HERO-GRAM

VOL. 1

NO. 3

NEWSLETTER OF THE HERO RESOURCE EXCHANGE

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<<< LETTERS RECEIVED >>>

Russell C. Luce of Meknes-Maroc who says that he is "the only person in Morocco who has a HERO.", designed a CRT interface to a D.E.C. VT-52. His HERO rambles around the apartment, telling the time, waking him up, greeting him when he arrives home, and gets his beer.

Joe Konrad (and son Matt) who live in New London, Ct. wrote a navigation program called "Scout" and a program that continuosly stacks and unstacks 3 beer cans named "Stack Can".

Martin Fleming in Moorhead, MN has added to his HERO a port expander board with 4 input and 4 output ports, 2 large 23 Amp hour Gel Cells (12 volt), a smoke alarm, a radio remote telephone, and the Heathkit radio remote controller. He says his HERO doesn't resemble the original creation much anymore as he has added extra "stories" to the robot body to accommodate all this new equipment and there is still room left for his next project of interfacing a Radio Shack Color Computer on board including a disk drive.

<<< PROGRAMS FOR HERO >>>

CYBORG I is a series of programs for HERO that has him dance, perform sentry duty, give a demo of himself, speak "Valley talk", and play "Touch" (a game of hide-and-seek). It is available on cassette from Bell & Hains Electronics, 14210 Leslie Lane, San Martin, CA. 95046, (408) 683-4409

DEMOROBO is a 4K ROM that demonstrates HERO's abilities as well as explain how they work.
ABUSERAMUSER is a program that will shock your friends and gives HERO a nasty personality.
HENNY HERO transforms your HERO into the king of computer based humor.
Each of the three are available on separate 4k ROMs from Silicon Technologies, 6 Deacon Court, Melville, NY 11747, (516) 643-2069 eves.

<<< HERO HARDWARE >>>

MOTHERBOARD available for HERO provides the robot with 5 slots for interfacing circuits. Besides it's obvious use for your own circuit designs, the following circuits are also available for use with the MOTHERBOARD:
32K MEMORY EXPANSION holds 6116, 6264, 2716, or 2732 memory chips (not included). / SERIAL I/O has handshaking, EPROM software, without cable. / PERFBOARD WIRE WRAP CARD SET (2 included).

MOTHERBOARD and it's accessary circuits are from DynaComp, 3617 Beechollow Drive, Memphis, TN 38128, (800) 237-8400 ext 170 or in FLA (800) 282-1469 ext 170.

HERO ANSWERS THE TELEPHONE

By Walter Glod

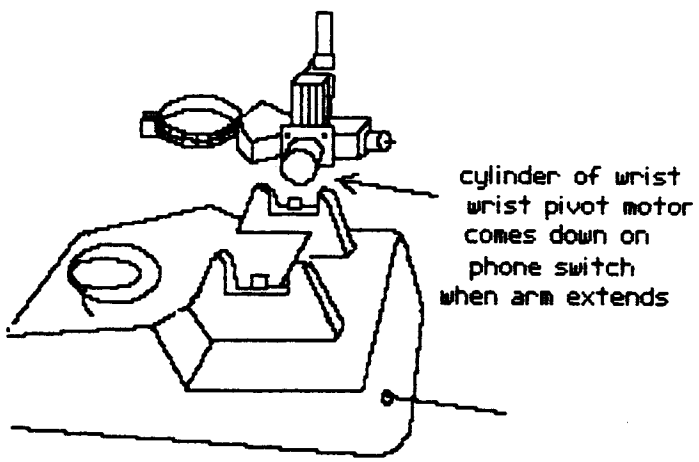
Start by "initializing" HERO.... (31).
Place a "standard" phone under the Arm of HERO (on the floor). Remove the Handset and place it on HERO's head near the robot's speaker. Position the telephone so that the Wrist Pivot Motor will come down onto the telephone Handset button when the Arm is extended.

```
0E00  C3 28 38    Extend Arm Down to 38 (press phone button)
0E03  42          Enable Sound Sensor.
0E04  8F 00 20    Pause to stabilize sensor.
0E07  F6 C2 40    LDAB Load B Accumulator with Sense Port.
0E0A  0C C1 10    Clear Carry & Compare B with 10.
0E0D  25 F8       If less than 10,  Loop Back.
0E0F  C3 2C 26    Sound heard...Retract Arm (release button)
0E12  72 0E 18    Speak phonemes at 0E18.
0E15  7E 0E 00    After speaking, Hang-Up , Restart.
```

