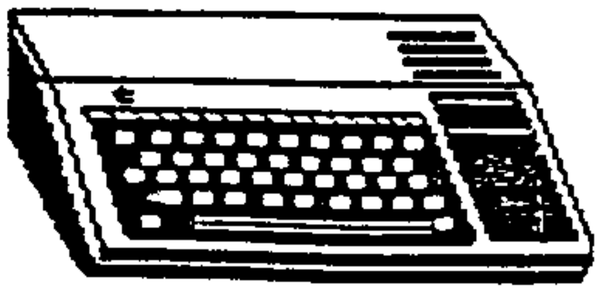
CLEVELAND AREA TI-99/4A USER GROUPS

JUNE 1992



OFFICE	TI-CHIPS		MEETINGS
CO-PRESIDENT	Glenn Bernasek	238-6335	10:00 AM
CO-PRESIDENT	Dinny Stockdale	1345-5239	N. Royalton
TREASURER	Lin Shaw	235-3912	County Library
MEMBERSHIP	John Parken	331-2830	State Rd. SO. of
	4172 W. 217th St.		Route 82 1/4mi
	Fairview Pk., OH 44126		EVERY THIRD SAT.
SECRETARY	Dennis Likens	842-9627	
DISK LIBRARY	Matt Andel	676-9759	JUNE 20,1992
TAPE + MODS	John Parken	331-2830	JULY 18,1992
HARD COPY	Dennis Likens	842-9627	AUGUST 17,1992

OFFICE	NORTHCOAST		MEETINGS
CO-PRESIDENT	Ken Gladyszewski	1357-7274	1:30 PM
CO-PRESIDENT	Walt Ryder	921-8223	Euclidian Room
Treasurer	Frank Jenkins	283-8526	Euclid SQ. Mall
MEMBERSHIP	Martin Sooley	1-257-1661	E.260th off I-90
	6149 Bryson		(South)
	Mentor, OH 44060		EVERY THIRD SAT.
SECRETARY	Bernie Zuckerman	381-4088	
DISK LIBRARY	Martin Sooley	1-257-1661	JUNE 20,1992
TAPE & MODS	Frank Jenkins	283-8526	JULY 18,1992
HARD COPY	Dick Alden	1-352-9172	AUGUST 17,1992

TI-CHIPS (09 MAY 1992)

by Dennis Likens

Co-President Dinny Stockdale called the May meeting to order at 2:30 pm with 23 people on hand from Chips and North Coast. The TREASURER'S report by Lin Shaw showed us sitting well. All hands were reminded that the reading of the previous meetings minutes were waived because they are published in the News Letter (posted on FREENET too).

TAPE/CARTRIDGE/MEMBERSHIP: John Parken advised we are holding steady. All current members are paying dues on time. We have many cassette tapes and modules for people who would like to sign them out ($3.00 -$1.00 RENT, $2.00 you get back when you return the module).

DISK LIBRARY: Matt arrived late but it appears the library is doing fine. When you call Matt to place your order, be sure to give him the type of disk format you have and the disk number from our catalog. Harry (past disk library keeper), stated that he could use some help at the LIMA CONFERENCE working the CHIPS table. A couple of people said they would lend a hand. Glenn said he will have over 100 disks and newsletters to hand out at the CONFERENCE.

XB: Les Kee showed us a program that uses XB to TRANSLATE AND SCALE data you input and will draw this scale on the screen. It was menu driven. The demo went well and showed us how XB can use it's mathematical skills to get the job done. Les also mentioned that since CHIPS is looking to purchase a RAM disk, he still has one that he never finished putting together. After a check with a local RAMDISK TECH is completed, we could have a RAMDISK in the clubs system.

DEMO's: Virgil Thomason demo'd a program which uses the TE-II module and speech to speak SPANISH. This program will show you graphics on the screen to get it's point across. If your wanting to learn SPANISH, this program may be of great interest to you.

Glenn made another attempt at the SIDEWRITER program this meeting. However, due to a technical problem (his ROS for his RAMDISK didn't make the meeting), the demo will be attempted again at a later date. He did show us some results of a printout that was made using this program.

MISC: Matt reported that the money was sent in for the NEWS LETTER CLEARING HOUSE BBS and we have yet to receive the passwords (both NC AND CHIPS gets one each), to access this board. Once in hand, I'll be downloading info for the CHIPS CLUB. Didn't find out who will be the SYSOP for the NC group.

The raffle was held and Mary Phillips won 1M disks from the club's library. Well thats it. CHIPS would like to extend a hearty CLAP CLAP for those NORTH COAST folks who ventured down to North Royalton for this meeting. For those who are going to the Fair, DRIVE SAFELY. See you all at the next meeting JUNE 20.

LET'S HEAR IT FOR LIMA!

Deanna Sheridan
Northcoast 99ers

For the fourth year in a row, the dedicated Lima TI group put on a first-class show. Perhaps there were no major hardware or software showings, but there was a good time and fellowship enjoyed by all...at least all that I was able to talk with.

There must have been more vendors and groups than in previous years as the tables were spread to an additional room. They came from the east, west, north and south. Ken Gilliand, Tom Freeman and Terry Masters .were there from California. Barry Traver again made it from the east coast. Chip's member Clyde Watcher made it from Maryland. Some Canadian clubs were again represented, and I met people from Tennessee and Florida. Not a bad representation.

