COMMODORE COMPUTER CLUB NEWS

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WIN A 1650 MODEM AT CCC AGM!!

Lots of goodies are to be given away and raffled off at the annual general meeting of the Commodore Computer Club, to be held at 7:30 p.m., Wednesday, January 15 at Emily Carr College of Art and Design.

At the top of the list is a Commodore 1650 auto-dial, auto-answer modem. Tickets for this now-extinct item will be on sale for a dollar each, or 6 tickets for $5. Door prizes to be awarded include a copy of Access Software's Mach 5 utility cartridge, plus text adventures and word processors (no Amigas, unfortunately).

In addition to all the fun and games (no pun intended), there is some serious business as well--the election of executive officers and directors for the club, and the proverbial "any other business that may come before the meeting". If you have a proposal for the club to include in its constitution like the moves against piracy of a couple of years back, the AGM is the place to air them.

It should be stressed that only paid-up members of the CCC will be admitted to this meeting and allowed to participate. To avoid line-ups and other delays at the door on January 15th, it is wise to renew your membership ahead of time at one of the club's regular workshop or business meetings.

Also, be sure and note the date -- January 15th. Since the first Wednesday of the month falls on New Year's Day, the Emily Carr meeting falls a week after the club's workshop meeting (at David Thompson on January 7th), rather than two weeks plus a day after the workshop meeting as is normal.

QUIZ FOR PIRATES

Many of our readers have written to us concerning the proliferation of software piracy. Among those readers there are a growing number who complain that they did not know that what they were doing was in fact piracy. For the benefit of those readers who fear that they may be closet pirates, we offer the following self-test.

1. How often do you purchase software for your computer?
   - A. Often. (0)
   - B. Sometimes. (1)
   - C. Rarely. (2)
   - D. Never, but I know someone who did once. (4)

2. Public domain software is:
   - A. Not copyrighted. (0)
   - B. Of inferior quality. (1)
   - C. Both A and B. (2)
   - D. Anything owned by me, friends, my friend's friends, or my enemies, that I can get my grubby little hands on. (4)

3. Canada A&M is:
   - A. A brand of malt whiskey. (0)
   - B. A foreign college with a good football team. (-1)
   - C. The Canadian equivalent of the French Foreign Legion. (0)
   - D. A copy program. (4)

4. Who is the Byte Baron?
   - A. Count Dracula's brother. (0)
   - B. A software pirate. (4)
   - C. A famous WW II flying ace. (-1)
   - D. Who cares, but thanks. (2)

5. A dongle is:
   - A. A method of copy protection that is effective for about two months. (4)
   - B. Too disgusting to imagine. (1)
   - C. A personal part of the male anatomy that should not be mentioned in fine articles like this. (-1)

6. 'Error 29' is:
   - A. A sequel to the best selling book, 'Catch 22'. (-1)
   - B. The one just after Error 28. (0)
   - C. Something that FCopy laughs at. (3)
   - D. Disk ID mismatch. (4)

7. How much money do you spend on blank diskettes each month?
   - A. I never buy blank diskettes. (0)
   - B. $0 - $25.00 (1)
   - C. $25 - $50.00 (2)
   - D. The equivalent of the gross national product of any third world country. (4)

8. Choose one best describing you.
   - A. I once copied a copyrighted program. (2)
   - B. I have NEVER copied a copyrighted program. (0)
   - C. I once DIDN'T copy a copyrighted program, even though I had a blank disk with me at the time. (4)

9. How would you respond to the following hypothetical situation?
   It is 2 A.M., and you are hacking away on your Commodore 64, when suddenly two men jump through your window and yell that they are from the FBI. You therefore...
   - A. Introduce yourself and offer the agents a cup of coffee. (0)
   - B. Whip out your little black book in which you have written names of all pirates you know. (0)
   - C. Stand up and start singing the national anthem while at the same time activating the 100,000 Gauss electromagnet conveniently placed beneath your Flip'n'Files. (4)

SCORING:

Each number in parentheses gives the Piracy Quotient (tm). Scores of zeros, ones or twos indicate you are pretty naive when it comes to the subject of piracy. Fours indicate that a knowledge of the subject, while negative numbers are a sign of sainthood.

0 or less - You know diddly squat about piracy, but you do have a sense of humour.