Phonemes to say:
"Hello...I am a robot servant....My Master can't answer the phone now....please call again , later."

```
0E17  00 5B 82 80 98 98 35 35 37 03 3E 3E 15 00 09 29 3E 3E
0E29  2F 00 0C 3E 86 A1 A9 3E AB B5 B7 0E 15 23 2A 3E 1F 3A
0E3B  0F 02 00 0D 2A 3E 3E 8C 95 80 89 A9 3E 0C 2F 00 1F 2A
0E4D  3A 3E 19 2F 00 00 0D 2A 3E 2F 80 8D 9F 3A 3E 38 32 23
0E5F  3E 9D B4 B4 8D 8D 3E 0D 15 23 37 3E 3E A5 98 BC A1 92
0E71  3E 19 3D 18 18 3E 3E B2 9C 85 82 8D 3E 18 06 21 29 2A
0E83  3A 3E 03 FF
```

NOTES:You may have to change the number in 0E0C (now at 10) to a higher or lower number to accomodate a different loudness level in your phone bell to trigger the program without normal room noise causing the program to run.
The Extend limit in 0E02 (now 38) AND the Retract limit in 0E11 (now at 26) may need changing, to use with your phone and pile of carpet that it sits upon.



<<< HERO - APPLE COMMUNICATION >>>

HERO programs in both Machine Language and HERO BASIC can be easily transferred or accessed through the Heath HERO Serial Interface assembly to an APPLE II computer. The APPLE SUPER SERIAL CARD (also built into the IIc) has a particularly nice feature for simple access of HERO,..a built in terminal mode that requires no software. On the APPLE type: IN#2 (for modem port), then press Control-A, you will get a question mark, press T, and you are in 300 baud terminal mode. You may now access HERO BASIC. If you wish to transfer or save HERO programs on the APPLE DISK DRIVE (either Mach. Lang. or BASIC) a program called ASCII Express (Southwestern Data Systems) for APPLE may be used to communicate at rates up to 9600 baud (I found most reliability with my cable at 2400 baud to HERO.).

```
15 GOSUB 500:REM- HERO VOICE RECOGNITION DEMO
20 LET R=RND:REM- BY RICHARD LOGAN, ATL. GA.
25 IF R>=50 THEN GOSUB 1000
70 GOSUB 2000
75 IF N=2 THEN 70
80 IF N=3 THEN 100
85 IF N=4 THEN 200
99 REM-I WILL GO AHEAD
100 SPE"2AH1 EH3 I3 Y W I1 I3 L G O1 U1 A1 AY Y H EH1 EH3 D PA0"
110 GOTO 70
199 REM-I WILL STOP
200 SPE"2AH1 EH3 I3 Y W I1 I3 L S T AH1 UH3 P PA0"
210 GOTO70
499 REM-THANK YOU
500 SPE"2TH AE1 EH3 N K Y1 IU U1 U1 PA0"
504 REM-FOR TURNING ME ON
505 SPE"2F O2 O2 R T ER R N I G M E1 AH1 UH3 N PA0":RETURN
1000 REM-WOULD YOU LIKE THE TIME?
1001 SPE"2W OO1 OO1 D Y IU U1 U1 L UH3 AH2 Y K PA0"
1002 SPE"2THV UH1 UH3 T AH1 EH3 Y M PA0"
1003 GOSUB 2000
1004 IF N=3 THEN 1007
1005 IF N=2 THEN 1003
1006 GOTO 1010
1007 POKE$3F,$20:POKE$40,$6C
1008 USER
1009 GOTO 20
1010 SPE"2O2 O2 PA0 1K A Y1 PA0":GOTO 20:REM O.K.
2000 REM VOICE-RECOGNITION BY RICHARD LOGAN, ATL. GA.
2002 DIM A(5):LET N=1:DPR"  =="
2005 FOR T=1TO100:NEXT T
2007 DPR"$"
2008 POKE$3F,$02:POKE$40,$20
2010 FOR I=1TO5
2015 USER
2020 LET A(I)=PEEK$0230
2025 NEXT I
2030 IF A(1)>130 THEN 2060
2035 IF A(2)>130 THEN 2070
2040 IF A(3)>130 THEN 2080
2045 IF A(4)>130 THEN 2090
2050 IF A(5)>130 THEN 2115
2055 LET N=2:RETURN
2060 IF A(2)>130 THEN 2105
2065 GOTO 2115
2070 IF A(3)>130 THEN 2105
2075 GOTO 2115
2080 IF A(4)>130 THEN 2105
2085 GOTO 2115
2090 IF A(5)>130 THEN 2105
2095 GOTO 2115
2100 REM 2105,2115-CHG AS REQ.
2105 LET N=3:RETURN:REM-GO AHEAD
2115 LET N=4:RETURN:REM-STOP
2125 REM MACH. CODE EAR ROUTINE **
2130 REM START=0220 THRU 022F
2135 REM 3F 42 8F 00 02 83 B6 C2
2140 REM 40 B7 02 30 3F 52 83 39
2145 REM VALUE STORED AT 0230
```

