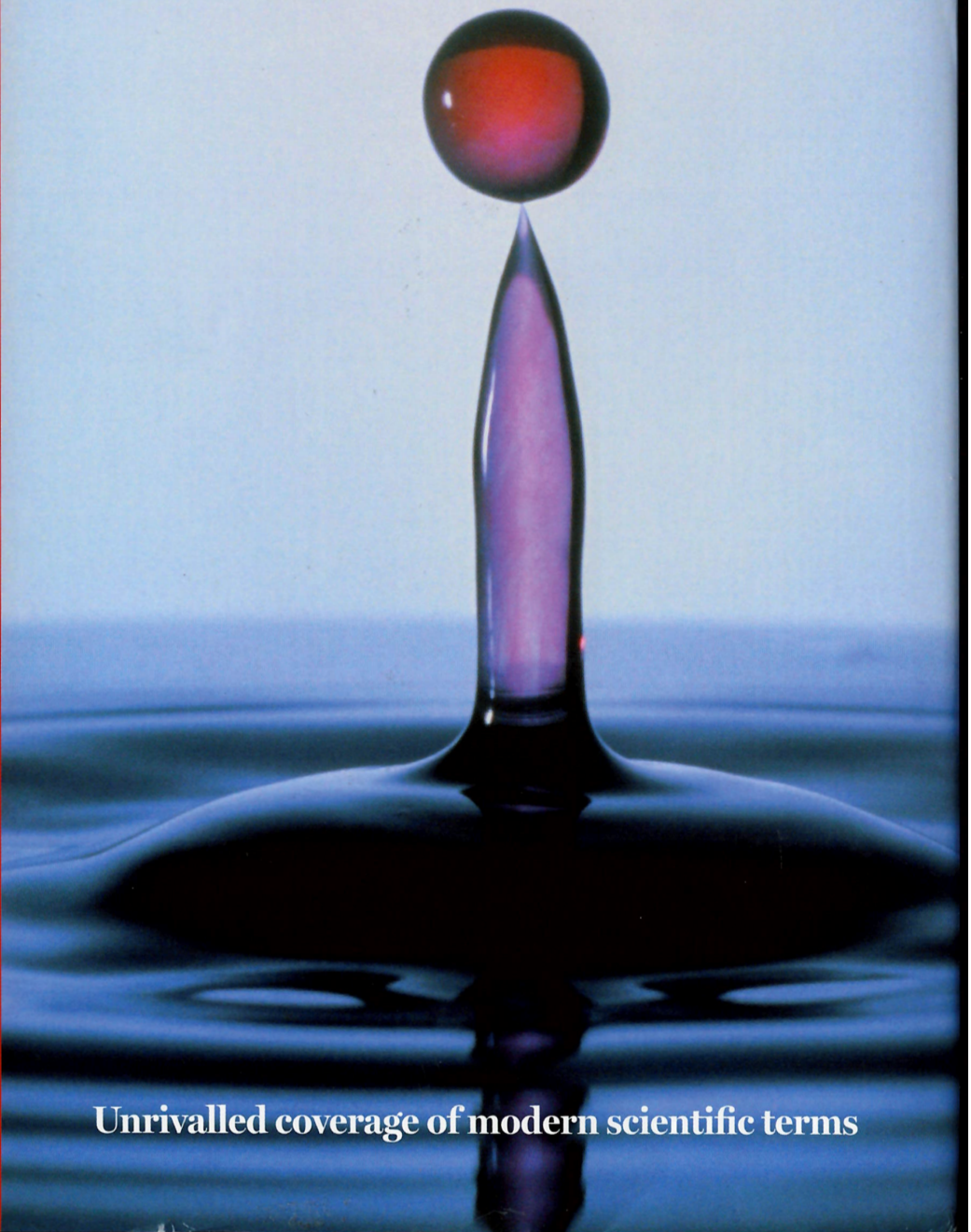


Chambers Dictionary of Science and Technology



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Chambers Dictionary of Science and Technology