1 to 10 - You are probably awaiting your elevation to the papacy. The sight of someone copying software is enough to make you faint.

11 to 35 - You are probably an occasional pirate, copying programs to save money. To ease your guilt, you send money to the author whom you have deprived of his livelihood.

36 - You are not a nice person. By committing your vile heinous crime you are causing the very foundations of civilization to crumble. The fall of the Roman Empire can be traced directly to your ancestors. In fact we are placing you under arrest. Please remain where you are until the police arrive.

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MEETING SCHEDULE

-- Workshop Meetings --
(David Thompson School)
January 7th
February 4th
March 4th
April 1st
May 6th
June 3rd
June 24rd (replaces July meeting)

-- Lecture Meetings --
(Emily Carr College)
January 15th
February 19th
March 19th
April 16th

C-64: A DESIGN CASE HISTORY

By TEKLA S. PERRY and PAUL WALLICH

(Continued from last issue)

When the design of the Commodore 64 began, the overriding goals were simplicity and low cost. The initial production cost of the Commodore 64 was targeted at $130; it turned out to be $135. The computer would use the same case as the VIC-20 and the same-sized circuit board, to speed development. "That wasn't even a decision," said Charpentier. "It was just common sense. If you've got a product that's a winner, why change it?" To switch from the VIC-20 to the Commodore 64, the production group had only to make the cartridge slot smaller, change the color of the case, and design a new label.

Furthermore, instead of designing for performance first and price second, as many engineers tend to do, the small design team at Commodore had cost in mind from the beginning. Yannes, for example, had made economy his credo when he was an impecunious high-school student looking for parts to build a sound synthesizer. "Anytime I design something, I want to use the minimum number of components possible. It's a personal challenge. If there's a spare [logic] gate in a gate package, I'll work to get rid of the entire package, because in working with a certain number of chips, I ought to be able to use up everything that's in them. The Commodore 64 was my attempt to build the absolute minimal system that could be built out of the video and sound chips put together."

In the consumer-electronics industry, new products are traditionally introduced to distributors, dealers, the press, and the competition twice a year--during the first weekend in January and the first weekend in June, at the Winter and Summer Consumer Electronics Shows (CESs).

"When you worked for Commodore," said Yannes, "you always had to have something for the Winter CES." The C-64 didn't have much competition at the winter show in 1982. Atari was still showing its 400/800 computer. Mattel introduced the Aquarius computer, and Spectravideo introduced its computer/game machine, both with limited memory and capabilities.

Ziembicki recalled, "All we saw at our booth were Atari people with their mouths dropping open saying, 'How can you do that for $595?'"

"We were a hit," Winterble added.

After the show, Commodore, which had a reputation for sometimes showing products that never reappeared, had to get the 64 into production quickly. Only a few design changes were made to ready the machine for production. "What's in the 64 functionally is what I wanted," Yannes said. "What's in the sound chip is what I wanted, and what's in the video chip is what Al [Charpentier] wanted."

In fact, said Ziembicki, "after it finally got into production, we looked back and asked, why did we bother changing it after January? It wouldn't have sold one unit less, and we would have saved a lot of money on development costs."

Some of the changes were fairly significant, but they may have created as many problems as they solved. The biggest improvement was to remedy a "hiccup" in the video chip, said Winterble.

When Charpentier first designed the video chip, he explained, his goal was optimum performance in both black-and-white and color. Previous video chips, such as those used in the Atari and the Apple, had a black-and-white frequency of 7.16 MHz--twice the television color-clock frequency of 3.58 MHz--but this could not squeeze enough characters on a line, and it also induced cross talk between the two signals, causing an object to shift slightly to the left or right on the screen depending on its color. After the January 1982 CES, when he saw that 40 characters wouldn't quite fit onto a TV screen, Charpenter sped up the black-and-white clock rate and made the two clocks completely asynchronous. But since the color and black-and-white sets of information were constantly changing phase relative to each other, "the color transitions were fantastic, but there was an overall swimming effect," he recalled. The solution was to put a phase-locked loop into the system so the color and the black-and-white information would have a constant relationship. This, Charpenter acknowledged, was "a Band-Aid solution."

And that is what it looks like, according to Craig Nelson, director of product development for Epyx Computer Software of Sunnyvale, Calif. "It's a really elegant circuit," he said, "except for the phase-locked loop, which is just stuck in the middle of it." (Commodore now says it has redesigned the chip to eliminate the problem.)

