McGRAW-HILL

SECOND EDITION

# DICTIONARY OF ENGINEERING

MORE THAN 18,000 ESSENTIAL TERMS

COVERS EVERY DISCIPLINE OF ENGINEERING

PROVIDES SYNONYMS, ACRONYMS, AND ABBREVIATIONS

McGraw-Hill

# Dictionary of Engineering

## Second Edition

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# Contents

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# Preface

The *McGraw-Hill Dictionary of Engineering* provides a compendium of more than 18,000 terms that are central to the various branches of engineering and related fields of science. The coverage in this Second Edition is focused on building construction, chemical engineering, civil engineering, control systems, design engineering, electricity and electronics, engineering acoustics, industrial engineering, mechanics and mechanical engineering, systems engineering, and thermodynamics. Many new entries have been added since the previous edition with others revised as necessary. Many of the terms used in engineering are often found in specialized dictionaries and glossaries; this Dictionary, however, aims to provide the user with the convenience of a single, comprehensive reference.

All of the definitions are drawn from the *McGraw-Hill Dictionary of Scientific and Technical Terms*, Sixth Edition (2003). Each definition is classified according to the field with which it is primarily associated; if it is used in more than one area, it is idenfified by the general label [ENGINEERING]. The pronunciation of each term is provided along with synonyms, acronyms, and abbreviations where appropriate. A guide to the use of the Dictionary appears on pages vii and viii, explaining the alphabetical organization of terms, the format of the book, cross referencing, and how synonyms, variant spellings, abbreviations, and similar information are handled. The Pronunciation Key is given on page xi. The Appendix provides conversion tables for commonly used scientific units as well as listings of useful mathematical, engineering, and scientific data.

It is the editors' hope that the Second Edition of the *McGraw-Hill Dictionary of Engineering* will serve the needs of scientists, engineers, students, teachers, librarians, and writers for high-quality information, and that it will contribute to scientific literacy and communication.

**Mark D. Licker**
Publisher

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# How to Use the Dictionary

**ALPHABETIZATION.** The terms in the *McGraw-Hill Dictionary of Engineering*, Second Edition, are alphabetized on a letter-by-letter basis; word spacing, hyphen, comma, solidus, and apostrophe in a term are ignored in the sequencing. For example, an ordering of terms would be:

| | |
|---|---|
| **abat-vent** | **ADP** |
| **A block** | **air band** |
| **Abney level** | **airblasting** |

**FORMAT.** The basic format for a defining entry provides the term in boldface, the field is small capitals, and the single definition in lightface:

**term** [FIELD] Definition.

A field may be followed by multiple definitions, each introduced by a boldface number:

**term** [FIELD] **1.** Definition. **2.** Definition. **3.** Definition.

A term may have definitions in two or more fields:

**term** [CIV ENG] Definition. [ENG ACOUS] Definition.

A simple cross-reference entry appears as:

**term** *See* another term.

A cross reference may also appear in combination with definitions:

**term** [CIV ENG] Definition. [ENG ACOUS] Definition.

**CROSS REFERENCING.** A cross-reference entry directs the user to the defining entry. For example, the user looking up "access flooring" finds:

**access flooring** *See* raised flooring.

The user then turns to the "R" terms for the definition. Cross references are also made from variant spellings, acronyms, abbreviations, and symbols.

**ARL** *See* acceptable reliability level.
**arriswise** *See* arrisways.
**at** *See* technical atmosphere.

**ALSO KNOWN AS . . . , etc.** A definition may conclude with a mention of a synonym of the term, a variant spelling, an abbreviation for the term, or other

such information, introduced by "Also known as . . . ," "Also spelled . . . ," "Abbreviated . . . ," "Symbolized . . . ," "Derived from . . . ." When a term has more than one definition, the positioning of any of these phrases conveys the extent of applicability. For example:

**term** [CIV ENG] **1.** Definition. Also known as synonym. **2.** Definition. Symbolized T.

In the above arrangement, "Also known as . . ." applies only to the first definition; "Symbolized . . ." applies only to the second definition.

**term** [CIV ENG] **1.** Definition. **2.** Definition. [ENG ACOUS] Definition. Also known as synonym.

In the above arrangement, "Also known as . . ." applies only to the second field.

**term** [CIV ENG] Also known as synonym. **1.** Definition. **2.** Definition. [ENG ACOUS] Definition.

In the above arrangement, "Also known as . . ." applies to both definitions in the first field.

**term** Also known as synonym. [CIV ENG] **1.** Definition. **2.** Definition. [ENG ACOUS] Definition.

In the above arrangement, "Also known as . . ." applies to all definitions in both fields.

# Fields and Their Scope

**building construction**—The technology of assembling materials into a structure, especially one designated for occupancy.

**chemical engineering**—A branch of engineering which involves the design and operation of chemical plants.

**civil engineering**—The planning, design, construction, and maintenance of fixed structures and ground facilities for industry, for transportation, for use and control of water, for occupancy, and for harbor facilities.

**control systems**—The study of those systems in which one or more outputs are forced to change in a desired manner as time progresses.

**design engineering**—The branch of engineering concerned with the design of a product or facility according to generally accepted uniform standards and procedures, such as the specification of a linear dimension, or a manufacturing practice, such as the consistent use of a particular size of screw to fasten covers.