Voice Recognition Study

Using Hero with the 'Basic' package installed, this program enables Hero to recognize the commands 'Go Ahead' and 'No',(or 'Stop').

You can add tasks for Hero, after he speaks 'I will go ahead' as you like. This program is to demonstrate the Voice Recognition Routine, and is a mere starting point for a true voice recognition program.

As you may know the EAR command does not work in your BASIC for Hero. Because of this it is necessary to have a short machine language routine in RAM. A copy is at the end of program.

Have Fun, Richard Logan

DEMOA by J. Phil. Weichert, Jr.

The following program written and assembled by Mr. Weichert is one in a series of programs for HERO. This program is a demonstration that exercises most of HERO's senses.

```
DEMOA.LST
PAGE  1

                        LIST ON ;USED WITH DL OPTION OF ASSEMBLER
                ;
                ;  *** DEMOA.ASM ***
                ; ABSTRACT:
                ;   A simple demonstration program to exercise most of Hero's senses.
                ;    Starts in Machine Language ( KEYIN: 1 D 0100)
                ;    ASSUMES motors have been initialize with KEYIN 31
                ;
                ;
0000                    DRIVES  4
0000                    INCLUDE D:ROBOT.EQU     ; RAM & RAM DEFINITIONS
                        LIST OFF        ;DO NOT LIST
                        LIST    ON
0000                    END ; STMT MUST BE PRESENT
0000                    INCLUDE D:ROBOTLAN.MAC  ; MACROS FOR HERO'S Robot Language
                        LIST    OFF
                        LIST ON
0000                    END ; STMT MUST BE HERE
                ;
                        CONDLIST OFF
                ;
     00 80      SVSEN   EQU     $80
     00 81      MOCTR   EQU     $81
     00 82      CTRL    EQU     $82
                ;
0100                    ORG     0100H
                ;
0100 3F                 CRL
0101 72 FA 64           SPW     0FA64H  ; SAY HELLO
0104 72 FB C1           SPW     0FBC1H  ; SEE PAGE 78 OF ET-18 VOICE
0107 72 FC 5B           SPW     0FC5BH  ; DICTIONARY
010A 72 FC 9D           SPW     0FC9DH  ;I'm perfect
010D 72 FE 6D           SPW     0FE6DH  ;Don't do windows
0110 72 FE 6D           SPW     0FE6DH
                ;**HEAD**
0113 71 FA DA           SPC     0FADAH  ; I can move my head
0116 DC C8 06           MCR     HEAD+SLOW+06H
0119 DC D0 06           MCR     HEAD+MED+06H
011C DC D8 2A           MCR     HEAD+FAST+02AH
                ;**ARM**
011F FD 00 00 4D        MAA     0H,0H,04DH,0H,0H,98H,49H
0123 00 00 98 49
0127 71 FA AA           SPC     0FAAAH  ; Say move arm
012A D3 48 04           MWR     SHLDR+SLOW+04H
012D D3 50 30           MWR     SHLDR+MED+030H
                ;**WRIST PIVOT**
0130 C3 90 52           MWA     WPIV+MED+52H    ; CENTER WRIST PIVOT
0133 71 01 FB           SPC     SP1     ; WRIST MOVE DOWN AND UP
0136 C3 90 90           MWA     WPIV+MED+090H   ; DOWN
0139 C3 90 6A           MWA     WPIV+MED+6AH    ; UP
                ;**WRIST ROTATE**
013C 71 02 1D           SPC     SP2     ; AND ROTATES