As a result of the "Band-Aid," the color information and the black-and-white information shift phase by 180 degrees in relation to each other on successive video fields rather than changing phase unpredictably. This conforms more closely to the National Television Systems Committee (NTSC) standard, which requires black-and-white information to have a clock rate that is an odd harmonic of the color-clock rate, so that the two automatically reverse their relationship every other field--one field in phase, the next field out of phase. (In the NTSC standard, colors are determined by the phase difference between the color signal and a color reference signal transmitted at the beginning of each line.)

At the time the standard was developed, commonly available circuitry could not completely separate the black-and-white information from the color: changes in color would lead to changes in brightness and vice versa. It was to average these changes out over time that the NTSC specified that the relative phase reversal of the two signals would occur on successive fields. The result is more pleasing color transitions, but the phase shift makes stationary figures appear to jitter. The jitter is particularly obvious on thin vertical lines, like those in alphanumeric characters. But when the Commodore 64 was conceived, it was to be primarily a game machine, not a computer.

Running a 5-micrometer-technology chip at an 8-MHz clock rate caused it to dissipate a great deal of power--nearly 1.5 watts. Not only did the chip run fast, but to prevent the colors from washing out, as they had in the VIC-20, "we went to 12 volts to drive the heck out of the color signals," recalled Winterble. "We knew we would have a heat problem."

At this point Winterble made another design fix--welding a small metal tab onto the inside of the lid of the shielding enclosure around the video chip. When the computer was assembled, the tab pressed against the top of the chip package, forming a heat-conducting path and turning the shielding into a heat sink.

Some changes that might have improved the machine did not get made in the rush to production. For example, Yannes said, the wires for the sound output on the printed-circuit board run alongside the wires for the video signal. As a result, the sound output picks up an annoying 15 750 Hz-whine. Rerouting the circuit would have taken time, "and we had a board that worked," he explained. "At that point, if you had something that worked, you did not change it." A circuit board revision since then has rerouted these lines, Commodore said.

But the designers did in fact change some things that worked--including one revision that degraded the machine's performance. The original design specified a high-quality radio-frequency modulator to transmit the signal to a television set, but a cheaper modulator was substituted. "It was $6.25 to $6.50 for a good one, and we ended up spending about $3," Charpenter said.

Winterble has a different view of the $3 modulator: "The 50-cent modulator we were using on the VIC-20 wasn't good enough," he said, "so we went to a more expensive one."

Electronic design wasn't the only difficult area as the Commodore 64 went from prototype development into production--the logistics posed a complex problem. The C-64 was designed in Norristown, Pa., at MOS. The VIC-20 assembly line, which was to begin making C-64s, was in Santa Clara, Calif. As the C-64 went into production, Commodore was also opening a new assembly line in West Chester, Pa. There were additional VIC-20 assembly facilities in Japan, where the disk drive for the C-64 was to be manufactured. And the C-64 circuit boards were being made in Hong Kong.

"It was a lot of fun," said Ziembicki. "The design people would pick an English screw. The production end would pick a metric. But they went with what they had. Commodore production was very good at making things fit whether they were intended to or not. Their charter was, 'Ship 'em!'"

The start of production of the Commodore 64 in the spring of 1982 did not signal an end to controversy. "The key is to be able to solve your problems while you're running," said Ziembicki.

One of the first battles, recalled Charpentier, was over the layout of the printed-circuit board. Commodore's assembly plant in the United States used automated component-insertion equipment, but its Japanese facility did not, and the two assembly techniques required different component spacing. In the end, the board for the C-64 was laid out for automated insertion, and production was moved to a new plant in Hong Kong that had the automated tools.

Problems also plagued a number of the components--switches, for example. "You pick a switch that's listed as a consumer switch," said Ziembicki. "You design it in. You call the manufacturer and get an estimate that sounds reasonable. Then California [the production division] wants 50,000 a week, but the manufacturer says, 'We can't make that. It's a consumer switch, but we're not geared for consumer quantities.' At that point, you're hung up."