**electricity**—The science of physical phenomena involving electric charges and their effects when at rest and when in motion.

**electronics**—The technological area involving the manipulation of voltages and electric currents through the use of various devices for the purpose of performing some useful action with the currents and voltages; this field is generally divided into analog electronics, in which the signals to be manipulated take the form of continuous currents or voltages, and digital electronics, in which signals are represented by a finite set of states.

**engineering**—The science by which the properties of matter and the sources of power in nature are made useful to humans in structures, machines, and products.

**engineering acoustics**—The field of acoustics that deals with the production, detection, and control of sound by electrical devices, including the study, design, and construction of such things as microphones, loudspeakers, sound recorders and reproducers, and public address sytems.

**industrial engineering**—A branch of engineering dealing with the design, development, and implementation of integrated systems of humans, machines, and information resources to provide products and services.

**mechanical engineering**—The branch of engineering concerned with energy conversion, mechanics, and mechanisms and devices for diverse applications, ranging from automotive parts through nanomachines.

**mechanics**—The branch of physics which seeks to formulate general rules for predicting the behavior of a physical system under the influence of any type of interaction with its environment.

**systems engineering**—The branch of engineering dealing with the design of a complex interconnection of many elements (a system) to maximize an agreed-upon measure of system performance.

**thermodynamics**—The branch of physics which seeks to derive, from a few basic postulates, relations between properties of substances, especially those which are affected by changes in temperature, and a description of the conversion of energy from one form to another.

# Pronunciation Key

### Vowels

| | |
|---|---|
| a | as in b**a**t, th**a**t |
| ā | as in b**ai**t, cr**a**te |
| ä | as in b**o**ther, f**a**ther |
| e | as in b**e**t, n**e**t |
| ē | as in b**ee**t, tr**ea**t |
| i | as in b**i**t, sk**i**t |
| ī | as in b**i**te, l**igh**t |
| ō | as in b**oa**t, n**o**te |
| ȯ | as in b**ough**t, t**au**t |
| u̇ | as in b**oo**k, p**u**ll |
| ü | as in b**oo**t, p**oo**l |
| ə | as in b**u**t, sof**a** |
| au̇ | as in cr**ow**d, p**ow**er |
| ȯi | as in b**oi**l, sp**oi**l |
| yə | as in form**u**la, spectac**u**lar |
| yü | as in f**ue**l, m**u**le |

### Semivowels/Semiconsonants

| | |
|---|---|
| w | as in **w**ind, t**w**in |
| y | as in **y**et, on**ion** |

### Stress (Accent)

| | |
|---|---|
| ˈ | precedes syllable with primary stress |
| ˌ | precedes syllable with secondary stress |
| ˈˌ | precedes syllable with variable or indeterminate primary/secondary stress |

### Consonants

| | |
|---|---|
| b | as in **b**i**bb**le |
| ch | as in **ch**arge, stre**tch** |
| d | as in **d**og, ba**d** |
| f | as in **f**ix, sa**f**e |
| g | as in **g**ood, si**g**nal |
| h | as in **h**and, be**h**ind |
| j | as in **j**oint, di**g**it |
| k | as in **c**ast, bri**ck** |
| x | as in Ba**ch** (used rarely) |
| l | as in **l**oud, be**ll** |
| m | as in **m**ild, su**mm**er |
| n | as in **n**ew, de**n**t |
| n̄ | indicates nasalization of preceding vowel |
| ŋ | as in ri**ng**, si**ng**le |
| p | as in **p**ier, sli**p** |
| r | as in **r**ed, sca**r** |
| s | as in **s**ign, po**s**t |
| sh | as in **su**gar, **sh**oe |
| t | as in **t**imid, ca**t** |
| th | as in **th**in, brea**th** |
| t͟h | as in **th**en, brea**th**e |
| v | as in **v**eil, wea**v**e |
| z | as in **z**oo, crui**s**e |
| zh | as in bei**g**e, trea**s**ure |

### Syllabication

| | |
|---|---|
| · | Indicates syllable boundary when following syllable is unstressed |

