

OCTOBER '84

I-M 1 IN A MILLION CLUB NATIONAL NEWSLETTER

INSIDE...

PICTURES & MOTION IN REVIEW
ARCADE REVIEW
OLDE TUNE FROM HAL BLOOM
CLUB OUTLOOK... EXTRA
KAMEL by GLENN JONES
1985 ENROLLMENT FORM
MEMBER SURVEY



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GENERAL NEWS

FROM KEITH JOHNSON

Keith has sent in copies of APF's advertisement flyers to be added to the growing APF memorabilia collection. The flyers give some detail, pictures, and advertising hype. If you would like copies, send a S.A.S.E.

THANK YOU KEITH!

LATEST PROGRAM/REVISION from BILL BOWMAN

A FRONT SCREEN PROGRAM that was submitted for the program library in the past has been revised and is now available to the membership.

This program contains instructions regarding the operation, and is very easy to use. It's purpose is to allow the user to make LO RES front screens for any program.

THANKS AGAIN BILL!

FROM KEITH PHILLIPS

Keith has been working on an ingenious way to make the IM-1 SPEAK by using ML loops and timing, and manipulating the internal oscillator of the computer. By changing intervals in the ML routine, a multitude of sound effects can be produced. With some IMAGINATION, these effects can be interpreted as actual spoken WORDS!

A copy of Keith's program can be obtained from the library as tape #SE-1. Take note that this program is merely an experiment to produce speech, but for sound effects, its very good. More on this subject when available from Keith.

THANK YOU KEITH!

BYTE ARTICLE DIDN'T MAKE IT IN SEPTEMBER

I must apologize to those of you who may have vigorously attacked the magazine stores, in droves, clawed, scratched, kicked, and fought for the last BYTE on the shelf, only to find the article (as mentioned in last month's newsletter) MISSING!

Perhaps in OCTOBER? PERHAPS!

FLASH...THE ARCADE IS MISSING!

Somewhere between Arrowsmith, Illinois and Greenfield, Wisconsin lies this month's ARCADE section. Because of this we will print some enlarged OP CODE sheets and some general information about the 6800 for review. We hope to have the regular instruction next month.

FI-100's and SI-232's SOUGHT!

Lately several requests have come in for the FI-100 and SI-232 interfaces.

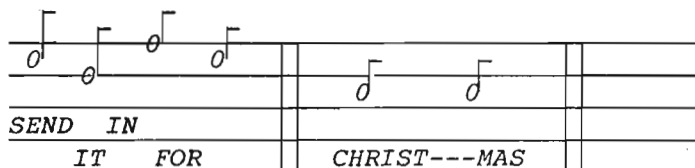
If you have any that you would like to sell, please contact us in writing and enclose your asking price. We'll post it on the bulletin board and pass the information along to those who are interested. Thank you.

WHO IS INTO EXTERNAL CONTROL?

Along with hardware requests, we have received a few inquiries regarding external control using the IM-1.

Before becoming involved with the newsletter, I was working on a design for an interface that would allow the IM-1 to control up to 256 remote devices using signals super-imposed on household current. This method is commonly used in computer control of external devices and is the basic operating principle behind the BSR X-10 controller.

There are many manufactured units available today that are STAND ALONE, RS-232 driven, and come with appropriate software. However, these units tend to be quite expensive. Therefore, I decided to begin work on developing an interface from the internal PIA of the IM-1, to the BSR unit. I haven't had time to get back to it. I would like to know if anyone in the club has ventured into this area and has possibly completed an interface of this type. It would also be interesting to know if anyone has accomplished DIRECT RELAY CONTROL using the PIA or SI-232 port. If so, would you be so kind as to share this knowledge with other members through the newsletter?



The image shows a musical staff with notes and a table below it. The staff has a treble clef and contains several notes. The table below the staff has two columns and two rows. The first row is labeled 'SEND IN' and the second row is labeled 'IT FOR'. The table contains the text 'CHRIST---MAS' in the second column of the second row.

SEND IN	
IT FOR	CHRIST---MAS

CHRISTMAS MUSIC, FRONT SCREENS, anything to "Make the season bright!"

If you have ever wanted to see your work printed, NOW IS THE TIME! The Christmas issue could be our last (see LETTER), so don't delay in sending in your Christmas favorites. We are hoping for a LARGE colorful issue in DECEMBER.

PRODUCT REVIEW

PICTURES & MOTION™ by ALFRED FRESSOLA

There have been some very good programs and instruction in the past that have given IM-1 owners the ability to create and store HI RESOLUTION shapes, and past newsletters have dealt with color sets, modes, object definition, etc. These programs and instructions have expanded our knowledge and capabilities pertaining to the creation of colorful, interesting HI RES screens.