Since Commodore had just moved its engineering staff from California to Pennsylvania, communication

(Continued on page 4)

128'S MEMORY MAP

COMPILED BY JAMES W. HERMANN, 9/3/85

$$$$RAM(0)$$$$

$0000	8502 ON-CHIP D-D REGISTER
$0001	8502 ON-CHIP I/O REGISTER
0002-0089	BASIC ZERO PAGE
0002-0009	TEMP. STORAGE BANK;<PC;>PC;ST;A;X;Y;P FROM CPU OR CODE FOR SWITCH TO 64
002D-003C	BASIC MEMORY VECTORS
002D	START OF BASIC PGM RAM(0)
002F	START OF VAR.$0400 RAM(1)
0031	START OF ARRAYS RAM(1)
0033	END OF ARRAYS RAM(1)
0035	BOTTOM OF STRINGS RAM(1)
0037	LOWEST STRING VCTR RAM(1)
0039	TOP OF BASIC $FF00 RAM(0)
003B	TOP OF BASIC $FF00 RAM(1)
003D	BASIC INPUT BYTE VECTOR
007D	UNKNOWN VECTOR 09FF
0090-00FF	KERNAL ZERO PAGE
0091	FLAG: STOP KEY
0098	NO. OF OPEN FILES
0099	DEFAULT INPUT DEVICE(0)
009A	DEFAULT OUTPUT DEVICE(3)
00A0-00A2	JIFFY CLOCK
00B2-00B3	TAPE BUFFER VECTOR
00B7	LEN OF CURRENT FILENAME
00B8	CURRENT FILE NO.
00B9	CURRENT SEC. ADDR.
00BA	CURRENT DEVICE NO.
00BB-00BC	FILENAME ADDRESS
0100-01FF	CPU STACK
0100-010F	F BUFFER
0110-0148	BASIC DOS USING
0200-02A1	BASIC AND MON INPUT BUF
02A2-02FB	KERNAL RAM CODE
02A2-02AE	LDA ($ZP);Y FOR MMU=X
02AA	ZERO-PAGE INDIRECT ADDR
02AF-02BD	STA ($ZP);Y FOR MMU=X
02B9	ZERO-PAGE INDIRECT ADDR
02BE-02CC	CMP ($ZP);Y FOR MMU=X
02C8	ZERO-PAGE INDIRECT ADDR
02CD-02CF	JSR $02E3
02D0-02E2	STORE CPU REG. IN $02-09
02E3-02FB	RTI BASED ON $02-09
02FC-033B	INDIRECT VECTORS-UNKNOWN
0300	PRINT BASIC MESSAGE 4D3F
0302	BASIC WARM START 4DC6
0304	TOKENIZE BASIC TEXT 430D
0306	BASIC TEXT LIST 5151
0308	BASIC CHAR DISPATCH 4AA2
030A	BASIC TOKEN EVAL. 78DA
030C-0310	UNKNOWN VECTORS
0314	IRQ HARDWARE INT. FA65
0316	BRK INTERRUPT B003
0318	NMI NON-MASK. INT. FA40
031A	OPEN EFBD
031C	CLOSE F18B
031E	CHKIN F106
0320	CHKOUT F14C
0322	CLRCHN F226
0324	CHRIN EF06
0326	CHROUT EF79
0328	STOP F66E
032A	GETIN EEEB
032C	CLALL F222
032E	USER-DEFINED B006
0330	LOAD F26C
0332	SAVE F54E
0334-0348	UNKNOWN VECTORS
033C-037F	KERNAL TABLES
0380-03FF	BASIC RAM CODE
0380-039E	BASIC CHRGET ROUTINE
039F-03D1	MISC. LDA ROUTINES
0400-04FF	VIC TEXT SCREEN (VM #1)
0800-09FF	BASIC RUN-TIME STACK
0A00-0AFF	MON & KERNAL ABS. VAR.
0A00-0A01	BASIC COLD START 4000/3
0A02	RAM INIT. IF =$A5
0A04	BASIC INIT. IF BIT 0 SET
0AC0	NUMBER OF INT./EXT. ROM'S
0AC1-0AC4	ACTIVE ROM FLAGS
0B00-0BBF	CASSETTE BUFFER
0BC0-0BFF	(DISK BOOT PAGE)
0C00-0CFF	RS-232 INPUT BUFFER
0D00-0DFF	RS-232 OUTPUT BUFFER
0E00-0FFF	SPRITE DEFINITION AREA
1000-10FF	FUNCTION KEY BUFFER
1000-1009	# OF BYTES PER KEY
100A-	FUNCTION KEY STRINGS
1100-1107	CP/M RESET CODE
1108-11FF	BASIC DOS/VSP VARIABLES
1200-12FF	BASIC ABSOLUTE VARIABLES
117A-122A	MISC. VECTORS
1210	END OF BASIC PROGRAM
1300-13FF	?
1400-17FF	RESV./FOREIGN LANG. SYS.
1B00-1BFF	RESV./FUNCTION KEY ML
1C00-FEFF	BASIC PROGRAM AREA OR
1C00-1FFF	VIC BIT-MAP COLOR (VM #2)
2000-3FFF	VIC BIT-MAP SCREEN
4000-FEFF	BASIC PROGRAM AREA(CON'T)
$FF00	MMU CONFIG. REGISTER
$FF01-FF04	MMU REGISTERS
FF05-FF44	KERNAL DISPATCH CODE
FFD0-	CP/M AND KERNAL RAM CODE
FFFA-FFFF	NMI;RST; AND IRQ VECTORS

