GROUP USERS HOUSTON ADDLE



News from the Apple Barrel

VOLUME 3 NO. 5 JUNE-JULY, 1980

Président, Bruce Barber

Editor, Ed Seeger

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Chuck Bracht

Mike Kramer

Pat McGee

Leslie Doest



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IN CASE YOU HAVEN'T HEARD >>>

(The Apple III is Out!)

Every self-respecting Apple-oriented newsletter is obliged to report something like the following article, and is doing so! Without a doubt the new Apple III is an interesting, maybe to some fascinating machine. BUT IT IS NOT A HOBBYIST MACHINE. I wish there were some easy way to make that point stick. IT IS NOT A HOBBYIST MACHINE. That is to say, you are not going to run out and trade in your faithful Apple II on a brand new III. Nor are you going to want to wait to kick tires on a III before deciding whether or not to spring for an Apple or an Atari (or whatever other seductress you may be about to fall for). All of the hype you are hearing? Don't let it rattle you into believing Apple, Inc., is about to abandon you to the ravages of planned obsolescence. True enough, Apple is out to sell the business market, and that's who the new stuff is aimed at. You don't believe it? Read on, and then judge for yourself if the Apple III is something you'd install in the workroom for accessing the Source, teaching French vocabulary, or outsmarting the wiley space invaders.

Let's run down some specs, and then talk about it:

- * CPU is a 6502A, running at 2 MHz.
- * Will ultimately address 512K, initially 96K RAM.
- * Built-in 5 1/4" disk drive with 143K storage.
- * Expandable to 4 drives with built-in disk controller.
- * Built-in battery-powered clock/calender.
- * 6-bit digital-to-analog converter for good quality audio.
- * RS-232C serial port.
- * SILENTYPE Printer port.
- * 4 analog-to-digital converters can be used with joysticks.
- * Full upper/lower-case keyboard with 10-key pad.
- * Fast repeat, alpha-lock and 4 cursor movement keys.
- * 2 independently-programmable "soft keys".

- * Video display 80 x 24 U/L-case.
- * Apple II emulation mode.
- * 3 new graphics modes:

Mode I - 140 x 192 dots, 16 colors or shades of gray.

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Mode II - 280 x 192, 16 colors which can change only every 7 dots.

Mode III - 560 x 192 ultra-hires black and white.

- * Sophisticated Operating System (SOS) occupying around 14K.
- * An interpretive business BASIC.
- * A new VISICALC.
- * Comes in 3 versions:

V.1 - 96K Apple III, built-in disk drive, 12" B&W monitor, SOS, Business BASIC, Visicalc III, Mail List Manager.

V.2 - Essentially a word-processing system, 96K Apple III, 2 disk drives, monitor, SilenType printer or Qume Letter Quality printer, SOS, Business BASIC, and a word processor with tutorial instructions.

V.3 - Hardware as in V.2 (excluding printer), has SOS, Business BASIC, FORTRAN, and Apple USCD Pascal. Primarily for software development.

=====> COST? \$4000-8000+, DEPENDING ON YOUR CHOICE OF VERSION.

After all the noise has died, your Apple IIs will be supported for a promised 5 years by Apple, Inc., not to mention support by the vast second source industry, exemplified by Mountain Hardware, Personal Software, Information Unlimited Software, and scores of smaller shops all over the country. To think the Apple III will compete with your Apple II is like fearing the Corvette would crowd out the Nova! It isn't going to happen. The features and the price suggest a non-hobbyist market, but we also expect to see filter down such innovations as a new DOS (look for 3.3 later in 1980), maybe a scaled-down SOS, FORTRAN (already announced for the II), and also a new BASIC and Pascal. So relax; it appears that everyone will benefit. Hold onto them Apples; they've got a few useful years still in them. And if you want to soup up the old Nova, turbocharge it with one of those new 2-80 boards. They say it'll really scream!

> EBS

HAAUG MEMBERSHIP SURVEY

Attached within this issue of the Apple Barrel is our first membership survey. The purpose of the survey is to accomplish the following objectives:

- To update our information such as addresses, phone numbers, etc. (Including Source or Micronet)
- To find your special interests in using your Apple. (This will help in designing meetings and articles.)
- 3) To create a force of volunteers for special areas in which we need help.
- 4) To get any other input that you wish to give.

Please give special attention to the Volunteer section (Sec. 3). This is an opportunity to strengthen our club and its activities, and get more people "involved." The survey will be most valuable if everyone responds. Won't you take a few minutes now to complete it, staple it closed, and mail it? Thanks for your help! (Results will be published soon.)

HAAUG MEMBERSHIP SURVEY

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	First Name	M.I.	Last	Name	A.C. Home	Phone
	Street Address	APT #	Ci	ity	State	Zi
	Occupation		Company	Name	() A.C. Work	Phone
	Business Mailing Address	Ste.	<u> </u>	İty	State	Zi
	I PREFER MAIL TO:	BUS	INESS		RESIDENCE]
	Source #		¥	Micro	net #	
2)	Special Interest (Please	check ar	eas of most	tinterest	to you):	
	Games/Puzzles Science/Engineering Business Applications Source/Micronet		•	New Lang Hardware Programm Other	uages ing	
	How do you use your Apple	? (Answ	er approxim	nate perce	ntages):	
	Games%	Business	%	Wo	rd Processing _	%
	:	Source/Mi	cronet	%		
3)	Help is need in the follo	wing areas	s. Please	check whe	re you would help	if cal
	 a) Writing Articles For Barrel b) Mailing Apple Barrel (collating, stapling) c) Writing Programs For Library d) Evaluating Programs e) Maintaining Program Library f) Help Run Program Exchang g) Bring Apple to Program 	Apple g) Apple ange m Exch.	h) j) k) 1) m) n) o) p) q)	Maintain Putting Helping Membersh Hardware Sale of Office A Faciliti Special Other	ing Hardcopy Libr Directory Togethe on Membership ip Orientation Projects Discount Merchand ssistance es Coordinator Projects	ary r ise

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FROM _____

\$ 1.5

Please Affix Postage

HAAUG SURVEY % DENNIS CORNWELL 7981 KENDALIA HOUSTON, TEXAS 77036

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<<< BUSINESS AND FINANCE MEETING >>>

The next meeting of the Business and Finance Special Interest Group will be on Tuesday, July 22, at the EBASCO offices, 3731 Briar Park at corner of West Park. The program will include a demonstration of Apple's Controller system, including Accounts Receivable, Accounts Payable, and General Ledger. For further information call Rudge Allen, 622-3979, or Lee Gilbreth, 780-4466.

===> Coming up in August: Apple III demo.

FILE CABINET STUFFER

--by Mike Kramer

With all of its capabilities, FILE CABINET (I thru IV) does not lend itself to changing a specific item or items common to all records in a given data base. FILE CABINET STUFFER provides a convenient way to loop through all records and examine, enter, or change any or all values.

When executed, FILE CABINET STUFFER first displays a menu of available data bases as stored in the BASENAMEFILE. When a database has been selected, a list of headers for the selected database is listed. The user is then asked to select which item to list by, how many items are to be changed in each record, and which items they are.

The program loops through the records, displaying the record number, the item to list by, and current values of the selected items. As the current values are displayed, the user can change the value of the item, enter a '/' if no change is to be made, or enter a '*' to stop and return to the menu. When a '*' is entered or the last record has been processed, the user is asked if the files are to be updated.

A sample dialog and the listing follow. Anyone wanting a copy of the program is welcome to copy it.

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10REMFILE CABINET STUFFER400NEXT N10REM410REM** SELECT DATA BASE20REM420PRINT : PRINT : INPUT "ENTER20REMWRITTEN BYSNU = VAL (NU\$)30REMWRITTEN BY43040REMMIKE KRAMER107050REM4/21/80440IF NU < 1 OR NU > ND GOTO 4270REM01070 40 FEM WRITTEN BY WRITTEN BY 430 IF LEFTS (NUS,1) = "/" GOTO 6 50 FEM 4/21/80 4/21/80 4/21/80 4/20 FEM 4