013F D3 6C 48           MWR     WROT+INCR+SLOW+048H
0142 DC 68 48           MCR     WROT+SLOW+048H
                ;**GRIPPER**
0145 FD 00 34 48        MAA     0H,34H,48H,6AH,0H,98H,49H
0149 6A 00 98 49
014D 72 FA C0           SPW     0FAC0H  ; Say move gripper
```

```
DEMOA.LST
PAGE  2
0150 D3 A8 45           MWR     GRIP+SLOW+045H
0153 D3 AC 45           MWR     GRIP+INCR+SLOW+045H
0156 D3 A8 45           MWR     GRIP+SLOW+045H
                ;**ARM EXTENTION**
0159 71 02 29           SPC     SP3     ; ARM EXTENDS
015C D3 28 06           MWR     EXT+SLOW+06H
015F D3 30 06           MWR     EXT+MED+06H
0162 C3 38 30           MWA     EXT+FAST+30H
0165 71 02 41           SPC     SP4     ; AND RETRACTS
0168 D3 2C 06           MWR     EXT+INCR+SLOW+06H
016B D3 34 06           MWR     EXT+INCR+MED+06H
016E C3 38 06           MWA     EXT+FAST+6H
                ;**DRIVE**
0171 71 FA F1           SPC     0FAF1H  ; Say and move about
0174 C3 08 16           MWA     DRIVE+SLOW+016H
0177 8F 00 20           PAUSE   0020H
017A C3 0C 16           MWA     DRIVE+INCR+SLOW+016H
                ;
017D 72 FB 09           SPW     0FB09H  ; Say sense Light, Sound, and motion
                ;**LIGHT LEVEL**
0180 41                 ELD
0181 83                 CML
0182 B6 C2 40           LDAA    SENSE   ; Get reference light level
0185 97 80              STAA    SVSEN   ; Save
0187 B6 C2 40   SLOOP   LDAA    SENSE   ; Get new light level
018A 91 80              CMPA    SVSEN
018C 24 F9              BCC     SLOOP   ; If same branch back
018E 3F                 CRL
018F 72 FB 45           SPW     0FB45H  ; Wow, it's dark
0192 8F 00 10           PAUSE   10H     ; Wait a little bit
                ;**SOUND**
0195 42                 ESD
0196 8F 00 10           PAUSE   10H     ; Wait a little bit
0199 83                 CML
019A B6 C2 40           LDAA    SENSE
019D 97 80              STAA    SVSEN   ; Save reference sound level
019F B6 C2 40   SLOOP1  LDAA    SENSE   ; Get  sound level
01A2 91 80              CMPA    SVSEN
01A4 23 F9              BLS     SLOOP1  ; Room level about the same, continue listening
01A6 3F         SLOOP2  CRL
01A7 72 FD 91           SPW     0FD91H  ; Be Quiet, I am trying to sleep
01AA 52                 DSD
                ;**MOTION DETECTION**
01AB 83                 CML
01AC 7F 00 82   MOTOP   CLR     CTRL
01AF 7F 00 81   MOT010  CLR     MOCTR   ; CLEAR COUNTER
01B2 86 7E              LDAA    #07EH   ; Jump extended instruction
01B4 97 27              STAA    MOTINT
01B6 CE 01 C6           LDX     #MNEXT  ; ADDRESS OF INTERRUPT ROUTINE
01B9 DF 28              STX     MOTINT+1
01BB 3F                 CRL
01BC 4B                 EMD
01BD 83                 CML
01BE 0E                 CLI     ; CLEAR INTERRUPT MASK
                ;
01BF 7D 00 81   MOT020          ; WAIT FOR INTERRUPT
                        TST     MOCTR
01C2 26 06              BNE     MOT030
```

```
01C4 20 F9              BRA     MOT020

                MNEXT   ; MOTION INTERRUPT HANDLER
01C6 7C 00 81           INC     MOCTR
01C9 39                 RTS