$$$$RAM(1)$$$$

0000-03FF	SAME AS RAM(0)
0400-FEFF	BASIC VARIABLE STORAGE
$FF00	MMU CONFIG. REGISTER
$FF01-FF04	MMU REGISTERS
FF05-FF44	KERNAL INT. DISPATCH CODE
FFF5-FFF9	"CBM" AND RST ADDR $E224
FFFA-FFFF	NMI;RST; AND IRQ VECTORS

$$$$RAM(2)$$$$ IF PRESENT

$FF00	MMU CONFIG. REGISTER
$FF01-FF04	MMU REGISTERS
FF05-FF44	KERNAL INT. DISPATCH CODE
FFFA-FFFF	NMI;RST; AND IRQ VECTORS

$$$$RAM(3)$$$$ IF PRESENT

$FF00	MMU CONFIG. REGISTER
$FF01-FF04	MMU REGISTERS
FF05-FF44	KERNAL INT. DISPATCH CODE
FFFA-FFFF	NMI;RST; AND IRQ VECTORS

$$$$ROM'S AND I/O$$$$ SWITCHABLE

4000-7FFF	BASIC LOW ROM OR INTERNAL LOW ROM OR EXTERNAL LOW ROM.
4000-	BASIC POWER-UP JMP $4023
4003-	BASIC RESET JMP $4009
4023-4044	BASIC POWER-UP
4045-410F	INIT. BASIC REGISTERS
4112-4179	INIT. BASIC ABS. VAR.
417A-418C	INITALIZE D501-4
419B-41BA	PRINT RESET SCREEN
41BB-4250	RESET SCREEN HEADER CHAR.
4251-4278	INIT. 0300-11;02FC
4279-43DD	BASIC CHRGET ML
430D-	TOKENIZE BASIC TEXT
4417-4515	BASIC 2.0 KEYWORDS
4516-46F8	BASIC 7.0 KEYWORDS
4848-4A81	BASIC ERROR MEASSAGES
4AA2-	BASIC CHAR. DISPATCH
4D3F-	PRINT BASIC MESSAGE
4DC6-	BASIC WARM START
5151-	BASIC TEXT LIST
5109-5261	INIT. BASIC PGM VECTORS
6EB2-6EDA	INIT. BASIC ABS. VAR.
78DA-	BASIC TOKEN EVAL.
7E82-7FFD	BLANK
8000-BFFF	BASIC MID ROM OR INTERNAL ROM OR EXTERNAL ROM.
9251-9298	BASIC TO KERNAL JMP TABLE
A845-A84C	TO BANK(15)
AA6E-AE62	BLANK
AFAB-AFFF	BLANK
B000-BFFF	MONITER ROM
B000-	MONITER RST CODE
B003-	BRK
BB72-BFFD	BLANK
C000-CFFF	EDITOR HIGH ROM OR INTERNAL ROM OR EXTERNAL ROM.
C000-	CIN@ -JMP $C07B
C00F-	SCREEN
C012-	SCNKEY
C018-	PLOT
C07B-	CINT
CEA8-CEF4	FUNCTION KEY INIT. VALUES
CEF5-CFFD	BLANK
D000-DFFF	I/O SPACE
D500-D50B	MMU I/O CHIP(SWITCHABLE)
D500	MMU CONFIG. REG. ($FF00)
D501-D504	MMU REGISTERS ($FF01-4)