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electrolytic tank (*ElecEng*) A device used to simulate field systems, eg the electrostatic field around the electrodes in a cathode-ray tube. The tank is filled with a poorly conducting fluid in which is immersed a scale model in metal of the desired system. Appropriate voltages are applied between the various parts and the equipotentials are traced out using a suitable probe.

electrolytic zinc (*Eng*) Zinc produced from its ores by roasting (to convert sulphide to oxide), solution of oxide in sulphuric acid, precipitation of impurities by adding zinc dust, and final electrolytic deposition of zinc on aluminium cathodes. Product has purity over 99.9%.

electromagnet (*ElecEng*) Soft-iron core, embraced by a current-carrying coil, which exhibits appreciable magnetic effects only when current passes.

electromagnetic brake (*ElecEng*) A brake in which the braking force is produced by the friction between two surfaces pressed together by the action of a solenoid, or by magnetic attraction, the necessary flux being produced by an electromagnet.

electromagnetic clutch (*Autos, Eng*) A friction clutch without pressure springs, operated by a solenoid. A switch in the base of the gear lever breaks the circuit and releases the pressure for gear changes.

electromagnetic component (*ICT*) Strictly, that component of the combined field surrounding a transmitting antenna which represents the radiated energy.

electromagnetic control (*ElecEng*) A form of remote control for switchgear etc in which operation is effected by means of a solenoid.

electromagnetic damping (*ElecEng*) See MAGNETIC DAMPING.

electromagnetic deflection (*Electronics*) Deflection of the beam in a cathode-ray tube by a magnetic field produced by a system of coils carrying currents, eg for scanning a TV image or for providing a time-base deflection.

electromagnetic field theory (*Phys*) Theory based on MAXWELL'S EQUATIONS describing ELECTROMAGNETIC WAVES (including visible light), interdependent transverse waves of electric and magnetic fields.

electromagnetic focusing (*Electronics*) The focusing of a beam of charged particles by magnetic fields associated with current-carrying coils. Used in the cathode-ray tube and electron microscope. See ELECTRON LENS and panel on ELECTRON MICROSCOPE.

electromagnetic generator (*ElecEng*) An electric generator which depends for its action on the induction of emfs in a circuit by a change in the magnetic flux linking with that circuit.

electromagnetic horn (*ICT*) See HORN ANTENNA.

electromagnetic induction (*ElecEng*) The transfer of electrical power from one circuit to another by varying the magnetic linkage. See FARADAY'S LAW OF INDUCTION.

electromagnetic inertia (*ElecEng*) The energy required to stop or start a current in an inductive circuit. Inductance is analogous to mass in a mechanical system.

electromagnetic instruments (*ElecEng*) Electrical measuring instruments whose action depends on the electromagnetic forces set up between a current-carrying conductor and a magnetic field. See DYNAMOMETER, MOVING-COIL INSTRUMENT.

electromagnetic interaction (*Phys*) An interaction between charged elementary particles and mediated by PHOTONS; completed in about 10^{-18} s. Intermediate in strength between strong and weak interactions. See panel on GRAND UNIFIED THEORIES.

electromagnetic lens (*Electronics*) One using current-carrying coils to focus electron beams.

electromagnetic loudspeaker (*Acous*) A device where a fluctuating magnetic field, induced by an electric current, excites a force in magnetic material connected to the loudspeaker cone. Also *inductor loudspeaker*.

electromagnetic microphone (*Acous*) The inverse of an ELECTROMAGNETIC LOUDSPEAKER.

electromagnetic mirror (*ElecEng*) A reflecting surface for electromagnetic waves.

electromagnetic moment (*Phys*) The magnetic moment of a current-carrying coil; given by the product of the current, coil area and number of turns.

electromagnetic pickup (*Acous*) Pickup in which the motion of the stylus, in following the recorded track, causes a fluctuation in the magnetic flux carried in any part of a magnetic circuit, with consequent emfs in any coil embracing such magnetic circuit.

electromagnetic pole piece (*ElecEng*) In a U-shaped core, the pole pieces are attached at the free end and are often conical in shape to concentrate the magnetic field in the air-gap.