Alfred Fressola has taken this know-how several steps beyond! His new program, PICTURES & MOTION (tm) is a culmination of HI RES creation and display technique, combined with fascinating shape and screen movement.

Shape building is easy with this program. Divided-screen PROMPTS appear in LO RES and ask you for pertinent color definition; after which a LARGE shape block appears dimensioned according to the mode selected. Co-ordinances appear on the left side of the block so that you can easily create, re-create, or modify your shapes. Cursor controls are provided which allow you to color in your shape with the colors that are available.

Once a shape is made, you may elect to save it, change it, or display it on the HI RES screen. You can then go onto making other shapes (31 possible).

The program allows you to butt 2 shapes together in the LO RES shape making mode. This nice feature lets you look at one shape in relationship to another, thus allowing shape symmetry to be maintained.

Once the shapes are completed, they can be displayed with others on the HI RES screen. The same cursor controls that were used in the creation of the individual shapes can then be used to maneuver them on the screen.

After the picture is pieced together, a number of MOVEMENT commands can be called upon. You may elect to have 1 particular shape to move left to right across the screen; the speed of which can be controlled by depressing various alpha keys on the main keyboard (ASCII value determines the speed). A different movement feature permits the user to see a particular shape move around the screen randomly with it's speed controlled as explained. Finally, the ENTIRE screen can be moved left, right, up, or down by depressing 4 direction keys on the keyboard. This function makes

your squadron of F-15's come alive! Speed controls also apply in this mode.

The picture may be displayed in either hi res mode (1 or 2) and in either color set, all while the picture is being displayed. Thus, FOUR variations of the created picture can be easily viewed. The background shape which is initially entered for all screen locations can, like the other created shapes in the high resolution picture, be modified by recalling the shape from the high resolution screen.

It would be impossible to cover ALL the features of this program in this space. We have covered the main highlights and have tried to convey the remarkable versatility and quality of this program. If you are into HI RES screen making and are looking for a program that lets you create with ease, store your pictures to tape, and display them with movement, PICTURES & MOTION (tm) does it ALL!

CLASSIFIED

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During our stock clearance for new production runs, you can get the AIT-IMPIA-parallel port card and the AIT-IMPIA-SI-trainer for \$84.00+6.00 shp.= \$90.00. The regular price for this combination is \$135.90. This offer is limited to present stock quantity or 12/31/84. Get them while they last.

SEE BELOW FOR MORE FROM
A.I.T.

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1-APF-IM-1 machine w/BB1, SI-232, FI-100, 16K Ram, Basic Interpreter.\$175.00
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EXTRA

The following information is provided to let you know how we stand as a club, what changes are needed to continue, and to fill you in on what we have attempted to do this year to increase the membership. We'd also like to share some thoughts regarding club member activity in the coming year. We invite your comments on the enclosed enrollment-survey form.

We're a very small group. With very few members in 1984 opposed to 833 the previous year, our survival is based upon several very essential needs...ACTIVITY, INCREASED ENROLLMENT, UNIFIED EFFORT, AND KNOWLEDGE. Where one essential is missing or lacking, the others suffer as a result. Let's take a look at each one in perspective.

INCREASED ENROLLMENT...Over the past year we have periodically mailed sample issues and flyers to ALL KNOWN OWNERS of APF computers. According to facts published in various magazines in the past, APF ELECTRONICS manufactured about 5000 IM-1 computers. Out of this number, we have contacted approximately 1400 owners (NON MEMBERS) with an invitation to join the club. As of this writing, 29 owners have responded. This amount is not sufficient enough to cover the printing and mailing costs of the sample issues and flyers, let alone servicing their membership for an entire year. Compounding the situation is the recent 40% increase in printing costs and rumors of a postal rate hike in the wind. After adding the costs of equipment and supplies to produce the newsletter with any type of quality at all, the total costs over the year surpass the initial income.

ACTIVITY, UNIFIED EFFORT, KNOWLEDGE...If you look back at each issue of the newsletter you will quickly discover WHO has been active in the club this past year. The number of active members, as a percentage, compared to the number of inactive members would be very reasonable IF the club was LARGE. However, in our case, the MAJORITY of the membership SHOULD BE ACTIVE in order to bring about needed instruction, ideas, programs, products, and services. Although the 1984 newsletter contained many of these things, MUCH MORE is needed to continue on. The MAJORITY MUST contribute to the success of the club. Other clubs have failed because this standard was not maintained.

