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NEIL SCLATER
JOHN MARKUS

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DARPA

tion is that of an *emitter follower*. The output is taken across a resistor from the emitter of the second transistor to ground. The input resistance at the base of the first transistor is raised to a higher value than that of a single transistor emitter-follower circuit.

DARPA Abbreviation for *Defense Advanced Research Projects Agency*; now called *ARPA* (Advanced Research Projects Agency).

d'Arsonval movement See *permanent magnet, moving-coil meter movement*.

DAS Abbreviation for *data-acquisition system*.

DASD Abbreviation for *direct-access storage device*.

dashpot A device with a piston that moves in a gas- or liquid-filled chamber to absorb energy and delay the opening of electrical contacts. In *magnetic circuit breakers*, it delays the opening of its contacts long enough to allow the passage of harmless transients. See *magnetic circuit breaker time delay*.

data A general term for the words, numbers, letters, and symbols that serve as input for communications and computer processing. It is commonly treated as a collective noun, for use with a singular verb.

data acquisition The process of acquiring data that tracks changes in physical variables such as temperature, pressure, flow rate, and hydrogen ion concentration in factories, process plants, or laboratories. These variables are measured by *thermocouples*, *strain gauges*, *flowmeters*, and *pH meters*. This data can be displayed at the measurement site in analog form on meter or chart recorders, or it can be converted to a digital format by an *analog-to-digital converter* [ADC] for local display. The digitized data can then be transmitted over wires with no loss in accuracy to a remote process control room for display, further processing, printout, or storage in computer memory.

data bank One or more collections of data, generally stored on magnetic tapes or disks in a form suitable for computer processing. It is also called a *data base*.

data base *Data bank*.

data communications equipment [DCE] Devices or circuits that provide the functions required to establish, maintain, and terminate a data transmission line, such as those of a modem.

data compression A technique for reducing the number of bits in the original data without information loss for more efficient and faster transmission. The receiver expands the received data bits into the original bit sequence.

data concentrator A device that takes data from several different teleprinter or other slow-speed lines and feeds them to a single higher-speed line. A microprocessor can perform this function.

data converter A converter that changes data from one form to another, as from laser marks on a CD-ROM to magnetic domains on a disk drive.

data domain The aspect of digital systems that is characterized by data flows, data formats, equipment architecture, and state-space concepts.

data element A basic unit of information, such as age, sex, payroll number, geographic location, date, or time.

data encryption The transformation of computer data into a form that is unreadable by nonauthorized recipients. The protection system is based on use of a unique

encryption key assigned to each customer. Data is encrypted with its key at the point of transmission and decrypted at the receiving point.

data-encryption unit [DEU] A computer peripheral device that encrypts blocks of text words with a specified key to produce cipher words. It is reversible for decrypting.

data-flow diagram A graphic representation of a communication system in which data transmitters, data receiver, data storage, and the processes performed on data are shown as nodes, and the logical flow of data is shown as links between nodes.

data format The organization of digital information in a computer storage medium. Typically hierarchical, the format includes specifications for the low-level data recording and high-level file system organization.

data-handling capacity The maximum number of units of information that can be transmitted, received, processed, stored, or otherwise handled by a specific piece of equipment.

data link A wire, radio, or other data-transmission channel used for connecting data-processing equipment to an input terminal, output or display device, or other remotely located data-processing equipment.

data logging The recording and printing of the output values of the sensors and transducers monitoring processes such as the fractional distillation of petroleum or the generation of power in a power station in real time as they occur. Data can be logged in analog form on mechanical printers, but in the latest systems the data is converted from an analog to a digital format for transmission to a remote computer for further processing and computer printout.

data path The path followed through a circuit by a signal being processed. This path can be traced through the circuit stage by stage for fault isolation.

data processing Changing the form, meaning, appearance, location, or other characteristics of data. Processing includes data handling and data reduction.

data processor A circuit or system that processes data by such steps as entering it into the computer, formatting it, modifying or enhancing it, performing programmed calculations, and storing it for further reference. Data processing can be performed by *computers*, *personal communicators*, and *facsimile machines*.

data set ready [DSR] An RS-232C modem interface control signal that indicates when a terminal is ready for signal transmission.

data signaling rate The data-handling capacity of a set of parallel transmission channels, expressed in bits per second.

data source A device capable of originating signals for a data-transmission system.

data terminal equipment [DTE] A circuit, such as a terminal, that acts as a data source, a data sink, or both.

data terminal ready [DTR] An RS-232C modem interface control signal that indicates to the modem that the data terminals are ready for transmission.

data tone multiple frequency [DTMF] The audio signaling frequency on pushbutton Touch Tone telephones.

data transcription The conversion of data from one recorded form to another, as from magnetic tape to magnetic disks.

rial appears to become perfectly diamagnetic. The induced magnetization opposes the applied magnetic field so effectively that there is no magnetic field in the material.

