

Headlines 1965 - 1968

(From "The Way We Lived," published by Reader's Digest)
(and "Time Lines" World History Year by Year Since 1492)
(and "The 20th Century, Day by Day" by DK Publishing, Inc.)

- 1965
- Race riots ravage Watts section of Los Angeles, 35 people died.
 - The **Early Bird** communications Satellite enables the exchange of TV programs between Europe and South America.
 - Soft **contact lenses** are invented.
 - Space probe **Mariner 4** sent back images of Mars showing surface detail with extraordinary clarity.
 - Martin Luther King, Jr. led a **civil rights** march through Selma, Alabama.
 - Medicare**, a federal health insurance program for the aged was signed into law.
 - More than 125,000 American troops were on active service in **Viet Nam**.
 - Mao Tse Tung's **Cultural Revolution** began in China.
 - War** between India and Pakistan over status of Kashmir.
 - Rhodesia broke away from Britain..
 - Winston Churchill** died at age 91.
 - Ralph Nader published "**Unsafe at Any Speed**," a study of safety factors in American automobiles.
 - In nine Northeastern states, 24 million people weathered total loss of electricity.
 - US spacecraft, Gemini 7 and Gemini 8 rendezvous in space. They flew along side each other but did not actually dock.
- 1966
- TV series **Star Trek** begins.
 - Protests mounted as US involvement in **Viet Nam** increased.
 - The **Model Cities Act** offered incentives for rehabilitation of slums.
 - The **Beatles** followed up on their invasion of the US in the early 1960's
 - TV pictures were transmitted from the **surface of the Moon**. when a Soviet spacecraft Luna 9 made a successful unmanned landing.
 - Nehru's daughter, Mrs. Indira Gandhi, was elected Prime Minister of India.
 - Mini-skirts were in style, complimented by headbands, beads, and plastic boots..
 - US airplane loses H-bomb over Spain. It was found intact later in coastal waters.
 - Gemini 8 docked with an Agena spacecraft for 30 minutes, then began to spin violently because of a malfunctioning small thruster.
 - Sniper on top of a 27-story University of Texas tower in Austin kills 12 people.
 - Arno river floods Florence, Italy, and destroys invaluable art.
 - Ronald Reagan elected Governor of California.

- 1967
- Three astronauts killed in tests atop Apollo 1 in Florida.
 - Twenty-fifth amendment authorizes President to appoint a vice-president if the number 2 post becomes vacant.
 - South African surgeon Christian Barnard performs first **heart transplant** operation.
 - 10,000 hippies rally at New York "be-in."
 - Rolling Stone** first appear.
 - Israel launched pre-emptive "**Six-Day War**" against Egypt, Syria and Jordan.
 - "Expo '67" opens in Montreal, Canada.
 - The "Concorde" supersonic airliner was unveiled in Toulouse, France.
 - First microwave oven introduced.
- 1968
- Student** demonstrations in Paris turned into full-scale riots and a General Strike was called.
 - Apollo 8** with a crew of three astronauts, made the first manned orbit of the Moon.
 - The USS **Pueblo**, an intelligence ship, was seized in North Korean waters.
 - Racial violence followed assassination of **Martin Luther King, Jr** in Memphis, TN in April.
 - Robert Kennedy was assassinated in June.
 - Soviet tanks invade Prague, Czechoslovakia.
 - Republican **Richard Nixon** was elected President.
 - 2001, A Space Odyssey was Stanley Kubrick's science fiction movie masterpiece.
- 1969
- At a Cairo conference Yasir Arafat became leader of PLO (Palestine Liberation Organization)
 - Dwight D. Eisenhower died at age 78.
 - First implanted artificial heart.
 - Blacks at Cornell seize Student Union.
 - American astronauts land on the Moon**
 - Woman drowned in car driven by Ted Kennedy.
 - 400,00 people overwhelm Woodstock Rock Music Festival.
 - The first fertilization of a human egg outside the human body was achieved at Cambridge University.

