only using hindsight but going against the fact that those two companies have not exactly done badly without CP/M. But as we shall see later, outside firms have done very well out of providing conversion kits for the Apple II and Pet to make them do what the market wants and run CP/M as well as their own wide ranges of programs.

Floppy disks

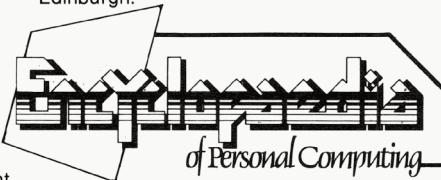
Still, there were few signs in the mid-70s that the 8080/8085/Z80 systems with floppy disks were going to be any kind of force in the market. Floppy disks were still unreliable and expensive, and CP/M was still an engineer's program development tool rather than a business-oriented operating system. Who needed the hassle? The two Steves, Wozniak and Jobs, certainly didn't as they used their meagre resources and the famous garage to put together the Apple I (a single board now lost in the mists of time) and replace paper tape with cassette tape for storage. And Chuck Peddle at Commodore didn't either, particularly since MOS Technology was Commodore's chip shop for calculators and watches, and a ready supply of 6502 chips was to hand. Even Tandy, who chose the Z80 for the TRS-80 Model I, didn't want to get involved in floppies at that early stage and skirted carefully round CP/M.

Other companies were not so coy. And another lucky break helped them move to floppies with the minimum of fuss. The break was the design of the MITS Altair, generally acclaimed as the first real personal micro.

The best-known names here are Cromemco, Systems Group, Ithaca InterSystems, North Star (thank God for the name change), Dynabyte's Vector Graphic, and the CompuPro Division of Godbout Electronics (there really is a gentleman called Jim Godbout, in case you had

a vision of some cosmic boxing match). The most traditional of these is Cromemco, by which I mean that this company offers a range of systems in boxes complete with its own terminals and disk units, but includes in each box a set of S100 slots for the user to plug in extra boards from Cromemco or any other IEEE 696 S100 board supplier.

These systems start with the System One CS-1, with eight spare slots, interfaces for VDU and printer, and 780k of floppy disk (the Z80A fast version of the Z80 and the 64k RAM can be taken for granted) which costs around £2,000. The System One CS-1H adds a 5M byte Winchester which adds another £1,000 or more; and then the Cromemco range goes up to the System Three with more slots at around £4,000 and the Z-2H hard disk machine at about £5,000. All these prices exclude terminals and printers, and so are pretty high; but Cromemco offers an upgraded but compatible CP/M operating system called CDOS which is a bit friendlier. Main UK supplier is Micro Centre in Edinburgh.



Multi-user

The Systems Group used to be known only as a board supplier for S100 systems, with one of its big UK customers being CASU — the firm that is approved by the Government and supplies surprising numbers of machines to British Telecom. But now Systems Group has moved into systems with the 2800 range, sold here by CPS Data Systems of Birmingham. The 2800 grows from a very expensive single-user CP/M machine to a powerful multi-user system with MP/M or the much better Oasis multi-user operating system; and you certainly pay for the growth at the bottom end.

North Star is known for its Horizon systems, which comes in at about £2,500 minus terminal and printer for a bog-standard machine, and the new Advantage, which drops the S100 bus but is cheaper and includes hi-res screen and keyboard. Comart is the best-known UK name for North Star, and has used the experience to come up with its own range of S100 machines, competitively priced, called Communicators. Dynabyte hardware is very like North Star's Horizon, but priced higher and sold by hotel giant Grand Metropolitan's Metrotech subsidiary; Vector Graphic's range is well regarded for its robustness and software, but is pricey from UK distributor Almarc Data Systems; and Ithaca Inter Systems (with its own UK subsidiary) and Godbout are primarily board makers.

All these S100 systems have the advantage of easy expandability, but the disadvantage of high initial price caused by the fact that in buying the box you are buying the empty slots and the power supply capable of powering all the slots when you fill them. Still, at the price, you get a machine you could drive a tank over without stopping it processing... and of course you get CP/M, running on the Z80 built into all of them.

But for those of us without a handy tank, the real market is in the non-S100 systems where everything is on one board and expansion comes more expensive if you should ever need it. And the first CP/M system to make a breakthrough in this area was the Superbrain from Intertec Data Systems of South Carolina.

The Altair emerged as a kit in the US magazine *Popular Electronics* early in 1975, and was built around the 8080 with a bit of memory connected to it, using a bus with 100 connections on it called, oddly enough, the S100 bus. MITS sold 3,000 Altairs in the year following the first shipment in May 1975, and imitators of the 8080/S100 concept, such as Processor Technology's Sol and the Imsai machine, quickly appeared. America works like that.

Then Zilog stepped in with the Z80 upgrade from the 8080, and Z80/S100 became the new standard to launch companies like Kentucky Fried Computers — later happily renamed North Star — and Cromemco, an offshoot from a technical University whose name we forgot.

Upgraded system

Remember that it was Glenn Ewing of Imsai, one of these S100 firms, who convinced Gary Kildall to re-write CP/M to run on any computer with the right microprocessor in it. And the S100 made it simple to build up a CP/M machine, since to add memory or disks all you had to do was plug a memory board or a disk controller board into a slot on the bus and there you were.

Upgrading systems in the field was easy too, since if you wanted to move to 5.25in. floppies from the old 8in., you only had to replace the disk controller board on the bus, and tinker with a few lines of assembler in CP/M, to have an upgrades system that could happily run your old applications programs.

So the new standard CP/M machine had a Z80, 16k or so bytes of RAM, the S100 bus for expansion, and CP/M to run the whole show. And this system could easily cope with more memory, bigger floppies, Winchester hard disks, and extra processor boards plugged in to add extra users; all without changing the operating system software — or very easily changing it only a tiny bit to handle the new peripherals.

Of course it didn't last. Chip technology advanced so that a Z80, 64k of RAM, a floppy disk controller, and I/O facilities could all be put on a single board rather than four separate S100 ones. But by that time CP/M was established, and now we have what are elegantly called 'bog-standard' CP/M machines at very low prices indeed. You've all seen them. Desk-top boxes with 25 lines of 80 columns each on the built-in screen, keyboard with separate numeric pad, twin floppy disk drives mounted vertically or horizontally, and a Z80 with 64k of RAM handling the whole thing including one RS232 serial port and one parallel printer port (or two RS232s — that at least varies). And some of them are still based on the S100 bus, although these are generally pricey and sold to knowledgeable people who want as much possible future expansion as they can get.

Bog-standard

The industry is now churning out these tediously familiar machines in vast numbers, in the US, Europe, Japan, and even Hong Kong. And all these machines run bog-standard CP/M or a close relative, and will run those bog-standard CP/M packages that are making so much money for a few software houses at least.

There are so many of these cloned systems that it is impossible to list them all, but some of them deserve a mention for various reasons. After all, dammit, *Britain* has actually produced its quota.

First we can look at the S100 contenders, still going strong since the US Institute of Electrical and Electronic Engineers (best known here by its initials on the Pet's IEEE 488 user port) came up with an official S100 standard, IEEE 696. It is now something of a sales point for the S100 vendors to boast conformity with IEEE 696, and slag off other vendors by saying they don't meet it properly.

Superbrain

The Superbrain, available here from numerous suppliers was a price sensation last year at around £2,000 for one of our bog-standard systems. But it was not really standard, since it actually uses two Z80 processors — a fact that was used in the ads until it was revealed that only one of them was working at any one time. Later versions doubled the capacity of the floppy drives to a 700k byte total, and added a hard disk and network facilities; all using the same CP/M programs, with the easy upgrading of the operating system.

There were and are drawbacks with the basic Superbrain, like the screen display which is the

usual 80 x 25 but has no descenders on the letters, but it is still selling well.

Other US machines worth a look include the Altos range, from a company founded by expatriate Brit Dave Jackson, which offers up to 208k of RAM on a multi-user Z80 box and just about the widest range of operating systems around from single-user CP/M through MP/M and CP/Net, up to Oasis and Unix at the top end. Prices start around £2,000 for a single-user, Z80 system with 1M byte of floppy space, but without terminal and printer, from UK distributors Logitek and Microtex.

Then there are the systems from Televideo, Archives Inc., Industrial Microsystems (sold as Equinox here), Monroe, ADDS, Datapoint, Scientific Data, Pertec, Durango, Zilog — which only offered CP/M under user protest — California Computer Systems, Columbia Data Products, Zenith Data Systems (previously the Heathkit machine), Smoke Signal Broadcasting, and the rest of them. And that misses out literally dozens of CP/M machine makers in the US — all with their plus and minus points but all running the standard operating systems from Digital Research.

In Europe the picture is complicated by the fact that the big office equipment names have a disproportionate influence on the business; of these Olympia, Triumph Adler (a VW subsidiary), BASF and Facit have all gone for CP/M on their overpriced micros. Philips hasn't on its even more overpriced P2000, and is suffering in consequence.

Other European CP/M systems include the Shelton Sig/Net, Gemini Galaxy, Nascom 3, Cenlo Conqueror, Interactive Data Systems' Oscar, the DSC range from Extel acquisition

Digital Microsystems (headed by CP/M hardware originator John Torode, strangely enough), the LSI M3, the Rain Black Box range, Research Machines' 380Z, and the Transam Tuscan. And that is just a smattering from the UK alone. In the rest of Europe there are yet more from people like Ericsson and Tanberg from Scandinavia, and Kontron of West Germany.

Osborne

But the biggest threat is always supposed to be from Japan, although the hardware so far on view from the Panasonic, Sord, Sanyo, Toshiba, Oki, Nippon Electric and a few more are not causing much of a stir although they are all CP/M machines. The Japanese have been beaten at their own game here by Adam Osborne and his Osborne Computer Corporation.

The Osborne 1 is really a staggering example of how cheap you can make a bog-standard system these days. All the company has done is put a Z80, 64k RAM, and twin 90k floppies in a single box with a tiny 5in. screen and designed it to fold up into a portable unit looking like a sewing machine. But the price is £1,250 — and that includes a range of five top CP/M program packages that would normally cost about £800. No wonder he has cut the ground out from under the feet of the £2,000 CP/M vendors.