# A

**a** *See* ampere.
**A** *See* ampere; angstrom.
**Å** *See* angstrom.
**a axis** [MECH ENG] The angle that specifies the rotation of a machine tool about the *x* axis. { 'ā 'ak,sis }
**abandon** [ENG] To stop drilling and remove the drill rig from the site of a borehole before the intended depth or target is reached. { ə'ban·dən }
**abate** [ENG] **1.** To remove material, for example, in carving stone. **2.** In metalwork, to excise or beat down the surface in order to create a pattern or figure in low relief. { ə'bāt }
**abatement** [ENG] **1.** The waste produced in cutting a timber, stone, or metal piece to a desired size and shape. **2.** A decrease in the amount of a substance or other quantity, such as atmospheric pollution. { ə'bāt·mənt }
**abat-jour** [BUILD] A device that is used to deflect daylight downward as it streams through a window. { ä·bä'zhůr }
**abattoir** [IND ENG] A building in which cattle or other animals are slaughtered. { ,ab·ə'twär }
**abat-vent** [BUILD] A series of sloping boards or metal strips, or some similar contrivance, to break the force of wind without being an obstruction to the passage of air or sound, as in a louver or chimney cowl. { ,ä,bä'vän }
**ablatograph** [ENG] An instrument that records ablation by measuring the distance a snow or ice surface falls during the observation period. { ə'blā·də,graf }
**A block** [CIV ENG] A hollow concrete masonry block with one end closed and the other open and with a web between, so that when the block is laid in a wall two cells are produced. { 'ā ,bläk }
**Abney level** *See* clinometer. { 'ab·nē 'lev·əl }
**abnormal reading** *See* abnormal time. { ab'nór·məl 'rēd·iŋ }
**abnormal time** [IND ENG] During a time study, an elapsed time for any element which is excessively longer or shorter than the median of the elapsed times. Also known as abnormal reading. { 'ab,nór·məl 'tīm }
**abort branch** [CONT SYS] A branching instruction in the program controlling a robot that causes a test to be performed on whether the tool-center point is properly positioned, and to reposition it if it drifts out of the acceptable range. { ə'bȯrt ,branch }
**Abrams' law** [CIV ENG] In concrete materials, for a mixture of workable consistency the strength of concrete is determined by the ratio of water to cement. { 'ā·brəmz 'lȯ }
**abrasion** [ENG] **1.** The removal of surface material from any solid through the frictional action of another solid, a liquid, or a gas or combination thereof. **2.** A surface discontinuity brought about by roughening or scratching. { ə'brā·zhən }
**abrasion test** [MECH ENG] The measurement of abrasion resistance, usually by the weighing of a material sample before and after subjecting it to a known abrasive stress throughout a known time period, or by reflectance or surface finish comparisons, or by dimensional comparisons. { ə'brā·zhən test }
**abrasive belt** [MECH ENG] A cloth, leather, or paper band impregnated with grit and rotated as an endless loop to abrade materials through continuous friction. { ə'brās·əv belt }
**abrasive blasting** [MECH ENG] The cleaning or finishing of surfaces by the use of an abrasive entrained in a blast of air. { ə'brās·əv 'blast·iŋ }
**abrasive cloth** [MECH ENG] Tough cloth to whose surface an abrasive such as sand or emery has been bonded for use in grinding or polishing. { ə'brās·əv 'klȯth }
**abrasive cone** [MECH ENG] An abrasive sintered or shaped into a solid cone to be rotated by an arbor for abrasive machining. { ə'brās·əv 'kōn }
**abrasive disk** [MECH ENG] An abrasive sintered or shaped into a disk to be rotated by an arbor for abrasive machining. { ə'brās·əv 'disk }
**abrasive jet cleaning** [ENG] The removal of dirt from a solid by a gas or liquid jet carrying abrasives to ablate the surface. { ə'brās·əv 'jet 'klēn·iŋ }
**abrasive machining** [MECH ENG] Grinding, drilling, shaping, or polishing by abrasion. { ə'brās·əv mə'shēn·iŋ }
**abreast milling** [MECH ENG] A milling method in which parts are placed in a row parallel to the axis of the cutting tool and are milled simultaneously. { ə'brest 'mil·iŋ }
**abreuvoir** [CIV ENG] A space between stones in masonry to be filled with mortar. { ab·rü'vwär }

**ABS** *See* antilock braking system.

**absolute altimeter** [ENG] An instrument which employs radio, sonic, or capacitive technology to produce on its indicator the measurement of distance from the aircraft to the terrain below. Also known as terrain-clearance indicator. { 'ab·sə,lüt al'tim·ə·dər }

**absolute altitude** [ENG] Altitude above the actual surface, either land or water, of a planet or natural satellite. { 'ab·sə,lüt 'al·tə·tüd }

**absolute blocking** [CIV ENG] A control arrangement for rail traffic in which a track is divided into sections or blocks upon which a train may not enter until the preceding train has left. { 'ab·sə,lüt 'bläk·iŋ }

**absolute block system** [CIV ENG] A block system in which only a single railroad train is permitted within a block section during a given period of time. { 'ab·sə,lüt 'bläk ˌsis·təm }

**absolute efficiency** [ENG ACOUS] The ratio of the power output of an electroacoustic transducer, under specified conditions, to the power output of an ideal electroacoustic transducer. { 'ab·sə,lüt ə'fish·ən·sē }

**absolute expansion** [THERMO] The true expansion of a liquid with temperature, as calculated when the expansion of the container in which the volume of the liquid is measured is taken into account; in contrast with apparent expansion. { 'ab·sə,lüt ik'span·shən }

**absolute instrument** [ENG] An instrument which measures a quantity (such as pressure or temperature) in absolute units by means of simple physical measurements on the instrument. { 'ab·sə,lüt 'in·strə·mənt }

**absolute magnetometer** [ENG] An instrument used to measure the intensity of a magnetic field without reference to other magnetic instruments. { 'ab·sə,lüt mag·nə'täm·ə·dər }

**absolute manometer** [ENG] **1.** A gas manometer whose calibration, which is the same for all ideal gases, can be calculated from the measurable physical constants of the instrument. **2.** A manometer that measures absolute pressure. { 'ab·sə,lüt mə'näm·ə·dər }