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IRE33, 33: POKE1913, 69 770 REM ** ENTER OR CHANGE DATA JAN FILE CABINET STUFFER 780 HOME : PRINT "ENTER '/' FOR NO CHANGE OR !* TO ABORT": POKE FILE NOT FORM 34,2 790 FOR M = 1 TO NR **IRIN FILE OPRINET STIFFER** 800 PRINT : PRINT "REC #";M 810 PRINT : PRINT "ITEM #";IT;" ***** FILE CARINET STUFFER *** : ";IP\$(M,IT) HEITTEN BY 820 FOR K = 1 TO NI NIKE KOAMEP 830 PRINT H\$(IT(K));": "; IP\$(M, INSERT FILE DISC AND PRESS ANY KEY: IT(K)INPUT "CHANGE TO: ";CH\$ 840 FILE CABINET FILES NOT ON THIS DISKETTE. 850 IF LEFT\$ (CH\$, 1) = "*" GOTO INSERT FILE DISC AND PRESS ANY KEY: 900 860 IF LEFT\$ (CH\$, 1) = "/" THEN FILE CABINET DATA CHANCE PRINT "NO CHANGE MADE.": GOTO SELECT A DATABASE: 880 (1) PERIOD 1 870 IP\$(M, IT(K)) = CH\$(2) PERIOD 3 880 NEXT K (3) PEPI00 4 890 NEXT M (4) PERIOD 5 900 PRINT : INPUT "UPDATE DISK F HIN MANY ITERS TO OHNER? 2 (5) PERIOD 6 ILE? ";YN\$: POKE 34,0 (6) DAILY TITLES **9**10 1. NINGER OF ITEN 1: 2 IF LEFT\$ (YN\$,1) = "Y" GOTO 940 920 MAREP OF ITEN 2: 9 LEFT\$ (YN\$,1) = "N" GOTOIF BITER NUMBER OR 1/1 TO END: 1 REPOING PERIOD 1 DATA 360 PERIOD 1 DATA HEADERS: BATER 111 FOR NO CHENKE OR 141 TO REDRT. 930 GOTO 900 (1) NAME 940 POKE 34,0 (2) T1 REM ** UPDATE DISK FILE **9**50 肥料 (3) 72 960 FL = DB (NU) + IX + FI(4) 73 970 PRINT D\$;OP\$;FL\$ THE #1 : ANELA ASLEY (5) T4 980 PRINT D\$;WR\$;FL\$ T! : 53 (6) 75 990 PRINT NR\$ CHINE TO: / (7) 16 1000 FOR M = 1 TO NR NO CHONGE NODE (8) T7 1010 FOR N = 1 TO NH N : 0 (9) D1 1020 PRINT IP\$(M,N) DINE TO: / (10) 02 1030 NEXT N NO CHANGE NROE. (11) D3 1040 NEXT M (12) 04 1050 PRINT D\$;CL\$;FL\$ 腔 #2 (13) 05 1060 GOTO 360 (14) 06 1070 POKE 34,0: END TEN #1 : OPIS REHRENS (15) D7 1080 REM ** APPLESOFT ONERR COR TI: 78 (16) 09 RECTION DANE TO: * (17) 09 1090 CALL 1013: VTAB 18: PRINT CHR\$ (18) 010 (7): PRINT "FILE CABINET FIL UPDATE DISK FILE? N (19) D11 ES NOT ON THIS DISKETTE.": POKE (28) D12 216,0 FILE CABINET DATA CHANGE LIST BY ITEN NUMBER: 1 1100 FOR I = 1 TO 1000: NEXT I: GOTO SELECT A DATABASE: 190 (1) PEPIOD 1 1110 FOR I = 1013 TO 1022: READ (2) PERIOD 3 PP: POKE I, PP: NEXT I (3) PERION 4 1120 I = 0(4) PERIOD 5 1130 RETURN (5) PERIOD 5 1140 DATA 104,168,104,166,223,1 (6) DAILY TITLES 54,72,152,72,96 BRER NUMBER (F // TO END: / 1

[This page was mistakenly omitted from last month's DOS Disassembly installment. APPLE BARREL regrets the error.]

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10	FWAUG Newsletter November-December 1	9/9
•	15 DRG \$3000	
1.	16 DBJ \$BD00	
	17 MOTOROFF EQU \$COBB	
•	19 DRVOEN FOU SCOBA	
	20 DRVIEN EQU SCOBE , LANS LAND PLACE TO READ	BYTE FROM
	21 GOL EQU SCOBE - Plue to run on a ger PLACE TO WEN	TE BYTT TO
	22 GGH EQU SCOBD - quan be write tight to	
	23 GTL EQU SCOBE GAT SIT BAD MODE	•
	25 PHASON EQU SCORI	
	26 PHSOFF EQU \$COBO	
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	28 * STATE MACHINE CONTROLS TABLE:	
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	32 + LO LO READ	
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	40 10BPL EQU 648	
	41 IOBPH EQU \$47	\$
	42 SLOT EQU \$5F8 HOLDS SLOT NUM USED	
	43 CURTRK EQU \$478	
	44 FINDLESI EUV \$30 45 Devetri Egil otordest.	•
······································	46 BUEPTR EQU SE	
•	47 MONTIME EQU \$46	•
	48 TEMP EQU \$2C PUT ADDRESS INFO HERE -	
	49 CSUM EQU TEMP	
	SU RECT FOUL COUNT	•
	52 DRIVND FAIL \$25	•
	53 TRACK EQU BECT+1	:
	54 TRKN EQU TRACK	
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	56 SEEKCNT EQU \$4F0	•
	57 IBRERR EQU \$80	••
	50 IBUMME EQU \$40	•
	40 IBHPER EQU \$10	
		•
	62 +	•
	63 + HOOKS TO CORE ROUTINES: -	
· ·	AD PRENIBL EQU SOBOO / PRENIBBLIZE FOR WRITE ROUTINE	•
	67 READ FOUL \$3860 , PEAD NIBDIES	
	68 RDADR - EQU \$3965 READ AN ADDRESS FIELD	1
	49 POSTNIBL EQU - \$3901 / CONVERT BACK TO DATA FROM NIBBLES	1
	70 SEEKABS EQU \$3A1E ; SEEK A HALF-TRACK	
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We continue in this issue the third installment of Lee Meador's excellent series on the Disk Operating System, as originally published in the "Fort Worth Apple Users Group Newsletter." Thank you, Lee and FWAUG, for initiating us into these mysteries. Ċ

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"L	301P	- 48			181		PHA-	- PUT BACK ON STACK
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	3D1B	BD	BF	C0	183		LDA	G7L, X J GO INTO READ HODE
<u>-</u> _	3DIF	. 40	. 08		184	STILLON		#\$08 TO BE SURE; DATA MUST REMAIN
]	3020	BD	ac	CO	185		LDA	GALL X STABLE FOR 96 MICROSECONDS
	3023	DD	BC	cō	186	NOTSURE	CMP	GAL X / DATA BTILL CHANGING?
<u>"</u> L	3026	- DO	FF		-187		BNE	BTILLON TIF BOT STILL SPINNING
	3028	88	• •		188		DEY	
	3029	DO	F8		189		BNE	NOTBURE (STABLE LONG ENOUGH? IF NOT, LOOP .
					-190			
					191	+ PREVI	DUA BL	OT'S DRIVE NOW OFF
1	•		·		192	*		
	3028	- 68			193		PLA	T) RESTORE NEW BLOT
	3D2C	ĀĀ		. .	1.94		TAX	
					195	*		1
۳Ľ					196	- #- NOW -CI	HECK 1	F THE MOTOR IS ON, THEN START IT
	•		·		197		- •	
15	3D2D	BD	8E	CO	198	SAMESLO	T LDA	G7L, X I MAKE SURE IN READ MODE
ب ر	3030	-BD	80	-CO	-199		LDA-	- 96Li X
n	3033	BD	8C	CO	200	•	LDA	GOLIX JOET THE DATA
Ja	3D36	48			201		PHA	JDELAY FOR DISK DATA TO CHANGE
۳Г	-3D37	-68			. 505		PLA	
n	3038	8E	FB	05	203		STX	SLOT
н	3D3B	DD	BC	CO	204		CMP	G6L, X) CHECK RUNNING HERE
4 –	-3D3E	- 08			205		• PHP	SAVE TEST RESULTS
6	3D3F	BD	89	CO	206		LDA	MOTORON, X I TURN ON MOTOR REGARDLEBS
¢,	3D42	AO	06		207		LDY	#6 IMOVE OUT ALL POINTERS INTO ZPAGE
٩ſ	-3D44	- 81	48		- 208	"PTRMOV -	LDA-	
-	3D46	99	36	00	209		8TA	PTREDEST-6, Y
4	3D49	C8			210		INY	
۰.۲	-3D4A	T CO	' OA		-211		-CPY-	"#\$OA" MOVED ALL POINTERS?
4	3D4C	DO	F6		212		BNE	PTRMOV
41	3D4E	AO	02		213	•	LDY	#2 INDW GET PARAMS
•	3050	B 1	-48		214		"L'DA "	- (IOBPL), Y IDETERMINE DRIVE ONE OR TWO
× ;	3052	AO	10		215		LDY	#\$10 SAME DRIVE USED BEFORE?
r	3054	D1	48		216	•	CMP	(JOBPL),Y
	3D96	FO	06		217		BEG	" DK / IF 50, DON'T NECESSARILY WAIT FOR MOTOR
	3058	91	48		218		6TA	(IOBPL), Y , NOW USING THIS DRIVE
1	3D5A	28			219		PLP	TELL HIM MOTOR WAS OFF
18,	3D5B	AO	00		-550		LDY-	#\$00 JBET ZERO FLAG
۰.	:3D5D	08			221		PHP	· · · · · · · · · · · · · · · · · · ·
r :	3D5E	6A	-		222	OK .	ROR	BY ODING INTO THE CARRY
ч.	3D5F	BD	BA	CO	223		LDA -	DRVOEN, X / ABGUME DRIVE O TO HIT
٠	3062	BO	03		224		BCB	DRVSEL IF WRONG, ENABLE DRIVE 1 INSTEAD