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TIME LINE
1959 - 1985
Jim Sutherland
306 Newbury Dr.
Monroeville, PA

* **30-bit, 4096-word core memory** purchased by Westinghouse from Telemeter Magnetics
for use in the PRODAC-X process computer prototype

* **PRODAC-X shipped to field for on-site testing**

* **PRODAC-X upgraded, all components returned to Pittsburgh**

* **Core memory, Power supplies, eight card cages, and 120 printed circuit boards loaned to Jim Sutherland for experimental use.**

* **ECHO-IV designed, built, and in operation at home.**

* **First publicity in Pittsburgh newspapers.**

* **Speaking engagements: June, 1967 - Dallas, TX**

February, 1968 - Columbus, OH

March, 1968 - Cornell, Ithica, NY

May, 1968 - Chattanooga, TN

September, 1968 - Pittsburgh, PA

February, 1971 - IEEE, Pittsburgh, PA

* **"Popular Mechanics" article, April 1968**

* **National publicity via Associated Press news**

* **Designed and constructed ECHO-XL
(Single-board home computer)**

* **Began check-out of ECHO-XL board, but stopped
after Intel announced the 4004 microprocessor.**

* **ECHO-IV processed text of 533-page book.**

Donated ECHO-IV to the
Boston Computer Museum

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"Advanced Technology" in 1965

Mainframe computers

- Transistorized

- Magnetic core memory

- Huge (and expensive)

- Digital Equip Corp introduced PDP-5 in 1964 (cost only \$18,000)

Photography

- 35mm camera, film, and blue flash bulbs

- Polaroid camera

- One-day film processing

- Albums for 4x6 prints

- Darkroom needed for B/W pictures and enlargements.

Entertainment

- Stereophonic music

 - Vacuum tube amplifiers

 - 33-1/3 LP records

 - 45 RPM records

 - 1/4" magnetic tape

 - 7-inch reel-to-reel

 - 10-1/2 inch reel-to-reel

 - 8-Track tape cartridges

- CRT Color TV

Communication (Home and Office)

- Intercom systems

- Flexible magnetic disc letters

- 1/4" magnetic tape letter mailers

- Dial telephones and directories

- Dictation discs for typing of business letters

- Secretaries used IBM Selectric typewriters

- Catalog "Wish-Books"

- Stenographers used shorthand PADs

- "Big Chief" TABLETs used in school

- Road maps were free at most filling stations

- Amateur radio operators (HAMS) were licensed by FCC

- Citizens Band Radio was allowed without a license

Bulova Accutron electronic turning-fork wrist watch

- 1-minute per month guaranteed accuracy

Was ECHO-IV a Real Computer?

ECHO-IV was built in a wooden 6' x 8' cabinet 18 inches deep.
ECHO-IV had 15 machine-language instructions.
Programs were written using mnemonics, then converted to octal.

What Tasks did ECHO-IV Perform?

Time of day

- Controlled HOUR lights of BCD clocks.
- BCD Alarm clock.
- Controlled Hi-Fi speakers throughout house.
- Day/night thermostat selection.
- Coordinated TV channel selection & antenna orientation.
- Created and played Christmas Carols.
- Regulated TV on school nights.

Calculations

- Printed "2 to the Nth power"
- "Instant Insanity" puzzle solution

Word processor

- IBM model 735 I/O typewriter in Kitchen Console.
- Printed text and index of 515-page book for publisher
- Printed personalized Christmas Newsletters
- Ruth wrote her paper for AHEA Convention - 1967

Publicity for Westinghouse

- Magazines and Newspapers - 77,000,000 circulation
 - Amateur Computer Society - Stephen B. Gray - 1966
 - Popular Mechanics - April, 1968
 - Datamation - March, 1970
 - Science and Mechanics - February, 1971
 - Byte Magazine - July, 1978
 - Creative Computing - November, 1984
- Radio - John Stewart interview - KDKA

ECHO-IV heated the basement

Where is ECHO-IV Now?

Donated to the Computer Museum in Boston, 1984
Moved to Computer History Museum in Mountain View, CA 1998

**Jim Sutherland's Vision
of Future Home Computer Tasks**

Prediction	Achieved by	
	ECHO-IV	Later system
Produce shopping lists from inventory on-hand	no	yes
Keep track of family finances	no	yes
Make Income tax report	no	yes
Predict the weather	no	yes
Word processing for writing letters and text	yes	yes
Turn TV and Radio on/off at pre-selected times	yes	yes
Print out recipes	yes	yes
Control thermostats according to time of day	yes	yes
Family messages on screen	no	facebook
Display time	yes	yes
Digital alarm clock	yes	yes
Programs must be written by the user	yes	no
Large capacity memory system	no	yes
Schedule future events and issue alerts	no	yes
Play games	yes	yes
Size of computer will be reduced in future	--	yes
Programs will be bought like phonograph records	no	apps
Power consumption reduced by automatically switching computer off when not being used	yes	yes

IMPRESSIONS OF A HOMEMAKER WITH A COMPUTER IN HER BASEMENT

**Ruth Sutherland, Pittsburgh, Pa
June 2, 1967**

**(Excerpts from a paper she presented in Dallas, TX to the
American Home Economics Association Convention)**

At first, I thought it might really replace me! From the cartoons and jokes we see and hear about computers, isn't this the general impression that most homemakers at present would have if they suddenly found out they had a computer in their home?

