

Science in Everyday Objects

Large Print Guide

Discoveries made in the laboratory often find applications unrelated to the field of scientific experimentation they were born of. Serendipitous scientific breakthroughs shape our lives, underpinning the technology we use every day to store our most important information, communicate with one another, and entertain ourselves.

HOW WE TURNED ON THE 'TUBE'

Early mechanical television in the 1920-30s used mirror drum technology, developed following experiments into the properties and behaviour of light. When these sets received a 'TV' signal it varied the brightness of light cast onto a rotating drum, circled by a sequence of angled mirrors, which projected moving images onto the screen. In the 1930s, television makers eager to improve picture quality found a new use for cathode ray tubes, which had been invented as a result of experiments to understand the behaviour of gasses back in 1897. In these sets electrons were accelerated through a vacuum tube towards a phosphor-coated screen, producing a bright spot where they hit. Magnetic fields deflected the electrons in a raster pattern, to generate the image.

1. Mirror drum type television

Six parts from a receiving set, various materials, maker unknown, about 1930
Left to right: tripod stand and screen, light track with grid cell, motor and control unit

2. Model BT 8090 Vision Unit (exterior)

Outer casing of television receiver with 7 inch black and white screen, manufactured by General Electric Company, England, 1938

3. Model BT 8090 Vision Unit (interior)

Inner workings of television receiver with 7 inch black and white screen, manufactured by General Electric Company, England, 1938

4. Brionvega Cuboglass Television

Set with remote. Designed by Design Centre Brionvega with Mario Bellini, manufactured by Brionvega Spa, Lissone, Italy, 1992

Purchased with funds from the MAAS Foundation, 2017

DAWN OF THE COMPUTER AGE

Completed in 1956, SILLIAC was the second computer ever built in Australia. The size of a room it had 2800 valves built on the same principle as cathode ray tubes (see opposite panel). It computed thousands of calculations per second — super quick for its day, but a million times slower than a smartphone. As interest in electronic computing grew, so did the desire for more speed and memory. One of the earliest forms of random-access memory (RAM) was magnetic core memory, which was invented in the 1950s drawing on earlier experiments in magnetism. Metal wire threaded through hundreds of rings, or ‘cores’, made from ferrite, a ceramic-like material, carried electrical pulses magnetising the rings. Each core stored one bit of data.

5. SILLIAC component

Vacuum tube register consisting of a semi-circular frame of aluminium and Bakelite, 70 valves and 200 resistors arranged in six rows of 12, with various wire connections. From the University of Sydney’s SILLIAC computer, Australia, 1955–56

6. Memory array

Ferrite core computer memory with four layers of memory arrays, made from metal, plastic and electronic components, maker unknown, about 1970

Donated through the Australian Government’s Cultural Gifts Program in memory of Associate Professor Allan Bromley, 2010

7. Printed circuit card

Ferrite core computer memory on a printed circuit card with 48x8 bits of memory. Made from synthetic resin bonded paper and electronic components, maker unknown, about 1970-75

Donated through the Australian Government’s Cultural Gifts Program in memory of Associate Professor Allan Bromley, 2010

8. Apple MacBook Air

Laptop computer used by Australian adventurers, James Castrission and Justin Jones on their 'Crossing the Ice' Antarctic expedition 2011–12. Designed by Apple Inc, Cupertino, California, USA, made in China 2011

Donated through the Australian Government's Cultural Gifts Program by James Castrission, Justin Jones and Crossing the Ditch Pty Ltd, 2013

9. Apple iPhone 3GS 16GB

Internet enabled mobile phone designed by Sir Jonathan Ive and the Apple Industrial Design Group, California, USA. Made by Foxconn, China, 2008

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