As usual, the Lima group graciously made available their new additions to their library to any club wishing to make copies while on the premises. As with last year, I believe that Harry Hoffman copied almost 100 disks which will soon be placed in the Cleveland libraries.

Even though I didn't arrive early enough to see the demo on Funnelweb 5.0 which boasts an entirely new editor, I heard great things about it. The 40-column version for the TI is evidently ready, but the 80-column for the GENEVE isn't completely finished.

Our own Ken Gladeszevski was one of the stars with his demo on new hardware projects. Hopefully he can interest others in these projects and they can be refined for the benefit of all of us. Like, Marty Smoley, Ken does his work for the fun and expects no remuneration for his ideas and shares all of his experiences freely.

Marty Smoley and I had a delightful talk with Art Gibson of Newsletter Printer fame. Art is also redoing the TI-Writer editor and hopes to incorporate the ability to add text next to graphics. He is running out of memory in trying to get in all of the features he wants. Since this is a hobby with Art, he gave no timeframe for release of this wonder (It seems to have most of the features which were promised to us in "Press" and never materialized), but I did hear something about in the next month or so.

Bud Mills also has several new hardware projects in the works, and we hope they materialize. The Accelerater which was previewed at last year's conference has not been released and there is no timeframe for it. However, Bud Mills was advertising soon-to-be released an SCSI hard/floppy drive controller and a 4mg MEMEX board to the TI. Neither had release dates or projected prices. However, if both materialize, they can certainly open up a new world for us.

Again, Lima, many thanks for an enjoyable day. It has almost become like attending a family reunion. I am already looking forward to next year!

COLOR BANNERS
REVIEW BY DEANNA SHERIDAN
NORTHCOAST 99ERS

If you have a color printer, this is the banner making program that you have been looking for. Even if you don't have a color printer, you may want to consider purchasing this program because of it's ease of use, versatility and speed in printing.

I know that over the years we have gone from banners printed with ASCII letters to graphics and fonts. I believe that CSGD had an excellent banner program, and there were several others. Color Banners does all of them one better. Text can be printed in any TI-ARTIST font up to 80 characters long. Graphics can be placed to the right, left, or both sides of the banner text in normal or mirror image. The text and graphics can be automatically centered on a page or adjusted up or down the page. This will allow you to print more than one line on a page if the graphic and text are not too large.

Magnification for text and each graphic is allowed from a simple 1x to whatever will fit on the page. Printing can be done in single or double density.

The best part of all though is the ability to use color. There are several color options including, using only one color for the entire banner, alternating two colors, or rainbow1 and rainbow2. Rainbow1 will cycle all 7 colors including black. Rainbow2 will cycle all colors except yellow. Yellow doesn't always stand out on a white background, thus I found that Rainbow2 gave the best variety.

This program was written by Paul Coleman, who also did Designer Labels, GianT Artist Posters, etc., and is distributed through Comprodine, 1949 Evergreen Avenue, Fullerton, CA 92635. I paid $10 for it at Lima and feel that I more than got my money's worth.

ARTIST CARDSHOP
REVIEW BY DEANNA SHERIDAN
NORTHCOAST 99ERS

Over the years, you purchased CSGD, Fontwriter, Print Wizard, Page Pro, Jiffy Card, and took advantage of TIPS, so why would you need another card-making program? Just look how each of these incorporated new features and become more sophisticated than the previous. I think that Paul Coleman has finally found the ULTIMATE card-making program for the TI.

As you look at each of the above, you will find that they were difficult to set up, or took only certain size graphics; graphics could only be placed in certain areas, only certain built-in fonts could be used, etc. Or else there was no way to save the card, or print multiple copies, or else the printing so excruciatingly slow. Artist Cardshop will make your creative juices flow without frustration if you like to create and print your own greeting and note cards.

It consists of three separate programs (in the manner of TI-Artist) which include CARD BUILDER, CARD PRINTER and BORDER MAKER. There is a professionally printed 26-page manual and samples of cards and borders included on the disk.

Both the inside and outside of the card uses two TI-ARTIST fonts..1 large (any size) and 1 small (1 char high). Up to 4 TI-ARTIST instances can be used on a page, and the back of the card will print any TI-ARTIST instance up to 27 columns wide. Thus, you can use the back for an additional message or your own personal logo.

Each page of the card consists of 40 lines on which to place material (text, or graphics or text and graphics). This can be laid in any combination of the following:

1. Graphic only
2. Text only
3. Graphic (left) with text (right)
4. Text (left) with graphic (right)
5. Graphic, then text, then graphic

If the instance is small enough, the graphic only option allows you to lay out multiple copies of the picture across the page. Cards can be saved and loaded for later modification. Up to 99 cards can be printed at one time and they can be printed in single or double density. I accidentally discovered that if you have a color printer and set the printer for a certain color before entering Card Maker, it will print in that color for you. I have tried this with Page Pro and a couple of other programs, and it doesn't work because evidently the program sends a "reset" command to the printer before printing. Card Maker does not, so if you write a short XB program to say, print in Blue, before entering the print program of Card Maker, you will be able to print your card in blue ink. This is probably the next best thing to having a color card program.