**absolute pressure gage** [ENG] A device that measures the pressure exerted by a fluid relative to a perfect vacuum; used to measure pressures very close to a perfect vacuum. { 'ab·sə,lüt 'presh·ər ˌgāj }

**absolute pressure transducer** [ENG] A device that responds to absolute pressure as the input and provides a measurable output of a nature different than but proportional to absolute pressure. { 'ab·sə,lüt 'presh·ər tranz'dü·sər }

**absolute scale** *See* absolute temperature scale. { 'ab·sə,lüt ˌskāl }

**absolute specific gravity** [MECH] The ratio of the weight of a given volume of a substance in a vacuum at a given temperature to the weight of an equal volume of water in a vacuum at a given temperature. { 'ab·sə,lüt spə'sif·ək 'grav·əd·ē }

**absolute stop** [CIV ENG] A railway signal which indicates that the train must make a full stop and not proceed until there is a change in the signal. Also known as stop and stay. { 'ab·sə,lüt 'stäp }

**absolute temperature** [THERMO] **1.** The temperature measurable in theory on the thermodynamic temperature scale. **2.** The temperature in Celsius degrees relative to the absolute zero at −273.16°C (the Kelvin scale) or in Fahrenheit degrees relative to the absolute zero at −459.69°F (the Rankine scale). { 'ab·sə,lüt 'tem·prə·chür }

**absolute temperature scale** [THERMO] A scale with which temperatures are measured relative to absolute zero. Also known as absolute scale. { 'ab·sə,lüt 'tem·prə·chür ˌskāl }

**absolute volume** [ENG] The total volume of the particles in a granular material, including both permeable and impermeable voids but excluding spaces between particles. { 'ab·sə,lüt 'väl·yüm }

**absolute weighing** [ENG] Determination of the mass of a sample and expressing its value in units, fractions, and multiples of the mass of the prototype of the international kilogram. { 'ab·sə,lüt 'wā·iŋ }

**absolute zero** [THERMO] The temperature of −273.16°C, or −459.69°F, or 0 K, thought to be the temperature at which molecular motion vanishes and a body would have no heat energy. { 'ab·sə,lüt 'zir·ō }

**absorber** [CHEM ENG] Equipment in which a gas is absorbed by contact with a liquid. [ELECTR] A material or device that takes up and dissipates radiated energy; may be used to shield an object from the energy, prevent reflection of the energy, determine the nature of the radiation, or selectively transmit one or more components of the radiation. [ENG] The surface on a solar collector that absorbs the solar radiation. [MECH ENG] **1.** A device which holds liquid for the absorption of refrigerant vapor or other vapors. **2.** That part of the low-pressure side of an absorption system used for absorbing refrigerant vapor. { əb'sȯr·bər }

**absorber capacity** [CHEM ENG] During natural gas processing, the maximum volume of the gas that can be processed through an absorber without alteration of specified operating conditions. { əb'sȯr·bər kə,pas·əd·ē }

**absorber plate** [ENG] A part of a flat-plate solar collector that provides a surface for absorbing incident solar radiation. { əb'sȯr·bər ˌplāt }

**absorbing boom** [CIV ENG] A device that floats on the water and is used to stop the spread of an oil spill and aid in its removal. { əb'sȯrb·iŋ ˌbüm }

**absorbing well** [CIV ENG] A shaft that permits water to drain through an impermeable stratum to a permeable stratum. { əb'sȯrb·iŋ ˌwel }

**absorption bed** [CIV ENG] A sizable pit containing coarse aggregate about a distribution pipe system; absorbs the effluent of a septic tank. { əb'sȯrp·shən ˌbed }

**absorption column** *See* absorption tower. { əb'sȯrp·shən ˌkäl·əm }

**absorption cycle** [MECH ENG] In refrigeration, the process whereby a circulating refrigerant, for example, ammonia, is evaporated by heat from an aqueous solution at elevated pressure and subsequently reabsorbed at low pressure, displacing the need for a compressor. { əb'sȯrp·shən ˌsī·kəl }

**absorption dynamometer** [ENG] A device for measuring mechanical forces or power in which the mechanical energy input is absorbed by friction or electrical resistance. { əb'sȯrp·shən dīn·ə'mäm·əd·ər }

**absorption-emission pyrometer** [ENG] A thermometer for determining gas temperature from measurement of the radiation emitted by a calibrated reference source before and after this radiation has passed through and been partially absorbed by the gas. { əb'sȯrp·shən ə'mish·ən pī'räm·əd·ər }

**absorption field** [CIV ENG] Trenches containing coarse aggregate about distribution pipes permitting septic-tank effluent to seep into surrounding soil. Also known as disposal field. { əb'sȯrp·shən ˌfēld }

**absorption hygrometer** Also known as chemical hygrometer. [ENG] An instrument with which the water vapor content of the atmosphere is measured by means of the absorption of vapor by a hygroscopic chemical. { əb'sȯrp·shən hī'gräm·əd·ər }

**absorption loss** [CIV ENG] The quantity of water that is lost during the initial filling of a reservoir because of absorption by soil and rocks. { əb'sȯrp·shən ˌlȯs }

**absorption meter** [ENG] An instrument designed to measure the amount of light transmitted through a transparent substance, using a photocell or other light detector. { əb'sȯrp·shən 'mēd·ər }