01CA                    MOT030.
01CA 0F                 SEI     ; SET INTERRUPT MASK
01CB 3F                 CRL
01CC 5B                 DMD
01CD 8F 00 10           PAUSE   010H
01D0 72 FB 56           SPW     0FB56H  ; Wait, something moved
01D3 83                 CML
01D4 96 82              LDAA    CTRL
01D6 BD F6 4E           JSR     REDIS
01D9 BD F7 AD           JSR     OUTBYT
01DC 7C 00 82           INC     CTRL
01DF 86 02              LDAA    #2
01E1 91 82              CMPA    CTRL
01E3 22 CA              BHI     MOT010
                ;
                ;       JSR     DORANGE ;GO MEASURE AND SPEAK RANGE
01E5 01                 NOP
01E6 01                 NOP
01E7 01                 NOP
                ;       JSR     TIMDAT ;SAY TIME AND DATE
01E8 01                 NOP
01E9 01                 NOP
01EA 01                 NOP
01EB                    WRAPUP
01EB 3F                 CRL
01EC CC 48 00           MCA     SHLDR+SLOW+00H
01EF 72 02 53           SPW     SP9     ;I hope you enjoyed the DEMO . . .
01F2 FD 00 00 4D        MAA     0H,0H,04DH,0H,0H,62H,49H  ;RESTORE ALL MOTORS
01F6 00 00 62 49
                ;
01FA 3A                 REX
                ;                       MY      W   R   I   S   T
01FB 0C 15 00 29 SP1    DB      0CH,15H,0H,29H,3H,2DH,2BH,0AH,1FH,2AH,3EH
01FF 03 2D 2B 0A
0203 1F 2A 3E
                ;       ,       M   O   V   ES
0206 0C 37 37 0F        DB      0CH,37H,37H,0FH,1FH,3EH
020A 1F 3E
                ;               D   O   W   N
020C 1E 15 23 2D        DB      1EH,15H,23H,2DH,0DH,3EH
0210 0D 3E
                ;               A   N   D
0212 2F 00 0D 1E        DB      2FH,0H,0DH,1EH,3H
0216 03
                ;                   U   P
0217 32 31 25 03        DB      32H,31H,25H,3H
021B 3F FF              DB      3FH,0FFH
                ;               R   O   T   A   T   ES
021D 2B 37 37 2A SP2    DB      2BH,37H,37H,2AH,06H,29H,2AH,1FH,3EH,3EH
0221 06 29 2A 1F
0225 3E 3E
0227 3F FF              DB      3FH,0FFH
                ;
```



```
                ;                       MY
0229 0C 15 00 29 SP3    DB      0CH,15H,0H,29H,3H
022D 03
                ;               A   R   M
022E 15 2B 0C 3E        DB      15H,2BH,0CH,3EH
                ;                   E   X   T   E   N   D   S
0232 02 00 19 03        DB      2H,0H,19H,3H,12H,2AH,2H,0H,0DH,0DH,1EH,1FH,3FH
0236 12 2A 02 00
023A 0D 0D 1E 1F
023E 3E
023F 3F FF              DB      3FH,0FFH
                ;
                ;               A   N   D
0241 2F 00 0D 1E SP4    DB      2FH,0H,0DH,1EH,3H
0245 03
                ;               R   E   T   R   A   C   T   S
0246 2B 3C 29 2A        DB      2BH,3CH,29H,2AH,2BH,2FH,0H,19H,2AH,1FH,3FH
024A 2B 2F 00 19
024E 2A 1F 3E
0251 3F FF              DB      3FH,0FFH
                ;
                ;                   I               HOPE
0253 15 00 09 29 SP9    DB      15H,00H,09H,29H,  1BH,35H,37H,25H
0257 1B 35 37 25
                ;                   YOU             HAVE
025B 22 36 37 37        DB      22H,36H,37H,37H,  1BH,2FH,00H,0FH
025F 1B 2F 00 0F
                ;ENJOYED