Once you have chosen the graphic or graphics and fonts you want to use, enter the Card Builder program. You are first requested for the fonts. I guess the only complaint I might have here is that you MUST load both fonts even if you don't plan to use both. It seems it would save some computer memory for the graphics if one didn't have to load a font one wasn't going to use. This must be done for both the inside and outside of the card. Then you are prompted to load your graphic or graphics. As you place them, you chose the line on which you wish to place your data, and the computer tells you how many of the 40 lines are needed, so that you will know where to start the next step. On the example enclosed, on the front side, I used the text only option to place the first two lines. The graphic only option printed my instance, and again the text only was used for the last two lines.

On the inside part of the card, I used the text/graphic to place the text next to the graphic and the text only to finish up the last three lines. For the instance on the back page, I simply used my initials as my personal logo. But, remember larger instance could have been used with an additional Father's Day message.

When you have all the data placed, on the card, it is time to save it to a file. You then call in the Card Printer program. All the fonts and instances are loaded before any printing commences. You are then prompted for a border. Twenty-five borders have been included and you can use borders on both the inside and outside if desired. Here is where you are also prompted for the instance you might want to use on the back side. And then you can print in single or double density.

Last, but not least, if you need more borders, you can use your imagination and make your own. The template for the border is created in TI-Artist. If you are familiar with the grey boxes you could bring in from Graphx to use as a guide in Artist, you will see the area available to make an border pattern. The design must be saved in Instance format and has to be EXACTLY 9 rows by 12 columns. If it is not, you will get an error message when returning to Border Maker. If you have saved your border correctly, Border Maker will take your file and make a border with the name you designate.

I paid $25 for this program at Lima, and it can be ordered through Comprodine, 1949 Evergreen Avenue, Fullerton, CA 92635

THERE ARE
DADS AND

THERE ARE
DADS

BUT
THE
BEST
IS
MINE!

HAPPY
FATHERS
DAY

THE 1992 TI-99/4A MULTI-USER GROUP CONFERENCE AT LIMA

By Glenn Bernasek

The 1992 TI-99/4A multi-user group conference at Lima, Ohio was just as an enjoyable and informative experience as it has been in the past three years! And this was the direct result of the dedicated and talented efforts of the LIMA USER GROUP. I know that Charles Good said that the success of the conference is primarily due to the user groups, seminar presenters and the vendors who attended. But, in all reality, the user groups, presenters and vendors wouldn't have a place to go to in the first place if it weren't for the Lima User Group and the Administration of the Lima campus of Ohio University.

The day started rather early for some of the attendees (4 AM in my case), but it was well worth the pre-dawn drive. This was a once-in-a-year opportunity to meet with old friends, make new friends, learn more on how to use our TI, find out what's available and new and do some serious shopping. ALL UNDER ONE ROOF, and FREE! What more could a TIer ask for?

The seminars were plentiful and well done. I don't know how Lima does it, but the quality and scheduling of the presentations seem to improve every year. I only have one regret - I just couldn't attend all of them.

However, I did attend the "Executive Session" of THE MULTI USER GROUP CONFERENCE, and several areas of common interest were discussed. The one concern on the minds of the user group officers was an apparent shrinking membership in the TI community. Several ideas were proposed and discussed such as community involvement. I reported that the TI-CHIPS recently had the pleasure of getting involved in a local support group for families of autistic persons. It is through involvement such as this that the TI user groups can attract additional membership.

Additional discussions centered around how to preserve the TI-99/4A user group "families" as much as possible. This brought about a clarification of the idea that the TI user groups might provide some basic form of informational service for the TI-99/4A user members who also use MS-DOS systems while restricting membership to TI-99/4A owners only. (This would insure that the user groups would remain TI-99/4A user groups!)

Ervin Hott reported that the TI-99/4A BBS Clearing House was on line and that there were approximately eighteen registered user/members, and that usage at this time was rather light. However, several suggestions were made regarding improvement in communications and operating instructions concerning the BBS operated by CONNI. Ervin stated that he would take the ideas and comments into consideration, and that operational improvements would be forthcoming.

I regret that I was unable to attend Northcoast 99er's co-president Ken Gladyszewski's presentation, "Digital to Analog Conversion on the TI". As part of Ken's demonstration, Ken controlled a robot with commands generated with the TI-99/4A. It has been said that the success of a show is not how well it went, but rather how well it was remembered. In Ken's case, not only did I over hear comments on the impressive presentation, but many of the people who attended Ken's demo dropped by the Cleveland User Groups table and examined the digital to analog schematics. Well done Ken!

Both Bud Mills (of Bud Mills Services) and Don O'Neil (of Western Horizon Technology) gave excellent talks on their respective products. Bud's seminar was very helpful to the TIers who experienced occasional difficulties with their RAM disks. Thanks Bud. And Don O'Neil gave us a tantalizing glimpse of his powerhouse memory products and future thoughts, plans and dreams for our TI-99/4A. In short, thanks to Bud and Don, the TI is one super machine that is far from dead!

The work that Eunice Spooner and Meaghan Good are doing for first graders with TI LOGO is both astounding and heart warming to say the least. These ladies demonstrated that much good can come from the TI in preparation of our future leaders for their roles in our world. We're all very thankful for your love and dedication.

I counted 137 sign-ins at the end of the day, and I know that at least 50 additional people walked through without registering. This speaks well for a coputer which was refered to as an obsolete "toy". Not only is the TI NOT obsolete, it is also MOST CERTAINLY NOT A TOY! The user group and vendor displays were professionally done, and the "garage sale" atmosphere of 1991 was not in evidence in 1992. The products offered for the TI were either in excellent condition or brand new. (Nothing seedy about this show!)