**absorption number** [ENG] A dimensionless group used in the field of gas absorption in a wetted-wall column; represents the liquid side mass-transfer coefficient. { əb'sȯrp·shən ˌnəm·bər }

**absorption plant** [CHEM ENG] A facility to recover the condensable portion of natural or refinery gas. { əb'sȯrp·shən ˌplant }

**absorption process** [CHEM ENG] A method in which light oil is introduced into an absorption tower so that it absorbs the gasoline in the rising wet gas; the light oil is then distilled to separate the gasoline. { əb'sȯrp·shən ˌpräs·əs }

**absorption refrigeration** [MECH ENG] Refrigeration in which cooling is effected by the expansion of liquid ammonia into gas and absorption of the gas by water; the ammonia is reused after the water evaporates. { əb'sȯrp·shən rəˌfrij·ə'rā·shən }

**absorption system** [MECH ENG] A refrigeration system in which the refrigerant gas in the evaporator is taken up by an absorber and is then, with the application of heat, released in a generator. { əb'sȯrp·shən ˌsis·təm }

**absorption tower** [ENG] A vertical tube in which a rising gas is partially absorbed by a liquid in the form of falling droplets. Also known as absorption column. { əb'sȯrp·shən ˌtau̇·ər }

**absorption trench** [CIV ENG] A trench containing coarse aggregate about a distribution tile pipe through which septic-tank effluent may move beneath earth. { əb'sȯrp·shən ˌtrench }

**absorptivity** [THERMO] The ratio of the radiation absorbed by a surface to the total radiation incident on the surface. { əbˌsȯrp'tiv·əd·ē }

**Abt track** [CIV ENG] One of the cogged rails used for railroad tracking in mountains and so arranged that the cogs are not opposite one another on any pair of rails. { 'apt ˌtrak }

**abutment** [CIV ENG] A surface or mass provided to withstand thrust; for example, end supports of an arch or a bridge. { ə'bət·mənt }

**abutting joint** [DES ENG] A joint which connects two pieces of wood in such a way that the direction of the grain in one piece is angled (usually at 90°) with respect to the grain in the other. { ə'bət·iŋ ˌjȯint }

**abutting tenons** [DES ENG] Two tenons inserted into a common mortise from opposite sides so that they contact. { ə'bət·iŋ 'ten·ənz }

**ac** *See* alternating current.

**accelerated aging** [ENG] Hastening the deterioration of a product by a laboratory procedure in order to determine long-range storage and use characteristics. { ak'sel·əˌrād·əd 'āj·iŋ }

**accelerated life test** [ENG] Operation of a device, circuit, or system above maximum ratings to produce premature failure; used to estimate normal operating life. { ak'sel·ərˌā·dəd 'līf ˌtest }

**accelerated weathering** [ENG] A laboratory test used to determine, in a short period of time, the resistance of a paint film or other exposed surface to weathering. { ak'sel·ərˌā·dəd 'weth·ər·iŋ }

**accelerating incentive** *See* differential piece-rate system. { ak'sel·ərˌād·iŋ in'sen·tiv }

**accelerating potential** [ELECTR] The energy potential in electron-beam equipment that imparts additional speed and energy to the electrons. { ak'sel·ərˌād·iŋ pə'ten·shəl }

**acceleration** [MECH] The rate of change of velocity with respect to time. { akˌsel·ə'rā·shən }

**acceleration analysis** [MECH ENG] A mathematical technique, often done graphically, by which accelerations of parts of a mechanism are determined. { akˌsel·ə'rā·shən əˌnal·ə·səs }

**acceleration-error constant** [CONT SYS] The ratio of the acceleration of a controlled variable of a servomechanism to the actuating error when the actuating error is constant. { akˌsel·ə'rā·shən 'er·ər 'kän·stənt }

**acceleration measurement** [MECH] The technique of determining the magnitude and direction of acceleration, including translational and angular acceleration. { akˌsel·ə'rā·shən 'mezh·ər·mənt }

**acceleration of free fall** *See* acceleration of gravity. { akˌsel·ə'rā·shən əv 'frē ˌfȯl }

**acceleration of gravity** [MECH] The acceleration imparted to bodies by the attractive force of the earth; has an international standard value of 980.665 $cm/s^2$ but varies with latitude and elevation. Also known as acceleration of free fall; apparent gravity. { ak,sel·ə'rā·shən əv 'grav·ə·dē }

**acceleration signature** [IND ENG] A printed record that shows the pattern of acceleration and deceleration of an anatomical reference point in the performance of a task. { ak,sel·ə'rā·shən 'sig·nə·chər }

**acceleration tolerance** [ENG] The degree to which personnel or equipment withstands acceleration. { ak,sel·ə'rā·shən 'täl·ər·əns }

**acceleration voltage** [ELECTR] The voltage between a cathode and accelerating electrode of an electron tube. { ak,sel·ə'rā·shən 'vōl·təj }

**accelerator** [MECH ENG] A device for varying the speed of an automotive vehicle by varying the supply of fuel. { ak'sel·ə,rād·ər }

**accelerator jet** [MECH ENG] The jet through which the fuel is injected into the incoming air in the carburetor of an automotive vehicle with rapid demand for increased power output. { ak 'sel·ə,rād·ər ,jet }