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		3D67	66	35		226	DRVSEL	ROR	DRIVNO I SAVE WHICH DRIVE REING USED	
-		3049	<u>۸</u>	02		227		I DV		
		0007	20					LUT	M P U Z	
		3068	81	30		558		LDA	(DEVCTBL), Y JGET MOTOR ON TIME	
		3D6D	85	46		229	· · -	STA T	MONTIME	٩.
		3D6F	C 8			230		TNY		
		2070		20		22.				
		3070	81	36		231		LDA	(DEVCTBL), Y	•
	•	3D72	85	47		232		STA"	MONTIME+1 ; THIS WILL COUNT UP TO 0000	•
		3074	C8			233		INY		1
	•	3075	01	49		234		I DA	TODDIN W OFT DESTIMATION TRACK	
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						236	#NDW AT	THE D	EBIRED TRACK. WAS THE MOTOR	٠
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	<u>`</u> _	2074	-70			220		0, 0,		•
	i	30/4	40			×30		PLP	IWAS MUTUH UN7	٠.
	3.	3078	DO	OD		239		BNE	TRYTRK / IF SD, DON'T DELAY, GET IT TODAY!	•
						240	+		•	
	Пr					-DA1-		-1446-0		.'
	14							, who u	FFI WALL FOR IT TO OFEED OF.	٠.
	M					444				•
	L ¹	3D7D	80	12		243	MOTOF	LDY	#\$12 JDELAY 100 USEC PER COUNT	,
		3D7F	-88			244	CONWAIT	DEY -		• "
		3000	no.	ED		24#		BNE	CONILIATT	
	11	3000	20			E 70				
	H	3082	ŁÓ	46		246		INC	MONTIME	١.
		3D84	DO	F7		247		BNE	MOTOF	2
	1	3084	FA	47		248	-	TNC	MONTINEAT	1
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	÷.,	2080	DO	ra		247		BNE	MUTUF / COUNT OF TO \$0000	Þ
	r					. 520.				•
	1.					251	# DISK	IS NOW	UP TO SPEED: READ IT!	Ŀ
						282	A NOU C	HECH.	TE IT TO NOT THE COMMAT DIGH ADMMAND	
	×								IF II IS NUT THE FURHAT DIAN CUMMAND,	h
	2					523	- LUCA	TE-THE	CORRECT SECTOR FOR THIS OPERATION.	١.
	2					254	*			14
	1	3084	40	00		255	TRYTAK	1 DV	HEDC .	
	" <u>-</u>	-2000	-			0				
	3	3000		48		\$ 30		LDA	TIDEPL'TTY TOET COMMAND CODE	
•	24 74	3D8E	FO	55	•	257		BEQ	GALLDONE / IF NULL COMMAND, OO HOME TO BED.	
•	26 74 14	3D8E 3D90	F0 C9	48 55 04	•	257 258		BEQ CMP	GALLDONE JF NULL COMMAND CODE G GALLDONE JF NULL COMMAND, GO HOME TO BED.	•
•	**	3D8E 3D90	F0 C9	48 55 04	•	250 257 258		LDA BEQ CMP	(IDBPL); Y) GET COMMAND CODE GALLDONE JIF NULL COMMAND, GO HOME TO BED. #\$04 JFORMAT THE DISK?	
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•	******	3D8E 3D92 3D92 3D94 3D95 3D94 3D98 3D98 3D98	F0 C9 F0 6A 08 B0 20 A0	48 55 04 53 03 00 30		250 257 258 259 260 261 262 263 264	TRYTRK2	LDA BEQ CMP BEQ ROR PHP BCS JSR LDY	GALLDONE J IF NULL COMMAND CODE GALLDONE J IF NULL COMMAND, GO HOME TO BED. #\$04 JFORMAT THE DISK? FORMDSK JALLRIGHT, ALLRIGHT, I WILL JET CARRY=1 FOR READ, O FOR WRITE JAND SAVE THAT TRYTRK2 JMUST PRENIBBLIZE FOR WRITE. PRENIBL #\$30 JONLY 48 RETRIES OF ANY KIND.	, , , , , , , , , , , , , , , , , , ,
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•		3D8E 3D92 3D94 3D95 3D94 3D95 3D98 3D98 3D98 3D98 3D98 3D80 3DA3 3DA3 3DA8 3DA8 3DA8 3DA8 3DA8 3DA8	F0 F0 F0 F0 F0 F0 F0 F0 F0 F0 F0 F0 F0 F	103 103	- 38 05 39 05 39 05 05	257 258 257 260 261 262 263 265 265 265 265 265 265 265 265 265 267 265 267 265 267 265 267 271 272	TRYTRK2 TRYADR TRYADR2	LDA BEQ BEG RDR BCR BCR BCR JSR LDY LDY BCC BPL BCC BPL LDA BCC BPL	GALLDONE ; JF NULL COMMAND CODE GALLDONE ; JF NULL COMMAND, GO HOME TO BED. #\$04 ; FORMAT THE DISK? FORMDSK ; ALLRIGHT, ALLRIGHT, 'I WILL ; SET CARRY=1 FOR READ, O FOR WRITE ; AND SAVE THAT TRYTRK2'; MUST PRENIBBLIZE FOR WRITE. PRENIBL #\$30 ; ONLY 48 RETRIES OF ANY KIND. RETRYCNT SLOT ; GET SLOT NUM INTO X-REO RDADR ; READ NEXT ADDRESS FIELD RDRIGHT ; JF READ IT RIGHT, HURRAH! RETRYCNT ; ANOTHER MISTAEK!! TRYADR ; WELL, LET IT GO THIS TIME.; CURTRK ; SAVE TRACK WE REALLY WANT #\$60, RECAL IBBATE ALL DWEP ADATM!	
•		3D86 3D97 3D97 3D97 3D97 3D97 3D96 3D98 3D98 3D98 3D98 3D80 3D80 3D80 3D80 3D80 3D80 3D80 3D8	F09 F0A 80 80 80 80 80 80 80 80 80 80 80 80 80	48 55 04 53 00 00 37 8 55 178 57 8 00 278 57 78 57 8 00 20 78 57 78 50 57 78 57 78 57 78 57 57 78 57 57 57 57 57 57 57 57 57 57 57 57 57	38 05 39 05 39 05 05	257 258 259 261 262 263 264 263 264 265 266 267 268 269 270 271 272 272	TRYTRK2 TRYADR TRYADR2	LDA BEQ BEQ RDR BCR BCR JDY LDY LDY LDX BCC BPL A LDA LDA	GALLDONE ; IF NULL COMMAND CODE GALLDONE ; IF NULL COMMAND, OO HOME TO BED. #\$04 ; FORMAT THE DISK? FORMDSK ; ALLRIGHT, ALLRIGHT, I WILL ; SET CARRY=1 FOR READ, O FOR WRITE ; AND SAVE THAT TRYTRK2'; MUST PRENIBBLIZE FOR WRITE. PRENIBL #\$30 ; ONLY 48 RETRIES OF ANY KIND. RETRYCNT SLOT ; GET SLOT NUM INTO X-REO RDADR ; READ NEXT ADDRESS FIELD RDRIGHT ; IF READ IT RIGHT, HURRAH! RETRYCNT ; ANOTHER MISTAEK!! TRYADR ; WELL, LET IT GO THIS TIME., CURTRK ; SAVE TRACK WE REALLY WANT #\$60 ; RECALIBRATE ALL OVER AGAIN!	
•		3D86 3D97 3D97 3D97 3D97 3D97 3D97 3D97 3D97	F09 F0A 80 80 80 80 80 80 80 80 80 80 80 80 80	48 55 04 33 00 30 78 55 178 78 60 278 60 278 60 20 78 60 20 78 60 20 78 78 60 20 78 78 78 78 78 78 78 78 78 78 78 78 78	38 05 05 39 05 04 	257 258 259 260 261 262 263 264 265 266 265 266 265 266 265 266 271 272 273 273	TRYTRK2 TRYADR TRYADR2	LDA BEQ BEQ RDR BCR BCR LDY SCR LDY LDSR DEC LDA PHA LDA LDA JSR	GALLDONE ; IF NULL COMMAND CODE GALLDONE ; IF NULL COMMAND, GO HOME TO BED. #\$04 ; FORMAT THE DISK? FORMDSK ; ALLRIGHT, ALLRIGHT, I WILL ; SET CARRY=1 FOR READ, O FOR WRITE ; AND SAVE THAT TRYTRK2; MUST PRENIBBLIZE FOR WRITE. PRENIBL #\$30 ; DNLY 48 RETRIES OF ANY KIND. RETRYCNT SLOT ; GET SLOT NUM INTO X-REG RDADR ; READ NEXT ADDRESS FIELD RDRIGHT ; IF READ IT RIGHT, HURAH! RETRYCNT ; ANOTHER MISTAEK!! TRYADR ; WELL, LET IT GO THIS TIME., CURTRK ; SAVE TRACK WE REALLY WANT #\$60 ; RECALIBRATE ALL OVER AGAIN! SETTRKT; PRETEND TO BE ON TRACK 80	
		3D86 3D92 3D94 3D94 3D95 3D98 3D98 3D98 3D98 3D98 3D98 3D80 3D80 3D80 3D80 3D80 3D80 3D80 3D8	F09 F04 B0 B00 B420 9 CE 1 A B A 20 CE	485 03 000 30 78 45 78 78 78 78 78 78 78 78 78 78 78 78 78	38 05 05 39 05 04 -	257 258 260 263 264 265 266 266 266 266 266 271 273 273 273 273 275	TRYTRK2 TRYADR TRYADR2	LDA BEG BEGR BCR BCR BCR BCR BCR JCR LDY BCC BCR JCR BCR JCR C BCR JCR C BCR JCR BCR JCR C BCR BCR BCR BCR BCR BCR BCR BCR BCR	GALLDONE ; IF NULL COMMAND CODE GALLDONE ; IF NULL COMMAND, OO HOME TO BED. #\$04 ; FORMAT THE DISK? FORMDSK ; ALLRIGHT, ALLRIGHT, I WILL ; SET CARRY=1 FOR READ, O FOR WRITE ; AND SAVE THAT TRYTRK2'; MUST PRENIBBLIZE FOR WRITE. PRENIBL #\$30 ; ONLY 48 RETRIES OF ANY KIND. RETRYCNT SLOT ; GET SLOT NUM INTO X-REO RDADR ; READ NEXT ADDRESS FIELD RDRIGHT ; IF READ IT RIGHT, HURRAH! RETRYCNT ; ANOTHER MISTAEK!! TRYADR ; WELL, LET IT GO THIS TIME., CURTRK ; SAVE TRACK WE REALLY WANT #\$60 ; RECALIBRATE ALL OVER AGAIN! SETTRK ; ONLY RECALIBRATE DNCE!	