And if Osborne is applying pressure from below, the squeeze is also on from above in the shape of the CP/M-86 '16-bit' systems (The inverted commas are mine; I will argue unto death with anyone who tells me that the Intel

GOTO PAGE 70

SOFTWARE FOR CP/M®

HIGH QUALITY SOFTWARE — WITH HIGH QUALITY SERVICE



NEW THE FORMULA £300. Application Builder and Reporter. SPELL STAR £125. Option for Wordstar. SUPER CALC £165. Spread Sheet financial planning.

WORDSTAR - Professional word processing software. On-screen formatting, wordwrap, pagination, line and character count on view. Micro-justification on daisy-wheel printer. Search and replace. Block/paragraph manipulation. External file read/write. Background printing during editing etc.

MAIL-MERGE - Powerful Wordstar enhancement for file merging and document personalisation.

DATASTAR Screen orientated system for Data Entry, Retrieval and Updating.

SUPERSORT - Sort, merge and selection program.

CONFIGURABLE BUSINESS SYSTEM (CBS) - Unique information management system with user definable files, powerful report generator, menu-driven for ease of use. No programming experience necessary!

ACCOUNTING PACKAGES by Median-Tec: PAYROLL, SALES, PURCHASE, £300 NOMINAL. Specially developed by UK software house to exacting specifications. Written in Microsoft Basic each package may be customised by end user, all are widely used. Ledgers are open item. Payroll caters for weekly and monthly pay.

PROJECT COST CONTROL/JOB ACCOUNTING - A comprehensive set of programs to monitor budgets, account for expenditure and project completion etc. Ideally suited for contractors. Written in CBASIC-2.

STATISTICS PACKAGE - Over 25 routines including Regression & ANOVA

MATHS PACKAGE - Over 40 easily used routines.

IBM - CP/M COMPATIBILITY - Powerful utility to transfer data to/from IBM machines in standard disk format.

MICROSOFT BASIC INTERPRETER

MICROSOFT BASIC COMPILER

£250

MICROSOFT FORTRAN COMPILER

£205

MICROSOFT COBOL

£310

MAGSAM - Versatile easy to use Keyed File Management System for Microsoft Basic or CBASIC.

£130

CIS - COBOL - ANSI '74 implementation to full level 1 standard. Supports random, indexed and sequential files, features for conversational working, screen control, interactive debugging, program segmentation etc.

£425

FORMS-2 - Automatic COBOL code generator for screen formats.

£100

PASCAL-Z

£255

STRUCTURE BASIC - Relocatable compiler

£160

CBASIC-2 - Extended Disk Basic pseudo compiler and run-time interpreter.

£75

SELECTOR III - C2 - Information management system written in CBASIC-2

£185

SELECTOR IV - Upward compatible version of III with enhanced reporting.

£300

BSTAM - Telecomms facility for exchanging files between CP/M computers.

£100

ASCOM - Facility for communicating with other computers.

£95

TRANSFER - CP/M to CP/M file exchange - telecomm source code

£95

MACRO 80 - Macro Assembler

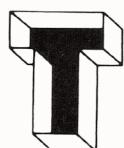
£99

CP/M 2.2 - Standard Version 8" Single Density.

£99

Please contact us for availability of other products

All orders must be PREPAID. Add £1 per item P & P (Minimum £2.00) and VAT
CP/M is trade mark of Digital Research



TELESYSTEMS LTD
P.O. Box 12, GREAT MISSENDEN, BUCKS, HP16 9DD
Telephone (02406) 5314



CP/M: THE PROGRAMS

The sheer number of standard CP/M programs packages is daunting for the user — there is just so much choice. True, not as much choice as there is for the Apple, say. But the Apple has a lot of games programs written for it, and CP/M is much more staid and businesslike than that; there are lots of CP/M packages that are, God help us, worthy and useful.

So when the editor (whom the saints once again preserve) asked me to give you a top ten of CP/M programs that aren't word processors, I worried not a little and started the kind of panicky phone-round that is becoming my trademark.

So caveat lector, as the Romans might have said if I hadn't just made it up. The packages described below are the ones I reckon to be the best-sellers, most popular, and so on; but if your favourite isn't here please do write to the editor and tell him. I am going on holiday, and am indisposed for eternity.

(*Researcher's note: the products listed are in no particular order, and bear no intentional resemblance to any programs, living or dead.*)

1. dBase II

This comes from Ashton-Tate of Los Angeles, and is one of those super database managers that micros aren't supposed to be able to handle; viz, it is relational. If you don't know what this means, *Microcomputer Printout* ran a feature on databases a few months back. Modestly and the knowledge that it wasn't very good prevents me telling you the author.

Anyway, dBase II lets the user build up databases using a built-in command language that is as like English as possible, and then sort through them, merge them, and produce printed reports on them in the same way, at will. Input and output forms are created on the screen at the user's whim, and Ashton-Tate claims that it saves you a lot of money compared with writing database programs in Basic or any other language for that matter. Well they would, wouldn't they?

One interesting thing I found out about this undoubtedly popular package is that it is pretty hard to lay hands on in the UK — and one dealer told me that he could buy it cheaper in the US than he could from the UK distributor (mentioning no names).

Whatever, this is a highly-rated package, and will cost you £380 if you can find it.

2: MBasic

For all those readers who are used to buying a micro with a Basic language built in, it is worth explaining that CP/M has no language sold with it and you have to buy your own. Without any doubt at all, the leading CP/M language package is Microsoft's MBasic, or Basic 80 as it is also called.

Microsoft provides two versions, one an interpreter like your common-as-muck Apple or Pet ROM Basic, and the other a compiler that goes faster but is not as easy to edit.

All your favourite Basic features plus a few 'structured' additions are here, and the packages will cost you around £150 for the interpreter and maybe £190 for the compiler.

3: CBASIC

But what is life without competition? As Margaret Thatcher sings in her bath. Here is another Basic compiler that is going well down the computer stores.

Originally written by Gordon Eubanks at Compiler Systems, CBASIC is now an official

Digital Research product since Kildall's mob bought Eubanks' company and made him vice-president in charge of languages.

The reason for the competition with the Basic 80 compiler is simple; CBASIC version 2.08 (the latest) will only set you back around £65.

4: SuperCalc

Let's play look at the name and spot the VisiClone. Sorcim spotted the fact that there wasn't a CP/M VisiCalc from Personal Software (although there is now) and jumped in with a CP/M spreadsheet financial modeller that looks like VisiCalc, has the same commands as VisiCalc, and by golly, it acts just like VisiCalc. Drawbacks: Personal Software has a lot of Visi.* products that link VisiCalc to graph plotters, indexes, pie chart drawers, and so on. Sorcim doesn't.

My mole-like source also tells me that SuperCalc is as tough to get hold of as dBase II, and that once again it is cheaper to ship packages from the US West Coast than it is to buy them from the UK distributor. Is the £190 you will pay too much? (PS: I know Personal Software is now called VisiCorp, but it is a pretty silly name isn't it? I'd feel a fool typing it out.)



5: PLink2

This looks like an odd one, but I am told that the queues for this overlay link loader start to form at dawn. And if you ask 'what is an overlay link loader', I answer that I asked just the same question. It seems that PLink2, written by Phoenix Software Associates, is a two-pass linkage editor that allows you to construct programs 8M bytes long if you ever wanted to do such a thing.

What happens is that PLink2 lets you construct this monster program on disk; and when you run it the appropriate sections are taken off disk and overlaid in your bog-standard 64k CP/M RAM. To the user, it looks like a CP/M machine with 8M bytes of RAM (if you ignore the time taken for disk accesses, of course).

Price for this, which works with all high-level languages you might care to write in, is around £185.

6: CIS Cobol

Here is one of those high-level languages, and I am amazed to say that it is actually British — well, actually it's English, but we don't want to offend the Celts. Considering Britain's supposed expertise in software, this is the only one written here that makes the top ten — Phoenix Software, writers of PLink2, may be a Ltd. rather than an Inc. or Corp., but I have this nagging feeling that it is based in Canada. Or maybe Scotland; I do know it is imported. Anyway, back to CIS.

The Cobol part of this Micro Focus product speaks for itself, and is an ANSI 74 standard Level I Cobol compiler with all that that entails. Cobol is not exactly my strong point (I'm an Algol 60 fan) but my sources tell me that CIS is not exactly a true compiler, but it almost is. It also has some CP/M-like features, in that it can be

configured for particular hardware by re-writing a small piece of the program called, I think, the run-time executive.

An option for CIS is a utility called Forms-2, which allows the user to design input and output forms for Cobol programs on the screen. It is very neat indeed, and adds £100 to the ordinary CIS Cobol Version 4.4 price of £400. Incidentally, the unofficial pronunciation for this product is "kiss Cobol".

7: Macro-80

From high-level to low-level programming with the next one, again from Microsoft. This is a machine code assembler for Z80 CP/M systems, competing with Digital Research's own MAC product. It costs £105, compared with MAC's £60, but the punters don't seem to care.

8: BSTAM

This is a handy little thing that allows the transfer of CP/M files from machine to machine, across a room or over the telecomm networks. I'm not sure, but I think the long-distance stuff is not the commonest application; BSTAM is good at switching CP/M program files from one disk format to another, from an 8in. floppy machine to a 5 1/4 in. version, for example.

Going very cheap at £100.

9: Statistics

A bit of a cheat to put this in, since there is no one stats package that cleans up the market. But the demand for all the CP/M statistics stuff is surprisingly high, and there are obviously lots of people out there who want to do standard deviations, regressions, ANOVA (whatever that is), and those other odd statistical hoops you have to jump through.

A typical package — no names again — will cost you around £100.

10: Pascal MT +

We Microcomputer Printout people like to be fashionable, and so obviously do CP/M users. Pascal is in this year, and this particular version seems to be leading the field — perhaps because it comes from Digital Research. It is not leading by much, since Sorcim's Pascal/M also has its adherents.

But Pascal MT +, originally written by MT Microsystems before Kildall's amoeba swallowed this company up, is supposed to be hot stuff for program development — according to Digital Research's Carmen Governale, anyway. Price is £150, and an add-on speed programming package puts this up to £265.