**accelerator linkage** [MECH ENG] The linkage connecting the accelerator pedal of an automotive vehicle to the carburetor throttle valve or fuel injection control. { ak'sel·ə,rād·ər ,liŋ·kij }

**accelerator pedal** [MECH ENG] A pedal that operates the carburetor throttle valve or fuel injection control of an automotive vehicle. { ak'sel·ə,rād·ər ,ped·əl }

**accelerator pump** [MECH ENG] A small cylinder and piston controlled by the throttle of an automotive vehicle so as to provide an enriched air-fuel mixture during acceleration. { ak'sel·ə,rād·ər ,pəmp }

**accelerogram** [ENG] A record made by an accelerograph. { ak'sel·ə·rə,gram }

**accelerograph** [ENG] An accelerometer having provisions for recording the acceleration of a point on the earth during an earthquake or for recording any other type of acceleration. { ak 'sel·ə·rə,graf }

**accelerometer** [ENG] An instrument which measures acceleration or gravitational force capable of imparting acceleration. { ak,sel·ə'räm·əd·ər }

**accelerometry** [IND ENG] The quantitative determination of acceleration and deceleration in the entire human body or a part of the body in the performance of a task. { ak,sel·ə'räm·ə·drē }

**accent lighting** [CIV ENG] Directional lighting which highlights an object or attracts attention to a particular area. { 'ak·sent ,līd·iŋ }

**acceptability** [ENG] State or condition of meeting minimum standards for use, as applied to methods, equipment, or consumable products. { ak,sep·tə'bil·ə·dē }

**acceptable quality level** [IND ENG] The maximum percentage of defects that has been determined tolerable as a process average for a sampling plan during inspection or test of a product with respect to economic and functional requirements of the item. Abbreviated AQL. { ak ¦sep·tə·bəl 'kwäl·ə·dē ,lev·əl }

**acceptable reliability level** [IND ENG] The required level of reliability for a part, system, device, and so forth; may be expressed in a variety of terms, for example, number of failures allowable in 1000 hours of operating life. Abbreviated ARL. { ak¦sep·tə·bəl rə,lī·ə'bil·ə·dē ,lev·əl }

**acceptance criteria** [IND ENG] Standards of judging the acceptability of manufactured items. { ak'sep·təns krī'tēr·ē·ə }

**acceptance number** [IND ENG] The maximum allowable number of defective pieces in a sample of specified size. { ak'sep·təns ,nəm·bər }

**acceptance sampling** [IND ENG] Taking a sample from a batch of material to inspect for determining whether the entire lot will be accepted or rejected. { ak'sep·təns ,sam·pliŋ }

**acceptance test** [IND ENG] A test used to determine conformance of a product to design specifications, as a basis for its acceptance. { ak'sep·təns ,test }

**acceptor** [CHEM ENG] A calcined carbonate used to absorb the carbon dioxide evolved during a coal gasification process. { ak'sep·tər }

**access** [CIV ENG] Freedom, ability, or the legal right to pass without obstruction from a given point on earth to some other objective, such as the sea or a public highway. { 'ak,ses }

**access door** [BUILD] A provision for access to concealed plumbing or other equipment without disturbing the wall or fixtures. { 'ak,ses ,dȯr }

**access eye** [CIV ENG] A threaded plug fitted into bends and junctions of drain, waste, or soil pipes to provide access when a blockage occurs. *See* cleanout. { 'ak,ses ,ī }

**access flooring** *See* raised flooring. { 'ak,ses ,flor·iŋ }

**access hole** *See* manhole. { 'ak,ses ,hōl }

**accessory** [MECH ENG] A part, subassembly, or assembly that contributes to the effectiveness of a piece of equipment without changing its basic function; may be used for testing, adjusting, calibrating, recording, or other purposes. { ak'ses·ə·rē }

**access road** [CIV ENG] A route, usually paved, that enables vehicles to reach a designated facility expeditiously. { 'ak·ses ,rōd }

**access tunnel** [CIV ENG] A tunnel provided for an access road. { 'ak·ses ,tən·əl }

**accident-cause code** [IND ENG] Sponsored by the American Standards Association, the code that classifies accidents under eight defective working conditions and nine improper working practices. { 'ak·sə,dent ¦kȯz ,kōd }

**accident frequency rate** [IND ENG] The number of all disabling injuries per million worker-hours of exposure. { 'ak·sə,dent 'fre·kwən·sē ,rāt }

**accident severity rate** [IND ENG] The number of

worker-days lost as a result of disabling injuries per thousand worker-hours of exposure. { 'ak·sə,dent sə'ver·əd·ē ,rāt }

**accommodation** [CONT SYS] Any alteration in a robot's motion in response to the robot's environment; it may be active or passive. { ə,käm·ə'dā·shən }

**accordion door** [BUILD] A door that folds and unfolds like an accordion when it is opened and closed. { ə'kȯrd·ē·ən ,dȯr }

**accordion partition** [BUILD] A movable, fabric-faced partition which is fitted into an overhead track and folds like an accordion. { ə'kȯrd·ē·ən pər'tish·ən }

