

Merry Christmas !

And to celebrate the occasion, we have decided to come out with our December issue. As of this writing, there are only 320 or so shopping days left, so hurry.



Our last issue (November in January) had its good and bad points, some of which are correctable, so here goes:

The week after we send out an issue is traditionally the time when, with much wailing and gnashing of teeth, we replace the "dings" (those cassettes which the subscribers find to be unloadable). This last time was no exception. By Friday of that week, we had received a few. One of them had a dropout in the oxide, and the other one was completely blank. C'mon, folks - we rejected more than that during random sampling! If we're that good, we might as well start a software magazine, and publish on a regular basis. Seriously, if you find that you get an unloadable copy, mark it "bad" or "can't load" or "<ex-pletive deleted>" and send it back. We will (1) replace it, and (2) send it to the Quality Control department (me) and see what may need adjusting on our next run. So far, it looks good for our new system.

So much for the good - it seems that the instructions for "Cat and Mouse" were somewhat less than the total paragon of lucidity. This is a game for three people to play. Yourself, a friend (or enemy) and your TRS-80. The basic structure of the game is that the cat wants to catch the mouse (by moving to the position that the mouse occupies), the mouse wants to escape from the cat (by safely navigating to the exact center of the board), and the computer is the referee and rulemaker. The moves that are legal vary with each player's turn. The computer signifies legal moves by "putting a line" in that direction. Thus, if we think of North as being at the top of the screen, the following rules apply:

a space marked:

can be entered from:

"-"	East or West
"1"	North or South
"+"	North, East, South, or West
"L"	Northwest or Southeast
"/"	Northeast or Southwest
"X"	Northwest, Northeast, Southwest, or Southeast

Using "L" for Northwest or Southeast is a bit strange, but the TRS-80 doesn't have a backslash character (\).

What makes this game interesting to us is that the computer is both referee (preventing illegal moves) and participant (adding the random factor). It was written by a local junior high student, Allen Callaway.

This month, we have another interesting one - Four Color. For over a century, mapmakers have suspected that four colors are sufficient to color any map on a flat sheet or on a globe, with the restriction that no common border of any two countries has a single color. Though mathematicians have provided rigorous minimum-color proofs for more complex shapes, such as doughnuts (minimum - 7 colors), they have been much less successful with the "simpler" surfaces. Some 124 years after the introduction of the problem, it was solved by Kenneth Appel and Wolfgang Haken, at the University of Illinois, Urbana. Their proof was a bit different than the typical logical construction - it called for reducing several thousand cases, and then proving that those several thousand cases were permutations of all possible cases. The proof took genius, perseverance and 1,200 hours of computer time. Although theoretically possible to solve without the use of a computer, the incredible amount of computation involved makes it quite unlikely. The feeling of the mathematicians involved is that this proof may be merely the first of a number of proofs which may be impossible or impractical to solve otherwise. It is my personal opinion that the "big, dumb adding machine" view of computers will be valid for another decade at most, and that the real value of electronic computation will not be in the field of numbers as such. The calculations will still be around, but will be internal to a larger simulation or control algorithm.

The result of the proof, you ask? Excuse me. Four colors are enough. Searchers for the five color map must now join the angle trisectors and the circle squarers. If anyone proves Fermat's last theorem on a TRS-80, let us know.

Last week I managed to scrape up a pile of time high enough to leave our international headquarters here in Goleta and visit Tandy Corporation in Fort Worth, Texas. If anyone reading this wakes up in the area, I'd highly recommend a visit to Tandy Center. One gets the feeling of being inside a dream world. There are glass sided elevators with all the structure and machinery out in plain view, there's boutique shops aplenty, there's an ice skating rink, escalators hung in midair, a restaurant, and three Radio Shack stores - the "Subway" store, the "Telephone Booth", and, of course, Tandy Computers. In the elevators leading to the business offices, you can trace out the circuitry of the LCD digital floor counter. The entire circuit board is backlighted behind a plexiglas panel. The architect of this building was definitely designing for a company in the retail electronics trade.

Announcements -

HUH Electronics, of 1429 Maple Street, San Mateo, CA 94402 (phone 415 573 7359) has announced an S-100 interface, the model 8100. This unit is basically a large circuit board which acts as the base of the unit. It has six slots for S-100 cards, plus provision for 16K of dynamic RAM, a very versatile serial port, one input and one output parallel port, five bells, two whistles, and a manual to explain it all. The prices range from \$185 to \$295, depending on the configuration desired, and whether it is desired in kit form or assembled. For those hackers who are long of patience and short of pocket, we have the word that there are a number of circuit boards (blank - no chips) that have the circuit side and the component side reversed through a manufacturing error. These are for sale with full documentation for \$50. There's only one problem with this configuration. The edge connectors that are used for interfacing are reversed as well, and therefore the connectors used have to be "made up" (as opposed to a mass terminated ribbon cable). If you're hot with a soldering iron, this might just be the interface you've been looking for.

There is a bug in the level II "Ohm's Law" (last month's issue). The authors tell us that inserting a semicolon at the end of lines 165 & 510 will straighten everything out.

We have a few more bugs we are checking out - if you wish to call our attention to one, please be as specific as possible. Verifying and correcting a bug is a very difficult affair, and we can't devote as much time to the process as we'd like.