•	, , , , , , , , , , , , , , , , , , ,	3D86 3D92 3D94 3D94 3D95 3D98 3D98 3D98 3D98 3D98 3D98 3D80 3DA3 3DA4 3DA8 3DA8 3DA8 3DA8 3DA8 3DA8 3DA8 3D80 3D81 3D88 3D88 3D88 3D88 3D88	F09 F0A 800 800 800 800 800 800 800 800 800 8	48504 53000000 786578 78002 786578 78002 780278 7802778 7802778 7802778 7802778 78027777777777	38 05 39 05 39 05 04 	2557 2559 2259 2260 2260 2260 2260 2260 2260 2260 226	TRYTRK2 TRYADR TRYADR2	LDA BEGP BEGP BCRP BCSR JDDYX BCCC BCSRY JDSCC BCSRY JDSCC BCA BCSRY JDSCC BCA BCSRY JDSCC BCA BCSRY JDSCC BCA BCSRY JDSCC BCA BCA BCA BCA BCA BCA BCA BCA BCA B	GALLDONE J IF NULL COMMAND CODE GALLDONE J IF NULL COMMAND, OO HOME TO BED. #\$04 JFORMAT THE DISK? FORMDSK'JALLRIGHT, ALLRIGHT, I WILL JET CARRY=1 FOR READ, O FOR WRITE JAND SAVE THAT TRYTRK2-JHUST PRENIBBLIZE FOR WRITE. PRENIBL #\$30 JONLY 48 RETRIES OF ANY KIND. RETRYCNT SLOT JGET SLOT NUM INTO X-REG RDADR JREAD NEXT ADDRESS FIELD RDRIGHT JIF READ IT RIGHT, HURRAH! RETRYCNT JANOTHER MISTAEK!! TRYADR J WELL, LET IT GO THIS TIME., CURTRK JSAVE TRACK WE REALLY WANT #\$60 JRECALIBRATE ALL OVER AGAIN! SETTRK-JPRETEND TO BE ON TRACK 80 SEEKCNT JONLY RECALIBRATE ONCE! DRVERR JTRIED TO RECALIBRATE A SECOND TIME.	
•	Талала, тыныктыны 	3D86 3D97 3D97 3D97 3D97 3D98 3D98 3D98 3D98 3D98 3D98 3D98 3D80 3D80 3D80 3D80 3D80 3D80 3D80 3D8	F09 F0A 08 200 F0 200 F	485 04 53 000 378 54 178 78 602 88 50 000 378 578 602 88 50 000 378 578 602 88 50 50 50 50 50 50 50 50 50 50 50 50 50	38 05 39 05 39 05 04 	237 257 258 260 261 262 264 265 266 267 268 267 268 267 277 271 272 274 275 277 275 277	TRYTRK2 TRYADR TRYADR2	LDA BEGP BEGR BCRP BCRP BCRP BCR BCR BCR BCR BCR BCR BCR BCR BCR BCR	GALLDONE ; IF NULL COMMAND CODE * GALLDONE ; IF NULL COMMAND, OO HOME TO BED. *\$04 ; FORMAT THE DISK? FORMDSK ; ALLRIGHT, ALLRIGHT, 'I WILL ; SET CARRY=1 FOR READ, O FOR WRITE ; AND SAVE THAT TRYTRK2~; MUST PRENIBBLIZE FOR WRITE. PRENIBL *\$30 ; ONLY 48 RETRIES OF ANY KIND. RETRYCNT SLOT ; GET SLOT NUM INTO X-REO RDADR ; READ NEXT ADDRESS FIELD RDRIGHT ; IF READ IT RIGHT, HURRAH! RETRYCNT ; ANOTHER MISTAEK!! TRYADR ; WELL, LET IT GO THIS TIME., CURTRK ; SAVE TRACK WE REALLY WANT *\$60 ; RECALIBRATE ALL OVER AGAIN! SETTRK~; PRETEND TO BE ON TRACK 80 SEEKCNT ; ONLY RECALIBRATE ONCE! DRVERR ; TRIED TO RECALIBRATE A SECOND TIME.	
•	**************************************	3D86 3D97 3D97 3D97 3D97 3D98 3D98 3D98 3D98 3D98 3D98 3D98 3D98	F090A0000000000000000000000000000000000	45543 000308 7854 17878 602 82900 82000 82000 82000 82000 82000 82000 82000 82000 80000 80000 80000 80000 8000000	38 05 39 05 39 05 04 	2357 258 258 258 260 261 262 263 264 264 264 264 264 264 264 264 264 264	TRYTRK2 TRYADR TRYADR2	LDA BEGP BEGR BCR BCR BCR BCR JDY LDY BCC LDY BCC BPL BDA DEC BDA DEC DEC BDA DEC DEC DEC DEC DEC DEC DEC DEC DEC DEC	GALLDONE ; IF NULL COMMAND CODE GALLDONE ; IF NULL COMMAND, GO HOME TO BED. #\$04 ; FORMAT THE DISK? FORMDSK ; ALLRIGHT, ALLRIGHT, 'I WILL ; SET CARRY=1 FOR READ, O FOR WRITE ; AND SAVE THAT TRYTRK2'; MUST PRENIBBLIZE FOR WRITE. PRENIBL #\$30 ; ONLY 48 RETRIES OF ANY KIND. RETRYCNT SLOT ; GET SLOT NUM INTO X-REO RDADR ; READ NEXT ADDRESS FIELD RDRIGHT ; IF READ IT RIGHT, HURRAH! RETRYCNT ; ANOTHER MISTAEK!! TRYADR ; WELL, LET IT GO THIS TIME., CURTRK ; SAVE TRACK WE REALLY WANT #\$60 ; RECALIBRATE ALL OVER AGAIN! SETTRK'; PRETEND TO BE ON TRACK BO SEEKCNT ; ONLY RECALIBRATE A SECOND TIME. #600	
•		3D86 3D92 3D92 3D94 3D95 3D98 3D98 3D98 3D98 3D98 3D98 3D98 3D80 3D83 3D83 3D88 3D88 3D88 3D88 3D8	F090A80000000000000000000000000000000000	485 030 030 788 178 78 020 788 178 78 020 38 020 38	38 05 05 39 05 04 3E	237 257 258 260 261 263 263 264 265 265 265 265 265 265 265 277 272 273 274 275 275 275 275 275 275 275 277 275 275	TRYTRK2 TRYADR TRYADR2	LDA BEGP BECRP BCSRY JDDYX BCCCLA BCA BCSRY JDSCCCLA JDSCCCLA JDSCCCLA JDSCCCLA JDSCCCLA JDSCCCLA JDSCCCLA JDSCCCLA JDSCCCLA JDSCCCCCA JDSCCCA JDSCCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSCCCA JDSC	GALLDONE ; IF NULL COMMAND CODE * GALLDONE ; IF NULL COMMAND, OO HOME TO BED. *\$04 ; FORMAT THE DISK? FORMDSK ; ALLRIGHT, ALLRIGHT, 'I WILL ; SET CARRY=1 FOR READ, O FOR WRITE ; AND SAVE THAT TRYTRK2; HUST PRENIBBLIZE FOR WRITE. PRENIBL *\$30 ; DNLY 48 RETRIES OF ANY KIND. RETRYCNT SLOT ; GET SLOT NUM INTO X-REO RDADR ; READ NEXT ADDRESS FIELD RDRIGHT ; IF READ IT RIGHT, HURAH! RETRYCNT ; ANOTHER MISTAEK!! TRYADR ; WELL. LET IT GO THIS TIME., CURTRK ; SAVE TRACK WE REALLY WANT *\$60 ; RECALIBRATE ALL OVER AGAIN! SETTRK ; PRETEND TO BE ON TRACK 80 SEEKCNT ; ONLY RECALIBRATE ONCE! DRVERR ; TRIED TO RECALIBRATE A SECOND TIME.	
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- u	JE4C		60	CO	367		1.DA	PHOOFFIX TURN ALL PHASES OFF TO BE SURE.
н	3E51	BD	82	CO	368		LDA	PHEOFF+2. X
ч	3E54	BD	84	CO	369		LDA	PH5OFF+4, X
_ h_	-3E57	BD	86	CO	370		L'DA-	PHSOFF+6, X
17	JE5A	20	7B	JE	371		JER	XTOY I KET Y=SLOT
u	3E5D	89	78	04	372		LDA	DRYDTRK, Y SAME AS LURTRK (0- CHE SINT "
- N,	- JE60	24	35		373		BIT	DRIVNO
۰.	3E62	30	03		374		BMI	WASDO / IS MINUS, ON DRIVE ZERO
.	3E64	87	FB	04	375		LDA	DRVITRKIY SAME A Seeker
Ľ.	-3E67	8D	78	04	376	WASDO -	STA-	CURTRK ITHIS IS WHERE I AM
Σ.	3E6A	A5	2E		377		LDA	TRKN ; AND WHERE I'M GOING TO
31	3E6C	24	35		378		BIT	DRIVNO INOW UPDATE BLOT DEPENDENT
• •	-3E6E	30	05		379	· · · · · · · · · · · · · · · · · · ·	BMI -	ISDRVO ILOCATIONS WITH TRACK
	3E70	99	F8	04	380		8TA	DRV1TRK, Y J INFORMATION
	3E73	10	03		381		BPL	QOBEEK JALWAYS TAKEN
	-3E75	99	78	04	382	18DRV0-	STA-	DRVOTRK
	2670			~ .		ABACCU		
7	3670	46	16	JA	383	GUDEEK -	JMP	SEEKABS (OD THERE!
7) X	3E78	BA	16	34	383 384	XTOY	JMP TXA	SEEKABS JOD THERE!
7 X 3:	3E78 3E78 -3E70	8A -4A	16		383 384 385	XTOY	JMP TXA LSR	SEEKABS ; QD THERE!
7 × 7	3E78 3E78 3E70 3E70	8A -4A 4A	1E		383 384 385 385	XTOY	JMP TXA LSR LSR	SEEKABS ; GD THERE!
****	3E78 3E78 3E70 3E70 3E7E	40 8A 4A 4A 4A	16		383 384 385 385 385 385	XTOY	JMP TXA LSR LSR	SEEKABS / GD THERE !
и 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3E78 3E78 3E70 3E70 3E7E 3E7F	40 8A 4A 4A 4A	1E		383 384 385 385 385 385 385	XTOY	JMP TXA LSR LSR LSR TSR	SEEKABS / GD THERE !
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7 X X X X X X X X X X X X X X X X X X X	3278 3278 3270 3270 3276 3277 3280 3281	40 8A 4A 4A 4A 4A 4A 4A 60	1E	JA	383 384 385 385 385 387 389 389 389		JAP TXA LSR LSR LSR TSR TAY RTS	SEEKABS / GD THERE !
7 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3E78 3E77 3E7C 3E7D 3E7F 3E80 3E81	40 4A 4A 4A 4A 4A 4A 4A 60	1E		383 384 385 385 385 387 388 387 389 390 390		JMP TXA LSR LSR USR USR TAY RTS	SEEKABS / GD THERE !
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3E78 3E77 3E7C 3E7D 3E7E 3E7F 3E80 3E81	40 8A 4A 4A 4A 4A 60	1E	3A	383 384 385 385 385 387 388 387 389 389 390 391 392	* THIS E	JMP TXA LSR LSR USR TAY RTS SUBROU	SEEKABS ; GD THERE !
	3E78 3E77 3E7C 3E7D 3E7F 3E80 3E81	40 4A 4A 4A 4A 4A 4A 60	1E		383 384 385 385 385 385 385 385 385 387 389 390 391 392 393	* THIS E	JMP TXA LSR LSR USR TAY RTS SUBROU	SEEKABS / GD THERE !
	3E78 3E77 3E7C 3E7D 3E7F 3E80 3E81	40 4A 4A 4A 4A 4A 4A 60	1E		383 384 385 385 385 385 385 385 385 387 390 391 392 393 394	* THIS E * LOCATI	JMP TXA LSR LSR USR TAY RTS SUBROU	SEEKABS ; GD THERE !