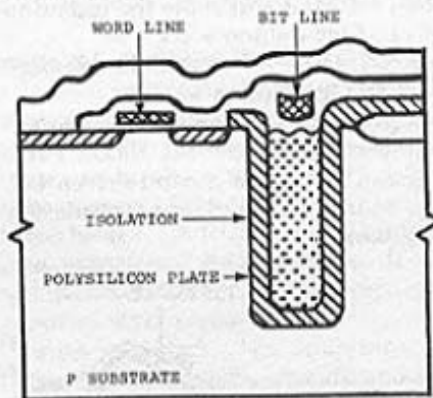
mel A unit of pitch. By definition, a simple 1-kHz tone 40 dB above a listener's threshold produces a pitch of 1000 mels. The pitch of any sound that is judged by the listener to be n times that of the 1-mel tone is n mels.

memory A device that stores information in electrical, magnetic, or optical form. In computers, memories accept and hold binary numbers only. Among the many forms of memory are charge-coupled devices (CCD), magnetic bubble memories (MBM), random-access memories (RAM), read-only memories (ROM), floppy disks, and Winchester hard disks.

memory capacity *Storage capacity.*

memory card A solid-state memory device packaged as a plug-in card module. There are three kinds: flash, dynamic random-access [DRAM], and static random access [SRAM]. Both DRAM and SRAM cards require a power source. (It can be a battery for SRAM cards.) Flash cards do not require power. The modules are typically packaged in PCMCIA standard Type I, II, and III cases. The cards are components in digital cameras, personal digital assistants [PDAs], pagers, and cellular telephones. See also *memory module*.

memory cell A single storage element of a memory, together with associated circuits for storing and reading out 1 bit of information.



Memory cell structure based on a 0.7- μ m CMOS process.

memory integrated circuit A memory that consists of cell matrices that include address selection and amplification circuits. It stores information as binary numbers. See *volatile memory*, *nonvolatile memory*, *field-programmable memory*, *erasable memory*, *random-access memory*, and *read-only memory*.

memory module An assembly of four to six semiconductor integrated circuit memory devices mounted on a circuit board for insertion onto an existing computer circuit board to supplement the computer's memory. It is typically organized as a plug-in, single-in-line (SIP) component.

MEMS Abbreviation for *microelectromechanical systems*.

menu In computer technology, command options available to the computer user in the form of either a row of icons or a written list.

MEO Abbreviation for *medium earth orbit*, the medium altitude orbit of a satellite orbiting the earth. See also *low earth orbit (LEO)*.

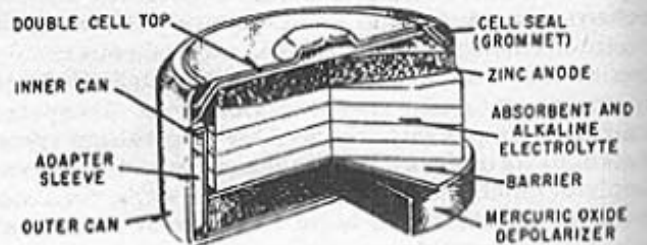
mercuric telluride [HgTe] An intermetallic compound that has characteristics similar to those of indium antimonide.

mercury [Hg] A silvery white liquid metal that becomes a solid at -40°C . It is used in mercury switches and electron tubes because the vapor of mercury ionizes readily and conducts electricity. The green line of mercury 198 very closely approaches pure monochromatic light. Its atomic number is 80.

mercury arc An electric discharge through ionized mercury vapor; it gives off a brilliant bluish green light that contains strong ultraviolet radiation.

mercury battery A battery consisting of mercury cells.

mercury cell A *primary* low-voltage power cell, typically made as a *button cell* for powering watches, hearing aids, and other low-power portable circuits. It has a nominal voltage of 1.3 V and energy density of 100 Wh/Kg or 470 Wh/L. It is being replaced by other button cells such as silver-oxide and zinc/air because mercury is toxic. It is also called the *zinc-mercuric-oxide cell*.

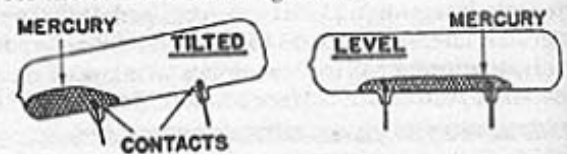


Mercury cell with flat pellet structure. Other versions use cylindrical structures.

mercury delay line An acoustic delay line with mercury as the medium for sound transmission.

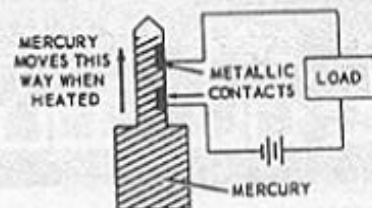
mercury relay A relay containing mercury that when moved by a magnetic plunger connects the relay contacts together.

mercury switch A switch that is closed by tilting the switch body so that a large globule of mercury moves across the contacts to bridge them.