0263 02 00 0D 0D        DB      02H,00H,0DH,0DH,1EH,1AH,35H,35H,23H,09H
0267 1E 1A 35 35
026B 23 09
026D 21 1E 03           DB      21H,1EH,03H
                ;               THIS                    LITTLE
0270 38 09 0A 1F        DB      38H,09H,0AH,1FH,03H,  18H,0BH,09H,2AH,23H,18H,03H
0274 03 18 0B 09
0278 2A 23 18 03
                ;           DEMONSTRATION
027C 1E 02 0C 23        DB      1EH,02H,0CH,23H,32H,0DH,1FH,2AH
0280 32 0D 1F 2A
0284 2B 06 21 11        DB      2BH,06H,21H,11H,23H,0DH
0288 23 0D
                ;                   AS              MUCH
028A 2F 00 12 03        DB      2FH,00H,12H,03H,  0CH,32H,31H,2AH,10H,03H
028E 0C 32 31 2A
0292 10 03
                ;                   AS                      I
0294 2F 00 12 03        DB      2FH,00H,12H,03H,  15H,00H,09H,29H,03H
0298 15 00 09 29
029C 03
                ;               HAVE
029D 1B 2F 00 0F        DB      1BH,2FH,00H,0FH,03H,03H
02A1 03 03
                ;               HAD                             IN
02A3 1B 2F 00 1E        DB      1BH,2FH,00H,1EH,03H,03H,  0BH,09H,0DH
02A7 03 03 0B 09
02AB 0D
                ;                       GIVING                  IT
02AC 1C 0B 09 0F        DB      1CH,0BH,09H,0FH,0BH,14H,03H,  0BH,09H,2AH ,3E
```

```
DEMOA.LST
PAGE  5
 02B0 0B 14 03 0B
 02B4 09 2A
                    ;          SEE YA LATTER
 02B6 1F 3C 3C 03        DB  1FH,3CH,3CH,03H,69H,32H,03H, 18H,06H,21H,29H
 02BA 69 32 03 18
 02BE 06 21 29
 02C1 2A 3A              DB  2AH,3AH
 02C3 3F FF              DB  3FH,FFH
                    ;
                    ;
 02C5                    END
```

```
DEMOA.LST
PAGE  6
************* S Y M B O L I C   R E F E R E N C E   T A B L E *************

CCW      = 0400   CLKCMD   = C2C0   CLKDAT   = C300   CLOSE    = 0400
CLRDIS   = F65B   CTRL     = 0082   CW       = 0000   DECR     = 0000
DIGADD   = 0FF2   DOWN     = 0000   DRIVE    = 0000   DRPOS    = 0007
DRVCOM   = 0009   DSPLAY   = F6F9   EXPINT   = 002D   EXPOS    = 0000
EXT      = 2000   EXTEND   = 0000   FAST     = 1800   FORWARD  = 0000
GRIP     = A000   GRPOS    = 0004   HEAD     = C000   HEPOS    = 0005
IHB      = F796   INCH     = F777   INCR     = 0400   INKEY    = F788
LEFT     = 0400   MED      = 1000   MNEXT      01C6   MOCTR    = 0081
MODE     = 0EE1   MOTO10     01AF   MOTO20     01BF   MOTO30     01CA
MOTINT   = 0027   MOTOP      01AC   OPEN     = 0000   OUTBYT   = F7AD
OUTCH    = F7C8   OUTHEX   = F7B5   OUTSTR   = F7E5   PIPOS    = 0003
REDIS    = F64E   RETRACT  = 0400   REVERSE  = 0400   RIGHT    = 0000
ROPOS    = 0002   SENSE    = C240   SHLDR    = 4000   SHLDRDW  = 0400
SHLDRUP  = 0000   SHPOS    = 0001   SLOOP      0187   SLOOP1     019F
SLOOP2     01A6   SLOW     = 0800   SP1        01FB   SP2        021D
SP3        0229   SP4        0241   SP9        0253   STEER    = E000
STPOS    = 0006   SVSEN    = 0080   TICCNT   = 0FFC   TRGINT   = 002A
UHITS    = 0010   UP       = 0400   URANG    = 0011   USER1    = 0030
USER2    = 0033   USER3    = 0036   WPIV     = 8000   WRAPUP     01EB
WROT     = 6000

        LINES ASSEMBLED :   778             ASSEMBLY ERRORS :   0
```