	3E78 3E77 3E70 3E70 3E77 3E80 3E81 3E81	4C 8A 4A 4A 4A 4A 4A 4A 4A 4A 4B	1E	ЗА 	383 384 385 385 387 388 387 388 387 389 390 391 392 393 394 395	* THIS E + LOCATI	JMP TXA LSR LSR USR TAY RTS SUBROU	SEEKABS ; GD THERE !
N N N N N N N N N N N N N N N N N N N	3E78 3E78 3E70 3E70 3E77 3E80 3E81 3E81 3E82 3E83	4C 8A 4A 4A 4A 4A 4A 4A 4A 4A 4A 4A 4B 48 A0	02		383 384 385 385 385 385 385 387 398 397 397 397 397 397 397 397 397 397 397	* THIS E * LOCATI	JAP TXA LSR LSR USR USR TAY RTS SUBROU ION. PHA LDY	SEEKABS ; GD THERE !
N N N N N N N N N N N N N N N N N N N	3E78 3E78 3E70 3E77 3E80 3E81 3E81 3E82 3E83 3E83	40 4A 4A 4A 4A 4A 4A 4A 4A 4A 4A 4B 40 81	02	3	383 384 385 385 385 385 385 385 397 391 392 393 394 395 396 397	* THIS E + LOCATI SETTRK	JAP TXA LSR LSR USR TAY RTS SUBROU ION. PHA LDY LDA	SEEKABS ; GD THERE !
N N N N N N N N N N N N N N N N N N N	3E78 3E78 3E770 3E770 3E777 3E80 3E81 3E82 3E83 3E83 3E83	4C 8A 4A 4A 4A 4A 4A 4A 4A 4A 4A 4B 40 81 6A	02		383 384 385 385 385 385 385 385 387 388 390 391 392 393 394 395 395 395 398	* THIS E * LOCATI SETTRK	JAP TXA LSR LSR USR TAY RTS SUBROU ION. PHA LDY LDY LDA ROR	SEEKABS ; GD THERE!
N N N N N N N N N N N N N N N N N N N	3E78 3E78 3E770 3E770 3E770 3E770 3E770 3E80 3E81 3E83 3E83 3E85 3E85 3E88	4C 8A 4A 4A 4A 4A 4A 4A 4A 4A 4A 4B 4B 4B 4B 4B 4B 4B 4B 4B 4B 4B 4B 4B	02 48 35		383 384 385 385 385 385 385 385 387 396 397 395 395 395 395 395 395 395	* THIS E * LOCATI SETTRK	JAP TXA LSR LSR LSR TAY RTS SUBROU ION. PHA LDY LDA ROR ROR	SEEKABS ; GD THERE!
Particular and a state a	3678 3678 3670 3670 3670 3680 3680 3680 3683 3683 3685 3685 3686 3688 3688	40 4A 4A 4A 4A 4A 4A 4A 4A 4A 4A 4A 4A 4A	02 48 35 78		383 384 385 385 387 388 387 388 399 399 399 3994 3994 3995 3994 3997 398 399 400	* THIS E * THIS E * LOCATI SETTRK	JAP TXA LSR LSR LSR TAY ATS SUBROU ION. PHA LDY LDA ROR USR USR	SEEKABS ; GD THERE!
	3678 3678 3670 3670 3670 3680 3680 3680 3683 3685 3685 3687 3688 3688 3688 3680	404 44 44 44 44 44 44 44 44 44 44 44 44	02 48 35 78		383 384 385 385 387 388 387 388 390 399 399 399 399 399 399 399 399 400 401	* THIS E * LOCATI SETTRK	JAP TXA LSR LSR LSR TAY RTS SUBROU ION. PHA LDY LDA ROR ROR ROR ROR PLA	SEEKABS ; GD THERE!
Partic and a second a	3E78 3E77 3E77 3E77 3E80 3E81 3E81 3E81 3E83 3E85 3E87 3E88 3E88 3E88 3E88 3E88 3E88 3E88	404 44 44 44 44 44 44 44 44 44 44 44 44	02 48 35 78		383 384 385 385 388 388 388 390 399 399 399 399 399 399 399 399 399	* THIS E * LOCATI * SETTRK	JAP TXA LSR LSR LSR TAY RTS SUBROU ION. PHA ROR ROR JSR PLA ASL	SEEKABS ; GD THERE!
	3E78 3E78 3E77 3E77 3E77 3E77 3E77 3E80 3E81 3E81 3E82 3E83 3E87 3E88 3E88 3E88 3E88 3E88 3E88	404 44 44 44 44 44 44 44 44 44 44 44 44	02 48 35 78		383 384 385 385 387 388 390 3991 3993 3993 3993 3993 3993 3993	* THIS E * THIS E * LOCATI * SETTRK	JAP TXA LSR LSR LSR TAY RTS SUBROU ION. PHA ROR ROR VJSR PLA ASL BIT	SEEKABS ; GD THERE !
	3678 3678 3670 3670 3670 3680 3681 3683 3683 3687 3688 3687 3688 3687 3688 3687 3688 3687 3688 3687 3688 3687 3688	484444 44444 480 4801 4802884 2080430	1E 02 48 35 78 35 05		383 384 385 385 385 385 385 385 385 387 398 397 398 397 398 395 395 395 395 395 395 395 395 400 401 402 403	* THIS E * THIS E * LOCATI SETTRK SETTRK2	JAP TXA LSR LSR LSR TAY RTS SUBROU ION. PHA LDY LDA ROR ROR JSR PLA ASL BIT BMI	SEEKABS ; GD THERE!
KANINA ANANA NOTA A AAA	3678 3678 3670 3670 3670 3670 3680 3681 3683 3683 3685 3685 3685 3686 3686 3687 3688 3687 3693	48444480 4844480 480146026042099	1E 02 48 35 78 35 65 F8		384 384 385 385 385 385 388 389 390 391 392 393 394 395 394 395 394 401 402 403 404 405	* THIS E * THIS E * LOCATI SETTRK SETTRK2	JAP TXA LSR LSR LSR LSR TAY RTS SUBROU ION. PHA LDY LDA ROR PHA LDY ROR PLA ASL BHI STA	SEEKABS ; GD THERE!
KNULTH HANNA COLOR ON AND	3678 3678 3670 3670 3670 3670 3680 3681 3683 3685 3685 3685 3686 3686 3686 3687 3689 3689 3689 3689 3693	464 444 460 480 480 480 480 480 480 480 480 480 48	02 48 35 78 35 56 03		384 384 385 385 385 385 385 387 398 399 399 399 399 399 399 399 399 399	* THIS E * THIS E * LOCATI * SETTRK	JAP TXA LSR LSR LSR LSR TAY RTS SUBROU ION. PHA LDY LDA ROR ROR ROR ROR ROR SUBROU STA BHI STA BBL	SEEKABS ; GD THERE!
NUT NEW	3E78 3E77 3E77 3E77 3E80 3E81 3E80 3E81 3E83 3E85 3E85 3E87 3E88 3E88 3E88 3E88 3E88 3E88 3E88	46 44 44 460 40 40 40 40 10	02 48 35 78 35 60 35 60 378		384 384 385 385 385 385 387 388 387 398 397 397 397 397 397 397 397 397 397 397	* THIS E * THIS E * LOCATI * SETTRK SETTRK2	JAP TXA LSR LSR LSR TAY RTS SUBROU ION. PHA LDY LDA ROR ROR JSR PLA ASL BHI STA	SEEKABS ; GD THERE !
NA	3E78 3E78 3E77 3E70 3E70 3E87 3E80 3E81 3E82 3E83 3E85 3E88 3E88 3E88 3E88 3E88 3E88	46 44 44 46 48<	02 48 35 78 35 65 F8 03 78		384 384 385 385 385 385 387 388 387 390 390 390 397 397 397 397 397 397 397 397 397 397	* THIS E * THIS E * LOCATI * SETTRK SETTRK2 ONDRVO SETRTS	JAP TXA LSR LSR LSR USR USR TAY RTS JUBROU ION. PHA SUBROU ION. PHA ROR PHA ROR PLA ASL BHI STA BPL STA STA	SEEKABS ; GD THERE!
WALLEN REAL STOLES STATE STATE STATE	3E78 3E78 3E77 3E70 3E87 3E80 3E81 3E82 3E83 3E85 3E87 3E88 3E87 3E88 3E87 3E88 3E87 3E88 3E87 3E88 3E87 3E88 3E87 3E93 3E93	404 444 444 444 446 48 48 48 48 48 48 48 48 48 48 48 48 48	02 48 35 78 05 F8 03 78		384 384 385 385 385 385 389 389 390 391 392 393 394 397 398 397 398 397 398 397 398 400 401 402 403 404 405 404	SETTRK2	JAP TXA LSR LSR LSR LSR TAY RTS SUBROU ION. PHA LDY PHA LDY PHA LDY PHA LDY STA BIT STA BMI STA BPL STA RTS	SEEKABS ; GD THERE!
WHEN THE REAL STORES STORE STORES	3E78 3E78 3E77 3E70 3E77 3E80 3E81 3E82 3E83 3E85 3E85 3E86 3E87 3E88 3E87 3E88 3E87 3E93 3E98 3E98 3E98 3E98 3E98	4CA 4AA 4AA 4AA 4AA 4AA 4AA 4AA 4AA 4AA	02 48 35 78 35 78 05 F8 03 78		384 384 385 385 385 385 385 388 389 390 391 392 393 395 395 395 395 395 395 395 400 401 402 403 404 405 405	* THIS E * THIS E * LOCATI SETTRK SETTRK2 ONDRVO SETRTS	JAP TXA LSR LSR LSR LSR TAY RTS SUBROU ION. PHA LDY LDA ROR PHA LDY LDA ROR PHA STA BMI STA BPL STA RTS	SEEKABS ; GD THERE!
A WAR STATES STA	3E78 3E78 3E77 3E77 3E80 3E81 3E80 3E82 3E83 3E85 3E87 3E88 3E88 3E88 3E88 3E88 3E88 3E88	400 400 400	02 48 35 78 35 56 03 78		384 384 385 385 385 385 387 388 387 390 390 390 390 397 398 397 398 397 398 397 398 397 398 397 400 401 402 403 404	SETTRK2 ONDRVO SETRTS	JAP TXA LSR LSR LSR LSR TAY RTS SUBROU ION. PHA LDY LDA ROR ROR ROR ROR ROR STA STA STA RTS	SEEKABS ; GD THERE!
RACHTO LABORATOCOCANENERENE	3E78 3E77 3E77 3E77 3E80 3E81 3E81 3E83 3E85 3E85 3E87 3E88 3E88 3E88 3E88 3E88 3E88 3E88	40 40 40 84 44 44 40 80 40 81 40 80 40 80 40 97 97 90	02 48 35 78 35 60 378		384 384 385 385 385 387 388 387 398 390 390 390 390 390 397 398 397 398 397 398 397 398 397 400 401 402 404 405	SETTRK2	JAP TXA LSR LSR LSR TAY RTS SUBROU ION. PHA LDY LDA ROR ROR JSR PLA ASL BHI STA RTS	SEEKABS ; GD THERE!