Newcomers to the club who need instruction (as we all have, and still do) would be greatly encouraged by seeing an active membership. In time, THEIR knowledge can be re-channeled back into the club to benefit others.

There is one final point to mention while on this subject. The newsletter is strictly a MEMBER GENERATED publication, unlike any computer magazine that exists today. YOU are it's writers. YOU decide what goes into it, and YOU are its only readers. Please seriously consider the opportunity you have as a club member to freely use this medium.

WHAT CAN BE DONE? A POSITIVE APPROACH!

If each of us would consider the CLUB, THE NEWSLETTER, and THE COMPUTER to be WORTHWHILE, and would be willing to take a few minutes now and then to write in with new programming ideas, helpful hints, maintenance tips, modifications, etc., or even just to say HELLO, we'd begin the new year with a positive outlook and a much healthier club!

NEXT YEAR?

It all depends upon what YOU do the remaining portion of this year, and if the membership stays near its present level for next year.

Enclosed you will find an enrollment form with a questionnaire. We request that all questionnaires be returned with your 1985 membership dues BEFORE NOVEMBER 30, 1984. We need to know what areas you may be able to help in. Also, we would like to know your level of familiarity with the IM-1 so that we can gear a portion of the newsletter to your needs. Remember, the club will not be changing hands this year. It is strictly up to YOU if we will resume operation in 1985. Thank you for taking the time to read this letter and we hope, for the sake of the club, that you will respond.

SHORT PROGRAM

```
10 POKE 24578,38: POKE 26112,0
20 REM COPYRIGHT 1979 CREATIVE COMPUTING; MOD IF FOR APP BY G.R. J ON ES 1981
50 CALL 17046: PRINT TAB (14);"KAMEL"
55 PRINT
60 PRINT "WELCOME TO KAMEL. THE OBJECT IS"
70 PRINT "TO TRAVEL 200 MILES ACROSS THE"
75 PRINT "GREAT GOBI DESERT. A TRIBE OF"
80 PRINT "KNOCK-KNEED PYGMIES WILL BE "
85 PRINT "CHASING YOU. YOU WILL BE ASKED"
90 PRINT "FOR COMMANDS EVERY 50 OFTEN.": PRINT
110 PRINT "YOU HAVE ONE QUART OF WATER"
112 PRINT "WHICH WILL LAST YOU SIX DRINKS."
120 PRINT "YOU MAY RENEW YOUR WATER SUPPLY"
125 PRINT "COMPLETELY AT AN OASIS. YOU"
130 PRINT "GET 1/2 QUART IF FOUND BY HELP.":
160 PRINT : PRINT "PRESS ANY KEY TO CONTINUE.":
170 X= RND (0): IF KEY$ (0)="" THEN 170
175 CALL 17046
176 PRINT "          COMMANDS": PRINT
180 PRINT "#1 DRINK FROM CANTEEN"
190 PRINT "#2 AHEAD MODERATE SPEED"
200 PRINT "#3 AHEAD FULL SPEED"
205 PRINT "#4 STOP FOR THE NIGHT"
210 PRINT "#5 STATUS CHECK"
215 PRINT "#6 HOPE FOR HELP (OUT OF WATER)"
218 PRINT : PRINT : PRINT : PRINT "PRESS ANY KEY TO CONTINUE.": PRINT : PRINT
219 IF KEY$ (0)="" THEN 219
220 CALL 17046: PRINT "YOU ARE IN THE MIDDLE OF THE"
221 PRINT "DESERT AT AN OASIS.": PRINT
230 GOSUB 1550
240 IF C>199 THEN GOTO 1090
250 Z=Z-1
260 IF Z=0 THEN PRINT "*****WARNING***** TAKE A DRINK !": PRINT : PRINT
270 IF Z<0 THEN PRINT "YOUR BOB JUST DEHYDRATED.": GOTO 1290
280 P=P+1
290 X2= INT ( RND (0)*10+2.5)
300 IF Q>0 THEN 300
310 IF P<4 THEN 300
320 C1=C1+X2
330 IF C1<C THEN GOTO 370
340 PRINT "THE PYGMIES HAVE CAPTURED YOU."
341 PRINT "KAMEL AND PEOPLE SOUP IS THEIR"
350 PRINT "FAVORITE DISH!"
360 GOTO 1440
370 PRINT "THE PYGMIES ARE "C-C1" MILES BEHIND"
371 PRINT "YOU."
380 PRINT "YOU HAVE TRAVELLED "C" MILES.": PRINT
390 PRINT : PRINT " 1  2  3  4  5  6"
393 PRINT " DRINK MOD FAST STOP STAT HELP!": PRINT
395 INPUT "WHAT IS YOUR COMMAND",Y
400 PRINT
420 ON Y GOTO 690,490,560,630,660,430
```

KAMEL

This program, submitted by GLENN JONES has appeared in a past newsletter, but we thought those of you who weren't members at that time might enjoy the game.