SONAR MAPPER is a HERO-BASIC program that shows a graphic representation of a room as painted with the robots Sonar. HERO will scan the room with his head and display the results to a video monitor or printer. Make sure that HERO is connected to your terminal or computer for the entire run. Remember that the head will turn, so keep the cable clear of tangles. A sample run is shown below. You can see the outlines (from top to bottom) of a chair, a table and a plant.

```
1 REM ---------------------
3 REM  HERO-SONAR-MAPPER
4 REM
6 REM  BY WALTER GLOD  1985
8 REM ---------------------
25 C=4
30 HEAD=95
40 FOR I=1 TO 18
50 X=SONAR:GOSUB 100
60 HEAD=HEAD-10
70 IF HEAD=-95 THEN END
80 NEXT I
90 HEAD=0
95 END
100 B=X/C
110 FOR Z=1 TO B
120 PRINT "**";
130 NEXT Z
140 PRINT:RETURN
```

```
****
****
****
****
******
******************
****************
****************
****************
**************
**************
**************
****************************
**************************
**
****************************
****************************
********
```

<<< PROGRAMS FOR HERO >>>

"Keypad Utilities for HERO- 1" contains three keypad utilitles designed to assist in the entry of machine language programs into the HERO 1 Robot. Included are utilities to Copy data from one location to another, Compare two blocks of data, and use the speech option to pronounce the previous, current, or next contents of memory. It also has features for aiding in speech development and inflection. Cassette and listings. Available from Newline Software, P.O. Box 402, Littleton, Mass. 01460 (617) 486-8535

"Storyteller" is an artificial Intelligence program which turns HERO into a teller of galactic tales.

and

"Poet" lets the robot speak self-generated, random poems on an endless list of subjects.

Both are available from Micromation, Inc. (listed under computer/ HERO communication section)

<<< MAGAZINE ARTICLES ON HERO >>>

"The PC Interfaces with a HERO", by John Goodlet, PC MAGAZINE, August 21,1984, describes using the Micromation MemCom board to connect HERO to an IBM PC.

INFRARED SENSING WITH HERO
is described in "Animate Vs. Inanimate", Robotics Age Magazine, August 1984. Carl Quick tells how to interface HERO with a infrared sensing unit.

NAVIGATION
program listing called "HERO The Robutler" by Dr. Kenneth R. Hill can be found in REMark magazine, April 1984. The robot wanders around from room to room,avoiding obstacles, until commanded to "STOP". Another vocal command (any loud sound) will restart or jump to a different utility program. Any motion in the room after "There is something in my way" will cause the "Dinner" announcement.

SMOKE DETECTION
interfacing is discussed in an article by Patrick H. Stakem in Robotics Age magazine, July/August 1983 entitled "A Nose For The HERO-1"

In the interest of trivia here are a few magazines of the past that at least mentioned HERO or featured it's release:

POPULAR SCIENCE, May 1983
ENTREPRENEUR, April 1983
SCIENCE DIGEST, April 1983
ROBOTICS AGE, March/April 1983
THE WALL STREET JOURNAL, January 1983

<<< MODIFICATIONS >>>

The problem with HERO being interrupted during the processing of a sonar

reading has been helped on newer models with the addition of shielded cable to the transducers. It can be helped on older models by ordering the sonar pair # 473-34 (the type without wires attached) and adding shielded audio cable (keep it short).