Once again, thanks Lima! You all did the TI-99/4A community proud!

COMPUTER CONTROLLED ROBOT

By Ken Gladysewski

CONTROL A ROBOT OR ANYTHING USING "PIO"

Some years ago while visiting my local Radio Shack, I discovered a robot called "The Mobile Armatron" and immediately decided that controlling this robot with my computer would make a great project. So did Radio-Electronics Magazine in an article which appeared in their May 1987 issue using a Commodore 64. This simple robot consists of five motors which cause different motions when energized by a handheld remote attached to the robot via a two foot, seven conductor ribbon cable. The remote consists of a number of pushbuttons which when pushed connect the wires of the ribbon cable in various combinations to energize one of the motors in a given direction. After reading and understanding the article, I concluded the TI parallel port is similar to the Commodore user port and could be used in a like manner to control the robot. These ports both have 8 data bit outputs which can be used to drive relays whose contacts then act just as the pushbuttons did in the remote. My design for the interface uses SPDT relays instead of the SPST relays used in the article and only 6 instead of 7 of the 8 available data bits. In addition to less hardware, the contacts are interconnected so that each motor acts as a generator when power is removed, causing the motion to stop quickly instead of coasting. The remaining bits can be used for other purposes, such as speed control, by switching out resistors to vary the voltage to the motor.

Before attempting to write the program and design the interface, I did some investigation into the workings of the parallel port and learned the following:

The parallel port on the TI RS232 card is bi-directional, meaning the port may be used to input as well as output information. A printer and the robot use the output ability solely and can be used with a parallel interface that can only output data, such as the Axiom parallel. The connector on the TI card is a 16 pin IDC type having 2 rows of 8 pins, per Fig. 1. The data bits are connected to a pair of cross wired 74LS373, 8 bit transparent latch IC's. These chips are capable of sinking 18 MA (input mode) and sourcing 6 1/2 MA (output mode). LED's and relays (even low power reed type) require more current than this and must be driven by a transistor.

When the computer outputs a byte, it causes the "handshake out" line to go high when the "data bit" lines have all changed. The data lines are latched, i.e., they remain in their last state until changed by new information. The peripheral device must cause the "handshake in" line to go low when it has read the data lines. The computer is then allowed to change the "data bit" lines to output another byte.

This information was used to design the universal interface shown in Fig. 2. The design is modular using a handful of inexpensive generic parts which are easily obtainable. All relay contacts are wired to a 25 pin D-Sub connector (like the one used with the RS232 serial port). Interconnections between the contacts required to use the interface with the robot are made in the mating interface cable which attaches between the interface box and the robot ribbon cable. Using this approach, one interface may be used for many different projects, each with it's own custom cable. Almost anything can be controlled using this interface and some imagination! These relays could energize bigger relays if final devices require a large amount of power. The program in Fig. 3 shows how keys 0-9 on the computer keyboard may be used to energize one or more relays at a time.

The actual program for the robot includes unlimited speech and the ability to store motion commands to disk. The commands may be input to the computer interchangeably through the keyboard or the handheld remote attached to the joystick port. The program is in this newsletter. It consists of 120 lines of Extended Basic with no Assembly routines, except for the text-to-speech routine. The program could be re-written to run in Basic on a console, using the Terminal Emulator cartridge, a cassette recorder and a stand alone parallel port.

If you have a Mobile Armatron and would like to computerize it now, or have other uses for this information and can't wait - - - write to me!

Ken Gladyszewski
6440 St. Rte 86
Concord, OH 44077

Editor's note:

It must be very hard putting all this effort into letting others know what amazing things our TI can do when there is very little feedback from the readers. Ken told me this project has spawned many more ideas that cannot possibly be looked into without the help of other hardware hackers, as time is always an enemy which can't be overlooked! Please write Ken if you would like to get involved in this project or any other that Ken has written about in the past. Also, write Ken, just to let him know if you like his ideas or not. This way, you may see more projects printed in this Newsletter! Thanks, Harry

NOTES:
1. R6, R7, R9, R10, Q6, Q7, RY6, RY7, OPTIONAL FOR SPEED CONTROL, IF NOT USED, SHORT PIN 14 TO 17.
2. 5 VOLT RELAYS MAY BE POWERED BY PIN 12 OF PARALLEL PORT (JUMPER X & Y). SOME 12 VOLT RELAYS MAY BE POWERED BY 9V BATTERY (JUMPER Y & Z).
3. RESISTORS R0-R8 AND TRANSISTORS Q0-Q8 MAY BE REPLACED BY OPTO-ISOLATOR INTEGRATED CIRCUIT.