**accordion roller conveyor** [MECH ENG] A conveyor with a flexible latticed frame which permits variation in length. { ə'kȯrd·ē·ən 'rōl·ər kən'vā·ər }

**accretion** [CIV ENG] Artificial buildup of land due to the construction of a groin, breakwater, dam, or beach fill. { ə'krē·shən }

**accumulated discrepancy** [ENG] The sum of the separate discrepancies which occur in the various steps of making a survey. { ə'kyü·myə ,lād·əd də'skrep·ən·sē }

**accumulative timing** [IND ENG] A time-study method that allows direct reading of the time for each element of an operation by the use of two stopwatches which operate alternately. { ə'kyü·myə,lād·iv 'tīm·iŋ }

**accumulator** [CHEM ENG] An auxiliary ram extruder on blow-molding equipment used to store melted material between deliveries. [ENG] *See* air vessel. [MECH ENG] **1.** A device, such as a bag containing pressurized gas, which acts upon hydraulic fluid in a vessel, discharging it rapidly to give high hydraulic power, after which the fluid is returned to the vessel with the use of low hydraulic power. **2.** A device connected to a steam boiler to enable a uniform boiler output to meet an irregular steam demand. **3.** A chamber for storing low-side liquid refrigerant in a refrigeration system. Also known as surge drum; surge header. { ə'kyü·myə,lād·ər }

**accustomization** [ENG] The process of learning the techniques of living with a minimum of discomfort in an extreme or new environment. { ə,kəs·tə·mə'zā·shən }

**acetate process** [CHEM ENG] Acetylation of cellulose (wood pulp or cotton linters) with acetic acid or acetic anhydride and sulfuric acid catalyst to make cellulose acetate resin or fiber. { 'as·ə,tāt 'präs·əs }

**acetone-benzol process** [CHEM ENG] A dewaxing process in petroleum refining, with acetone and benzol used as solvents. { 'as·ə,tōn 'ben·zȯl ,präs·əs }

**acetylene cutting** *See* oxyacetylene cutting. { ə'sed·əl,ēn 'kət·iŋ }

**acetylene generator** [ENG] A steel cylinder or tank that provides for controlled mixing of calcium carbide and water to generate acetylene. { ə'sed·əl,ēn 'jen·ə,rād·ər }

**acetylene torch** *See* oxyacetylene torch. { ə'sed·əl,ēn ,tȯrch }

**acfm** *See* actual cubic feet per minute.

**acid blowcase** *See* blowcase. { 'as·əd 'blō·kās }

**acid cleaning** [ENG] The use of circulating acid to remove dirt, scale, or other foreign matter from the interior of a pipe. { 'as·əd 'klēn·iŋ }

**acid conductor** [CHEM ENG] A vessel designed for refortification of hydrolyzed acid by heating and evaporation of water, or sometimes by distillation of water under partial vacuum. { 'as·əd kən'dək·tər }

**acid egg** *See* blowcase. { 'as·əd ,eg }

**acid gases** [CHEM ENG] The hydrogen sulfide and carbon dioxide found in natural and refinery gases which, when combined with moisture, form corrosive acids; known as sour gases when hydrogen sulfide and mercaptans are present. { 'as·əd 'gas·əz }

**aciding** [ENG] A light etching of a building surface of cast stone. { 'as·əd·iŋ }

**acid lining** [ENG] In steel production, a silica-brick lining used in furnaces. { 'as·əd 'līn·iŋ }

**acid number** [ENG] A number derived from a standard test indicating the acid or base composition of lubricating oils; it in no way indicates the corrosive attack of the used oil in service. Also known as corrosion number. { 'as·əd ¦nəm·bər }

**acid polishing** [ENG] The use of acids to polish a glass surface. { 'as·əd 'päl·ish·iŋ }

**acid process** [CHEM ENG] In paper manufacture, a pulp digestion process that uses an acidic reagent, for example, a bisulfite solution containing free sulfur dioxide. { 'as·əd ,prä·səs }

**acid recovery plant** [CHEM ENG] In some refineries, a facility for separating sludge acid into acid oil, tar, and weak sulfuric acid, with provision for later reconcentration. { 'as·əd rə'kəv·ə·rē ,plant }

**acid sludge** [CHEM ENG] The residue left after treating petroleum oil with sulfuric acid for the removal of impurities. { 'as·əd ,sləj }

**acid soot** [ENG] Carbon particles that have absorbed acid fumes as a by-product of combustion; hydrochloric acid absorbed on carbon particulates is frequently the cause of metal corrosion in incineration. { 'as·əd ,sůt }

**acid treatment** [CHEM ENG] A refining process in which unfinished petroleum products, such as gasoline, kerosine, and diesel oil, are contacted with sulfuric acid to improve their color, odor, and other properties. { 'as·əd 'trēt·mənt }

**acid-water pollution** [ENG] Industrial wastewaters that are acidic; usually appears in effluent from the manufacture of chemicals, batteries, artificial and natural fiber, fermentation processes (beer), and mining. { 'as·əd 'wȯd·ər pə'lü·shən }

**Ackerman linkage** *See* Ackerman steering gear. { 'ak·ər·mən ,liŋ·kij }

**acme screw thread** [DES ENG] A standard thread having a profile angle of 29° and a flat crest; used on power screws in such devices as automobile jacks, presses, and lead screws on lathes. Also known as acme thread. { 'ak·mē 'skrü ,thred }