Jim started talking about the availability of parts of an obsolete Westinghouse computer that could be made into a computer for home use. It wasn't long until one wall of the dining room began to fill up with stack after stack of meaningless parts which I called junk.

As each portion was finished, the family; which includes Ann, now eleven; Sally; seven, and Jay; two, would run to the basement to view the latest accomplishment. The biggest day was when the power was turned on and nothing blew up!

One day during the early testing stages a neighbor child pressed a keyboard switch and turned the computer on. It was then that I realized I didn't know how to switch it off, short of turning the power off at the main circuit breaker of the house.

I'm sure the fellows in Jim's office thought I had gone kooky when I asked them to leave this message for him, "Please call home! The computer is running. How do I turn it off? "

Last week we needed some address labels for the tape recorder cartridges that we mail as letters back and forth to our parents. It wasn't long until we got a call from Jim to come see what the printer was doing. There it was typing out the address and return addresses on sheets of gummed labels. This program is now stored in the memory unit so anytime these labels are needed, a certain code typed into the keyboard will cause the printer to type it again.

I'm excited NOW about a computer in my home. What a sense of accomplishment it will be to me to answer, "I wrote a new menu and shopping list program today", when Jim asks the question that every man asks his wife when getting home from work, "And what did you do today?"

Second, I'm excited about a computer in my home to relieve me of some of the more menial tasks so that I will have time to do three things that are pure recreation to me: continue to make all of the clothes for the family, time to carry out ideas for home decorating, and to work outside with flowers and garden. I also feel a need to have time to work with youth groups.

And thirdly, I'm excited about a computer in my home because it is something that our whole family can use and has already enjoyed. With proper instruction, any school age child will be able to use it as a tool, for games, or actual mental exercise.

Even if they were available for home use at a reasonable cost, the word COMPUTER is a little frightening to the average homemaker because she has had no experience or personal contact with one.

Homemakers must know that a computer only does what it is told to do through a program that has been written in a form that the machine can understand. It is almost like teaching a child how to do a specific chore or task. The child knows how to do it after he has been instructed. One important difference is that the computer always does it exactly as programmed.

Therefore, one source of frustration to the homemaker is relieved because she is working with a device that is always precisely predictable.

At this point, I cannot say or even comprehend all the things that a computer someday will be doing for our homes, but wouldn't it be wonderful if they could provide more time for parents to spend with their children, therefore, making every home a happier one ?

Some Home Computer Ideas from AHEA Conference - Dallas, TX

(Home Economics teachers' responses to questionnaire - 1967)

- Indicates services provided now by home systems and computers - 2015

- **Handle family accounting**
- **Keep a record of stocks and advise on good investments.**
- **Keep party menus and shopping lists handy.**
- **Control temperature, humidity, and burglar alarm.**

Turn the TV off when someone falls asleep.

- **Turn the lights on when you're gone.**

Carry out the rubbish.

Do major cleaning of floors, windows, carpets, draperies, and woodwork.

- **Balance my checkbook.**
- **Keep track of tax deductible expenditures.**
- **Figure out income tax at end of year.**
Keep track of foods in the freezer.
Alert us when items (i.e. car) need servicing.
- **Alert us when prescriptions need filling.**

Lock all doors at night.

Close windows when it rains.

- **Sound alarm for break-ins.**
- **Water the lawn.**
- **Answer phone when away.**
Record who was calling without allowing phone to ring at night.
Feed baby at night.
- **Balance checkbook.**
Make out job reports.
Keep correct food and clothing inventories.

- **Automatic sprinkler system.**
Reminder to put cars and bikes away.
Make a grocery list.

Ironing

Floor scrubbing

Dusting

Wash the car.

Baby sitting

Feed the pets.