K.J.GLADYSZEWSKI 5/01/92
NC99ERS CLEVELAND,OHIO

SCHEMATIC FOR COMPUTER CONTROLLED ROBOT

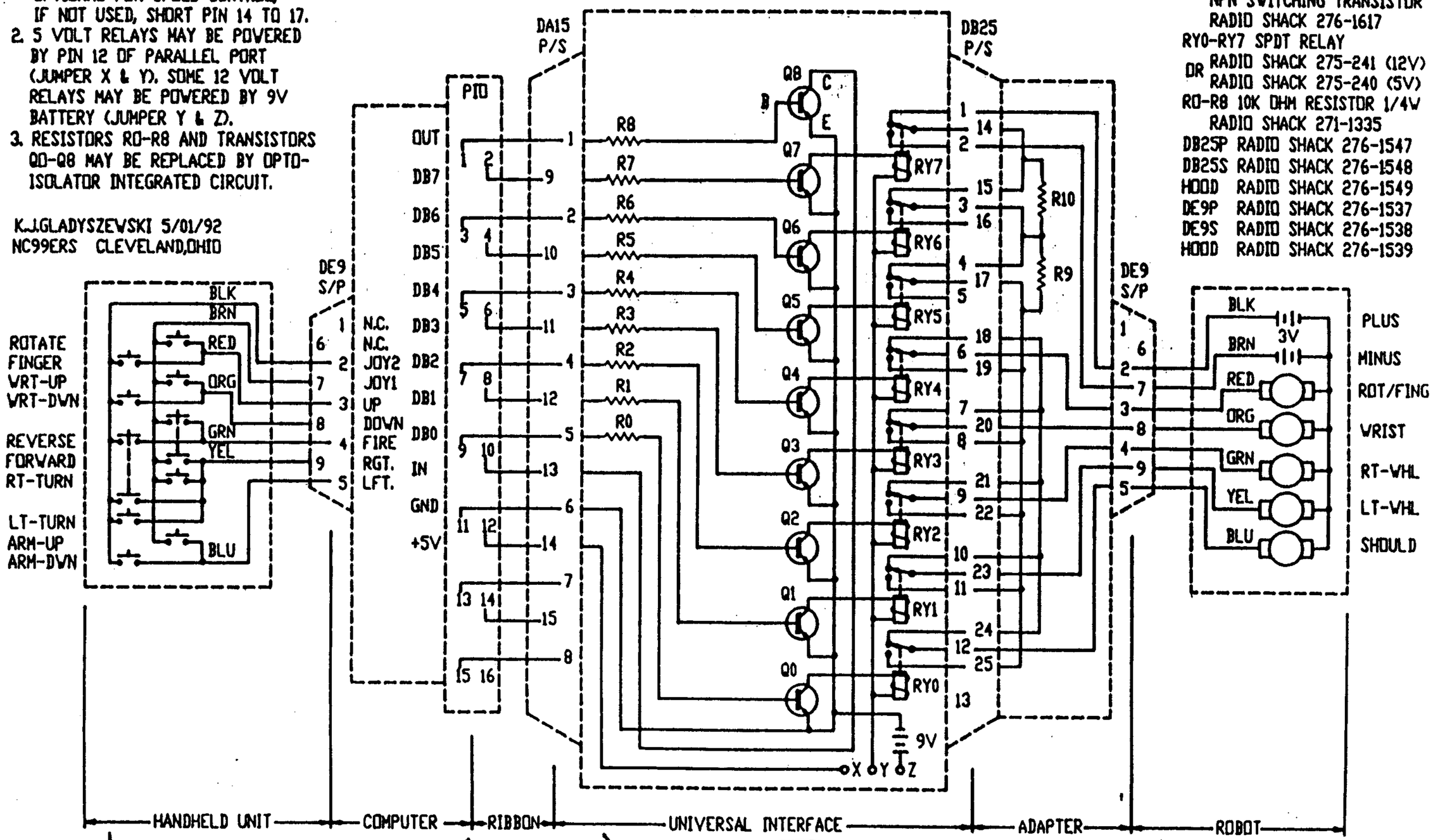


FIG. 1

FIG. 2

PARTS LIST:
Q0-Q8 GENERAL PURPOSE NPN SWITCHING TRANSISTOR RADIO SHACK 276-1617
RY0-RY7 SPDT RELAY
DR RADIO SHACK 275-241 (12V)
DR RADIO SHACK 275-240 (5V)
R0-R8 10K OHM RESISTOR 1/4W RADIO SHACK 271-1335
DB25P RADIO SHACK 276-1547
DB25S RADIO SHACK 276-1548
HOOD RADIO SHACK 276-1549
DE9P RADIO SHACK 276-1537
DE9S RADIO SHACK 276-1538
HOOD RADIO SHACK 276-1539

```
100 REM******************
110 REM**  CAUTION !!  **
120 REM**  DO NOT PUT  **
130 REM**  BATTERY IN  **
140 REM**  ROBOT UNTIL **
150 REM**  PROGRAM HAS **
160 REM**  INITIALIZED **
170 REM**  ALL RELAYS  **
180 REM**  ENERGIZED   **
190 REM**  AT POWER UP **
200 REM******************
210 REM*****************
220 REM** ARMATRON 99 **
       THIS PROGRAM IS PATTE
RNED AFTER
230 REM** NAME: ROBOT **
       A SIMILAR ONE FOR THE
 COMMODORE
240 REM** (c) 1991 KG **
       64 WRITTEN BY JIM BAR
BARELLO OF
250 REM** CONCORD, OH **
       MANALAPAN,NJ WHICH AP
PEARED IN
260 REM** ver. 910519 **
       RADIO-ELECT. MAGAZINE
 MAY,1987
270 REM*****************
280 DIM A(12),B(250,1),C$(25
0):: OPEN #1:"PIO",FIXED 1 :
: PRINT #1:CHR$(0):: CLOSE #
1 :: REM ROBOT INTERFACE OR
PRINTER MUST BE ATTACHED TO
PARALLEL PORT TO RUN PROGRAM
290 CALL INIT :: CALL LOAD("
DSK1.SPEAK","DSK1.XLAT","DSK
1.SETUP"):: CALL LINK("SETUP
","DSK1.DATABASE"):: REM MUS
T HAVE "TEXT-TO-SPEECH" FILE
S
300 A(0)=0 :: A(1)=6 :: A(2)
=134 :: A(3)=2 :: A(4)=132 :
: A(5)=1 :: A(6)=128
310 A(7)=8 :: A(8)=135 :: A(
9)=16 :: A(10)=143 :: A(11)=
131 :: A(12)=129
320 SS$=" 1234567890+-" :: R
EM THESE ARE THE MOTION KEYS
330 PRINT RC$;"    M A I N
 M E N U "
340 PRINT :: PRINT TAB(4);"<
CTRL> T :  TEACH(LEARN)" ::
PRINT :: PRINT TAB(4);"<CTRL
> P :  PERFORM(DO)"
350 PRINT :: PRINT TAB(4);"<
CTRL> S :  SAVE" :: PRINT ::
 PRINT TAB(4);"<CTRL> R :  R
ETRIEVE"
360 PRINT :: PRINT TAB(4);"<
CTRL> Q :  QUIT(END)" :: PRI
NT :: PRINT TAB(4);"<CTRL> U
 :  UNDO(RETRACE)"
370 PRINT :: PRINT "
  WHICH... "
380 CALL KEY(5,SR,STATUS)::
IF STATUS=0 THEN 380
390 SR=SR-143 :: REM DETERMI
NE WHICH MENU ENTRY
400 IF SR<1 OR SR>6 THEN 380
410 ON SR GOSUB 980,1410,128
0,1190,430,930
420 GOTO 300 :: REM REDEFINE
 CORRECT RELAYS FOR NORMAL O
PERATION
430 GOSUB 1420 :: J=B(0,0)::
 X=0 :: REM ** TEACH(LEARN)
MODE **
440 OPEN #1:"PIO",FIXED 1 ::
 REM ONLY ONE BYTE IS SENT T
O PARALLEL PORT AT A TIME
450 CALL KEY(5,KEY,STATUS)::
 IF STATUS=0 THEN 550 :: REM
 EXAMINE KEYBOARD FOR COMMAN
D,IF NONE, LOOK AT HANDHELD
CONNECTED TO JOYSTICK PORT
460 IF KEY=13 THEN LINPUT "P
HRASE- ":C$(0):: IF C$(0)=""
