$15.00

Price includes punched paper tape listing.

LIFE

Cromemco
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LIFE

The game of LIFE was first introduced in the October 1970 issue of Scientific American magazine. The Dazzler-Life program is a truly spectacular full-color interpretation of the interesting and varied game of LIFE. This program was written by Ed Hall.

Memory Requirements

The first 4K bytes of memory space is used for the Life program and for the Dazzler picture. Life is provided as a paper tape listing that loads from zero and runs from zero.

Loading the Paper Tape

The following procedure can be used to load the LIFE paper tape into your computer. The procedure assumes that your paper tape reader is interfaced using the MITS REV 0 I/O convention.

1) Using your front panel switches, deposit this paper tape load software into your computer beginning at memory location 010 000:

Location	Data
010 000	041
	000
	000
	333
	000
	346
	040
	312
	003
	010
	333
	001
	167
	043
	303
	003
	010

2) Examine location 010 000 (the data lights should read 041).
3) Run. Stop. (This clears the input buffer).
4) Examine location 010 000.
5) Align the first byte of data on the paper tape over the read sensors on your teletype or other paper tape reader.
6) Run.
7) Start the paper tape reader.
8) After the tape is read depress Stop.
9) To start Life: Reset. Run.

Operation

After the paper tape is loaded into your computer, an initial colony of cells can be drawn on your TV screen using keyboard controls. Control A is used to deposit a cell of life on the screen. Controls N, O, I, and H step the cursor up, down, right, and left respectively. Control B can be used to earase the screen. Once the initial colony is complete, Control D is used to start the evolution of the cells. During the colorful evolution of the cells the letter F on your keyboard can be used to freeze the picture. Hit the letter G to go and the letter S to stop.

The details of the game of Life are described succinctly in this excerpt from the February 1976 issue of Popular Electronics :

THE GAME OF LIFE

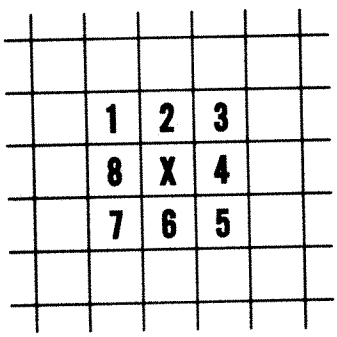
One of the most fascinating uses of the Dazzler is in playing what is known as "The Game of Life." (See *Scientific American*, October 1970, p 120; February 1971, p 112; April 1971, p 116.) The game is started by entering the program shown below. (A paper tape of the program is available for $15 from Cromemco, 1 First St., Los Altos, CA 94022.) Then a colony of cells is entered to appear on the TV screen on a 64 x 64 grid.

Each cell in the colony has eight possible neighbors, as shown at right. The evolution of the colony proceeds according to a fixed set of rules invented by John Conway at the University of Cambridge. Every cell with two or three neighbors will survive to the next generation. Every cell with four or more neighbors dies from over-population. Every cell with one neighbor or no neighbors dies from isolation. Every cell with exactly three neighbors is a birth cell—a new cell is born here in the subsequent generation.

In the Dazzler version of The Game of Life, blue represents life; birth generates a green cell; and death is shown in red. There are many surprises to be found in the game. Some colonies survive and prosper; others reach a stable state—neither growing nor lessening. Other colonies fade from existence. Some colonies, known as "gliders" sail across the screen and can be devoured by other colonies in the process.

The full-color illustrations on the first page of this article are actual photos of a TV screen several generations into a Life program.

The initial colony of cells is drawn on the TV screen using ASCII keyboard inputs as controls. Control A deposits a cell of life on the screen. Controls N, O, *I*, and *H* step the cursor up, down, right, and left, respectively. Once the initial colony is complete, Control D is initiated to start the game.



Each cell has 8 possible neighbors.

On the following pages is the assembler listing for Dazzler-Life.