By the end of February, we will be making program listings available for all our current and back issues. The equipment has been around for some time, and as soon as our head is above water, we'll get the process underway. Both level I and level II for all our issues will eventually be available (with a few exceptions, like Hammurabi and Othello). Our present plans are to market each month's issue as a whole, and for the instructors/schools that are interested, a packet of many copies of the same program. Now all our bugs and inefficient coding will be known to the world.

Book review time - two books have passed CLOAD magazine's stringent requirements for a review (the publishers sent us a copy).

The first is one we have mentioned before - The BASIC Handbook by Dr. David Lien (Compusoft Publishing, San Diego CA 92119). The price is \$14.95 + 1.35 postage & handling - Californians, as usual, add 6% tax.

This book is subtitled "An Encyclopedia of the Basic Computer Language", and that pretty much sums it up. Dr. Lien felt that there was a form missing from among the multitude of texts available on the subject, and wrote this book in that form. As an encyclopedia, it is broken into entries, each one covered in a page or two, with no continuity from entry to entry. Handy? You bet! Let's suppose you've just laboriously typed in a program from a magazine article (not CLOAD magazine) and it chokes on a line containing a "MAT PRINT" statement. You go to the Radio Shack manual. hmm... no mats printed here. Seems as how mats should be woven anyhow. Solution? In this book, somewhere between MAN and MEM, there is an entry on MAT PRINT. It explains what the statement means, and (hooray) tells you how to get around it if your computer doesn't have it. This is a powerful tool to help overcome one of BASIC's limitations - the lack of software portability.

Our second book is BASIC for Home Computers, by Bob Albrecht, LeRoy Finkel, and Jerald R. Brown (Wiley & Sons, 605 Third Ave. NY, NY 10016 \$5.95)

"Old Timers" will recognize Bob Albrecht as the Dragon Emeritus of the People's Computer Company, PCC Newsletter, People's Computers Magazine, and finally Recreational Computing Magazine. He really doesn't look like a dragon at all. He and his cohort have long been in the business of introducing computers to newcomers, notably the coming generation of computermasters who now can be found in grade school.

This is a "Do It !" book which starts at the proverbial beginning and proceeds to lead down a logical path, introducing the various computer concepts along the way. It assumes that you have a personal computer (so do we !) and it urges you to have it handy as you read the book. Although the book is not written specifically for the TRS-80 (there actually are other computers in existence), the dialect of BASIC used is Microsoft's. Since they wrote the BASIC used in the TRS-80, there should be little trouble here. Graphics are understandably limited, as this is where the various computers have their greatest incompatibilities. Overall, this is a good book for those who are beginning and whose questions are conceptual (as opposed to those who have begun, whose questions are unanswerable).

To start off this month's hardware talk, I'd like to plug the Radio Shack TRS-80 Tech Manual (Catalog #26-2103). This is not the typical fistful of sheets stapled to an apology, which is what the computer hobbyists have grown to expect. It's about the size and shape of the Level II Manual (100 pages). Half the book is explaining the circuit design of the innards, and the rest is devoted to troubleshooting the beast, a short talk on interfacing it to "the outside world", part numbers, and two beautifully drawn foldout schematic diagrams.

Enough of the sales pitch. The reason for it is that it has all the things in it that I was heading towards in my short talks, except that it's well written. At this point, I'd like to change the subject (a favorite trick of mine) and talk about interfacing to something other than a coffeepot. The level II machines are easier to work with when it's software time because of the INP(X) and OUT X,Y statements. The level I machines do not have these, and the "driver" program must be written in machine code with T-BUG (or the Editor - Assembler).

The first question that comes up is a corker - what do we control? A toaster? waterbed? machine gun? A few general constraints on a good choice are:

(1) It should be something that is complex enough to rate a computer solution. The simple devices (lights, toasters, television sets) are best handled with a simple timer, or a simple finger.

(2) It should not be a device which is likely to be mass-produced in the near future, like a telephone directory/dialer. Those clowns at Tandy Corporation probably have one in their back warehouse, and will introduce it the week you finish making yours.

(3) It should be something that is worth controlling. Keep in mind that controlling it will tie up a computer, and that's a non-trivial expense. It also will absorb a significant amount of time and money in the parts which have to be added.

(4) It should not be totally dependent on automatic control. If (a) it can be left uncontrolled with no harm, or (b) it can be controlled by manual methods, then there is less temptation to set fire to the whole thing during the debugging phase.

As anything that meets the above criteria is likely to be a firm commitment of one's time, effort, and sanity it is appropriate to begin at the TRS-80 interface plug and work outwards. This is not always the best way to plan a project, but in this case we have a very flexible design, and can tailor it to quite a few different needs.

The heart of the interface is a chip made by Intel, the 8255. this chip controls 24 separate lines (a line being essentially a wire), it is moderately cheap (about seven dollars), it is available from several sources, and it is very, very flexible in design and use. If you wish to purchase one, two good sources are Jade (4901 W. Rosecrans, Hawthorne, CA 90250 - 213 679 3313) and Jameco (1021 Howard Ave. San Carlos, CA 94070 - 415 592 8097). Unfortunately, Radio Shack doesn't seem to carry this one. An information sheet on the 8255, with a schematic for a TRS-80 hookup will be in next month's column.

Next month? Excuse me. Next week's (or so...). Our only problem now is that we seem to have run Southern California out of yellow paper. There's no telling what this might get printed on!

Later,



Ralph McElroy
Publisher