In a reprint from a Interface Technology bulletin are the following modifications:

"The trip points for the battery low indications have been changed, and a spurious interrupt problem has been identified. On the power supply board, R207 and R233 have been changed to 885K. The new part number is 6-9003-12. These resistors affect the low voltage trip point for the batteries. More importantly, the 4 74LS73'S on the CPU board that serve to input the interrupts have the J inputs floating. This leads to spurious interrupts, especially noticeable with the low voltage trip and motion detector. For these chips, jumper pin 7 to pin 4 to solve the problem. You must remove the CPU board, and carefully do the jumper operation on the back of the board." (Interface Technology sells an inexpensive solution to this with adapter sockets that have the necessary jumpers installed where the CPU does not need to be removed). "In the area of engineering changes, there is one on the motion circuit board. A 470K Resistor, designation R1424, has been added between pins 12 and 14 of U1403. Also, the sound level adjustment on the sense board has been changed several times. It started out at 2 MEG., went to 500K, and is currently 1 MEG. the 1 MEG part number is 10-928."

<<< PERSONAL COMPUTER / HERO COMMUNICATION >>>

Several methods are available from vendors or have been developed by HERO users.

REMark magazine, June 1984
"How To Build An RS232 Circuit For HERO 1" by J.P. Weichert, Jr.

REMark magazine, April 1983
"HERO 1 Chats with the H89"
Descriptions are given for doing parallel communication between HERO 1 and a Heath H89 computer.

Interface Technology, P.O. Box 745, College Park, Maryland 20740 (301) 490-3608 markets an RS232 interface for HERO that includes both Rom software and Hardware.

Micromation, Inc.,9104 Red Branch Road, Columbia, Maryland 21045 (301) 730-1237 markets the HERO Memcom Board that has both RS232 and Parallel ports for the HERO as well as additional Memory.

David L. Fentress who wrote to us from Albligen Switzerland has developed a cross assembler for his Apple II computer to assemble 6808 code (including the Robot Interpreter codes). He transfers the programs to the HERO via the cassette interfaces of both machines. We will have further information on how he did this if he makes it available to us.

Robert J. Pollock of Durham, N.C sent us a listing for his HERO Program Disassembler as well as a listing of the dload program from the Heath Demo Rom. The Disassembler is written in TURBO Pascal which runs under CP/M-80, CP/M-86 and MS-DOS.

Virtual Devices, Inc.,P.O. Box 30440, Bethesda, Md. 20814 (800) 762-ROBO

markets a complete program development system and communication hardware, both RS232 hardwired and radio-link for HERO.

Heath Co. of course also offers a Remote Control radio-link keypad that is equipped with a RS232 Serial Port for controlling HERO with a computer.

Robotronix, Box 1125, Los Alamos, NM 87544 markets Androtext a high level language for programming HERO as well as the necessary interfaces for a personal computer.

SHY OF FIRE ROUTINE

By Walter Glod

Here is a simple little program to use at a party, to demonstrate that HERO is as afraid of fire as the rest of us. HERO will first turn it's head so that the light sensor is facing forward. Then it will roll forward and wait. If you strike a match and hold it near the light sensor, the robot will roll back screaming "Help, Help, Help. Alarm Emergency!". Hero will then start this cycle again. When demonstrated, people seem to think that HERO has some way of recognizing fire.

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0100  C3 C8 9A   TURNS HEAD FORWARD
0103  41         TURNS ON LIGHT SENSOR
0104  8F 00 30   WAIT 3 SECONDS
0107  CC 10 10   ROLL FORWARD 10 UNITS
010A  B6 C2 40   LDAA FROM SENSE PORT
010D  0C 81 80   CLC AND CMPA TO 80
0110  25 F8      IF < 80 BRANCH BACK
0112  71 FB 9A   SPEAK "HELP, ETC."
0115  C3 14 10   ROLL BACK 10 UNITS
0118  7E 01 04   START AGAIN
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Beginners note: You may have to change the figure of 80 in 010F and/or adjust the "light" control on the sense board to another number to accommodate different ambient light conditions.

<<< NEED NEWLETTER ARTICLES >>>

Don't forget to keep in touch with us, on your recent robot projects no matter how simple or mundane you may think they are. I've heard several people remark that they don't want to "re-invent the wheel" if someone else has already done it. There are also many beginners that need a hand in getting started on what many of us may consider simple programming. If you don't want to get fancy in writing an article, at least give us a brief description of your activities. I'm sure it will be of interest to most of us.

....."READY"....