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PAGE LIST FOR THE APPLE

BY ROBERT D. DIAZ 2849 W. 235th St. #3 Torrance, Calif. 90505

The Apple Computer prints on the TV screen at a rate of about 1,000 characters per second. However, most of the Apple users would prefer to read a listing at a slower rate. This article presents a solution to the dilemma: the Page List. The Page List (or listings by page) enables the Apple to list 20 lines of text, stop, and wait for a command from the keyboard to continue or to quit listing.

When the command "CALL 770" is entered into the computer, every twentieth line printed on the TV screen causes the Apple to stop until any key is pressed. The following are the commands used with Page List:

CALL 770	(Turn on Page List)
LIST	(If Page List was turned on, then
	the computer lists 20 lines and stops)
ESC	(List one additional line)
CTRL C	(Jumps out of the list mode and back into BASIC)
All other keys except Reset	(Lists 20 more lines)
CALL 815	(Turn off Page List)

This program is very flexible. It will function with either Integer BASIC, Floating-Point BASIC, with or without DOS, or on any size memory. It also will function with other software such as Microproducts Assembler, with the exception that hitting a Control C will send the program to Monitor Mode rather than returning it to the assembler.

Loading Page List Into A System

In order to load the Page List into an Apple that does not have a disk drive, first push Reset, then type the program as shown in Figure 1.



300.	388								
0300-	00	00	A2	04	B5	35	5D	39	
0308-	03	D0	06	CA	D0	F6	4C	20	
0310-	03	A2	04	B5	35	9 D	2A	03	
0318-	BD	39	03	95	35	CA	D0	F3	
0320-	A9	28	8 D	00	03	Α9	15	8D	
0328-	01	03	60	FO	FD	1B	FD	A2	
0330-	04	BD	2A	.03	95	35	CA	D 0	
0338-	F8	60	3E	03	1B	FD	48	49	
0340-	8D	F0	05	CE	00	03	D0	0A	
0348-	A9	28	8D	00	03	CE	01	03	
0350-	FO	04	68	4C	F0	FD	A9	15	
0358-	8D	01	03	AD	00	C 0	10	FB	
0360-	48	A9	00	8D	10	C0	68	C9	
0368-	83	FO	0 B	C9	9 B	D0	E3	A9	
0370-	01	8D	01	03	D0	DC	A5	33	
0378-	C9	BE	D0	03	4C	03	EO	C 9	
0380-	DD	D0	03	4C	00	00	4C	69	
0388-	FF								
* .			Figu	re 1.		٠			

Remember to type a colon and not a dash, then save the program onto tape. The program can be saved onto tape by typing "300.388W". Once the program is saved onto tape, it may be loaded into the Apple by pushing Reset and then typing "300. 388R".

If the system has a disk drive, the program can be saved onto a disk instead of tape. The procedure is as follows:

a) Boot up DOS

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- b) Type "POKE 72,0"
- c) Type "CALL -151" (This gets you into Monitor without killing DOS)
- d) Type in the program shown in Figure 1
- e) Use Control C or Control B to get back into BASIC
- f) Save the program on to disk by typing "BSAVE PAGE LIST, A\$300,L\$89".