electromagnetic prospecting (*Geol*) A method in which distortions produced in electric waves are observed and lead to pinpointing of geological anomalies.

electromagnetic pump (*ElecEng*) A pump designed to conduct fluids, eg liquid metals, and to maintain circulation without moving parts.

electromagnetic radiation (*Phys*) The emission and propagation of ELECTROMAGNETIC WAVES.

electromagnetic reaction (*ElecEng*) The reaction between the anode and grid circuits of a valve obtained by electromagnetic coupling; also *inductive reaction, magnetic reaction*.

electromagnetic separation (*MinExt*) Removal of ferromagnetic objects from town refuse, or TRAMP IRON from bulk materials, as they travel along a conveyor, over a drum or into a revolving screen, by setting up a magnetic field which diverts the ferromagnetic material from the rest. Concentration of ferromagnetic minerals from gangue.

electromagnetic separation (*NucEng*) Isotope separation by ELECTROMAGNETIC FOCUSING, as in a mass spectrometer.

electromagnetic spectrum (*Phys*) See ELECTROMAGNETIC WAVE and appendices.

electromagnetic switch (*ElecEng*) A switch moved by electromagnets or solenoids.

electromagnetic theory (*Phys*) See ELECTROMAGNETIC FIELD THEORY.

electromagnetic units (*Phys*) Any system of units based on assigning an arbitrary value to μ_0 , the permeability of free space.

$$\mu_0 = 4\pi \times 10^{-7} \text{ H m}^{-1}$$

in the SI system; μ_0 is unity in the CGS electromagnetic system.

electromagnetic wave (*Phys*) A wave comprising two interdependent mutually perpendicular transverse waves of electric and magnetic fields. The speed of propagation in free space for all such waves is that of the speed of light, $2.997\,924\,58 \times 10^8 \text{ m s}^{-1}$. The electromagnetic spectrum ranges from wavelengths of 10^{-15} m to 10^5 m , ie including gamma rays, X-rays, ultraviolet radiation, visible light, infrared radiation, microwaves and radio waves. Electromagnetic waves undergo reflection and refraction, exhibit interference and diffraction effects, and can be polarized. The waves can be channelled, eg by waveguides for microwaves or fibre optics for visible light.

electromagnetism (*ElecEng*) The science of the properties of, and relations between, magnetism and electric currents. Also *electromagnetics*.

electromechanical brake (*ElecEng*) An electric brake in which the braking force is due partly to the attraction of two magnetized surfaces and partly to friction of the clamping action caused by the solenoid.

electromechanical counter (*ElecEng*) One which records mechanically the number of electric pulses fed to a *solenoid*.

electromechanical recorder (*ElecEng*) One which changes electrical signals into a mechanical motion of a similar form, and cuts or records the shape of the motion in an appropriate medium.

sometimes the fuselage) are inflated so that it can be compactly packed for transport.

inflation (*Aero*) The process of filling an airship or balloon with gas. Also *gassing*.

inflationary universe (*Astron*) A model of the very early universe (10^{-44} seconds after the Big Bang) in which the universe expands momentarily much faster than the speed of light. This model is able to account for the flatness of space-time and the isotropy of the observed universe. See panel on *COSMOLOGY*.

inflected arch (*CivEng*) See *INVERTED ARCH*.

inflexion (*MathSci*) See *POINT OF INFLEXION*.

infiximab (*Pharmacol*) A therapeutic antibody used to treat Crohn's disease and some types of arthritis.

inflorescence (*BioSci*) (1) Flowering branch (or portion of the shoot above the last stem leaves) including its branches, bracts and flowers. See *CAPITULUM*, *CYMOSE*, *MIXED INFLORESCENCE*, *PANICLE*, *RACEMOSE*, *UMBEL*. (2) In bryophytes, a group of antheridia or archegonia and associated structures.

influence line (*Build, Eng*) A curve whose ordinate represents the value of some variable (such as the bending moment) at particular points in the structure, due to the application of a unit load at that point. Also *load curve*.

