

# C.C.O.G.

## COLOR COMPUTER OWNERS GROUP NEWSLETTER MARCH 1993

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**INDEX:**

1. Meeting Minutes  
2. Editors Notes  
3. OS9 68000  
4. Viewpoints  
5. Expert Corner  
6. Meeting Dates

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### Minutes for February 1993

Slow meeting this month. How slow? Well, one high point was getting the story of how our President, Larry, tried to fly and landed on his .... At least the damage is not so bad that he has to carry around an inner tire.

Bernie, showed off his new toy, an 80486-33 unit, of special interest were the CD-ROM capabilities. These were demonstrated with several programs: encyclopaedia, Sherlock Holmes game, atlas, xxx-rated goodies, etc.

No, the club has not given up on the Coco, but our heads should not be in the sand either. It is nice to see what the competition has to offer and chuckle over the price differentials.

Gus came through again with a grab-bag full of prizes from a local Tandy store. Where Gus finds Coco hard/software I can't imagine. The store near me have been out for over a year.

I picked up an Orchestra-90 pak. More about this in another issue. I plan to add an 8-bit A to D convertor to the hardware and improve my digital recorder program.

# COLOR COMPUTER OWNERS GROUP

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## "OS-9 68000" by Karl Sefcik

It's about time I wrote an article for our newsletter about my new toy, a PT68K-4, (Coco-4), built by Peripheral Technology (Atlanta, Georgia). My machine came with a Motorola 68000 processor running at 16 MHz, an IBM-style keyboard (interface not necessary), Super VGA monitor, OS-K (OS-9 68000), a 5 1/4 inch high density drive, a 3 1/2 inch high density drive, 1 MB of RAM, and a 106 MB hard drive. Windowing software (G Windows is sold by Delmar), did not come with my machine.

I had wanted to buy a Coco 4 since the 1st Atlanta Fest in 1990, but I had trouble deciding which one would be best for me, besides coming up with the money. All the machines had their good points and bad points. I finally had everything all sorted out by the Atlanta Fest of '92. I concluded that the MM/1 was barely an improvement over the Coco 3 because it may still come as a kit, and K Windows isn't complete yet, (it's in revision 49 and still counting). The last hardware problem they had was a defective hard drive controller chip, and they couldn't tell if they were defective till the machine was built. The TC-70 from Frank Hogg Labs was actually in a close tie with the machine I ended up buying, but the TC-70 was too much like the MM/1 to me. The PT68K-4 is probably as far away from the Coco as I could get, since only the motherboard is custom-made, it uses as many readily-available parts as possible while retaining ties to the Coco world through OS/K.

I ordered this on October 19th, 1992, (I thought it would be 2 to 3 weeks before I would get it), but it was shipped (UPS) on October 26th and it

arrived October 28th. It came assembled with OS-K version 2.4 already loaded on the hard drive, and they say it was tested and working before they shipped it, (d/1 still does not work for me). When they tested the system and loaded OS-K, they used a full complement of RAM (4 MB), but because I scaled back my original order they constantly had to re-configure OS-K (my order was for only 1 MB).

After I got the computer out of the box, connected everything, I turned it on. The first menu is a boot-source select menu, which also sets drive type and terminal baud rate (1200,9600 or 19,200 bps). It does an auto boot from the default boot source if there's no response in 1 minute. Then it runs the startup file that initializes the devices and starts OS-K. At first, I couldn't get either floppy to work properly, even though the hard drive worked just fine, and I failed to do any real work with it till I finally decided to just use the hard drive. Again, it did not come with windowing software.

Reading through the manual, I discovered Microware includes a word processor with OS-K called UMACS. What it is, is Microware's version of EMACS, which is the PC version of UMACS from the UNIX world. I couldn't get it to work, I couldn't understand why, so I started reading. I got through all the commands and part of the chapter on UMACS, when I just happened to look through some of the other papers that came with the computer. I should've known the answer would be right in front of me, in the folder about installing OS9/68000, on page 9 is an information section with the question, "How do I get UMACS to work?" The answer is to set the environment variable (setenv TERM V1).

This word processor operates just like Simply Better, only since it's OS9, you can only use files from the directory that you are in, (before you enter UMACS, do a chd to get the directory you want). UMACS is put in the execution directory, so you can enter umacs from any data directory. Just enter umacs from it, and at once, the screen clears, and the umacs command line appears at the bottom of the screen. To load a file, use <control> 'X F', just activate the scroll lock to enable the cursor movement keys. To change files, it's best to save the file with <control> 'X S', it's saved in about a second or two. To load another file, use <control> 'X F', and enter the filename at the prompt.