D505	BIT 7 - 40/80 SWITCH 1=40 BIT 6 - 128/64 MODE 1=6 BITS 4-5 -IF NOT SET THEN RST GOES TO 64 MODE BIT 1 -NOT INPUT =1 BIT 2 -? BIT 1 -NOT INPUT =1 BIT 0 -8502/Z80 CPU 0=Z80
D50C-D5FF	BLANK
DC00-DCFF	CIA #1 (KEYBOARD; ETC.)
DD00-DDFF	CIA #2 (SERIAL; ETC.)
E000-FFFF	KERNAL HIGH ROM
E000-	KERNAL ROM CODE
E000-E048	RST CODE
E04B-E055	$D500 INIT. VALUES
E056-	RESTORE
E05B-	VECTOR
E093-	RAMTAS
E0CD-E108	INIT.$FF05- ON RAM(0-3) & KERNAL RAM CODE ON RAM(0)
E109-E1EF	IOINIT ROUTINE
E1F0-E223	IF $FFF5-9 ON RAM(1)=CBM, THEN JMP ($FFF8);ELSE...
E224-E241	INIT. $FFF5-9 ON RAM(1)
E242-E2BF	SWITCH TO 64 MODE IF D505 BITS 4-5 NOT SET; CHECK INT./EXT. ROM AND JMP
E24B-E26A	SWITCH TO 64 MODE
E338-	TALK
E33E-	LISTEN
E43E-	ACPTR
E4D2-	SECOND
E4E0-	TKSA
E503-	CIOUT
E515-	UNTLK
E526-	UNLSN
F23D-F264	CLOSE ALL FILES ON DEV=AC
F265-	LOAD
F53E-	SAVE
F5F8-	UDTIM
F63D-F65D	CHECK FOR CTRL R/S OR C=
F65E-	RDTIM
F665-	SETTIM
F6B1-F71D	KERNAL MESSAGES
F731-	SETNAM
F738-	SETLFS
F744-	READST
F75C-	SETMSG
F75F-	SETTMO
F763-	MEMTOP
F772-	MEMBOT
F781-	IOBASE
F7D0-F7D9	CALL KERNAL RAM CODE 02A2 TO LDA BYTE FROM ADDR;Y AT ZERO-PAGE VECTOR IN ACC FOR BANK(X)
F7EC-F7EF	LDA MMU VALUE FOR BANK(X)
F7F0-F7FF	MMU VALUES FOR BANK(0-15)
F800-F859	KERNAL RAM CODE $02A2-FB
F85A-F866	KERNAL RAM CODE $03F0-FC
F867-F90A	CHECK FOR ROM NOT USED ON RST ; LOAD CP/M BOOT PAGE AND EXECUTE
F9D5-F9FA	LOAD PAGE AND STA($ACC)
FA00-	EDITOR TABLES
FA40-	NMI
FA65-	IRQ
FC3B-FC7F	BLANK
FC80-FEFF	FOREIGN LANG. SYS.-BLANK
$FF00	MMU CONFIG. REGISTER
$FF01-FF04	MMU REGISTERS
FF05-FF44	KERNAL INT. DISPATCH CODE
FF3D-FF44	RST CODE JMP $E000
FF47-FF80	KERNAL HARDWARE JMP TABLE
FF81-FFF5	KERNAL USER JUMP TABLE
FFFA-FFFF	NMI;RST; AND IRQ VECTORS

THESE ARE I/O REGISTERS AND TAKE THE PLACE OF RAM OR ROM ALWAYS.