The program can be loaded into memory by typing "BLOAD PAGE LIST, A\$300".

Some important points to remember about Page List are: (1) When Page List is turned on, DOS is turned off.

- (1) when rage List is turned on, DOS is turned on.
- (2) The Page List stays turned on until you turn it off.
- (3) If Page List is left on and you run a program, the program will stop when 20 lines of text have been printed.

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How It Works

Before the Apple prints anything, it first looks at locations \$36 and \$37 to find out where to go next. (The dollar sign indicates that the number is in hexidecimal). On a non-disk system, the computer would go to location \$FDFO (the output routine in Monitor). When the Apple wishes to input information, it looks at locations \$37 and \$38 to determine where to go next. When the command "CALL 770" is entered, the Initiation Routine (location \$302) first checks to see if Page List is already turned on. If it has not been turned on, the data at locations \$36-\$39 is moved to locations \$32B-\$32E, and the data at locations \$33A-\$33D is moved to locations \$36-\$39. Counter 1 (location \$300) is set to \$28 and Counter 2 (location \$301) is set to \$15.

When Page List is activated, all output is routed first to the Page List routine (location \$33E). There are two counters in Page List that keep track of how much has been printed. Counter 1 counts the number of characters on a line and Counter 2 counts the number of lines printed.

The flow chart, (Figure 2), shows how the counters interact and how the Page List routine works.



When "CALL 815" is entered, the Restore routine (location \$32F) moves the data from locations \$32B-\$32E back to locations \$36-\$39.

Program Relocation

One of the concepts connected with Murphy's Law says, "No matter where you put it, that was the wrong place." While Page List and DOS do not conflict with each other as long as DOS is not rebooted, Page List and the Programmer's Aid #1 HIRES Routines do conflict with each other. I'm sure that there are a lot of other programs out there that conflict with Page List in its present location.

The easiest way to relocate the program is to set all Data Bytes, locations \$300-\$301, \$32B-\$32E, and \$33A-\$33D to \$00 and relocate the program using Apple's Programmer's Aid #1. You will find relocation much easier if you tell the computer that all of the program is in Machine Code and none of it is Data. Once relocated, look at the program listing using Apple's Disassembler. The part you are looking for is the section with four "BRK's" followed by "PHA." The low order byte of the address is placed in the location of the first of the four "BRK's", and the high order byte is placed in the location of the second "BRK". Place S1B in the location of the third "BRK", and \$FD in the final "BRK". The final step is figuring out the new Basic Calls to turn the program on and off.

If a Programmer's Aid is not available, then program relocation will have to be done by hand. The listing in Figure 3 should be of some help in doing the relocation manually.

*300LLL	L				
0300-	00			BRK	
0301-	00			BRK	
0302-	A2	04		LDX	#\$04
0304-	B5	35		LDA	\$35,X
0306-	57	39	03	EOR	\$0339,X
0309-	D0	06		BNE	\$0311
030B-	CA			DEX	40204
030C-	D0	F6		BNE	\$0304
030E-	4C	20	03	JMP	\$0320
0311-	A2	04		LDX	#\$04
0313-	B5	35		LDA	\$35,X
0315-	9D	2A	03	STA	\$032A,X
0318-	BD	39	03	LDA	\$0339,X
031B-	95	35		STA	\$35 , X
031D-	CA			DEX	
031E-	D0	F3		BNE	\$0313
0320-	P	28		LDA	# \$28
0322-	8 D	00	03	STA	\$0300
0325-	A9	15		LDA	#\$15
0327-	8D	01	03	STA	\$0301
032A-	60			RTS	
032B-	00			BRK	
032C-	00			BRK	
032D-	00			BRK	
032E-	00			BRK	

Continued on next page



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	10328-	۵2 OA	T DV	# ¢04 `	13	Closing Con
	0331-	RD 24 82		# 704 ·	ſ	
	0334-	05 35	DDA СШУ	COE V	9	I have chose
	0336-	CV	DEV	4224V	1	duce maximu
	0337-		DEA	60223		Apple owners
	0337-		BNE	\$0331		any person or
	0339-	00	RTS		1	welcome to de
	033A-	00	BRK	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	i i	
	0338-	00	BRK		1	\$322 - STA
		00	BRK		1	+343 - DEC
		00	BRK			534A - STA
	0336-	48	PHA			\$327 - STA
	0335-	49 8D	EOR	#\$8D		\$3/1D DEC
	0341-	FU U5	BEQ	\$0348		
	0343-	CE 00 03	DEC	\$0300		-358 - STA
	0346-	DU UA	BNE	\$0352		371 - STA
	0348-	A9 28	LDA	# \$28		\$315 - STA
	034A-	8D 00 03	STA	\$0300		3331 - LDA
	034D-	CE 01 03	DEC	\$0301		3306 - EOR
	0350-	FU U4	BEQ	\$035 6		3318 - LDA
	0352-	68	PLA			\$33A The
	0353-	4C FO FD	JMP	\$FDF0		rout
	0356-	A9 15	LDA	#\$15		\$33B - The l
	0358-	8D 01 03	STA	\$0301		\$30E - JMP
	0358-	AD 00 C0	LDA	\$C000		0,02 - 0,2
	0356-	IU FB	BPL	\$035B		
	0360-	48	PHA			A list of lo
	0361-	A9 00	LDA	# \$00		
	0303-	8D 10 C0	STA	\$C010		
	0300-	68	PLA			
	0307-	C9 83	CMP	#\$83		
	0309-	FU UB	BEQ	\$0376		
	0360-	C9 9B	CMP	#\$9B		\$33 - 1
	0368-		BNE	\$0352		\$300 - (
	0371-	A9 U1 02	LDA	#\$U1		
	0374-	00 01 03	STA	\$0301) - 10 کې
	0376-	Δ5 32	DNE	\$U35Z		\$302 - 1
•	0378-	C0 DE		4000		#200
	0378-			# 3 BE		\$320 - 2
	0370-	40 03 EN	DNL TMD	903/E \$E003		\$32B - 1
	037F-	10,05 EU 17 07 09	CMD			\$22E
	0381-	0 03	BNF	# 300 \$03.96		4)2r − n
	0383-	40 00 00	TMD.	\$0000		\$33A - L
	0386-	4C 69 FF	TMD	\$5550		\$330 - T
	0389-	FF	222	VII 09		<u> </u>
	0384-	FF	222			\$ 33D - H
	038B-	FF	··· ???			\$33E - P
	038C-	FF	222			r - درر +
	038D-	FF	???			\$ 352 – J
	038E-	FF	???			\$37CT
	038F-	FF	???			#J;0 - 0
	0390-	FF	???			\$383 - JI
	0391	FF	???			\$386 - JI
	0392-	FF	???			
	0393-	FF	???			
	*	Figure 3	•			
					1	

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nments

sen not to copyright this program in order to proum distribution. It is my hope that most of the s will be able to utilize this program. Therefore, group wishing to copy this program is more than o so.

\$322 - STA Counter 1
-343 - DEC Counter 1
\$34A - STA Counter 1
\$327 - STA Counter 2
\$34D - DEC Counter 2
-358 - STA Counter 2
2371 - STA Counter 2
\$315 - STA Tmpdata-1,X
3331 - LDA Tmpdata-1,X
3306 - EOR Listloc-1,X
3318 - LDA Listloc-1,X
\$33A The low order andress for the start of the page list routine.
\$33B - The high order address for the start of the page list routine.
\$30E - JMP Setcounters
Table 1

ocations that would have to be changed if the program was relocated.

\$33 - Promp Character
\$300 - Counter 1
\$301 - Counter 2
\$302 - Initiation Routine
\$320 - Setcounters
\$32B - Tmpdata
\$32F - Restore Routine
\$33A - Listloc
\$33C - Low order address of Keyin (\$1D)
\$33D - High order address of Keyin (\$FD)
\$33E - Page List Routine
\$352 - JMP Cout 1
\$37C - JMP Integer Basic
\$383 - JMP FP Basic
\$386 - JMP Monitor
Table 2
Important Locations

Number 39

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G Dr. Dobb's Journal of Computer Calisthenics & Orthodontia, Box E, Menio Park, CA 94025

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<<< CLUB NOTES >>>

Houston Area Apple Users Group APPLE BARREL 4331 Nenana Drive Houston, TX 77035

The HOUSTON AREA APPLE USERS GROUP is an Apple II user club, not affiliated with Apple, Inc., or with any retail computer store. HAAUG is a member of the International Apple Core and supports its purposes and publications. General membership meetings are held on the second Wednesday of each month in the school cafeteria of St. Agnes Academy, 9000 Bellaire Boulevard (just west of Gessner), and start at 6:30 p.m. An additional software swap is held the last Saturday of each month at the clubhouse of the Houston Amateur Radio Club, 7011 Lozier Street, west of the Astrodome. These Saturday meetings begin at 2:00 p.m.