When you are done with UMACS, or need to change directories, the command to save all files (buffers) and exit to OS9, is 'M <escape> Z', it saves all active files to the directory you are in.

One thing I miss is not being able print a file while you are in UMACS, but a quick way to print a file is to leave UMACS using 'M <escape> Z'. Then all you have to do is list the file and redirect it to one of the printer ports (serial or parallel). It's really flexible for me, my Coco 4 uses the

parallel port of my printer and my Cocom 3 uses the serial port.

Another bonus they included on the hard disk along with UMACS is S-TERM, a terminal program that defaults at 9600. There's also a C graphics demo with files of various resolutions. There are pictures in EGA, VGA, and Super VGA. If you didn't know you were looking at a computer, you might think that the S-VGA picture is actually television!

I think it's great, as the PC world profits from having replacement drives and printer cables available over the counter, it's the same way with the this computer. I walked into an AMIGA dealer, and bought a parallel printer cable, the salesman said it was the standard printer cable. I was also able to get another 5.25 inch high density drive from DSL computers, it's wonderful having this much flexibility!

I've called Delmar for a sample disk of G WINDOWS, and will let you know how it goes!

## **"Viewpoints" by Gus Korte**

That was a very impressive demonstration that Bernie Patton showed the CCOG club members at our previous meeting concerning a CD multimedia display of his encyclopedia-On-disk. The displayed graphics had such good resolution that they appeared as clear as photographs. A parrot was displayed on the screen which answered questions that Bernie asked it just like a real live parrot could do. He also displayed several past presidents of the USA and had them give short portions of some of their more famous speeches while shown on the screen. That was a good introduction to the interaction between the viewer, the related sound, and the computer display which is what multimedia is all about. This is something the COCO can not easily do. Eventually an advanced computer such as the IBM (or compatible) computer will be needed to accomplish this along with an ample supply of purchasing power to pay for it all.

On Sunday March 7th, I attended a computer trade show at Madonna University in Livonia, MI. I saw very expensive computers displayed there with the related software etc. It all pertained to computers other than the COCO. I met several members there (past and present) of the CCOG who were shopping for possible additions to their more advanced computers. Each one indicated that they still use their COCO to run thier particular useful programs and the other more advanced computer to run other programs. So you can see that as time goes on the COCO still has a very useful part to accomplish in one's computer hobby even though more advanced computers are available for those with the money to buy them.

Recently I spoke with CCOG member Karl Sefcik and he told me he is enjoying his newly purchased C0004 type of computer. He too indicated he still uses his C0003 to run several of his programs. He expects to give us more information about his new computer in our CCOG newsletter later. Once again you can see from this that, even though you may branch out to another type of computer, the C000 still has utility in your computer hobby. Therefore your investment of time and money in the C000 has not been lost. So the CCOG club will continue to be useful for us as long as we continue to use our C000 in the future.

It was interesting recently to read in the Detroit News, dated 3/1/93 on page 7B, about voice recognition technology and how the computer uses it to turn speech into a tool to operate machines etc. If you're interested you can read about it in your local library. In that regard you may have noticed an advertisement about a remote control unit which uses voice commands to operate a VCR. Possibly voice commands will be used as input commands to operate a computer, instead of using a keyboard, at some future time as we have seen in some science fiction TV shows.

For the information of any new CCOG members, Karl Sefcik's message is repeated here if you wish to subscribe to the Rainbow magazine. You can use a free telephone number to order by credit card. It is 1-800-847-0309. Since some of you do not use the BBS yet, this information is included here for your use. Also the Rainbow magazine is no longer available in local magazine stores.

Once again remember this club has obtained lots of support from the Radio Shack store managers at the stores in the Farmington Ctr, 33037 Grand River Ave. Farmington, MI; also at the corner of Five Mile Road and Merriman Road in Livonia, MI; and at 27675 W. Grand River Ave. , Livonia, MI. This kind of support is very helpful to our CCOG club. Therefore support those stores when possible if you have any purchases to make from Radio Shack so they know the CCOG club appreciates this good will. Indicate you are with the CCOG club when you go there and I know they will appreciate your business.