 THEN 480 :: IF ASC(SEG$(C$(
0),1,1))=60 THEN P=60 ELSE P
=50 :: REM < AT BEGINNING OF
 PHRASE MEANS USE LOW PITCH
470 E$=C$(0):: IF KEY=13 THE
N CALL LINK("XLAT",C$(0),D$)
:: REM CR CAUSES SPEECH
480 IF KEY=13 THEN CALL LINK
("SPEAK",D$,P,128):: GOTO 45
0
490 IF KEY=141 THEN CLOSE #1
 :: I=0 :: RETURN :: REM BAC
K TO MENU
500 I=POS(SS$,CHR$(KEY),1)::
 REM DETERMINE WHICH MOTION
KEY WAS PRESSED
510 IF I>0 THEN I=I-1 ELSE C
ALL SOUND(100,220,0):: GOTO
450
520 PRINT #1:CHR$(A(I)):: RE
M SEND DATA TO PIO PORT
530 CALL KEY(5,KEY1,STATUS):
: IF KEY=KEY1 THEN GOSUB 890
 ELSE 900 :: REM LOOK FOR RE
LEASE OF KEY
540 GOTO 530
550 I=0 :: REM EXAMINE HANDH
ELD
560 CALL JOYST(1,V,W):: IF V
=0 AND W=0 THEN 610
570 IF W=4 THEN I=9 :: GOTO
660
580 IF W=-4 THEN I=7 :: GOTO
 660
590 IF V=-4 THEN I=5 :: GOTO
 660
600 IF V=4 THEN CALL KEY(1,T
,R):: IF T=18 THEN I=1 :: GO
TO 660 :: ELSE IF T=-1 THEN
I=3 :: GOTO 660
610 CALL JOYST(2,Z,Y):: IF Z
=0 AND Y=0 THEN 450
620 IF Y=4 THEN I=10 :: GOTO
 660
630 IF Y=-4 THEN I=8 :: GOTO
 660
640 IF Z=-4 THEN I=6 :: GOTO
 660
650 IF Z=4 THEN CALL KEY(2,K
,S):: IF K=18 THEN I=2 :: GO
TO 660 :: ELSE IF K=-1 THEN
I=4 :: GOTO 660
660 PRINT #1:CHR$(A(I)):: IF
 I=0 THEN 450 :: REM OUTPUT
COMMAND TO PIO
670 ON I GOSUB 690,710,730,7
50,770,790,810,830,850,870
680 RETURN :: REM LOOK FOR R
ELEASE OF BUTTON WHICH START
ED MOTION
690 CALL JOYST(1,V,W):: IF V
=4 THEN GOSUB 890 ELSE 900
700 GOTO 690
710 CALL JOYST(2,Z,Y):: IF Z
=4 THEN GOSUB 890 ELSE 900
720 GOTO 710
730 CALL JOYST(1,V,W):: IF V
=4 THEN GOSUB 890 ELSE 900
740 GOTO 730
750 CALL JOYST(2,Z,Y):: IF Z
=4 THEN GOSUB 890 ELSE 900
760 GOTO 750
770 CALL JOYST(1,V,W):: IF V
=-4 THEN GOSUB 890 ELSE 900
780 GOTO 770
790 CALL JOYST(2,Z,Y):: IF Z
=-4 THEN GOSUB 890 ELSE 900
800 GOTO 790
810 CALL JOYST(1,V,W):: IF W
=-4 THEN GOSUB 890 ELSE 900
820 GOTO 810
830 CALL JOYST(2,Z,Y):: IF Y
=-4 THEN GOSUB 890 ELSE 900
840 GOTO 830
850 CALL JOYST(1,V,W):: IF W
=4 THEN GOSUB 890 ELSE 900
860 GOTO 850
870 CALL JOYST(2,Z,Y):: IF Y
=4 THEN GOSUB 890 ELSE 900
880 GOTO 870
890 X=X+1 :: RETURN :: REM I
F SAME MOTION THEN INCREMENT
 TIME
900 PRINT #1:CHR$(0):: REM S
TOP ALL MOTION BETWEEN COMMA
NDS
910 J=J+1 :: B(J,0)=I :: B(J
,1)=X :: X=0 :: B(0,0)=J ::
C$(J)=E$ :: E$="" :: C$(0)="
" :: D$=""
920 PRINT B(0,0);B(J,0);B(J,
1):: GOTO 450
930 REM ** UNDO(RETRACE) MOD
E
940 A(0)=0 :: A(1)=134 :: A(
2)=6 :: A(3)=131 :: A(4)=129
 :: A(5)=128 :: A(6)=1
950 A(7)=135 :: A(8)=8 :: A(
11)=2 :: A(12)=132 :: REM DE
FINE OPPOSITE MOTIONS
960 L=B(0,0):: M=1 :: N=-1 :
: GOTO 1010
970 PRINT :: PRINT "   UNDO(
RETRACE) PROCEDURE" :: PRINT
 :: PRINT
980 REM ** PERFORM(DO) MODE
**
990 L=1 :: M=B(0,0):: N=1
```