THANKS GLENN

```

430 T= INT ( RND (0)*10)
440 IF T>2 THEN GOTO 1080
450 PRINT "HELP HAS FOUND YOU IN A STATE"
451 PRINT "OF UNCONSCIOUSNESS."
460 S=3
470 Z=4
480 GOTO 240
490 F=F+1
500 IF F=8 THEN GOTO 1070
510 GOSUB 740
520 X1= INT ( RND (0)*10)
530 C=C+X1
540 PRINT "YOUR KAMEL LIKES THIS PACE."
543 FOR G=0 TO 6
545 FOR H=0 TO 100: NEXT H
547 PRINT
549 NEXT G
550 GOTO 240
560 F=F+3
570 IF F>7 THEN GOTO 1070
580 GOSUB 740
590 X1=2* INT ( RND (0)*10)
600 C=C+X1
610 PRINT "YOUR KAMEL IS BURNING ACROSS"
611 PRINT "THE DESERT SANDS."
613 FOR G=0 TO 150: NEXT G
615 FOR G=0 TO 10
617 FOR H=0 TO 50: NEXT H: PRINT
619 NEXT G
620 GOTO 240
630 CALL 17046: PRINT " YOUR KAMEL THANKS YOU.": PRINT : PRINT : PRINT : PRINT : PRINT
632 FOR G=0 TO 800: NEXT G
640 F=0
650 GOTO 250
660 PRINT "YOUR KAMEL HAS ";7-F;" GOOD DAYS LEFT.:"
670 PRINT "YOU HAVE ";S;" DRINKS LEFT IN YOUR"
671 PRINT "CANTEEN."
680 PRINT "YOU CAN GO ";Z;" COMMANDS WITHOUT"
681 PRINT "TAKING A DRINK."
685 GOTO 390
690 S=S-1
700 IF S<0 THEN GOTO 1490
710 IF S<2 THEN PRINT "BETTER WATCH FOR AN OASIS!": PRINT
715 IF S>1 THEN PRINT : PRINT " AAAHHHH !": PRINT
720 Z=4
730 GOTO 390
740 A= INT (100* RND (0))
750 IF A>5 THEN GOTO 1000
760 PRINT "WILD BERBERS HIDDEN IN THE SAND"
761 PRINT "HAVE CAPTURED YOU."
770 PRINT "LUCKILY THE LOCAL SHEIK HAS"
771 PRINT "AGREED TO PAY THEIR RANSOM"
780 PRINT "DEMANDS BUT....WATCH OUT FOR THE";
781 PRINT "PYGMIES!"
790 PRINT : PRINT "YOU HAVE SOME NEW OPTIONS:"
800 PRINT "#7 ATTEMPT AN ESCAPE"
810 PRINT "#8 WAIT FOR PAYMENT": PRINT
820 INPUT "WHICH COMMAND",X
840 IF X=8 THEN 920