Mercury-switch construction and operation.

mercury thermostatic switch A thermostatic switch in which heat causes mercury to expand and complete a circuit between contacts that project into the mercury column.



Mercury thermostatic switch.

serial programming Programming in which only one operation is scheduled at one time.

serial storage architecture [SSA] A serial interface for computer networks.

serial transfer Transfer of the characters of an element of information in sequence over a single path in a digital computer.

series 1. An arrangement of circuit components end to end to form a single path for current. 2. The indicated sum of a set of terms in a mathematical expression, as in an alternating series or an arithmetic series.

series circuit A circuit that has all parts connected end to end to provide a single path for current.

series coil The coil that carries the main current in a rotating machine or other device. The shunt coil is connected across the line and usually carries only a small current.

series connection A connection that forms a series circuit.

series element A two-terminal element connected to complete the only path existing between two nodes of a network. Any mesh including one series element must include all the other series elements of the mesh.

series excitation A motor or generator characteristic for obtaining field excitation by allowing the armature current to flow through the field winding.

series-fed vertical antenna A vertical antenna that is insulated from the ground and energized at its base. It is also called an end-fed vertical antenna.

series feed The application of direct voltage to the anode of a tube, the collector of a transistor, or the drain of a FET through the load that is carrying the output signal current. See also *shunt feed*.

series loading Loading in which reactances are inserted in series with the conductors.

series motor A commutator-type motor that has armature and field windings in series. Its characteristics are high starting torque, variation of speed with load, and dangerously high speed on no-load. It is also called a series-wound motor.

series-parallel switch A switch that changes the connections of lamps or other devices from series to parallel, or vice versa.

series peaking The use of a peaking coil and resistor in series as the load for a video amplifier to produce peaking at some desired frequency in the passband. It can compensate for previous loss of gain at the high-frequency end of the passband.

series regulator A transistor in linear power supplies that is connected in series with the load to achieve a constant voltage across the load. Feedback action on the transistor changes its voltage drop, as required, to maintain the constant DC output voltage. It can be part of the stand-alone power supply or part of the host equipment. See *linear regulator*.

series resonance Resonance in a series resonant circuit when the inductive and capacitive reactances are equal at the frequency of the applied voltage. The reactances then cancel each other, reducing the impedance of the circuit to a minimum purely resistive value. Signal current is then a maximum, and the signal voltage developed across either the coil or capacitor can be several times the voltage

series resonant circuit A resonant circuit that has a capacitor and coil in series with the applied AC voltage.

series T junction A junction in which the impedance of the branch waveguide is predominantly in series with the impedance of the main waveguide.

series-wound motor *Series motor*.

serrated pulse A pulse that has notches or sawtooth indentations in its waveform.

serrated rotor plate *Slotted rotor plate*.

serrated vertical pulse A vertical synchronizing pulse that is broken up by five notches which extend down to the black level of a television signal. It gives six component pulses, each lasting about 0.4 line to keep the horizontal sweep circuits in step during the vertical sync pulse interval.

serrodyne A phase modulator based on the transit-time modulation of a traveling-wave tube or klystron.

server A computer, generally a mainframe or minicomputer/workstation in a network, with large memory capacity assigned to the storage of programs and data not stored in the memories of typical network computers or terminals.

service area The area that is effectively served by a given radio or television transmitter, navigation aid, or other type of transmitter. It is also called coverage.

service band A band of frequencies allocated to a given class of radio service.

service life The length of time that a battery or other active device will provide specified performance under specified conditions of use.

service test A test made under simulated or actual conditions of use to determine the characteristics, capabilities, and limitations of a product.

serving A covering, such as thread or tape, that protects a winding from mechanical damage.

servo *Servomotor*.

servoamplifier An amplifier in a servosystem.

servomechanism A mechanical component in a *servosystem*.

servomotor The electric, hydraulic, or other type of motor that serves as the final control element in a servosystem. It receives power from the amplifier element and drives the load with a linear or rotary motion. It is also called a servo.

servo multiplier An electromechanical multiplier that has one variable which positions one or more ganged potentiometers across which the other variable voltages are applied.

servosystem A *closed-loop control system* for the control of speed, position, or both in machine tools, robots, military fire-control systems, and other electromechanical systems driven by electrical, hydraulic, or pneumatic motors.

sesqui-sideband transmission Transmission of a carrier modulated by one full sideband and half of the other sideband.

set 1. A radio or television receiver. 2. A combination of units, assemblies, and parts connected or otherwise joined together to perform an operational function, such as a radar system. 3. To place a memory device such as a flip-flop in a prescribed state, such as placing it in the 0 state or in the 1 state.

set point The value selected that is to be maintained by an