So that's my list, and to cover my tracks a bit of explanation is in order. You may wonder why all 10 are really languages and programmers' aids rather than undertakers' stock control packages. Simply, there are so many payroll, ledger, and stock control packages, that no single one has stood out in any of these areas.

Then again, some MicroPro packages like DataStar, SpellStar, CalcStar, and so on are selling well, but usually as an ancillary extra for WordStar word processing; and WordStar has a section pretty much to itself elsewhere. The same goes for MagiCalc from Peachtree, which tacks onto the Magic Wand word processor.

Besides, I think dBase II and SuperCalc beat off these admittedly strong contenders...



CP/M: THE WORDPROCESSORS

Word processing was a natural for CP/M systems, and in fact the first real applications package for the operating system, released in 1978, was a word processor. Reason? Systems with CP/M tend to have a lot of disk space — and we writers love a lot of space — and a nice big screen display of 25 80-column lines that lets you see a lot of text at once.

And as that first word processor, Wordmaster, came from MicroPro International, it is perhaps no surprise that the top-selling CP/M word processor — indeed the top-selling CP/M package of any kind, by a long way — is MicroPro's famous follow-up called WordStar.

MicroPro's entry into the CP/M software business was really caused by the fact that when Imsai, one of the early personal computer makers and CP/M licensees, went to the wall MicroPro picked up a lot of the staff. And it is nice to report that the old Imsai engineers have resurfaced with the new CP/M system from MicroPro subsidiary Performance Business Machines.

But that is neither here nor there. The thing to note is that WordStar is a good word processor, even though I speak as a user of the thing.

In my opinion, good word processors, let you see on the screen exactly what is going to be printed out, and do things like justify lines, wrap text around if a word is too long to fit on a line, and other things like that, without the operator having to do anything. Word Star does all that,

and when you do need to use a command WordStar has a set of menus that come up on the screen for you to choose a function from; these menus include 'help' listings that can save you rummaging through the manual. I like it, I like it.

Control Codes

Of course there are things wrong with WordStar. The command keys you hit do different things according to which menu you have on the screen, and in one particular awful case hitting the key that normally moves the cursor causes an exit from WordStar into CP/M. Very nasty indeed.

But one of the things for which the package is criticised, the fact that all the commands are control codes and need two keystrokes to use, is not MicroPro's fault. See, CP/M runs on so many different machines with different keyboards that the software firms can't rely on the micro makers using standard codes on the cursor controls and other control keys. However, all micros use the same codes for control-D, control-X, and so on. If the software only uses these keys, it will work on any keyboard. And if the micro has programmable function keys — the LSI M3, sold as a Word Star word processor called Caltex by Computer Ancillaries, has a particularly good crop for example — the system supplier can put all the word processor commands onto these.

I may be biased, but I think WordStar is good

value at £250 or so; and other CP/M users seem to agree.

MicroPro has come up with a whole set of 'Star products in the last couple of years, including a file manager called DataStar, a VisClone called CalcStar, and a proofreading dictionary program called SpellStar (usually with US spelling, unfortunately). But the best-selling add-on is MailMerge, a £60 extra to WordStar that allows the user to pull names and addresses out of files into form letters and onto address labels. Most WordStars sold have this option included now.

All this stuff about WordStar does not mean that other word processors for CP/M are no good. Far from it; they all meet my 'good word processor' criteria, although they do not sell as well.

Mailing list

One with a lot of support, though, is Lexisoft's Spellbinder. At least one ex-journalist, David Tebbutt of PCW fame, swears by it — although Dave swears about almost anything given a chance — and knocks WordStar. Spellbinder costs about the same, but has the mailing list facilities built in instead of being supplied as an option. There are more single-key commands, and not so much fiddling about with the 'control' key. But apart from that the facilities look the same as WordStar, and Spellbinder is certainly worth a look.

As is Magic Wand from Peachtree Software,

GOTO PAGE 70

AVAILABLE NOW! AVAILABLE NOW! AVAILABLE NOW!

From Network Designers —

CP/M™ for the IBM Personal Computer

- with U.K. Character set
- supports double sided disks (up to 2.5Mb)
- keyboard programmable to generate character strings from single key depression
- console output escape sequences for cursor positioning, attribute control etc.
- cache buffer for optimal disc accessing

Utilities

- disk formatting
- volume copy
- DOS to CP/M file transfer

Terminal Emulators

- for ICL mainframes
- enables data transfer between ICL mainframes and the IBM personal computer



For further information contact:
Mike O'Neill Leeds (0532) 628646

We represent a group including Doxiver, Network Designers, Micron Design.
CP/M™ is a registered trademark of Digital Research.

WATCH THIS SPACE FOR FUTURE DEVELOPMENTS . . .

WHY I HATE CP/M

Not everyone loves CP/M. Ace Micro commentator Guy Kewney has serious reservations.

Sport is the art of the difficult, made to look easy. If computer programming were a sport, rather than something to be done because you have to clear up the mess, then CP/M would be the greatest invention since the discovery of cricket stumps or the tennis court baseline.

By this time of the day, you will have been very good and dutiful, and will have done all your homework, and read all the important articles about CP/M in this Encyclopaedia.

You will know how important CP/M is, how standard it is, how it lets lots of people do lots of different things without confusing the computer because the computer thinks they are playing CP/M, and it knows the rules.

You may even know what CP/M is. Or you may think you do. Let me inform you what it really is.

It is a trap.

Like all good traps, it is easy to get into the thing. CP/M does all the necessary things for the programmer and the user, from petty, trivial things like knowing whether you are trying to use the keyboard, right up to complicated things like transferring a program from one disk on a computer to a different drive on another computer, changing it subtly in the process.

The question of "how do I get out of here" may not even occur to most people as they settle comfortably into CP/M, learning how to use commands like PIP, and DDT, and DIR and Control-C.

Such a comfortable, accommodating trap, despite the rather utility nature of the furniture, may seem at first to be the most remarkable des. res. you've ever seen. Why change?

Changing rules

Assuming that you really come to like your utility furniture, (and it's worth coming back to that in a moment), the problem is that the rules are changing.

Imagine that you are the world champion darts player. You turn up for a tournament equipped with heavier than lead, stronger than steel arrows with aerodynamically styled flight tips, and (just for safety) a point sharpening implement.

Grinning with masses of false teeth, a judge out of a nightmare looms towards you, and explains: "Hi! Glad you could make it – the target has just been set up. We've improved it a bit, and we've completely separated all the various segments of the board. There they are, over there on the far wall, 25 yards away, made of soap bubbles that automatically pop even when hit by the flimsiest of missiles. And we've made things a lot easier, by providing laser-guidance systems, which will guide the missiles onto the target. You can probably fire off a couple of thousand arrows a minute if you have these nice new lightweight laser-equipped pneumatic super-darts that everybody else is using, and you score one for every bubble you burst..."

Naturally you protest that at 25 paces, you stand a very small chance of reaching the target, never mind hitting anything – and anyway, your missiles aren't designed for popping bubbles.

"Oh, don't worry, there's nothing in the rules about not carrying your darts over over and

popping the bubbles by hand. They are a bit high up, I'll admit – but what the heck, we can lend you a ladder. Only trouble is, you can't leave it lying around in the target area, and you must start each bubble-pop from the baseline, so I'm afraid you'll have to bring the ladder back to the base each time, too. There's a towel in the Gents if your points get too soapy to burst the bubbles."

It would make great television on Grandstand, especially if you could actually get a few bubbles popped. As a way of eliminating foam, however, it could prove tedious. And a lot of foam would accumulate in critical parts of the farmyard.

As technology starts to provide us with general improvements like hard disks, enormous internal memory capacities, "soft" keyboards, soft screens, and networking abilities, CP/M starts to look more like a handicap than a help.

Disgust

I'm not talking about irritating but avoidable hazards such as the problem which generates those infuriating operating system messages. They are, goodness knows, bad enough – I



even know one user who has hooked a voice synthesiser into his system and written software which detects BDOS Error messages (instead of getting a displayed message on the screen his system announces "Aw, sh*t. BDOS Error!" in a disgusted American voice). They are part of a necessary safety first system. Frankly, if CP/M couldn't tell that somebody had loaded a new diskette, most people would be likely to complain that it accidentally over-wrote important data without checking.

No, I'm referring to the simple fact that the lowest common denominator is no longer high enough to be useable by tomorrow's machines.

For example, CP/M allows you to store information in "files" each with name. One file might be a letter to your solicitor, another might be a mailing list of estate agents, yet another might be a program.

CP/M allows only eight letters, plus a three-letter "qualifier" for this name. It takes no note of how long the file is, when it was created or last accessed, and it can even get its knickers in a twist by creating two files with the same name.

Not much of this mattered a damn in 1973, when Gary Kildal first wrote the software, because you would have been lucky to find anybody with enough disk capacity to store more than a dozen or so files on a diskette. Type DIR, and look at what you've got first.

On a networked system with over 300 million characters of disk storage – something that will be as common as muck this time 1984 – there may be something like 60,000 different files. You could grow a beard like mine trying to find the one you want with CP/M, and it's probable that when you try to start a new file, you'll never think of an eight-letter name that nobody else has used yet.

Then there's the long question (without an answer yet) as to what sort of things are going to be basic necessities in ten years' time.

Help!

You can be sure that ten years ago, disk file directories were not things that worried designers of microsystems. And today, HELP commands are just starting to be used in a rudimentary way.

Anybody who wants to make life easy for the user today, can write a program that keeps several (appropriate) messages in store, and prints them on the screen whenever something seems to go wrong.

These days, what you're likely to see if you accidentally type a zero instead of an "O" is something like:

"Error S39 – unrecognised command"

which is a little better than a rude BEEP and the A> prompt but not a lot better. If somebody types an unrecognised command, it would be far better to show a whole screen of information, properly laid out (so that you don't have to read the whole thing, but can easily spot the part that is relevant to your problem) relating to the stage of the program which has been reached.

For example, a list of possible valid commands could be displayed, with a suggestion as to which one is most often used here. "Press Q if you have finished entering names."