influence machine (*ElecEng*) See *ELECTROSTATIC GENERATOR*.

influenza (*Med, Vet*) An airborne respiratory virus infection, causing epidemics which are often worldwide, but whose severity varies with the (constantly changing) virus type. Abbrev *flu*. See *EQUINE INFLUENZA*, *SWINE INFLUENZA*.

information (*Genrl*) Meaning given to data through analysis and interpretation.

information (*ICT*) Any intelligence (code, speech, images, etc) that can be communicated to a remote destination by electrical or electromagnetic means.

information content (*ICT*) In information theory, a measure of the information conveyed by the occurrence of an allowable symbol in a transmitted message; defined as the negative of the probability that this particular symbol might be sent. If the base of the logarithm chosen is 2, then information content is measured in hartleys: 1 hartley equals $\log_2 10$, or 3.323 BITS.

information processing (*ICT*) The organization, manipulation and distribution of information. Central to almost every use of the computer and almost synonymous with computing.

information rate (*ICT*) The number of symbols transmitted per second multiplied by the average *INFORMATION CONTENT* per symbol. See *BIT*.

information retrieval (*ICT*) Abbreviated expression for *information storage and retrieval*. A major branch of *COMPUTER SCIENCE* concerned with the use of computers to structure and retrieve information from large information stores. Data retrieval is the special case where the nature of the information stored is fully expressed and retrieval involves perfect matching. The more difficult situation occurs when, as in document retrieval, the nature of the stored information cannot be fully summarized and the request for information does not fully anticipate the nature of the response. Abbrev *IR*. See *KEYWORDS*.

information storage and retrieval (*ICT*) See *INFORMATION RETRIEVAL*.

information superhighway or highway (*ICT*) Digital electronic telecommunication systems, including computer networks (esp the Internet), cable and satellite TV, and telephone links. See panel on *INTERNET*.

information technology (*ICT*) Abbrev *IT*. The application to *INFORMATION PROCESSING* of current technologies from computing, *MICROELECTRONICS* and *TELECOMMUNICATIONS*. Now more commonly *information and communications technology*, abbrev *ICT*.

information theory (*ICT*) Mathematical study of the information rate, channel capacity, noise and other factors

affecting information transmission and reception. Initially applied to electrical communications, now applied universally to business systems and other areas concerned with information in its broadest sense and its flow through networks. See *SHANNON'S THEOREM*.

infra- (*Genrl*) Prefix from *Lt infra*, below.

infrablack (*ImageTech*) The amplitude in a TV signal beyond the black level of the picture.

infracostal (*Med*) Beneath the ribs.

infradyne (*ICT*) Supersonic heterodyne receiver in which the intermediate frequency is higher than that of the incoming signal.

inframarginal (*BioSci*) Below the margin; a marginal structure; in tortoises and turtles, one of certain plates of the carapace lying below the marginals; in star fish, one series of ossicles situated on the lower margin of each ray.

infraorbital foramen (*BioSci*) In mammals, a foramen on the outer surface of each maxilla for the passage of the second division of the fifth cranial nerve.

infraorbital glands (*BioSci*) In mammals, one of the four pairs of salivary glands.

infrared astronomy (*Astron*) The study of radiation from celestial objects in the wavelength range 800 nm–1 mm. Absorption by water vapour in our atmosphere poses severe difficulties, some of which are overcome at high-altitude observatories such as Mauna Kea in Hawaii at 4000 m. There are many thousands of infrared sources in our Galaxy, principally cool giant stars, nascent stars and the galactic centre itself.

infrared countermeasures (*Aero*) Means of deceiving missiles guided by infrared sensors by (1) flares deployed as decoys from aircraft or (2) in design, by reducing heat output from jet exhaust or shielding hot parts.

infrared detection (*Phys*) The detection and photographic registration of infrared rays with special dyes: photosensitively with a special Cs–O–Ag surface; by photoconduction of lead sulphide and telluride; and, in absolute terms, by bolometer, thermistor, thermocouple or Golay detector.