OFFICERS / EXECUTIVE BOARD

---==*==---

President	Bruce Barber	469-5805
Vice President	(vacant)	
Treasurer	Ray Essig	497-7165
Secretary	James Odom	426-3970
Software Lib.	Dennis Cornwell	.774-0671
Hardcopy Lib.	Leslie Doest	472-5485
Hardware Chair	David Marchand	497-7366
Business Uses	Rudge Allen	622-3979
Membership	Lee Gilbreth	342-2685
Newsletter Ed.	Ed Seeger	723-6919

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MEMBERSHIP INFORMATION

Dues are \$18.00 per 12-month period for regular memberships, \$6.00 for students through high school and where no adult member of the family is an Apple user. Please make checks

payable to "Houston Area Apple Users Group," and mail to Lee E. Gilbreth, Membership Chair, 3609 Glenmeadow, Rosenberg, TX 77471. This includes a subscription to APPLE BARREL, which is published nine times a year. Newsletter exchanges with similar clubs are invited.

APPLE BARREL REPRINT POLICY

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SPECIAL INTEREST GROUPS

Members who share a common interest are encouraged to form Special Interest Groups to more fully explore their areas. Meetings may be arranged by common consent of the group and will ordinarily have one member who serves to coordinate or convene the meetings. If you would like to start a group around any given interest, please contact one of the club officers.

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Current groups are:

- 1) EUSINESS APPLICATIONS Coordinated by Rudge Allen, 622-3979
- 2) PASCAL USERS Directory being assembled Pat McGee coordinating, 663-6806
- 3) SOURCE USERS Directory being assembled Coordinator needed

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- 4) HAM RADIO OPERATORS Coordinated by Ed Seeger, WB5PTW 723-6919
- 5) NEW MEMBERS Coordinated by Lee Gilbreth, 342-2685

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APPLE BULLETIN BOARD SYSTEM

The Houston Area Apple Users Group supports an ABBS evenings and weekends, 6:00 pm through 8:30 am, and all weekend long. Feel free to sign-on and place your want-ad, meeting notice, request for help, Aggie joke, etc. Any ASCII terminal, Apple computer or not, with suitable modem or coupler, will give you ABBS capability. Call:

713/654-0759

SYSOP is Rudge Allen, 622-3979.

Pascal Course

If you did not sign up for Pat McGee's introduction to Apple Pascal at the June meeting, call him at 666-0004 (after 25 June) for details. The course will meet on two of the following nights per month: 1st Wed, 3rd Wed, 4th Wed. Meeting time will be 7:00 sharp and the first meeting is 16 July. The meeting place is near 59 & Beechnut. There will probably be a special session for beginners, time and place still TBA. Let me emphasize again that homework will be assigned, collected, and graded. The best way to learn something is to do it with feedback from someone who already knows how. Everyone will be expected to contribute to the class project. The textbook will be Ken Bowles MicroComputer Problem Solving Using Pascal. This came with the Language card, and is available from local computer stores and technical book stores if you don't have a language card. The first homework assignment can be found in the March-April Apple Barrel. Bring it to the first class.

For Sale or Trade

Looking for an upgrade path? Tired of running out of room on a disk? Got the 40 column screen blues? Look no further... than this beautiful Cromemco System Z-2 black box with 64K bytes of 150 ns RAM, a 4 megahertz Z-80, and a dual Persci 277 8" floppy (256K bytes each). The Persci floppy has the fastest seek time of any. Watch this sytem shuffle them bits. Need more memory? Just add it - this system is set up for bank select (No, you can't have the First National) all the way up to 512K bytes. Extras include 2 parallel ports, 3 serial ports, 4 variable timers, 5 barrel carb, and (pardon this abrupt return to zombie land) COBOL. Retails for over six grand, drive it home for only \$4800. Or if you have an Apple system and want to trade it in, call for reasonable trade-in offer. Pat McGee 666-0004 (Leave message with machine if no one is there)

HAAUG has a number of members whose dues are in arrears, but who do not know it. It's not your fault! We have not been very good about keeping our members up-to-date on their expirations, and numerous issues of the APPLE BARREL have gone out 'way past renewal time.

Thanks now to Chris Myers, our Mail Management (c) program has been modified to print your renewal date on the address label of the newsletter. Take a look on the last page mailing wrapper to see when your renewal is due. HAAUG will no longer carry you past your date. We must assume that if your renewal has not reached us before or during the 30-day period following expiration, that you wish to drop your membership.

Dues for a 12-month period are \$18.00, and bring you not only the APPLE BARREL, but software swap privileges, local dealer discounts (totaling several hundred dollars in 1979-80), the Apple Bulletin Board System, hardcopy library borrowing rights, programs and speakers, technical advice, and a lot of fun in getting the most out of your Apple!

Send your check for \$18.00 to:

Lee E. Gilbreth, Membership Chairman 3609 Glenmeadow Rosenberg, TX 77471

Make your check payable to "Houston Area Apple Users Group" and mark it for "renewal."

<<< APPLE ORCHARDS GOING, GOING, GONE! >>>

President Bruce Barber still has stacks of APPLE ORCHARDS yet to be picked up by HAAUG If you have been a member prior to members. March 30, your dues included the cost of this premier issue. Those who joined after the end of March can still get a copy for a very nominal \$1.00. Extras will be sold by one or more of the area Apple retailers at a price of their choosing. PLEASE PICK UP YOUR COPY AT THE NEXT SATURDAY OR WEDNESDAY CLUB MEETING. They will only be available in the stores after that. As you know, Apple, Inc., has agreed to support the International Apple Core with a library of manuals, technical advice, a hotline, CONTACT as a part of the Apple Orchard, and probably with contributed software as well.

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<<< APPLE BULLETIN BOARD SYSTEM >>>

More and more Apple owners are choosing to buy a modem as their next peripheral following purchase of a disk drive. A modem puts your Apple into telephone line communication with another computer, which may be virtually anywhere in the world. HAAUG maintains its own bulletin board system as a service to any and all who wish to call in. Newcomers will need to know the following:

- * Phone number 713/654-0759
- * Operating hours 6:00 pm through 8:30 am weeknights, and 6:00 pm Friday through 8:30 am Monday weekends.
- * The system will tell you all you need to know to operate it. Be sure to indicate that it is your first time on the system if that is true for you. You will then see a display of all operating commands and instructions for their use.
- * Please do not lock your messages unless there is a very good reason to do so. And please remove messages directed to you after you pick them up. This keeps things tidy and saves disk space.
- * Note that "SYSOP" refers to the System Operator, who is currently Rudge Allen. It is not a general designation for all users. Messages for Rudge go to "SYSOP," while those addressed to everybody go to "ALL."
- * One feature often overlooked is the command for reviewing a sequence of messages without passing through "Go." Type Rxx; where xx is the first of a series of messages you wish to read. If you have scanned messages and noted the ones you wish to read in full, separate the respective message numbers with a semicolon when prompted to enter a number. Saves an awful lot of trouble. Try it long distance around the country for real savings!
- * Don't be afraid to play around with the system. Experiment with the control-S, Q, and K. You can't hurt anything by playing.
- * Suggestions for improvements to the ABBS are welcomed. Current ideas include a program download feature, a Mountain Hardware clock, fuller use of the sign-on bulletin feature, abbreviated sign-on, etc. All are under study. What's yours?



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WANT AND DON'T WANT ADS >>>

I WANT A COMPLETE USED APPLE SYSTEM! Need all the gear! Contact Mark Williams, 621-0316.

LETTER-QUALITY PRINTER/TERMINAL: \$1300. This is the Anderson-Jacobson IBM Selectric machine that has printed your APPLE BARREL for well over a year now! It is an I/O terminal as well as a printer. Use it as a quality Selectric typewriter offline, or for beautiful hardcopy online. Comes with a parallel interface and will run nicely off the Apple Communications Card with a small handshaking modification. Includes a tractor feed mechanism for fanfold paper; three Selectric typeballs; operating manual. Delivered within 100 miles of Houston. I will arrange a demonstration for you in my home at your convenience. (Keep your newsletter coming and help Ed Seeger pay for his new SpinWriter!) 723-6919 evenings.

ALF MUSIC BOARDS: \$200 each, two for \$350 with complete users manual, technical manual, special timing board, and several disks of very good stereo music. These synthesizer boards plug into your peripheral slots and play through your stereo amp. You've got to hear the things to believe your Apple's doing it! No comparison to other boards now on the shelf. Remarkable hires display of measures, key signature, treble and bass clefs, etc. upon entry of notes. See review article in Creative Computing, June '79, p.102. I will arrange a demonstration at your convenience for seriously interested buyers. Ed Seeger, 723-6919 evenings.

WANTED: ONE GOOD DEAL ON APPLESOFT ROM CARD. Call Charlie Anderson, 688-2105 day or night.

I AM INTERESTED IN POSSIBLY MARKETING YOUR SOFTWARE. I wrote "Tuesday Night Football" and have dealers in 10 states. If you have developed a distinctive games program, polished or unpolished, I would like to talk about it with you. Charlie Anderson Night or day, 688-2105.

CROMEMCO SYSTEM III FOR SALE -- Z80 machine with Hazeltine 1500 terminal, TI 810 printer, dual disk drives, 16K ram and business software. Call Brian Bell, 621-9600 ext.442 days, or Jerry Barney, 680-0668.

I AM STILL LOOKING FOR AN APPLESOFT ROM CARD. If anyone has bought the Language System and no longer needs their ROM Card, please call Chris Myers, 668-3944.

THE END .

Houston Area Apple Users' Group APPLE BARREL Ed Seeger, Editor 4331 Nenana Drive Houston, Texas 77035

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