Supporters of CP/M will say: "But there is nothing to stop you writing your own help messages!" And that's true, but it is about as helpful as most chip makers' responses of ten years ago, that you could always write your own routine to drive a printer. Driving printers ten years ago, and organising HELP messages in ten years' time, are likely to prove to be very similar necessities – you can do it yourself, but you expect the operating system to do it for you, fast and simply.

CP/M simply can't cope with that sort of demand. It is just too slow in moving information from the program to the screen, because it assumes that the screen is a terminal. Most screens were terminals, and a lot of terminals were printers, when CP/M was first invented – and so CP/M assumes that you have a piece of paper in a printer, or a screen that behaves as if it were a piece of paper in a printer.

Try it, if you don't believe me. Get CP/M to print a message on the screen, and then print another message one line above it.

You'll find that the machine is quite capable of doing this, but you can't use CP/M for the job. You have to do it yourself – carry the darts over to the bubble, climb the ladder, dry the points, and jump.

Pop.

As long as you are content to do the things that CP/M thinks are worth doing, it is fine. Even on the big 16-bit Sirius and IBM Personal Computers running CP/M 86, you can do all the same things, but nothing else.

As long as "nothing else" means trivial things like how many characters per line on the screen, this doesn't matter much. But if it starts meaning important things like the time a command was typed, whether an automatic archive copy is due to be made, what date it is for auditing purposes, and what HELP message is due to be shown when, then there is one, inescapable conclusion.

That is: these important things won't get done.

As I said: it's a trap. Just wait until you need to get out.



THE STORY SO FAR

and was released in late 1980. This links various CP/M machines into a central server running MP/M — in this case MP/M seems OK — and allowing the CP/M machines to access central files on the disks attached to the MP/M server. To each user, these central disks look just like an extra drive on his own machine; but in fact files are sent from the server over the network lines. If you remember *Microcomputer Printout's* network feature, this is a star configuration.

Once again, CP/Net is only tentatively being adopted. But both MP/M and CP/Net have the advantages that existing CP/M applications programs can be run very nearly unchanged, and that once again the operating systems can be configured simply to suit a wide range of computer hardware (as long as they have Z80s or 8080s or 8085s).

But that other new product we looked at briefly, CP/M-86 for Intel's 16-bit processor, looks like a gold-plated success. The most important thing is that the mighty IBM chose the cut-down 8086 processor, called the 8088, for its Personal Computer. The 8088 is cheaper to use in systems, since the databus is only 8 bits wide and all the 8080 peripheral chips — cheap and plentiful — can be used with it. But the 8088 has the same instruction set as the 8086, and internally is a 16-bit processor. Anyway, CP/M-86 runs on the IBM Personal Computer unchanged.

IBM wanted two operating systems for the machine, and signed up Digital Research's CP/M-86 for one of them; Microsoft's MSDOS, a 'CP/M-like' but cheaper system, was the other. Then came Chuck Peddle's Sirius 1, also with an 8088 and also with CP/M-86 and MSDOS; and IBM and Sirius are rapidly clocking up the sales.

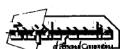
From the user's point of view, one popular misconception needs to be knocked on the head at once. Programs written for Z80 or 8080 CP/M will not work unchanged under CP/M-86, although when you sit at the IBM Personal or Sirius the operating system prompts and commands look just the same. But look on the bright side — IBM has produced its own CP/M-86 manual, up to the standards of its other Personal Computer manuals. And that standard is high.

This last point is by no means trivial. The Digital Research manuals are dire and incomprehensible, obscure and unhelpful, and to damn them completely, were written for engineers.

Be that as it may, using the same PL/M-86 compiler from Intel as was used to generate CP/M-86, Digital Research has come up with MP/M-86 for what that's worth.

That is where things stood until a month or so ago. Then Digital Research, now relocated from the garage into palatial new headquarters at Pacific Grove overlooking the Monterey Bay, announced Concurrent CP/M-86, which allows a single user to run several tasks simultaneously and even give each task a separate 'window' display on the screen.

And this is what the future holds for CP/M and its family. More graphics, more user-friendliness, more of what Kildall calls "fat on the interface." It takes a lot of memory, but memory is cheap. And CP/M Version 3... well, just wait and see.



THE COMPUTERS THAT USE IT

8088 is a 16-bit processor, since as far as the outside world is concerned it looks like an 8080). The IBM Personal and Chuck Peddle's Sirius 1 are really going to shake up the market for 8-bit CP/M systems, and the process has already

started. One supplier who has sold a lot of Superbrains told me that Superbrain sales were dropping right off when people found that they could buy a more powerful Sirius for the same price. Intertec too must have started twitching; the Superbrain took a 20% price cut on May 1st.

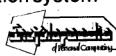
The Sirius and IBM PC are still following the CP/M route, as are people like Altos and the UK's Systime who have gone for the real 16-bit 8086 and CP/M-86 in their new systems. True, Microsoft's MSDOS is a competitor. But the leading CP/M software suppliers are quickly switching their packages to 16-bit CP/M, and the hardware suppliers are taking note.

But meanwhile, what about the Big Three? Tandy is still relying on TRSDOS, even for the Model II which is a CP/M machine if ever I saw one — it even has the 8in. disks that CP/M originally required. Pickles & Trout (wonderful name) and Lifeboat Associates are supplying CP/M for the Tandy models I, II, and III, but it is still not a real factor in the market.

2nd processors

And Commodore and Apple have got the add-on blues. Microsoft, that busy firm, has launched the SoftCard; this is a board that plugs into the Apple II and gives it a Z80 to run CP/M on. Metamorphic Systems and Coprocessors of the US have gone even further and released Apple II boards that include an 8088 chip so that the lowly Apple can run 16-bit CP/M-86. Meanwhile, Small Systems Engineering has the SoftBox that plugs into the Pet — this is really a Z80 computer that uses the Pet as a terminal and ignores the 6502 processor in the Pet case. And Vector International, Digital Research's European distributor, has come up with CP/Maker to do the SoftBox job, but this can be plugged inside the Pet.

All this little excursion into hardware was meant to do was to show you that if anything is a standard on micros, CP/M is it. When Commodore starts getting dragged into the CP/M arena, you know something is going on. There is no way round it; we are all CP/M users now. which costs around £200. Like MicroPro, Peachtree offers a whole set of programs with similar names, in this case using Magic instead of Star. So there are Magic Spell (guess what that does), MagicCalc (another difficult one), and Magic Bridge, which links all the others together into a complete-ish office automation system with communications built-in.



THE WORDPROCESSORS

Apart from the usual word processing facilities, Magic Wand has one unique feature that does not seem to be pushed forward enough. The program contains a sort of programming language that lets the user produce a very friendly system for unskilled people to use. For instance, say you are printing out form letters with different addresses at the top. The commands in Magic Wand let you set up the system so that the operator has to put the information in the proper places on the document, with warnings and prompts if the operator gets it wrong. The commands you program in will also take care of things like making sure that the date at the top of the letter always lines up with the last line of the address typed in, whether the address is two lines long or seven.

One Magic Wand expert told me that many users get on with the word processing and never even notice that the programming commands are there. Which is good news for the expert, since he is now selling Magic Wand complete with internal programs he has written to the user's specs; the customer can then just

hand the package to an unskilled typist and let him get on with it.

Peachtree, which supplies the accounting software for the IBM Personal, wishes IBM had gone for Magic Wand as well. But no; the giant went for an obscure — to me at any rate — package called Easywriter. I don't know much about it, but I hear that it is remarkably easy to use, and that was why IBM picked it. With IBM's backing, Easywriter is a name to watch out for.

One name you have probably tripped over already is Electric Pencil, which is really designed for novice users — a bit like Easywriter really. This package has been round for a long time, is pretty cheap, and is nice and robust. But it does not have the editing and printing facilities that Magic Wand and WordStar have in abundance, and if you want to do a lot of editing, switching paragraphs inside files and from one file to another, the more powerful pair are a better bet.

Is there any order to these, with one being a lot better than the rest? The answer is; it depends. WordStar has more editing features, Magi Wand has more printing and formatting facilities, and Easywriter and Electric Pencil are easier to use. The only way is to suck them and see. Happy writing.



HOW TO USE IT

simple; this program is the first one Kildall wrote for Intel's 8008 processor in about 1972 and is a paper-tape editor. As Adam Osborne has said, avoid ED if you possibly can — that way, once again, madness lies.

Basically, that's all there is to CP/M. Of course, it is doing lots of clever things inside the computer like connecting the keyboard to the screen — did you know the operating system did that? — organising the disk storage and figuring out whereabouts files should go on the disk, pulling off the utilities and running them when needed, and keeping that neat directory of file names. And also of course, there are little bits and pieces to the system that I haven't got room for here. But this is how CP/M looks to the user, that is pretty simple.

And as for the applications programs that you buy, all you have to do is make sure they are supplied on disks that fit the disk format of your CP/M machine. Then use FORMAT and SYSGEN to produce a formatted blank disk with CP/M on it, use PIP to copy the applications program files from the software firm's disk onto the new one, and there you are — an applications program disk. Then put this disk into drive A, reset, and at the A> prompt type in the name of the application program file (missing out the inevitable .COM on the end). You will then be running one of the growing line of CP/M packaged software.

Some manufacturers make this even easier, and typically Adam Osborne is one of them. His applications program disks come with CP/M already on, and with a little utility called AUTOST.COM also on the disk. Put an Osborne disk in drive A, boot the system, and it puts you straight into the program you want. Other micro makers please copy, an autostart utility takes up little room but saves the confusion often caused by A>.

So CP/M might be unfriendly. But really, doesn't it do its best to make life easy. Until of course you get one of the dreaded CP/M error messages that don't seem to mean anything and make you re-boot the system from scratch, losing everything you had in RAM. Now that really is something that ought to be fixed in version 3 of CP/M.

I recently lost 2,000 words of a 3,000 word feature on a CP/M word processor, for reasons which are still obscure. But that dread line 'BDOS error on A: Bad Sector' still keeps me awake at night...



EBAY.CO.UK 'BARGAINS'

HERE ARE JUST SOME OF THE MORE INTERESTING TANDY EBAY LISTINGS,
SINCE OUR LAST ISSUE. WERE YOU LUCKY?