```

KAMEL

```

850 X1= INT ( RND (0)*10)
860 IF X1<5 THEN GOTO 900
870 PRINT "CONGRATULATIONS! YOU HAVE"
871 PRINT "SUCCESSFULLY ESCAPED!"
873 FOR G=0 TO 350: NEXT
875 FOR C=0 TO 6: PRINT
877 FOR H=0 TO 25: NEXT H
879 NEXT G
880 Q=0
890 GOTO 240
900 PRINT : PRINT "YOU WERE MORTALLY WOUNDED BY A"
901 PRINT "PIG STABBER WHILE ESCAPING.": PRINT
910 GOTO 1290
920 X1= INT (100* RND (0))
940 IF X1>24 THEN GOTO 980
950 PRINT : PRINT "YOUR RANSOM HAS BEEN PAID AND"
951 PRINT "YOU ARE FREE TO GO.": PRINT
960 Q=0
970 GOTO 240
980 PRINT : PRINT "THE LOCAL SULTAN IS COLLECTING:"
981 FOR G=0 TO 150: NEXT G
983 PRINT ".....JUST WAIT....."
984 FOR G=0 TO 125: NEXT G
985 FOR E=1 TO 10: PRINT : FOR V=1 TO 100: NEXT V: NEXT E
990 GOTO 240
1000 A= INT (23* RND (0))
1010 IF A<22 THEN 1120
1020 PRINT "YOU HAVE ARRIVED AT AN OASIS---"
1021 PRINT "YOUR KAMEL IS FILLING YOUR"
1030 PRINT "CANTEEN AND EATING FIGS.": PRINT
1035 FOR G=0 TO 1000: NEXT
1040 Z=4
1050 S=6
1060 RETURN
1070 PRINT "YOU DIRTY RAPSCALLION! YOU RAN"
1071 PRINT "YOUR POOR KAMEL TO DEATH!"
1080 GOTO 1290
1090 PRINT "YOU WIN!!! THE PYGMIES ARE"
1091 PRINT "THROWING A BANQUET AND WOULD"
1100 PRINT "LIKE TO SERVE YOU AS GUEST OF"
1101 PRINT "HONOR."
1110 GOTO 1440
1120 X1= INT (100* RND (0))
1130 IF X1>5 THEN GOTO 1230
1140 PRINT "YOU HAVE BEEN CAUGHT IN A SAND-"
1141 PRINT "STORM....LOTS OF LUCK!": FOR L=0 TO 500: NEXT L
1142 FOR G=0 TO 50
1143 V= INT ( RND (0)*20)
1144 PRINT TAB (V);" . . . . . "
1145 NEXT G
1150 X5= INT (10* RND (0))
1160 X6= INT (10* RND (0))
1170 IF X6<5 THEN GOTO 1200
1180 C=C+X5
1190 GOTO 1210
1200 C=C-X5
1210 PRINT "YOUR NEW POSITION IS ";C;" MILES"
1211 PRINT "SO FAR"

```

KAMEL

SHORT PROGRAM

```

1220 RETURN
1230 X1= INT (100* RND (0))
1240 IF X1>5 THEN RETURN
1250 C1=C1+1
1260 PRINT "YOUR KAMEL HURT HIS HUMP."
1270 PRINT "LUCKILY, THE PYGMIES ARE WEARY.": PRINT
1272 FOR G=0 TO 4
1274 FOR H=0 TO 150: NEXT
1276 PRINT
1278 NEXT
1280 RETURN
1290 U= INT (10* RND (0))
1300 PRINT "YOU DIED IN THE DESERT.": PRINT
1310 IF U>1 THEN GOTO 1340
1320 PRINT "THE NATIONAL KAMEL'S UNION IS"
1321 PRINT "NOT ATTENDING YOUR FUNERAL."
1330 GOTO 1440
1340 IF U>3 THEN GOTO 1370
1350 PRINT "YOUR BODY WAS EATEN BY VULTURES."
1360 GOTO 1440
1370 IF U>5 THEN GOTO 1400
1380 PRINT "THE LOCAL SHEIK NOW USES YOUR"
1381 PRINT "SKULL FOR A CHANGE PURSE!"
1390 GOTO 1440
1400 IF U>7 THEN GOTO 1430
1410 PRINT "PEOPLE OF LITTLE INTELLIGENCE"
1411 PRINT "SHOULD STAY OUT OF THE GOBI!"
1420 GOTO 1440
1430 PRINT "TURKEYS SHOULD FLY, NOT RIDE"
1431 PRINT "KAMELS!"
1440 PRINT : INPUT "WANT A NEW KAMEL AND A NEW CAMPEXTER : (YES) OR 2 (NO)":"N
1450 IF N=1 GOTO 50
1460 GOTO 1510
1490 PRINT "SORRY,CHUMP---YOU RAN OUT OF"
1491 PRINT "WATER!": PRINT
1500 GOTO 1290
1510 PRINT : PRINT "          CHICKEN!"
1520 END
1550 Z=4
1560 S=6
1570 C=0
1580 C1=0
1590 Q=0
1600 F=0
1610 P=0
1620 RETURN

```

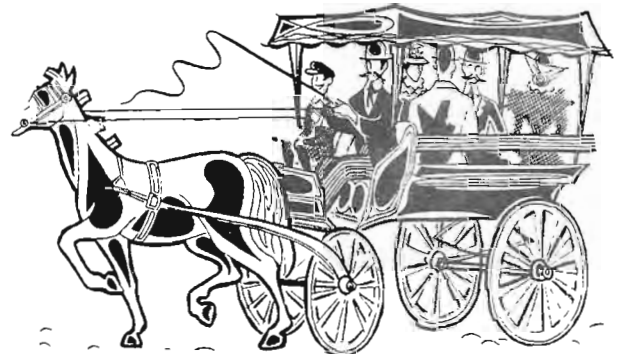
PICTURES & MOTION™ GRAPHICS DEVELOPMENT PROGRAM

A true graphics development program which allows you to *quickly* design high resolution graphics. The graphic images can be displayed in both high resolution modes and in both color sets of the IM-1 computer. The images can be moved under interactive control from slow to very fast in all four directions. Random movement of any location on the screen is also provided as well as other enhanced graphic features. Designs created can be stored on tape for later use and/or editing. The program tape includes many pre-recorded designs for your immediate enjoyment. All aspects of the program execute rapidly due to extensive use of machine language routines.