infrared maser (*Phys*) A maser which radiates or detects signals of millimetre wavelengths. See panel on *LASER*.

infrared photography (*ImageTech*) Photography using materials specially sensitized to infrared radiation; applications include photography without visible light, haze penetration, camouflage and forgery detection and medical records. See *FALSE COLOUR*.

infrared radiation (*Phys*) Electromagnetic radiation in the wavelength range of 0.75–1000 μm approximately, it between the visible and microwave regions of the spectrum. The *near* infrared is from 0.75 to 1.5 μm , the *intermediate* from 1.5 to 20 μm and the *far* from 20 to 1000 μm . See fig. at appendix on *Electromagnetic spectrum*.

infrared spectrometer (*Phys*) An instrument similar to an optical spectrometer but employing non-visual detection and designed for use with infrared radiation. The infrared spectrum of a molecule gives information as to the functional groups present in the molecule and is very useful in the identification of unknown compounds.

infrared spectroscopy (*Phys*) Routine analytical tool for detection of functional groups by infrared absorption in molecules, esp polymers, which can be easily examined in thin-film form. Can also use fluid smear on sodium chloride disks. Absolute structure determination is more difficult than matching unknown spectrum with standard spectra, although additives cause problems by obscuring the spectrum of the matrix polymer. Analysts then turn to *NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY* or *ULTRAVIOLET SPECTROSCOPY* if a polymer solution can be made.

infrasound (*Acous*) The sound of frequencies below the usual audible limit of 20 Hz.

infundibulum (*BioSci*) (1) Generally, a funnel-shaped structure. (2) In vertebrates, a ventral outgrowth of the brain or a pulmonary vesicle. (3) In *CEPHALOPODA*, the

lift engine (*Aero*) An engine used on VTOL or STOL aircraft, having the primary purpose of providing lifting force. It is shut down in normal flight and the intake usually closed by a sealing flap.

lifter (*Eng*) An L- or Z-shaped bar of cast- or wrought-iron, used for supporting the sand in a cope, the upper end being hooked on to a box bar.

lifter (*MinExt*) (1) Projecting rib or wave in lining plates of ball or rod mill. (2) Perforated plate in drum washer or heavy media machine which aids tumbling action or removes floating fraction of ore being treated.

lifting (*Build*) The result of applying a paint on top of a coating which is not fully dry. This can also happen when subsequent coats of paint contain excessively strong solvents.

lifting blocks (*Eng*) A lifting machine consisting of a continuous rope passing round pulleys mounted in blocks, whereby an effort applied at the free end of the rope lifts a larger weight attached to the lower block. See MECHANICAL ADVANTAGE.

lifting magnet (*ElecEng*) A large electromagnet used, instead of a hook, on cranes or hoists, when lifting iron and steel.

lifting of patterns (*Eng*) See DRAWING OF PATTERNS.

lifting screw (*Eng*) An iron rod screwed into a pattern to withdraw it from the mould.

lifting the offsets (*Ships*) The process of measuring the ship's form as 'laid off' on buttocks, waterlines and sections. These offsets are the permanent record and are used to reproduce the ship's form, initially, for design work and ordering material and, subsequently, in cases of repair or alterations.

lifting truck (*Eng*) A truck with three or four wheels, drawn by a handle which can be raised and lowered to lift a loaded platform standing on feet. The lift is effected either by leverage or by hydraulic mechanism.

lift-lock (*Build*) A canal lock serving to lift a vessel from one reach of water to another, the lock, water and vessel being raised mechanically.

lift-off (*Aero*) The speed at which a pilot pulls back on the control column to make an aircraft leave the ground. It is a carefully defined value for large aircraft depending upon the weight, runway surface, gradient, altitude and ambient temperature. It is one of the functions established from WAT CURVES. Colloq *unstick*.

lift-off (*Space*) The point at which the vertical thrust of a spacecraft exceeds the force due to local gravity and the spacecraft begins to leave the ground.