£80



£62



£157



£41



£199



£52



£363



£250



£458

EBAY.CO.UK 'BARGAINS'

HERE ARE JUST SOME OF THE MORE INTERESTING TANDY EBAY LISTINGS,
SINCE OUR LAST ISSUE. WERE YOU LUCKY?



£22



£7



£115



£105



£55



£248



£5



£77



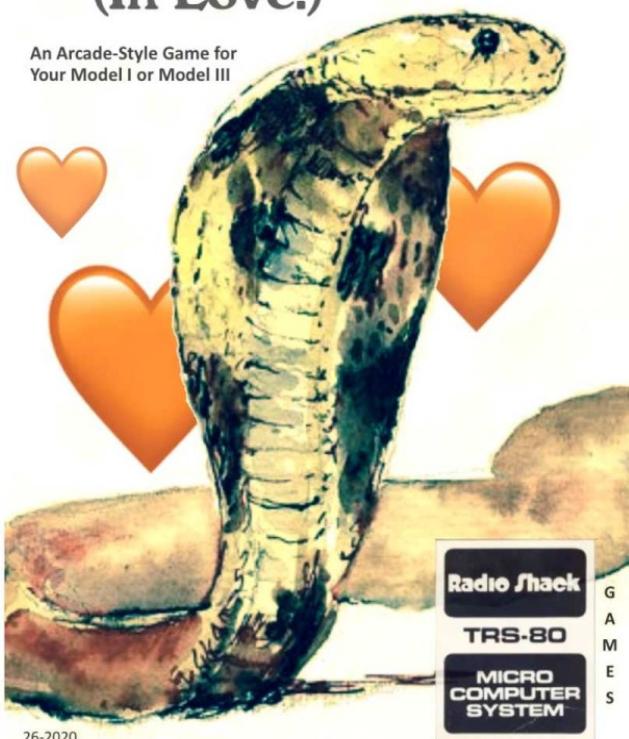
£226



£90

Vicious Vipers (In Love!)

An Arcade-Style Game for
Your Model I or Model III



26-2020



1st Place Winner - 2020 TRS8BIT "The Double Do" competition



Vicious Vipers (In Love!) is a fast-action arcade style game for the TRS-80 Model I, III, or 4 (in Model III mode).

You are Victor, a vicious viper in search of Violet, your sweetheart. She has gotten lost somewhere in the desert. Luckily, she has left a trail of keys you must gather in order to open tunnels in the sand that will lead you to her.

Eat eggs to stay alive while avoiding deadly cactus, scorpions, and sun-bleached bones.

Features include:

- 100% assembly language for fast-action and graphics
- 4-way full screen scrolling
- Multiple levels, each with a unique theme
- Sound effects and music
- Runs on real or emulated hardware (trs80gp recommended)
- Multiple input options (wasd, arrows, number pad)
- Available for **free** at www.plaidvest.com

Brought to you by:
Kyle Wadsten
www.plaidvest.com
Home of NEWKEY/80



Software News

INNOVATIVE
TRS 80·GENIE SOFTWARE

from the professionals



Info-Scan

Info-Scan is an information reference and retrieval utility. It combines the features of a data base manager, a word processor and display utility. Each information record is composed, using the word processing feature, in any format that is meaningful to the user.

It is no longer necessary to sculpt your data to the requirements of the data base. The information can be stored in a record in almost any format required. Indeed, forms themselves can be used. A utility in Info-Scan allows the operator to compose a form and file it on disk, recalling it for completion as and when required.

Each record is allocated a key phrase or word, so that it can be re-called at will. About 1,800 characters may be entered per record, and 350 records may be held to a file. Any number of files may be maintained. Info-Scan is written in machine language for high speed operation.

As with all data bases, the contents of the records may be changed at any time. They may also be deleted and have information added to them. The record contents may be printed out to any standard line printer.

In addition to the above, Info-Scan features a full screen editor, extremely comprehensive error trapping and recovery, plus a demonstration file to get you going.

Info-Scan removes the shackles from the data base user. No longer does he have to abide by the format rules of the data base. Information is entered, retained and displayed in a form chosen by the user and one which is uniquely meaningful to him.

Info-Scan is compatible with TRS-80 Model I, III and Model 4 in mode III, plus compatible Genie machines. Info-Scan will operate with any TRSDOS compatible disk operating system including LDOS, Dosplus and Multidos.

INFO-SCAN (disk) ~~£39.00 + VAT = £44.85~~

New low price £29.90 + VAT = £34.39
VAT inclusive, 75p P & P

TEL: 0424 220391/223636

MOLIMERX LTD
A J HARDING (MOLIMERX)

TELEX 86736 SOTEX G

1 BUCKHURST ROAD, TOWN HALL SQUARE, REXHILL-ON-SEA, EAST SUSSEX.

TRS-80 & VIDEO GENIE SOFTWARE CATALOGUE £2.00 plus £1.00 postage; postage refundable on order.

TRS-80 Screen Designer for macOS



Kyle Wadsten
www.plaidvest.com

(Home of the TRS-80 NEWKEY/80 Keyboard and Joystick Adapter)

A new year usually brings hope and joy. This must be true because Dusty and Mav are holding another programming competition for 2020. This year's theme is "Write a Game". Entries are due by 11/2020 (see pg. 35 in the 12/2019 issue of TRS8BIT for details).

I enjoy games, programming, and the TRS-80 so this sounds like a perfect competition for me to enter.

Creating a game usually involves many things, but these are at the top of my list:

- Knowledge of Z80 Assembly Language (for acceptable speed)
- Old TRS-80 paper screen layout worksheets
- Patience! (see #2 above)

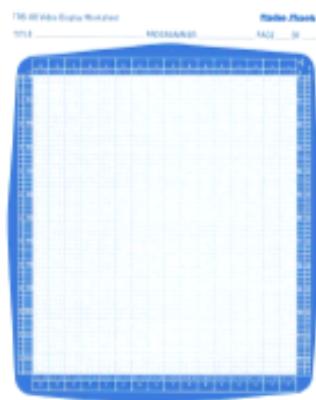
Living in the modern age (and in order to give myself a slight advantage) I decided to write a utility that would allow me to design some TRS-80 screens without the hassle of using those old paper worksheets.

However, in the interest of fairness, I have decided to release this tool in the hope that it may be useful to others who are entering the competition.

Therefore, I present the **TRS-80 Screen Designer** (TSD). This macOS application attempts to replicate the Radio Shack TRS-80 Video Design Worksheets from the early 1980's.

TSD features multiple brush sizes, gridline overlays, normal/inverse colors, undo/redo, printing, and Z80 assembly output (example loader code and DEFB data).

In order to save precious TRS-80 RAM, the DEFB output statements use a simple compression method. The sample loader program has the logic needed to decompress the data and output to the TRS-80 display.



The example loader program can be compiled directly with zmac (48k.ca/zmac.html). I do all of my TRS-80 coding on an emulator - trs80gpp is my current favorite (48k.ca/trs80gp.html). The example loader app simply displays the TDS screen and enters an endless loop. You will need to supply any other game code necessary 😊

Future plans include named screen locations, region select/move/rotate, graphics import, and integration with my stand-alone applications **TRS-80 Sprite Editor** (currently unreleased) and **trs-image** graphics converter (github.com/kwadsten/trs-image).

I hope you find TSD helpful and easy to use. Comments, feature requests, and bug reports are welcome. Just send them to me at support@plaidvest.com

TRS-80 Screen Designer is available now at www.plaidvest.com



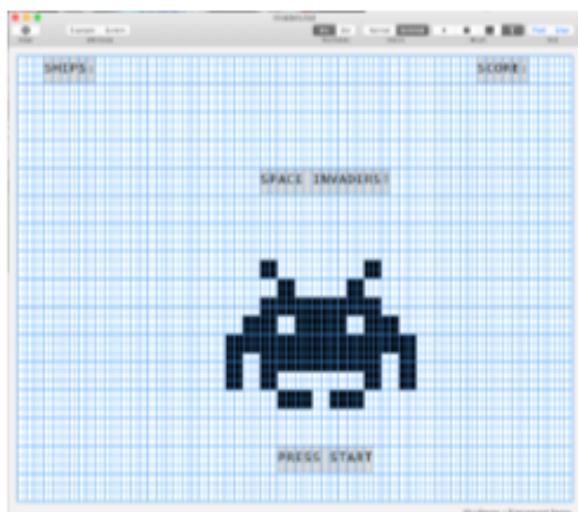
Sample Screens:



Normal colors, no gridlines



Inverted colors, no gridlines



Gridlines enabled (character and pixel)



As seen in the trs80gp emulator

Example of the output DEFB statements used to create the screen above:

```

; -----
; TRS-80 SCREEN DESIGNER (TSD) v1.0
; www.plaidvest.com
; Copyright © 2020 Plaid Vest Software, LLC
; -----
; /Users/kpw/Desktop/invaders.tsd
; -----
TSD_SCREEN_INVADERS
    DEFB    $01,$03,$00,$53,$48,$49,$50,$53,$3A,$01,$2C,$00,$53,$43,$4F,$52
    DEFB    $45,$3A,$01,$E1,$00,$53,$50,$41,$43,$45,$20,$49,$4E,$56,$41,$44
    DEFB    $45,$52,$53,$21,$01,$81,$00,$01,$02,$BC,$01,$0A,$00,$01,$02,$BC
    DEFB    $01,$32,$00,$01,$02,$00,$01,$02,$BF,$01,$06,$00,$01,$02,$BF,$01
    DEFB    $02,$00,$01,$30,$00,$01,$02,$BC,$01,$02,$BF,$01,$02,$83,$01,$06
    DEFB    $BF,$01,$02,$83,$01,$02,$BF,$01,$02,$BC,$01,$2C,$00,$01,$02,$BF
    DEFB    $01,$02,$BF,$01,$0E,$BF,$01,$02,$BF,$01,$02,$BF,$01,$2A,$00,$01
    DEFB    $02,$BF,$01,$02,$00,$01,$02,$BF,$01,$0A,$03,$01,$02,$BF,$01,$02
    DEFB    $00,$01,$02,$0F,$01,$30,$00,$01,$04,$BF,$01,$02,$00,$01,$04,$BF
    DEFB    $01,$76,$00,$50,$52,$45,$01,$02,$53,$20,$53,$54,$41,$52,$54,$01
    DEFB    $57,$00,$00

```

IN MAV'S WORKSHOP

REVISITING THE CN80 MODEL 4 MOUSE PROJECT - PART 5.

by Ian Mavric



The CN80 MOUSE HOUSE



MOUSE DRIVER

by David Goben

Complete Mouse Driver Program
and printed manual for 2 or 3 button mice
for use with your Model 4

Write your own mouse programs in Basic
or other program languages.