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```

10 FOR I=1 TO 2
20 MUSIC "*1000 50 30 20 100000 20 3000 50 +1000 7000 +10 +10000 20 30 +400 1000 +10000000"
30 MUSIC "
40 MUSIC "7000 60 50 70 6000 50 60 60 60 600000"
50 MUSIC "
60 MUSIC "
70 MUSIC "*2000 70 60 *20 7300 60 50 50 50 500000"
80 MUSIC "
90 MUSIC "*1000 50 30 20 100000 20 3000 50 +1000 7000 +10 +10000 20 30 +400 1000 +10000000"
100 MUSIC "
110 MUSIC "*2000 +10 70 *20 +1000 60 7000 70 70000 6000 50 5000 70 +10 +1000 5000 +1000000000000000"
120 MUSIC "
130 NEXT I
140 END

```

An OLDE TIME melody from
 HAL BLOOM

ORCHESTRA PIT

THE ARCADE

While we're waiting for more information from Eric, let's review the 6 addressing modes of the 6800. This may be easier than trying to look back for the one you want to use. Here they all are in ONE issue.

The MC6800 Microprocessor has 6 addressing modes available to the programmer. They are INHERENT/ACCUMULATOR, IMMEDIATE, DIRECT, EXTENDED, INDEXED, and RELATIVE.

A. INHERENT/ACCUMULATOR

These addressing modes have one-byte instructions and therefore either do not require addressing a memory location or the addressing information is contained in the instruction. An example of an INHERENT instruction would be to execute a "clear carry bit" instruction and would look like this in memory:

<u>MEMORY LOCATION</u>	<u>MEMORY CONTENTS (hex)</u>
0100	0C (CLC op-code)

0C in hex is the CLC instruction. The result of this instruction would be to load a zero in the carry bit in the MPU condition code register.

An example of an ACCUMULATOR instruction would be to execute an "arithmetic shift left of accumulator A" instruction and would look like this in memory:

<u>MEMORY LOCATION</u>	<u>MEMORY CONTENTS (hex)</u>
0100	48 (ASL A op-code)

48 in hex is the ASL A instruction. The result of this instruction will have the contents of accumulator A shifted one place to the left. Bit 0 (LSB) of the accumulator will be loaded with a zero and bit 7 (MSB) will be loaded into the carry bit of the condition code register. An example of an inherent memory addressing instruction would be to execute a "PUSH DATA" instruction and would look like this in memory:

<u>MEMORY LOCATION</u>	<u>MEMORY CONTENTS (hex)</u>
0100	36 (PSH A op-code)

36 in hex is the PSH A instruction. Execution of this instruction will cause the contents of accumulator A to be loaded into memory at the address contained in the stack pointer register. The stack pointer register is then decremented by one.

Source input coding to an assembler, written in mnemonics, for the above three instructions would appear as follows:

CLC

ASL A

PSH A

B. IMMEDIATE

In this mode of addressing, the operand is found the the next one or two memory locations following the op code.

C. DIRECT

In this mode of addressing, the address is found in the next memory location following the op code. This enables direct addressing of the first 256 bytes of memory (0000 to 00FF in hex).