(CONT. PAGE 9.)

te

FIG. 3

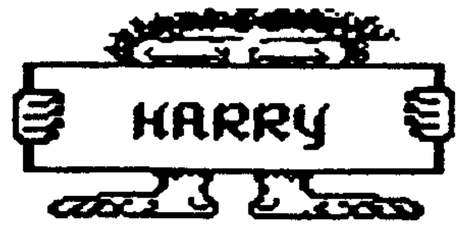
```
1000 PRINT :: PRINT "   PERF
ORM(DO) PROCEDURE" :: PRINT
 :: PRINT
---------------------------
1010 IF B(0,0)=0 THEN PRINT
"NO PROCEDURE IN MEMORY." ::
 GOTO 1160
---------------------------
1020 PRINT "PRESS ANY KEY FO
R MOTION."
---------------------------
1030 CALL KEY(5,KEY,STATUS):
: IF STATUS=0 THEN 1030
---------------------------
1040 PRINT "EXECUTION IN PRO
GRESS" :: PRINT
---------------------------
1050 OPEN #1:"PIO",FIXED 1 :
: FOR I=L TO M STEP N
---------------------------
1060 IF C$(I)="" THEN 1100
---------------------------
1070 IF ASC(SEG$(C$(I),1,1))
=60 THEN P=60 ELSE P=50
---------------------------
1080 PRINT C$(I)
---------------------------
1090 CALL LINK("XLAT",C$(I),
B$):: CALL LINK("SPEAK",B$,P
,128)
---------------------------
1100 PRINT I;B(I,0);B(I,1)::
 PRINT :: X=0
---------------------------
1110 PRINT #1:CHR$(A(B(I,0))
)
---------------------------
1120 CALL KEY(5,KEY,STATUS):
: IF X<B(I,1)THEN GOSUB 1140
 ELSE 1150
---------------------------
1130 GOTO 1120
---------------------------
1140 X=X+1 :: RETURN
---------------------------
1150 PRINT #1:CHR$(0):: FOR
K=1 TO 1 :: NEXT K :: NEXT I
 :: CLOSE #1 :: PRINT "PROCE
DURE DONE"
---------------------------
1160 PRINT "PRESS ANY KEY FO
R MAIN MENU"
---------------------------
1170 CALL KEY(5,KEY,STATUS):
: IF STATUS=0 THEN 1170
---------------------------
1180 RETURN
---------------------------
1190 REM ** SAVE PROCEDURE *
*
---------------------------
1200 IF B(0,0)=0 THEN PRINT
"NO PROCEDURE IN MEMORY." ::
 GOTO 1220
---------------------------
1210 INPUT "ENTER FILE NAME
TO SAVE ":F$ :: GOTO 1250
---------------------------
1220 PRINT "ABORT. PRESS ANY
 KEY..."
---------------------------
1230 CALL KEY(5,K,S):: IF S=
0 THEN 1230
---------------------------
1240 RETURN
---------------------------
1250 OPEN #2:F$ :: PRINT ::
PRINT "SAVING PROCEDURE. WAI
T."
---------------------------
1260 FOR I=0 TO B(0,0):: PRI
NT #2:B(I,0):B(I,1):C$(I)::
NEXT I :: CLOSE #2
---------------------------
1270 PRINT :: PRINT "PROCEDU
RE SAVED. PRESS ANY KEY." ::
 GOTO 1230
---------------------------
1280 REM ** RETRIEVE **
---------------------------
1290 PRINT "RETRIEVE PROCEDU
RE"
---------------------------
1300 IF B(0,0)=0 THEN 1330
---------------------------
1310 PRINT "PROCEDURE IN MEM
ORY. CONTINUE (Y/N)?" :: GOS
UB 1570
---------------------------
1320 IF CHR$(K)="N" THEN PRI
NT "ABORT. " :: GOTO 1350
---------------------------
1330 INPUT "ENTER FILE NAME
TO RETRIEVE ":F$ :: GOTO 137
0
---------------------------
1340 PRINT "PRESS ANY KEY"
---------------------------
1350 CALL KEY(5,K,S):: IF K=
0 THEN 1350
---------------------------
1360 RETURN
---------------------------
1370 PRINT "RETRIEVING PROCE
DURE. WAIT" :: OPEN #2:F$
---------------------------
1380 INPUT #2:B(0,0),B(0,1),
C$(0)
---------------------------
1390 FOR I=1 TO B(0,0):: INP
UT #2:B(I,0),B(I,1),C$(I)::
NEXT I :: CLOSE #2
---------------------------
1400 PRINT "RETRIEVAL COMPLE
TE. " :: GOTO 1340