\$10 plus \$3 Shipping & Handling
Published and Distributed by

Computer News 80



MTK

by David Goben

Complete Mouse to Keyboard Interface
and printed manual for 2 or 3 button mice.
Model 4 - Mouse Driver Required to use.

Take over your keyboard, arrow keys
with MTK, makes playing games easy.

\$18 plus \$3 Shipping & Handling
Published and Distributed by

Computer News 80

CN80

Three Button Mouse

and adapter for RS-232 connection.
\$ 26.95 plus \$ 4.00 S&H

Extender Cable for Model 4 with
the RS-232 connector out the bottom.
\$ 8.00 plus \$ 2.00 S&H

.....
Use an AB switch to connect both Mouse and Modem

CN80 COMBINATION MOUSE PACKAGE

Includes Three Button Mouse
Adapter for Model 4 connection
(4s with connector out the bottom require an additional cable)

The Mouse Driver Program
The MTK Mouse to Keyboard Program
For Model 4 with RS-232 out the back \$52.95
For Model 4 with RS-232 out the bottom \$59.95
Plus \$ 4 Shipping and Handling

Period advert from CN80 in 1992 shows their mouse products

1993 ARTICLES ON THE MOUSE CONNECTED TO THE MODEL 4

The year started off with a review of David P. Miller's excellent Mouse Menu and information about installing and using the program.

"DAVE'S MOUSE MENU" from CN80 MARCH 1993 Vol 6 Issue 3 Pages 3-5

Dave's Mouse Menu
by David P. Miller, (C) 1992
(\$15 plus \$4 S&H)

Dave's Mouse Menu is an Immediate Execution Program (IEP) designed to replace the file SYS13/SYS on your system disk. When this program has been installed, typing an asterisk ("*") at the DOS Ready prompt will cause DOS to execute it. As a replacement for SYS13/SYS, Dave's Mouse Menu is treated by DOS as a system file and considered part of the Disk Operating System (DOS). To install the program, simply place the distribution diskette in a data drive and type the following command: (Note that 4.5K of free space must be available to install this program.)

```
COPY DMM/CMD:d SYS13/SYS.LSIDOS:0
(C=N)
('d' is the drive number containing the
distribution diskette.)
```

WHAT WILL IT DO?

Dave's Mouse Menu replaces the "TRSDOS Ready" (or "LS-DOS Ready") prompt with a

simple, easy to use menu system. Up to twenty six entries of your choice can be typed into the menu, with each entry consisting of a prompt to be displayed on the menu; a DOS command to be executed when a selection is made; and three parameters, or items of information that affect the way a command is processed. If no keys are pressed while the menu is displayed for fifty seconds, a screen-blanking routine takes over and prevents video 'burn-in' until you are ready to proceed. Pressing any key restores the menu.

Once a menu has been designed, you may simply press the letter key corresponding to the selection you desire to execute, or use the arrow keys to position the reverse-image cursor bar to the selection desired, then press the <ENTER> key. The program you specified is 'launched' and you may proceed as if you had typed the command from the DOS Ready command line. To create a menu, simply press the <F1> key and the Editing screen will appear. This screen displays up to fourteen menu prompts, commands, and their parameters at a time, and allows several editing operations as indicated on the screen.

Three choices are available for each entry when creating a menu. The first, 'Input Parameters', is used when a program requires some additional information to run. For example, your favorite word processing program probably needs a document file name to begin work on a document, or you may have several BASIC-language programs that you may wish to run at different times. In the latter case, the command would be 'BASIC', and parameters would be specified. When BASIC is executed from Dave's Mouse Menu, a prompt appears first in which you can type the name of the BASIC program to be run, along with any additional parameters such as memory size, number of buffers, and so on. Simply pressing the <ENTER> key at the parameter prompt will execute the program without parameters.

The second choice permits you to tell Dave's Mouse Menu if you wish to return to the Menu after your application program has executed. If you respond by pressing 'Y' to this question, Dave's Mouse Menu will re-appear after you have finished running the program in question (but ONLY if DMM

has been installed as noted above, in place of SYS13/SYS.) If you select 'Return to Menu', the third and final question, 'Pause', allows you to tell the Menu to pause while you examine the screen. When this option is selected, the program will be run as usual, but when it is finished, a prompt will appear on the bottom line of the screen indicating that you should press the <ENTER> key to proceed. Doing so will again bring up Dave's Mouse Menu. This option is handy when executing such commands as 'FREE', 'DIR', and 'DEVICE' from the menu.

If you desire to exit Dave's Mouse Menu at any time, simply press the <F3> key. A prompt will appear asking you to verify this action, and by pressing 'Y' (or the <F3> key again), you will return to the normal TRSDOS/LS-DOS Ready prompt.

RUNNING FOR THE FIRST TIME

The first time Dave's Mouse Menu is executed, no menu file will be available (unless one is supplied on the distribution disk - look for "DMMENU/MNU"). Instead, a 'default' menu is used with a prompt indicating that a menu must be created, and with a "DIR" command. The Editing screen appears automatically. After you have created your menu, you will be asked if you wish to save the results.

ADDITIONAL FEATURES

Dave's Mouse Menu is designed to be a 'polite' program. If you have a high-resolution graphics board and the graphics screen is left on by another program or due to unexpected results, the graphics screen will be turned off and the text screen turned on. When exiting from Dave's Mouse Menu, either to DOS or to execute a program, the 'high-bit' routine is turned off, preventing the display of odd characters in place of block graphics.

If you have installed David Gobens' Mouse Plus driver, it will automatically be recognized and you may use a mouse effectively. The mouse will move the cursor, the left button (LB) is used to execute a menu item, the right button (RB) to exit to DOS Ready (LB to abort, RB again to verify), and the middle button (MB) to enter the editing screen. When using a mouse, the

keyboard is still required to edit the menu selections and enter parameters before running a program. The original X- and Y-sizing and sensitivity will still be in effect after exiting Dave's Mouse Menu. If David Gobens' Mouse-to-Keyboard (MTK) emulator is installed, it will be ignored, but still in place upon exit.

TIPS AND TRICKS

You will no doubt find many effective uses of Dave's Mouse Menu, but the following will help you get started.

A 64K system Ram Drive can be installed with Dave's Mouse Menu in place if SYS0/SYS is left out. Since SYS0/SYS is only used to 'boot' up (start) the computer, it serves no purpose on a Ram Drive. Instructions for this can be found in your DOS manual. If you use GrafDisk by David Bowman, this configuration can be loaded from diskette in under eight seconds, and subsequent Menu operation is literally 'in the blink of any eye'. Follow the GDLOAD command with an asterisk ("*") to invoke Dave's Mouse Menu.

***NOTE*:** when using GrafDisk, it is NEVER a good idea to attempt to use Graphics Memory as a disk drive! Since TRSDOS/LS-DOS has no scheme to mark this memory as 'protected', any other program that uses this memory for any purpose can cause reboots (or worse!) of your computer. Loss of data from your drives could conceivably result. Therefore, always use the (A) parameter with GrafDisk. One common method for a program to test for graphics board type is to place a value in the 'unseen' area of graphics memory and see if it remains the same; not all programs restore graphics memory to the original state after this is done.

When installing the TRSDOS/LS-DOS MemDisk with a JCL file, the asterisk should be the last command in the file.

NESTED MENUS

When using Dave's Mouse Menu with a floppy disk system, the twenty-six item menu should be sufficient. When using a hard drive, however, this limit quickly becomes restrictive. A series of menus can be created and used easily with a simple 'trick'.

Design your 'base' menu, exit to DOS Ready, and copy the menu just created ("DMMENU/MNU") to another name on a drive other than the system drive '0' (such as "MENU1/MNU:1"). Return to Dave's Mouse Menu and continue this process until all your menus are as you wish. Each menu should have a selection allowing movement to another menu. This selection would have a prompt of "Go to the Games Menu" or whatever is appropriate, and the command would be "COPY MENU1/MNU:1 DMMENU/MNU:0". When this command is executed, the menu desired is placed on drive zero, and return is made to Dave's Mouse Menu, which uses the file by the name of "DMMENU/MNU" on the lowest numbered drive on the system. This method will enable you to move freely between as many menus as you need and have storage space for.

Naturally, if this method is used on a floppy- or hard- system drive zero, the last menu selected will be 'brought up' the next time you use your computer. However, this technique is particularly useful when a system Ram Drive is used, as the menu file in use is lost when power is removed, and the actual "MMEZMENU/MNU" representing your 'base' menu will be used for each new power-up session. The biggest (and perhaps only) drawback to using a system Ram Drive is that this memory will not be available for programs such as VisiCalc or BusyCalc, and some programs (such as BCX) may not even run without it.

To avoid such problems, and allow multiple-menu use on a non-RAM drive system, keep all your menus on a drive other than system drive "0", and set up your initialization in such a way that your 'base' menu is copied to DMMENU/MNU on your lowest-numbered, non-write-protected drive. An example of such an initialization routine might be:

MOUSE
COPY MENU0/MNU:2 DMMENU/MNU:1
*

-David P. Miller

In the same issue David Goben answered some MagicDraw questions and answers:

**"MAGICDRAW Q & A" from CN80 MARCH 1993
Vol 6 Issue 3, pp. 7.**

MAGICDRAW Q & A

A couple of users have complained that when they use MagicDraw, that they cannot reach the right-most or bottom-most points of the hi-res screen. The answer is that there is not a bug in MagicDraw that causes this. Instead, be sure to use my MOUSE+ mouse driver, version 1.2 or higher. MagicDraw will work =wonderfully= with it. I cannot guarantee results with other mouse drivers, nor should I be expected to patch MagicDraw to work with them. After all, I was the one who defined the current Model 4 mouse standard that MagicDraw uses. Therefore my driver should be considered the defacto standard. Therefore if someone else's driver cannot work as well, or perform identically to my driver for which the standard was defined, then that is certainly not my problem.