A reminder especially for new members of the CCOG, the VFW uses your money donations from our club in it's many charitable activities especially concerning unfortunate hospitalized veterans. It's all going for a good cause. The Livonia VFW also collects used books and magazines to give hospitalized veterans. So if any of you want to contribute such, which you would otherwise discard, give them to the VFW bartender to make some unfortunate veterans happy. Those of you who have contributed this way in the past can be sure that your contribution is appreciated. Remember the bartender is on the first floor and serves both the bingo players there

and the CCOG in the Foxhole Lounge. The VFW wants us to supervise ourselves and to leave the room clean when we depart which is certainly a reasonable request.

For the information of any new members, please note the following parking requirement now in effect from the VFW Post 3941 in Livonia, MI where we hold our CCOG meetings. Because of a shortage of automobile parking space on the east side of the building (facing the Foxhole Lounge) used by those attending bingo and other similar large public events at the VFW Post 3941, parking spaces and lighting have been added at the rear and on the west side of the VFW hall for members and their guests. You are therefore requested to use those added parking spaces instead of the parking spaces used by the bingo players during our meeting night. Again do NOT park in the area reserved for the bingo players.

## **"EXPERT'S CORNER" by Robert Gault**

Before we look at a prototype sound generating program let's look at an interesting hardware project. It is the conversion of the Tandy Orchestra-90 pak from just an 8-bit Digital to Analog Converter (DAC) to a complete two way 8-bit ADC/DAC. The project uses an 8-bit ADC integrated chip as the heart of the circuit, but the chip used proved somewhat slow. More on this later.

The Orc-90 pak contains an address selection circuit which permits writes only to bytes \$FF7A (left channel) and \$FF7B (right channel). There are also present two 8-bit DACs and associated output amplifiers. For the sake of simplicity, we will use the address at \$FF7A to read our new ADC. Hardware buffs can add to the circuit and use perhaps \$FF7C which will allow the original circuit to remain intact.

The ADC is the ADC080(x) x=1,2,3,4 which used to be sold by Tandy (276-1792). Refer to the Tandy "Semiconductor Reference Guide", 1983, for information on this chip. An equivalent part is the Philips ECG 2053. This ADC is still available via electronic supply outlets, but not from Tandy.

This chip (except for speed) is ideal as it can be directly connected to the 6809 data bus. However, the chip needs both read and write capability. That means addressing for reads must be added to the ORC-90 pak. We will use the same part (74LS138) that is used in the pak.

To access all of the required trace lines for the 74LS138, I piggybacked the new chip on top of the existing part. A low profile IC socket was soldered on to the existing chip with all lines connected EXCEPT pins 5, 14, and 15.

Pin 5 is an "enable" line which we will cause to to be permanently ON.

The ORC-90 chip is on only for writes. Ours will be on in addition for reads. Pins 14 and 15 are output pins which we don't want to interfere with the existing circuit. We will connect pin 15 to the chip select line of the ADC.

One more chip is required for the circuit, some type of inverter. The ADC uses separate read write lines having the same logic values. The 6809 systems use a single read/write line where the write versus read logic is inverted. The circuit diagram below shows a TTL inverter but I actually used the 74LS02 (NOR) with one input grounded as the inverter.

The data lines D0-D7 of the ADC are connected using ribbon cable to the ORC-90 ROM chip as the simplest way to access the 6809 bus. If you don't have an ORC-90 schematic diagram, the ROM pins are D0-D7 11,12,13,15,16,17,18,19.

Referring to the circuit diagram, you will see that the signal input to the ADC has been set for AC signals. The capacitor is present to protect the input device from the 2.5v DC offset. Use of the ADC for DC signals requires an isolation op-amp added to the circuit.

Note that the Left RCA jack is used for signal input. This means that the original Left ORC-90 output must be disconnected. If you desire to retain full ORC-90 capabilities, insert a single pole double throw switch into the circuit permitting selection of stereo vrs. ADC. An alternative is to mount a new input connector.

Copper clad perf board (IC type) was used to mount all new components other than the 74LS138. Connecting wires should be kept reasonably short and outputs routed away from inputs.

HOW DOES IT WORK or How To Do Less With More?

Yes, gentle reader, the circuit does work and, no, it does not do all that I wanted. The problem is the conversion speed of the ADC.

The chip is rated at a clock speed of 640KHz which makes its optimal conversion rate 8767 conversions per second. Translated this means that we can sample at this maximum rate (our code for storage will slow things somewhat) and signal theory states that we can handle about 4000 Hz without aliasing distortion. This won't do at all for audio.