----MMU CONFIGURATION REGISTER $FF00

BITS	VALUES	PURPOSE
6-7	RAM CONTROL-	
	00	RAM(0)
	01	RAM(1)
	10	RAM(2)
	11	RAM(
4-5	ROM CONTROL-	
	00	KERNAL AND EDIT ROM
	01	INT. MID/HIGH ROM
	10	EXT. MID/HIGH ROM
	11	NONE
2-3	ROM CONTROL-	
	00	BASIC & CHAR ROM
	01	INTERNAL ROM
	10	EXTERNAL ROM
	11	NONE
1	UNKNOWN	
0	I/O CONTROL- 1=NONE	

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Club meetings are normally held: *Workshop*: first Tuesday of the month, 7:00 p.m., Thompson Secondary School cafeteria, 1755 E. 55th Ave. (near Victoria Drive); *Lecture*: third Wednesday of the month, 7:00 p.m., Emily Carr College of Art and Design, 1399 Johnston, Granville Island. For up-to-date information on any changes, please call the club BBS at 271-1002 or the club's 24-hour answering machine:

PET-3311 (738-3311)

WORD PROCESSING

By MIKE QUIGLEY

One of the most awaited programs of the last few months for the Commodore 64 has been The Newsroom from Springboard Software. This program allows you to create your own newspaper with text and pictures, the latter drawn from about 600 pieces of Print Shop-style artwork. The program comes with a "money back if not satisfied" guarantee from the manufacturer. (You have to return the program to the company in Minneapolis.)

I had the opportunity to try The Newsroom out for a couple of days recently. I originally hoped to buy it, but ran into a problem with my printer, a Gemini 10 (not a 10-I). It seems that this ancient beast, one of several that were bulk purchased through the CCC some years ago, has a bug in it somewhere which causes it to put extra line feeds in some programs like the Print Shop and, unfortunately, The Newsroom.

With The Newsroom, you can create text with a rather simple word processor and merge this with the program's pictures found on a second, double-sided disk (or you can create your own artwork). You can also have a "banner" which identifies the paper, just like on page one of the *CCC News*. Doing all this is not a particularly easy task, since you really have to think ahead every step of the way.

If you choose to make an 8-1/2"x11" paper (the other option is legal size, 8-1/2"x14"), the page is divided into four "panels", each approximately 4 wide by 2-3/4" deep. Each panel is worked on separately and saved to your own "data disk". When the paper is printed, the program calls these panels up in an order which you specify. This means if you want to have a story down one side of the page with long columns such as we have here, you may end up breaking the story into several pieces. Going back later to add another sentence into the top panel means you will have to do some pretty hairy editing of succeeding panels, assuming they are full of text. I wasn't too crazy about the word processor used to make the text--if you want to delete copy, you have to back the cursor up to the first character you want to delete. Pushing the INST/DEL key then removes all copy to the right of the cursor. Why can't these people realize that there are some features of the 64 which work just fine the way they are?

The Newsroom's pictures can be edited in a Doodle-like manner in a separate part of the program. (An additional package, costing about as much as the Newsroom itself--$60 or so--contains yet more artwork.) Though my experience with this part of the program was rather limited, I discovered you have to be careful not to push the joystick button (or the optional keys on the keyboard) too much or you will wind up with the artwork containing a bunch of bizarre shadows which my kids said made the pictures look like they had "some kind of disease".

An interesting feature of The Newsroom is that you can send and receive "copy" for your newspaper by modem, even from other computers' versions of the program. Unfortunately, this is strictly for material created with The Newsroom on the other end of the phone line. The program is not easily compatible with other word processors either--though the text is largely created in True ASCII, trying to edit it to fit in the Newsroom's "panels" would be a real circus.

The program has five different "type styles"--two small and three large--with two of the large ones being blown up versions of the smaller, plus a fancy "Old English" style large type thrown in for decorative titles. You can only use one small and one large type in each panel, which seems restrictive, but there are ways of getting around this as far as the whole page is concerned.

The Newsroom is visually rather dull, aside from the opening title screen. It is extensively menu-driven and contains a wide variety of options in regards to printers and interfaces. (One significant omission from the interface list is the MW-350 Micrografix, but while testing, I discovered that the Cardco G+ prompt would work for that one.) Once you have chosen your preferences in regards to printer, interface and modem type, these are saved to disk in a default file. I would strongly recommend not using Newsroom with Epyx Fastload, since the latter is famous for screwing up disks during this kind of saves. (A backup disk of Newsroom is available from Springboard for an additional $12 fee. It isn't specified whether this will get you just the program's "master disk", which contains the main program, or both that disk plus the one of artwork. Damaged disks can also be replaced for an additional charge.)

A serious flaw with the program is when you try to go from the text creation area back to the main menu. There is no cancellation prompt here with the F1 function key like there are in other parts of the program. As a result, accidentally wanting to go to the menu means all your text will be destroyed if you haven't saved it!