One person noted that if they are in the middle of drawing a line using the LINE pointer, and while drawing the line, select the menu and choose another pointer, that a copy of a pointer, usually the menu pointer, will have a copy of its image left on the screen. My response to this is to complete an action before selecting another one (the internal mechanics of the menu driver is extremely complex, and if I tried to change it, another problem would no doubt pop up). Therefore, either complete the drawing of the line and =then= select a new one, or abort the operation by clicking the right mouse button before selecting the menu. This problem is usually accidental anyway. This may most often happen on a 2-button mouse where one must press both mouse buttons simultaneously to select the menu (on a 3-button mouse, you select the menu by simply clicking the middle mouse button). If you press the left button first and wait an instant too long before the right button is pressed, the mouse driver, and subsequently MagicDraw will instead at

first assume that you are choosing to execute an action, and so will begin such an action, such as drawing a line, before the twin-button press is registered as a "select menu" command. To avoid this, always be sure to press the buttons simultaneously, or better yet, get a 3-button mouse. By the way, as I was exploring this minor problem, I noticed that it was less likely to happen with my MOUSE+ driver. MOUSE+ allows more of an intervening delay before reporting an action, thus the chances of a mistaken twin-button press are less likely to be encountered. Although it can be if you work at it by intentionally separating their presses. The best method of getting around this is to be sure that if you are one that for some reason cannot seem to press both buttons at exactly the same time, you should at least press the right button first. The right button tells MagicDraw to abort any operation it is currently performing.

And so my advice to anyone who is considering MagicDraw is: get my MOUSE+ mouse driver for optimum performance (you can reach the right and bottom ends of the screen with it). Also, get the 3-button CN80 mouse. It is my mouse of choice. Sure, you may be able to obtain another mouse cheaper at some bargain basement, but you will certainly be hard-pressed to get one of better quality and workmanship. Considering that the Microsoft mouse costs about \$90, and is the result of over one million dollars in development, the manufacturers of the CN80 mouse took advantage of Microsoft's sweat and developed their own mouse that is of like quality, but costing only \$26.95.

The following month Gary Shanafelt reviewed MagicDraw...

"MAGICDRAW A REVIEW" from CN80 APRIL 1993 Vol 6 Issue 4, pp. 15-17.

MAGICDRAW A REVIEW

by Gary W. Shanafelt

I've used most of the major hi-res drawing programs, and I'm also one of the main contributors to MDRAW. So, I'm a rather interested party in all this. But I'm also a user, someone wanting the best utilities possible to do things in hi-res, regardless of who writes them.

As a user, and if you're serious about graphics on the Model 4, MagicDraw is a "must have" program for your collection.

I won't recapitulate all the features of MagicDraw, for David has already done that in his own articles. Suffice it to say that it has pretty much every utility anyone might want in a drawing program, plus a lot you may never have thought of. What really distinguishes it from the public domain competition is that it is all machine code, and machine code that takes full advantage of the hardware it works with and it is fast.

I'm not enough of a programmer to examine David's code to see how he did all this, but the result is obvious as soon as you load the program. When you move the mouse, the arrow on the screen moves crisply and exactly. There is a precision or power of control that is difficult to describe in writing but is immediately obvious as soon as you get into the program. The mouse moves the arrow on MDRAW as well, but the response is not nearly as accurate. All you've got to do is try sketching something with MagicDraw and then try the same thing with the "other" program to appreciate what David has accomplished; and you see why he's been so enthusiastic (an understatement?) in his columns. You feel that you've got a program that redefines what a Model 4 is capable of, that takes full advantage of all its features. I've enjoyed other programs with that feel: some of the early Model 3 games, Kim Watt's

Super Utility Plus, Larry Payne's GRAPHICS-90. When you run the program, you continually ask yourself, "How did they DO that?" MagicDraw, is, in a certain respect, a work of art as much as a practical utility.

But back to the program. The pull-down menus are fast and impressive: if you thought this kind of thing was possible only on a 486 machine running Windows, you'll be very pleasantly surprised. You scarcely need to read the manual, for most of the options are obvious from the window/menu choices. One of the most impressive features of MagicDraw is its ability to draw circles. This can be done on all the available drawing programs, but the way they do it is s-l-o-w. The algorithms in BASIC which they use to draw circles are slow. But David has created new algorithms which are amazing in their speed. After choosing the circle option (causing the cursor to turn into a miniature circle, a clever touch) you move the mouse and a circle outline grows or shrinks before your eyes -- instantaneously. Hitting the mouse button makes the circle permanent. I've never seen such fast hi-res circles on a Model 4. The same goes for ovals, boxes, and triangles. You can sit in front of your monitor all afternoon just playing with the different shapes and moving them around. MagicDraw is fun to tinker with even when you have no actual drawing project in mind.

Painting is also greatly enhanced over earlier programs. "Painting" means filling a space with some pattern. Previous programs allow use only of the patterns built into the hi-res hardware or (in the case of TRS-DRAW, another drawing program available from The File Cabinet) a few pre-defined patterns included with the program. MagicDraw allows you to define your own paint patterns. Further -- and this is a mark of MagicDraw's sophistication -- you can abort the painting process by hitting the <BREAK> key. Painting will "bleed" out of any holes in the lines defining a space; with other drawing programs, nothing short of rebooting the whole computer can stop the "bleeding" until the entire screen has been covered. Use of <BREAK> to end painting may sound like a minor point, but is indicative of the attention to detail that has gone into writing this program.

MagicDraw also seems to be very solid. Every feature I tested works -- well. Loading and saving files is faster than on any other drawing program I've used. Zooming for detail work, shifting screens for editing, moving blocks of data, rotating images, storing clip art -- the features all performed as promised. There were some bugs in the first releases I got, to be expected in a program this complex. I reported them, and they were fixed -- and my disk replaced -- with gratifying speed. Expect excellent support from David on this program.

Finally, high praise goes to MagicDraw's manual. This also sets a new standard for the TRS-80, I think. Not only is it easy to read and detailed in its explanations, but it is itself an example of what is possible when you combine text and graphics. For you don't just get narrative explanations of MagicDraw's functions; you get pictures of the screen, pictures of the pull-down menus, pictures of all the prompts and other messages. When something is supposed to happen, the manual shows you exactly what it will look like. A lot of work clearly went into producing MagicDraw's documentation.

What about the downside? There are a few things I would like to see different about MagicDraw, but of course everyone has his own biases and preferences. One comes with loading files. You can use the Dos Shell option to display a directory of a disk before you load a file of graphics, clipart, or fonts; but, as far as I can tell, you can't display the directory at the same time that you type in the file name. The directory disappears as soon as you select a loading option, so if you have a poor memory as I do you may find yourself being reminded of the fact more than you'd like.

I think printing the hi-res screen might also be made more convenient in a future release of the program. Right now, utilities for a number of printers are included; you run them through MagicDraw's DOS Shell option. It seems to me that it would not be too hard to have MagicDraw linked to a standard driver called, say, PRINT/CMD, accessed with the @RUN SVC from within the program through an additional "print" option on one of the pull-down menus. To configure MagicDraw for your particular printer, you would find your specific driver

from the ones provided and, from the DOS, rename it PRINT/CMD. From that point on, simply moving the arrow to the new "print" option in the menu window and clicking the mouse would give you a hard copy.

I'm also not sure why David invented a new font format. There are already Dotwriter and PostMaster format fonts.

If you want to use fancy text with MagicDraw, you need MagicDraw Fonts. Some very nice fonts are available in the new format, though many seem to be conversions of current PostMaster fonts. MagicDraw will print the MagicDraw Fonts italic, boldface, and hollow form as well as in their regular format. When you buy a disk of these new lettersets, you're thus getting three additional fonts for every one you see listed.

While MagicDraw won't handle PostMaster FONT files, it will handle PostMaster ICON files. So If you've assembled an extensive library of the latter, they are all usable with MagicDraw.

MagicDraw is not in the same league as most public domain stuff, but rather that of the great TRS-80 commercial programs like Allwrite or VisiCalc, which once sold for Big Bucks. I'm more than happy with what I got for my \$65. If you want simple graphics on your Model 4, there are a number of inexpensive options like MDRAW. But if you want Cadillac capabilities, then there's clearly only one way to go -- and it's well worth the price.
-Gary Shanafelt

In the May issue Dave Goben gave us a little tip about MagicDraw:

"MAGICDRAW TIP" from CN80 MAY 1993
Vol 6 Issue 5, pp. 9.

MAGICDRAW TIP

One person has a need for pin-point accuracy when pointing the mouse pointer while using MagicDraw. He said he would like to use the zoom mode to position the cursor, save that position, zoom back out, and then use it. Actually, when you leave the zoom mode, the mouse pointer is positioned at the exact spot that it was pointing to while in the zoom mode.

You also may have noticed that the clipboard save file, MAGICDRW/BRD, already exists. This file is used whenever you wish to save the contents of the clipboard for a later session. If you have not yet saved any of your clipboard data to disk yet, you might try going into EDIT, load the clipboard, and then view it. I placed that picture of myself there to see if anyone would catch it. Apparently no one has thought about trying it.

DAVE'S MOUSE MENU

By David P. Miller

Build a up to twenty six DOS command menu with the ability to repeat the DOS command by pressing a keyboard letter, pressing the arrow keys to "point and shoot" or use your mouse for "point and shoot" selection.

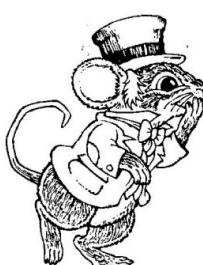
No longer do you have to memorize DOS commands and parameters that you use all the time. Simply type them in once and then select them from the menu.

Fully compatible with the use of a mouse, keyboard or arrow keys.

\$ 15.00 Plus S&H

David P. Miller is the author of PostMaster

Refer to March 1993 CN80 (Vol. 6 No. 3) for more information about Dave's Mouse Menu.