I used the 6809 clock line to raise the ADC clock rate to 1.79MHz. Note that the chip maximum is 1.46MHz. At this rate there is a conversion at 24KHz which means we could handle a 12KHz audio signal. That would be almost as good as AM radio if true. The problem is the max rate of 1.46MHz for the chip.

What happens at this high rate is that the ADC loses accuracy. The circuit should give a reading of \$80 with no signal. My device reads \$87 for a 5% error. When I slowed the CPU clock to .89MHz (normal slow speed) the

ADC read \$80. Since the error is constant it won't be perceived as noise. I have not tested whether the offset is linear, it may not be. If not, it will be audible in some fashion.

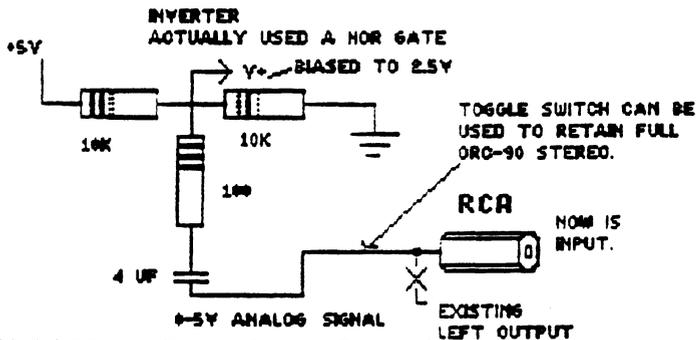
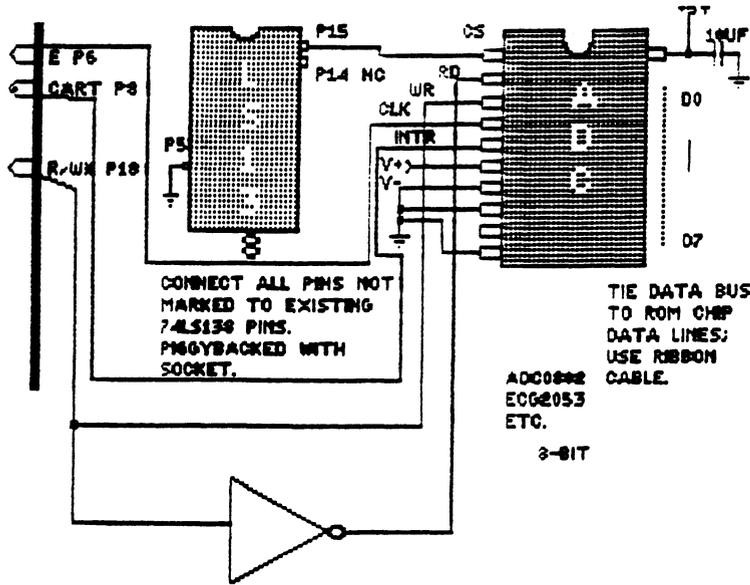
In actual use, the device sounds like a good portable AM/FM radio and the ORC-90 pak still works although in mono sound. Cost was under \$20. Hardware buffs may only need to buy the ADC ( see ADC drawing).

OKB  
**Jim's**  
**"CoCo" Corner**  
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300-1200-2400 BAUD 8/N/1 24 HOURS / 7 DAYS  
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## "Editors Notes"

Please have all articles for the news letter uploaded to the CCOG section of "Jim's CoCo Corner" by midnight of the third tuesday of the month. Articles uploaded after the cut off will be put into the following months issue.

I would like to take this opportunity to thank Mr Bernie Patton for seeing that the CCOG News Letter has not missed a single issue since the start of 1993. I have been having some medical problems that would have made it difficult to near impossible to put out this news letter, were it not for the continued support of Bernie. I am sure that all members feel the same way I do and are grateful to have a news letter at each meeting. Thanks again Bernie.



**ORCHESTRA-90 mod by R.Gault**  
**Adds 8-bit A to D at \$FF7A.**

# COLOR COMPUTER OWNERS GROUP

of Metropolitan Detroit

Meetings the fourth tuesday of each month  
 help at VFW Post 3941  
 Seven Mile road just east of Middlebelt.  
 Meetings start at 7:00 PM in the FOXHOLE  
 use the side door off the parking lot.

## 1993 MEETINGS

January 26  
 February 23  
 March 23  
 April 27  
 May 25  
 June 22

July 27  
 August 24  
 September 28  
 October 26  
 November 23  
 December 28

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