While I don't think the program is designed for really serious use, it is still an interesting challenge for someone who wants to put out a bulletin for a concern like a church group, or for some kids to make a newspaper up for their class at school. I'm waiting for the Amiga version of The Newsroom--if it has as much potential as the C-64 version does, it should be a real mind-blower!

DESIGN CASE HISTORY

(Continued from page two)

between the design engineers and the production facilities was not very good, Ziembicki explained. "It got to the point where you couldn't stop working even if you didn't get an answer--you'd just proceed with the components that you thought the production end could get."

And outside suppliers were not always reliable. "One provided a power supply for engineering approval," Ziembicki recalled. "It got approved, and then the supplier changed the design and didn't tell anybody."

Charpenter said that his relations with the production group were fairly agreeable. Winterble's dealings with them were not nearly as cordial, but he found this acceptable. "I personally had to play the heavy on a lot of stuff," he said. "Then Al would go in and do some good. That technique eased a lot of tension--it was a way to get things done."

The most notorious problem was "sparkle," a defect that caused small spots of light to appear on the display screen. The problem was solved before Charpentier left the company in September 1982, but reports of the defect continued well into the Christmas season, with press reports citing it as an example of Commodore's poor quality control. Canny consumers used it as an excuse to return perfectly good Commodore 64s while they were under 90-day warranty. Since the price of the machine had dropped $200 in the two months following its introduction, this ruse enabled owners to obtain a refund of the purchase price and buy another C-64 at the lower figure.

Sparkle was widely attributed to bugs in the video chip that was the heart of the system, but in fact it was caused by a ROM chip of which 3 million were in service with no problems in other types of systems, including the hit arcade video game Asteroids. Commodore engineers themselves looked for the problem in the video chip. It took them three weeks to spot the ROM chip as the source of the defect, Charpenter said. "The problem was a random event--it didn't happen all the time. We thought the video chip was for some reason seeing wrong data. We didn't even suspect it could be the ROM. Finally, we put the logic analyzer on it and tracked it down." The ROM, which Charpentier and his group had designed years earlier, had a special precharging circuit to make it run faster, but the circuit made it sensitive to spurious signals. The video circuitry and the 6510 microprocessor alternated in controlling the system bus, and when control passed from one to the other, voltage spikes were sometimes generated.

"It just happened that we hit the exact timing," Charpentier said. "If the spike had been a few nanoseconds shorter or longer, it wouldn't have been a problem. The spike was just wide enough that the ROM saw it as a valid address. It would ignore the next address and give the video chip wrong data." Since the ROM contained the C-64 character set, the screen display would be littered with random slices of characters.

According to Nelson of Epyx, "This confetti interference-looking stuff on the screen, glowingly referred to as sparkle, has an extremely un-nice property: it causes hardware collisions--the sprites really believe it exists." Since the sparkle was caused by inappropriate data fed to the video chip, it triggered the circuitry responsible for checking whether the movable display objects--sprites--were overlaying background objects on the screen. So software that depended on collision sensing to control the movement of objects on the screen would go berserk when confronted by sparkle.

The bug in the ROM was corrected, although Commodore had to rely on outside suppliers for a while as it ramped up its new production line. Only the first few hundred thousand units shipped had the defect. But, Nelson observed, "it doesn't matter to programmers that it was fixed. Our software has to work in every machine out there." The best solution for programmers, he explained, is to copy the contents of the ROM into RAM, which is reliable. But this wastes 2 kilobytes of RAM.

In addition to the difficulty with the ROM, "I made a logic error," Charpenter recalled. The error, which was corrected sometime after Charpenter left Commodore, caused the early C-64s to generate the wrong number of clock cycles on each horizontal video line. "It was off by one," he said. "Instead of 65 clock cycles per line, I had 64."

As a result, the 180-degree phase shift between the black-and-white and color information, which would eliminated color-transition problems, didn't occur. Depending on their color and the color of the background, the edges of some objects on the screen would appear slightly out of line. This was corrected approximately five months into production.

But leading edges are still a problem with the C-64. The circuitry that displays either sprite information or background information at any point on the screen is sometimes slow to respond and overlays the sprite on the background information only after it has missed a few pixels.

(Continued in next issue -- Part One of this article is now available on the CCC BBS at 271-1082.)