---------------------------
1410 END
---------------------------
1420 REM ** TEACH(LEARN) SCR
EEN *
---------------------------
1430 PRINT
---------------------------
1440 PRINT " ARMATRON ROBOT
TEACH MODE   " :: PRINT :: P
RINT
---------------------------
1450 PRINT "PRESS KEY TO DO
FUNCTION    PRESS ANY OTHER
KEY TO STOP"
---------------------------
1460 PRINT "PRESS <CTRL> M F
OR MAIN MENU" :: PRINT
---------------------------
1470 PRINT "    KEY FUNCTION
" :: PRINT "
   "                 -- ------
--
---------------------------
1480 PRINT TAB(5);"1 = FORWA
RD" :: PRINT TAB(5);"2 = BAC
KWARD"
---------------------------
1490 PRINT TAB(5);"3 = RIGHT
 FORWARD TURN" :: PRINT TAB(
5);"4 = LEFT FORWARD TURN"
---------------------------
1500 PRINT TAB(5);"5 = ARM U
P" :: PRINT TAB(5);"6 = ARM
DOWN"
---------------------------
1510 PRINT TAB(5);"7 = WRIST
 UP" :: PRINT TAB(5);"8 = WR
IST DOWN"
---------------------------
1520 PRINT TAB(5);"9 = HAND
ROTATE" :: PRINT TAB(5);"0 =
 FINGERS MOVE IN/OUT"
---------------------------
1530 PRINT TAB(5);"+ = RIGHT
 REVERSE TURN" :: PRINT TAB(
5);"- = LEFT REVERSE TURN"
---------------------------
1540 PRINT TAB(5);"Sp= PAUSE
"
---------------------------
1550 PRINT TAB(5);"Cr= SPEEC
H"
---------------------------
1560 RETURN
---------------------------
1570 CALL KEY(5,K,S):: IF S=
0 THEN 1570
---------------------------
1580 RETURN
---------------------------
```

To shorten program/remove 'REM' statements(except lines 100-200)

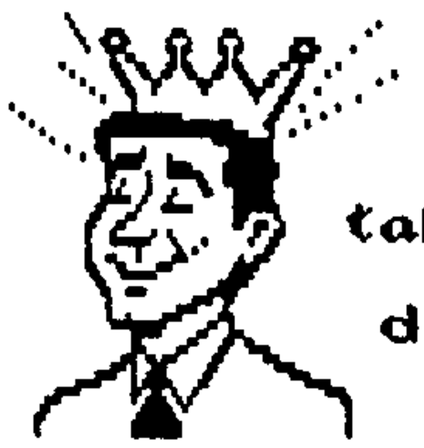
From the Editor:

It was great having a combined meeting of the North Coast and TI-Chips groups. I hope this can become an annual event in which all N.Coast members come and share their views with the Chip's group. We are all sharinng in a common passion for a unique machine. When the biographies (BIOS) start coming in and are printed in the Newsletter, we will see how varied are the uses of the TI, the way the machine was acquired, and for what purpose. It will be a good source of ideas! I have received only one BIO so far, and am anxiously waiting for the rest of them. Please make an effort to put it on disk in TI-Writer format, or just write it out on paper and Nina or I will type it up. Thank you.

This editorial is short due to the large amount of articles submitted. I need to say THANKS to Carol Shaw and Vonn Malcuit for lending a hand copying disks so I could wander around at the Lima Conference. THANK YOU Deanna for the loan of your Corcomp system! Clyde and Mary Wachter came from Maryland, via Indiana. Clyde says HI to all his fellow Cleveland members, especially John Parken! He also said his grandson's three pint bottle will be converted to a piggy bank! More on Lima next month.



Dad's Day



JUNE 21 1992

Call or take him out to dinner !

-*- In the Newsletter -*-

See You All at the Meetings JUNE 20th !
Happy Fathers Day
All you Dads out there !

RETURN ADDRESS:
CLEVELAND AREA 99/4A USER GROUPS
c/o HARRY HOFFMAN
3925 TROWBRIDGE AVENUE
CLEVELAND, OH 44109

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