D. EXTENDED

This mode of addressing is used to address memory locations ABOVE 00FF. The second memory location of the instruction contains the high order 8 bits of the address, and the 3rd memory location contains the low order 8 bits of the address.

E. INDEXED

In this mode of addressing, the number (offset) found in the second memory location of the instruction is ADDED TO THE CONTENTS of the index register to form a new effective address. The new effective address is the location in memory which contains the data for the operation or is the destination for data.

The effective address is held in a temporary address register so the content of the index register is not destroyed or altered.

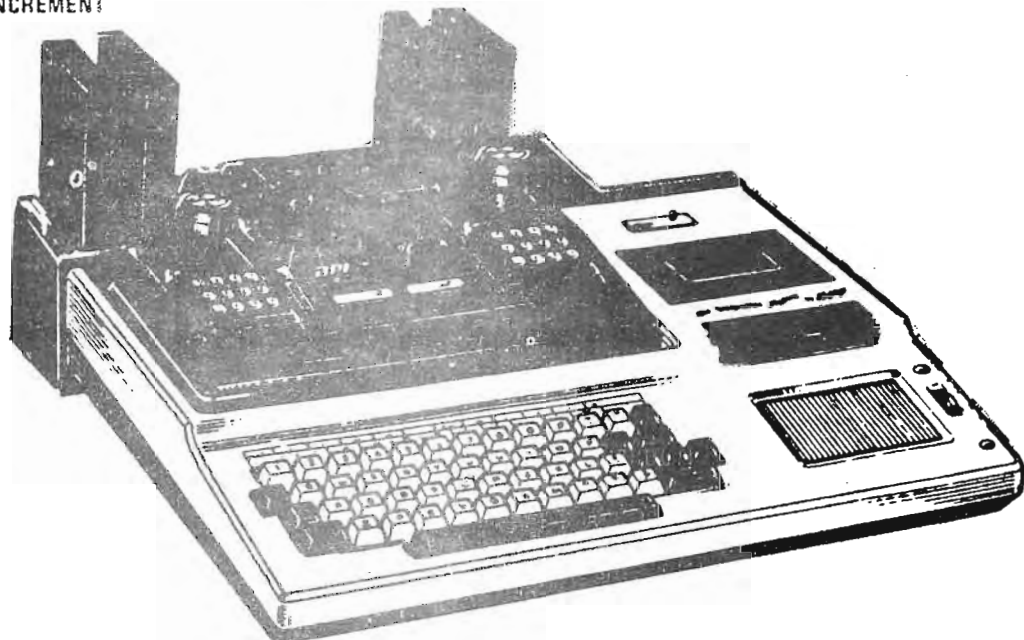
F. RELATIVE

In this mode of addressing, program control may be transferred to someplace other than the next sequential memory location. It is used for BRANCH instructions ONLY. Transfer is limited to 126 memory locations BACK, or 129 memory locations FORWARD from the present location. Since this is a 2 byte instruction, transfer is always referenced from the next instruction which the MPU would execute if it did not transfer control. This reference point would be the present value of the program counter after reading the 2 byte instruction, or the present location +2. The number of memory locations to branch over is called the OFFSET and is expressed as an 8 bit 2's complement number.

THE ARCADE

EXECUTABLE INSTRUCTIONS — ALPHABETIC LIST

ABA	ADD ACCUMULATORS	INS	INCREMENT STACK POINTER
ADC	ADD WITH CARRY	INX	INCREMENT INDEX REGISTER
ADD	ADD	JMP	JUMP
AND	LOGICAL AND	JSR	JUMP TO SUBROUTINE
ASL	ARITHMETIC SHIFT LEFT	LDA	LOAD ACCUMULATOR
ASR	ARITHMETIC SHIFT RIGHT	LDS	LOAD STACK POINTER
BCC	BRANCH IF CARRY CLEAR	LDX	LOAD INDEX REGISTER
BCS	BRANCH IF CARRY SET	LSR	LOGICAL SHIFT RIGHT
BEQ	BRANCH IF EQUAL TO ZERO	NEG	NEGATE
BGE	BRANCH IF GREATER OR EQUAL ZERO	NOP	NO OPERATION
BGT	BRANCH IF GREATER THAN ZERO	ORA	INCLUSIVE OR ACCUMULATOR
BHI	BRANCH IF HIGHER	PSH	PUSH DATA
BIT	BIT TEST	PUL	PULL DATA
BLE	BRANCH IF LESS OR EQUAL	ROL	ROTATE LEFT
BLS	BRANCH IF LOWER OR SAME	ROR	ROTATE RIGHT
BLT	BRANCH IF LESS THAN ZERO	RTI	RETURN FROM INTERRUPT
BMI	BRANCH IF MINUS	RTS	RETURN FROM SUBROUTINE
BNE	BRANCH IF NOT EQUAL TO ZERO	SBA	SUBTRACT ACCUMULATORS
BPL	BRANCH IF PLUS	SBC	SUBTRACT WITH CARRY
BRA	BRANCH ALWAYS	SEC	SET CARRY
BSR	BRANCH TO SUBROUTINE	SEI	SET INTERRUPT MASK
BVC	BRANCH IF OVERFLOW CLEAR	SEV	SET OVERFLOW
BVS	BRANCH IF OVERFLOW SET	STA	STORE ACCUMULATOR
CBA	COMPARE ACCUMULATORS	STS	STORE STACK REGISTER
CLC	CLEAR CARRY	STX	STORE INDEX REGISTER
CLI	CLEAR INTERRUPT MASK	SUB	SUBTRACT
CLR	CLEAR	SWI	SOFTWARE INTERRUPT
CLV	CLEAR OVERFLOW	TAB	TRANSFER ACCUMULATORS
CMP	COMPARE	TAP	TRANSFER ACCUMULATORS TO CONDITION CODE REG
COM	COMPLEMENT	TBA	TRANSFER ACCUMULATORS