lift-valve (*Eng*) Any valve consisting of a disk, ball, plate, etc, which lifts or is lifted vertically to allow the passage of a fluid.

ligament (*BioSci*) A bundle of fibrous tissue joining two or more bones or cartilages.

ligand field theory (*Chem*) An essentially ionic interpretation of bonding in transition metal compounds, in which the spectroscopic and magnetic properties are rationalized in terms of the distortion of the non-bonding d-electrons of the metal by the electric field of the ligands.

ligand-gated ion channel (*BioSci*) A transmembrane ION CHANNEL whose permeability to certain ions is increased by the binding of a specific ligand, eg a neurotransmitter such as GAMMA AMINO BUTYRIC ACID or ACETYLCHOLINE.

ligands (*Chem*) (1) In a complex ion, the ions, atoms or molecules surrounding the central (nuclear) atom, eg $(CN)^-$ in $Fe(CN)_6^{4-}$. (2) More generally, esp in bioscience, small molecules that bind to receptors.

ligase (*BioSci*) An enzyme that seals nicks in one strand of a duplex DNA, much used to seal the gaps formed when one DNA sequence is artificially inserted into another.

ligasoid (*Phys*) A colloidal system in which the continuous phase is gaseous and the dispersed phase is liquid.

ligate (*Med*) To tie with a ligature. N *ligation*.

ligation (*BioSci*) Joining two linear nucleic acid molecules together by a phosphodiester bond. Such linear molecules often have STICKY ENDS which facilitate ligation.

ligature (*Med*) A piece of thread, silk, wire, catgut or any other material, for tying round blood vessels etc.

ligature (*Print*) Two or more letters, originally cast together on one body, eg

ct ff ffi ffl st

light (*Build*) (1) A term applied to any glazed opening admitting light to a building. (2) A single division of a window.

light (*Glass*) Of optical glass, having a lower refractive index.

light (*Phys*) (1) Electromagnetic radiation capable of inducing visual sensation, with wavelengths between about 380 and 780 nm. (2) More generally, electromagnetic waves of any wavelength, including eg ultraviolet and infrared radiation. See ILLUMINATION, SPEED OF LIGHT.

light-adapted (*Phys*) See ADAPTATION OF THE EYE.

light air (*EnvSci*) A wind of between about 1 and 3 mph, force 1 on the Beaufort scale.

light aircraft (*Aero*) One having a maximum take-off weight less than 12 500 lb (5670 kg).

light alloys (*Eng*) Alloys based on the low-density metals aluminium and magnesium. See ALUMINIUM ALLOYS.

light breeze (*EnvSci*) A wind of between about 4 and 7 mph, force 2 on the Beaufort scale.

light-centre length (*ElecEng*) The distance from the geometrical centre of the filament of an electric filament lamp to the contact plate or plates at the end of the lamp cap remote from the bulb. With automobile headlight lamps the measurement is taken from the bulb side instead of from the remote side of the pin.

light chain (*BioSci*) A polypeptide chain present in all immunoglobulin molecules. In most molecules two identical light chains are linked to two heavy chains by disulphide bonds. There are either of two types of light chain, KAPPA and LAMBDA, but never both on the same molecule. Light chains have an N-terminal variable region that forms part of the antigen combining site and a C-terminal constant region.

light change points (*ImageTech*) The series of preset steps of exposure used in a motion picture film printer; abbrev LCP. (US printer lights).

light-curve (*Astron*) The line obtained by plotting, on a graph, the apparent change of brightness of an object (such as a variable star or supernova) against time.

light distribution curve (*Phys*) A graph showing the relation between the luminous intensity of a light source and the angle of emission.

light efficiency (*Phys*) The ratio of total luminous flux over total power input, expressed in lumens per watt for eg an electric lamp.

light-emitting diode (*Electronics*) Semiconductor diode which radiates in the visible region. Used in alphanumeric displays and as an indicator or warning lamp. Abbrev LED. See OPTOELECTRONICS.

lighter-than-air craft (*Aero*) See AEROSTAT.