MOUSEDOS

by Leonard Lorden

Load MOUSEDOS (Mouse Plus by David Goben is required) and select an icon from the screen display. Disk Drive Icon, displays a new menu and mini-keyboard. Write your command line. Utility Icon, displays several DOS commands and utility icons, click the mouse on the desired command icon or click the Exit icon to return to the main menu.

Included are icons for AUTO, BACKUP, BOOT, CONV, COPY, FILTER, FORMAT, FORMS, LINK, LIST, REMOVE, RENAME, RESET, ROUTE, SET, SETKI, SPOOL, SYSTEM, VERIFY.

Fancy in appearance, easy to understand and use. A must for mouse users.

\$ 25 plus S&H

The August issue had an interesting fix for the mouse driver so that it operated a little more smoothly.

"MOUSE FIX/ENHANCEMENT" from CN80 AUGUST 1993 Vol 6 Issue 8, pp. 7-8.

MOUSE FIX/ENHANCEMENT

Speaking of patches, I'm beginning to think that Richard VanHouten's alter ego is Sherlock Holmes. He noticed that when sensitivity factoring is non-zero (sensitivity from 0 to 3 is allowed) that the mouse shifts slightly when a button is pressed. This does not happen in MagicDraw because the program always sets sensitivity to 0, where no problems occur. Richard managed to track the problem down to my factoring routine within the mouse plus driver. The solution is incredibly simple, and requires just a 1-byte patch, plus another one to upgrade the program's version number. The patches to MOUSE+ version 1.2 to bring it up to version 1.3 are:

```
patch mouse (d03,f03=33:f03,4d=32)
patch mouse (d07,7f=29:f07,7f=09)
```

Interestingly, this little patch adds a new feature to the mouse driver that is publicized to great proportions in the MS-DOS world, calling this feature "Dynamic Motion Support", or as "Intelligent Tracking Technology", to name only 2

bullets extolled by ad copywriters to describe an incredibly simple process. That process is: "the faster you move the mouse, the faster it moves." Now before you submit my name as the next contestant on "Masterminds of the Bleeding Obvious," let me clarify what was said. What I meant was that if you move the mouse faster, the mouse pointer will move even faster than that, in a proportional way. The units of motion on a mouse is called a "Mickey" (believe it or not) and if the factoring is set to 3, that means that moving 1 mickey in a given micro-slice of time, the factoring will cause it to "appear" to move 8 mickeys. This is because using this technique, you provide the program with a computed factor of the value, using as a factor the product of multiplying the mickey count times 2 to the power of the sensitivity value. Thus 1 is processed as $1 * 2^3$, or 8. Moving twice as fast at 2 mickeys results in $2 * 2^3$, or 16. 10 mickeys results in a returned movement of 80 mickeys. And so on.

MOUSE RESOURCES:

MOUSE+ Driver: <http://members.iinet.net.au/~ianmav/downloads/MOUSE+.zip>

MTK: <http://members.iinet.net.au/~ianmav/downloads/MTK.zip>

MagicDraw: <http://members.iinet.net.au/~ianmav/hires/MDRAWP2.zip>

END OF THE MOUSE SERIES - FOR NOW

My collection of CN80 only goes a couple of months into 1994 so until further notice, this is the final instalment of Model 4 mouse articles. If people have 1994 and subsequent years issues of CN80 I'd be keen to continue this series.

Released around 1993 was MouseDos by Leonard Lorden, a mouse controlled app to integrate mouse operation in the disk operating system. If anyone has a copy of MouseDos I'd be keen to obtain a copy to evaluate so drop me a line to the email address below. Likewise I'd like to obtain a copy of Dave's Mouse Menu by David P. Miller, if anyone has that please contact me.



Ian Mavric is an IT Specialist who also restores and collects TRS-80's and classic cars. He lives with his wife and kids in Melbourne, Australia.



A Track/Sector Display Using the Model III Clock Interrupt



Kyle Wadsten

www.newkey80.com

(Home of the TRS-80 NEWKEY/80 Keyboard and Joystick Adapter)

Like many others, I have always wanted to write TRS-80 assembly language programs. More specifically, a TRS-80 game. Even though there are many good books and resources available, it is still fairly difficult to get anything substantial working.

While working on my game (granted slowly), I started thinking about interrupts and how they might be useful in my game - perhaps for handling input or even animation tasks. The first order of business was to research interrupts on the TRS-80.

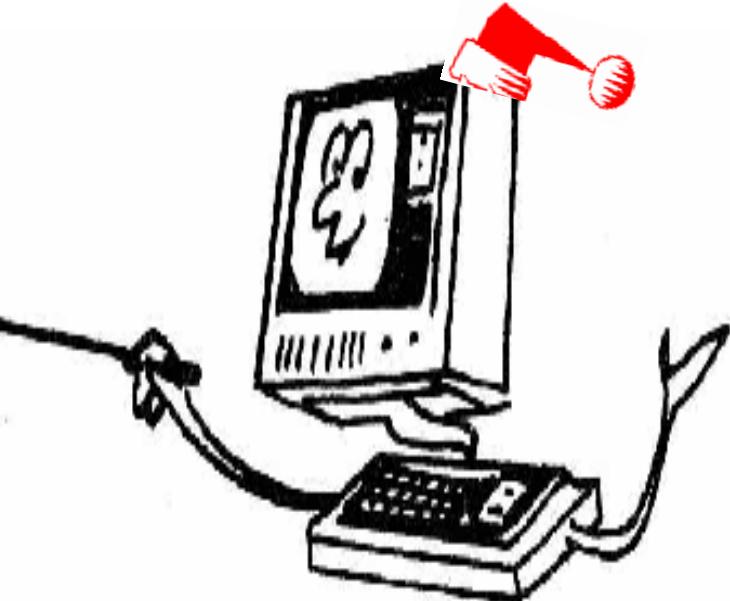
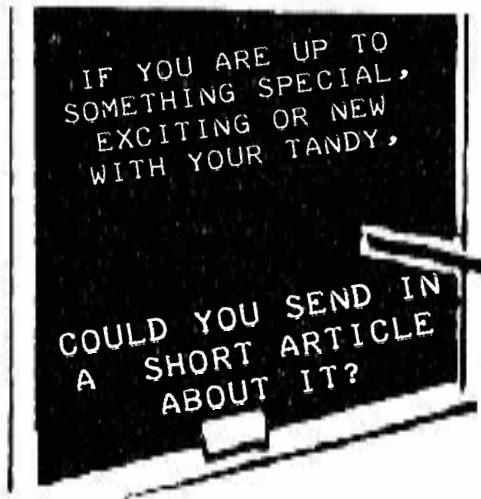
To my surprise, I found very little information on TRS-80 interrupts and almost no example code to use them. What I did find seemed to indicate that the real-time clock interrupt is probably the easiest (only?) one to work with. The Model 1 (with expansion interface), the Model III, and the Model 4/4p all have a real-time clock interrupt that fires every 1/30th of a second (30hz). For this article I will be using the Model III as the basis for my example code.

My best resource was the book "MOD III ROM COMMENTED" by Soft Sector Marketing (1981). This a fantastic book and an invaluable resource for this project. A pdf can be found on the internet archive (see link below).

DISCLAIMER: I'm new to interrupts and z80 coding in general. Some or all of this information may be misleading or incorrect. The code works but may not work for your particular application. This article is intended to be a starting point for your personal exploration, not the final word on interrupts! Now, on to the details...

I will be presenting a simple application (**trksec**) that shows a real-time display of the current track and sector being accessed by the disk drive. The display is in the upper-right corner of the display just to the left of the standard DOS CLOCK display. Please note that the drive number being access is not displayed. **trksec** is compatible with the DOS CLOCK command.





HERE'S THE ANSWER TO THE QUIZ ON
PAGE 53

THE MINIMUM NUMBER OF GOES IS FOUR. HERE ARE THE 4 TURNS YOU NEED TO MAKE: RBG, RGY, RBY, BGY. YOU'VE NOW TURNED EACH SANTA THREE TIMES, SO THEY ARE ALL UPSIDE DOWN.

THIS WILL WORK IN WHICHEVER ORDER YOU CARRY OUT THE FOUR TURNS IN.

PCALC-The Spreadsheet for the NEC PC-8201A, Olivetti M10, Tandy 100.

Now your portable computer can be a complete system - with PCALC, a powerful spreadsheet program specially designed to make the most of your NEC PC-8201A, Tandy Model 100 or Olivetti M-10 (16K RAM required). Supplied on cassette, complete with an easy-to-understand manual. Priced at only £25.00, PCALC is the low cost alternative to expensive ROM based software.

CAPRA-CINDERSTAN ASSOCIATES
5 OLIVER COURT
SOUTH HILL PARK GARDENS
HAMPSTEAD, LONDON NW3 2TE

DOUBLES YOUR DISKETTE MEMORY IN SECONDS!

Flip-Jig turns your floppies into flippies in seconds. Just insert the diskette and punch a Write-enable notch so that the unused second side of single-sided diskettes is usable.

Flip-Jig pays for itself immediately because every diskette you now own or will buy is like owing or buying two.

Order yours today
£23.00 inc VAT and delivery

Remittance with order to:

GRANNY SMITH
BCM 6502
LONDON WC1N 3XX

TRS-80 VIDEO GENIE

PROGRAMS FROM ADVENTURE INTL · BIG FIVE · SSM · Epyx APPARAT · MMS · SCREENPLAY HAYDEN · ACORN · MICROSOFT NEW CLASSICS · RACET · PDI

DETAILS OF THESE AND OVER 200 OTHER PROGRAMS ARE CONTAINED IN OUR NEW LOOSE LEAF CATALOGUE PRICE £1.00 (REFUNDABLE) FROM



MICROCOMPUTER APPLICATIONS

41 QUEEN'S ROAD
BLANDFORD FORUM
DORSET DT11 7LA

TEL: (0258) 55100



The *BEST* in TRS-80s
Call The Right Stuff

**Ask for Ian
The number is +61 416 184 893**

That's The Right Stuff
And he's in Melbourne



<http://members.iinet.net.au/~ianmav/trs80/>