CPX	COMPARE INDEX REGISTER	TPA	TRANSFER CONDITION CODE REG TO ACCUMULATOR
DAA	DECIMAL ADJUST	TST	TEST
DEC	DECREMENT	TSX	TRANSFER STACK POINTER TO INDEX REGISTER
DES	DECREMENT STACK POINTER	TXS	TRANSFER INDEX REGISTER TO STACK POINTER
DEX	DECREMENT INDEX REGISTER	WAI	WAIT FOR INTERRUPT
EOR	EXCLUSIVE OR		
INC	INCREMENT		





Return before Nov 30, 1984
 SURVEY AND ENROLLMENT FORM
 JAN 1 to DEC 31 1985

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

With rising expenses we will be unable to publish a MONTHLY newsletter in 1985. We have decided to publish a large QUARTERLY instead. The membership dues for the year are set at \$12.00 with the first quarterly issue delivered in MARCH and the final (4th) delivered in DECEMBER 1985. Club members benefits include: Access to free programs in the club library (shipping/handling costs = 3 programs for \$5.00), programming and technical assistance, free product reviews and evaluation, and 4 newsletters as mentioned above.

Any special request will be handled on an individual basis and every attempt will be made to satisfy member requests.

If the new 1985 membership enrollment is not consistent with 1984 levels, all membership dues paid for 1985 will be returned.

Please answer the following questions:

1. I HAVE IM-1(s) PRINTER DISK DRIVE(s) MODEM 8K 16K LARGER OTHER EQUIP.
2. I WOULD LIKE TO ADD THE FOLLOWING _____
3. THEREFORE I NEED THE FOLLOWING _____
4. SUBJECTS IN THE NEWSLETTER I WOULD LIKE TO SEE _____

5. I OWN OTHER COMPUTERS YES NO _____ TYPE _____
6. IN COMPARISON TO OTHER SYSTEMS I FIND THE IM-1 TO BE _____
7. I WRITE MY OWN PROGRAMS ONLY YES NO
8. I PURCHASE PROGRAMS FROM ADVERTISERS IN THE NEWSLETTER OCCASIONALLY NEVER
9. ARTICLES I LIKE IN THE NEWSLETTER (please be specific. Attach page if needed) _____

10. ARTICLES I WOULD LIKE REMOVED FROM THE NEWSLETTER (please be specific. Attach page if needed) _____

11. I RATE MY KNOWLEDGE IN PROGRAMMING THE IM-1 HIGH MEDIUM LOW
12. I RATE MY UNDERSTANDING OF IM-1 CIRCUITRY HIGH MEDIUM LOW
13. I HAVE MADE THE FOLLOWING MODIFICATIONS TO MY IM-1 _____

14. I WOULD BE WILLING TO HELP OTHERS IF REQUESTED WITH PROGRAMMING MAINTENANCE
 Comments on 14. _____

15. I HAVE, OR KNOW OF, AVAILABLE INTERFACE CARTRIDGES FOR THE IM-1 THAT COULD BE PURCHASED BY INTERESTED MEMBERS YES NO. IF YES PLEASE LIST THEM _____
16. AGE GROUPS THAT USE THE IM-1 IN MY HOME ARE _____
17. I FEEL THE NEWSLETTER IS DIFFICULT TO UNDERSTAND EASY TO UNDERSTAND
18. I READ ALL OF THE NEWSLETTER YES NO
19. I USE MY IM-1 FREQUENTLY INFREQUENTLY
20. I USE MY IM-1 FOR _____
21. I WOULD LIKE TO SELL MY COMPUTER YES NO. IF YES LIST ALL COMPONENTS _____

22. IF AN ARTICLE CALLED 'IM-1 PHOTO-MAINTENANCE' APPEARED IN THE 1985 NEWSLETTER, I WOULD, OR COULD BE EQUIPPED TO PERFORM MAINTENANCE ON MY OWN COMPUTER IF ADEQUATE INSTRUCTION WAS PROVIDED YES NO MAYBE
23. ADDITIONAL COMMENTS _____