light face (*Print*) A lighter weight of typeface, 'medium' being the usual normal in the TYPE FAMILY.

light fastness (*Build*) The ability of paint pigments or dyes to retain their colour when exposed to light.

light filter (*ImageTech*) A filter used in photography etc to change or control the total (or relative) energy distribution from the source. It consists of a homogeneous optical medium (sometimes of a specific thickness as in interference filters) with characteristic light absorption regions. Can be graded for special effects.

light flux (*Phys*) The measure of the quantity of light passing through an area, eg through a lens system. Light flux is measured in lumens. Illumination is light flux per unit area.

light fog (*ImageTech*) See FOG.

lighting contrast (*ImageTech*) The ratio between the level of the KEY LIGHT plus filler to the FILLER LIGHT alone.

light meter (*ImageTech*) A device for measuring the intensity of incident or reflected light, usually comprising a photosensitive cell and a meter; when this measurement is expressed as the corresponding camera lens aperture and exposure time for a given photographic sensitivity, it becomes an EXPOSURE METER.

lightness (*ImageTech*) The degree of illumination of a surface, measured in lumens per square metre.

lightning (*EnvSci*) The luminous discharge of electric charges between clouds, and between cloud and earth (or sea). A path is found by the *leader stroke*, the main discharge following along this ionized path, with possible repetition. See THUNDERSTORM.

lightning arrester (*ElecEng*) A device for the protection of apparatus from damage by a lightning discharge or other accidental electrical surge. A surge arrester is effectively a shunt device whose impedance is sensitive to voltage. At normal operating voltage, impedance is high, but, under conditions of overvoltage, the impedance reduces and the device protects by providing a bypass path for the surge.

lightning conductor (*ElecEng*) A metal strip connected to earth at its lower end, and its upper end terminated in one or more sharp points where it is attached to the highest part of a building. By electrostatic induction it will tend to neutralize a charged cloud in its neighbourhood and the discharge will pass indirectly to earth through the conductor. Also *lightning rod*.

lightning protector (*ElecEng*) See LIGHTNING ARRESTER.

lightning rod (*ElecEng*) See LIGHTNING CONDUCTOR.

lightning tubes (*Min*) See FULGURITES.

light oils (*Chem*) A term for oils with a boiling range of about 100–210°C, obtained from the distillation of coaltar.

light painting (*ImageTech*) A photographic technique in which the camera shutter is opened and a fibre optic light hose or portable light is used to selectively light the subject in total darkness.

light pen (*ICT*) INPUT DEVICE used in conjunction with a GRAPHICAL DISPLAY UNIT. The graphical display unit's hardware, together with special software, senses the position of the pen and relays this information to the CENTRAL PROCESSING UNIT.

light quanta (*Phys*) When light interacts with matter, the energy appears to be concentrated in discrete packets called *photons*. The energy of each photon is $E = h\nu$ where ν is the frequency and h is PLANCK'S CONSTANT. See QUANTUM and panel on QUANTUM THEORY.

light railway (*CivEng*) One of standard or narrow gauge, subject to severe restrictions on speed, load, etc, and thereby relieved of many of the operating requirements (signalling etc) applied to mainline railways.

light reactions (*BioSci*) Those reactions in PHOTOSYNTHESIS in which light is absorbed, transferred between pigments, and used to generate the ATP and reduced NADP used in the DARK REACTIONS for CO₂ fixation. See PHOTOSYNTHETIC PIGMENTS, PHOTOSYSTEMS I AND II.

light-red silver ore (*Min*) See PROUSTITE.

light relay (*ICT*) A relay operating circuit using a photoelectric detector.

light resistance (*Electronics*) The resistance, when exposed to light, of a photocell of the photoconductive type. Cf DARK RESISTANCE.

light scattering (*Chem*) A method for determining molecular mass of molecules, esp soluble polymers. Gives absolute measure of M_w . See MOLECULAR MASS DISTRIBUTION.

light-sensitive (*Phys*) Said of a thin surface for which the electrical resistance, emission of electrons or generation of a current depends on the incidence of light.

light-spring diagram (*Eng*) An indicator diagram taken by a piston or diaphragm-type engine indicator, using a specially weak control spring or diaphragm in order to reproduce the low-pressure part of the diagram to a large scale.

light table (*Print*) A ground-glass surface, illuminated from below, there being a variety of sizes and styles, for use in

the graphic reproduction processes when working with negatives, positives and proofs. Also *shiner*.

light trap (*ImageTech*) General term for any mechanical arrangement which permits movement while excluding light, such as the doors and partitions for operational access to a dark room (light-lock) or the rollers and lips over which film passes from and into a magazine.

light-up (*Aero*) The period during the starting of a *turbojet* or *turboprop* engine when the fuel/air mixture has been ignited.

light valve (*ImageTech*) A device for rapidly varying light transmission and hence the exposure of motion picture film, as in photographic sound recording or in printing from an assembled negative.

light valve projector (*ImageTech*) A video projector using a schlieren optical system and a light valve, consisting of a transparent liquid film whose surface is optically distorted by an ELECTRON BEAM modulated by the picture signal, to produce an image in the light. See DIGITAL MICROMIRROR DEVICE, LIQUID CRYSTAL LIGHT VALVE.

light water (*Chem*) Normal water (H₂O) as distinct from HEAVY WATER (D₂O).

light-water reactor (*NucEng*) A reactor using ordinary water as moderator and coolant. See figs at BOILING-WATER REACTOR, PRESSURIZED-WATER REACTOR, REACTOR.

light watt (*Phys*) The photometric radiation equivalent, the radiation being measured in lumens or watts. The ratio of lumens to watts depends on the wavelength. At the wavelength of greatest sensitivity of the eye ($\lambda = 555$ nm), the value of the light watt is 682 lm.

lightweight aggregate (*Build, CivEng*) Aggregate which is used in the manufacture of lightweight concrete. Normally clinker ash or clays or other materials which have been fired to reduce their carbon content and weight.

lightweight concrete (*Build*) Concrete of low density (20–90 lb ft⁻³ or 300–1400 kg m⁻³) made by using special aggregates or air entraining processes. Used particularly where lightness and insulation are required rather than load-resisting properties.

lightwood (*For*) Coniferous wood having an abnormally high resin content.

light-year (*Astron*) An astronomical measure of distance, being the distance travelled by light in space during a year, which is approximately 9.46×10^{12} km.

ligne (*Genrl*) A unit used in the measurement of watch movements. It is equal to 2.256 mm. The *twelfth*, or *douzième* (0.188 mm), is the unit used for the height or thickness of a movement. There are twelve twelfths in a ligne. Women's wristwatches vary from 3 to 8 lignes; men's wristwatches from 10 to 13, pocket watches from 17 to 19, and deck watches from 20 to 32. Symbol *'''*. Also *line*.

lignicole (*BioSci*) Growing or living on or in wood, or on trees, eg certain species of termites. Adj *lignicolous*.

lignin (*BioSci*) A complex cross-linked polymer, based on variously substituted p-hydroxyphenyl propane (HOC₆H₄-) units; a constituent with cellulose etc of the cell walls of xylem tracheids and vessels and of many sclerenchyma and some parenchyma cells etc where its major function appears to be to impart rigidity to an otherwise flexible wall. See panel on WOOD.

lignite (*Geol*) A brownish, black coal intermediate between peat and sub-bituminous coal. It is commoner than coal in Mesozoic and Tertiary deposits. Also *brown coal*.

lignivorous (*BioSci*) Wood-eating.

lignocaine (*Med*) See LIDOCAINE.

ligno-celluloses (*Chem*) Compounds of lignin and cellulose found in wood and other fibrous materials.

lignum vitae (*For*) One of the hardest and densest commercial timbers; some 25% of its dry weight is guaiac resin which makes it self-lubricating. A hardwood (*Guaiacum*) from the W Indies and tropical America, its heartwood is greenish-brown to black, with a heavily interlocked grain and fine, uniform texture.