**acme thread** *See* acme screw thread. { 'ak·mē ˌthred }

**acoubuoy** [ENG] An acoustic listening device similar to a sonobuoy, used on land to form an electronic fence that will pick up sounds of enemy movements and transmit them to orbiting aircraft or land stations. { ə'küˌbȯi }

**acoustical ceiling** [BUILD] A ceiling covered with or built of material with special acoustical properties. { ə'küs·tə·kəl 'sēl·iŋ }

**acoustical ceiling system** [BUILD] A system for the structural support of an acoustical ceiling; lighting and air diffusers may be included as part of the system. { ə'küs·tə·kəl 'sēl·iŋ 'sis·təm }

**acoustical door** [BUILD] A solid door with gasketing along the top and sides, and usually an automatic door bottom, designed to reduce noise transmission. { ə'küs·tə·kəl 'dȯr }

**acoustical model** [CIV ENG] A model used to investigate certain acoustical properties of an auditorium or room such as sound pressure distribution, sound-ray paths, and focusing effects. { ə'küs·tə·kəl 'mäd·əl }

**acoustical treatment** [CIV ENG] That part of building planning that is designed to provide a proper acoustical environment; includes the use of acoustical material. { ə'küs·tə·kəl 'trēt·mənt }

**acoustic array** [ENG ACOUS] A sound-transmitting or sound-receiving system whose elements are arranged to give desired directional characteristics. { ə'küs·tik ə'rā }

**acoustic center** [ENG ACOUS] The center of the spherical sound waves radiating outward from an acoustic transducer. { ə'küs·tik 'sen·tər }

**acoustic clarifier** [ENG ACOUS] System of cones loosely attached to the baffle of a loudspeaker and designed to vibrate and absorb energy during sudden loud sounds to suppress these sounds. { ə'küs·tik 'klar·əˌfī·ər }

**acoustic coupler** [ENG ACOUS] A device used between the modem of a computer terminal and a standard telephone line to permit transmission of digital data in either direction without making direct connections. { ə'küs·tik 'kəp·lər }

**acoustic delay** [ENG ACOUS] A delay which is deliberately introduced in sound reproduction by having the sound travel a certain distance along a pipe before conversion into electric signals. { ə'küs·tik di'lā }

**acoustic detection** [ENG] Determination of the profile of a geologic formation, an ocean layer, or some object in the ocean by measuring the reflection of sound waves off the object. { ə'küs·tik di'tek·shən }

**acoustic fatigue** [MECH] The tendency of a material, such as a metal, to lose strength after acoustic stress. { ə'küs·tik fə'tēg }

**acoustic feedback** [ENG ACOUS] The reverberation of sound waves from a loudspeaker to a preceding part of an audio system, such as to the microphone, in such a manner as to reinforce, and distort, the original input. Also known as acoustic regeneration. { ə'küs·tik 'fēdˌbak }

**acoustic generator** [ENG ACOUS] A transducer which converts electrical, mechanical, or other forms of energy into sound. { ə'küs·tik 'jen·əˌrād·ər }

**acoustic heat engine** [ENG] A device that transforms heat energy first into sound energy and then into electrical power, without the use of moving mechanical parts. { ə'küs·tik ¦hēt ˌen·jən }

**acoustic hologram** [ENG] The phase interference pattern, formed by acoustic beams, that is used in acoustical holography; when light is made to interact with this pattern, it forms an image of an object placed in one of the beams. { ə'küs·tik 'häl·əˌgram }

**acoustic horn** *See* horn. { ə'küs·tik 'hȯrn }

**acoustic jamming** [ENG ACOUS] The deliberate radiation or reradiation of mechanical or electroacoustic signals with the objectives of obliterating or obscuring signals which the enemy is attempting to receive and of deterring enemy weapons systems. { ə'küs·tik 'jam·iŋ }

**acoustic labyrinth** [ENG ACOUS] Special baffle arrangement used with a loudspeaker to prevent cavity resonance and to reinforce bass response. { ə'küs·tik 'lab·əˌrinth }

**acoustic line** [ENG ACOUS] The acoustic equivalent of an electrical transmission line, involving baffles, labyrinths, or resonators placed at the rear of a loudspeaker and arranged to help reproduce the very low audio frequencies. { ə'küs·tik 'līn }

**acoustic ocean-current meter** [ENG] An instrument that measures current flow in rivers and oceans by transmitting acoustic pulses in opposite directions parallel to the flow and measuring the difference in pulse travel times between transmitter-receiver pairs. { ə'küs·tik 'ō·shən ˌkər·ənt 'mēd·ər }

**acoustic position reference system** [ENG] An acoustic system used in offshore oil drilling to provide continuous information on ship position with respect to an ocean-floor acoustic beacon transmitting an ultrasonic signal to three hydrophones on the bottom of the drilling ship. { ə'küs·tik pə'zish·ən ¦ref·rəns ˌsis·təm }

**acoustic radar** [ENG] Use of sound waves with radar techniques for remote probing of the lower atmosphere, up to heights of about 5000 feet (1500 meters), for measuring wind speed and direction, humidity, temperature inversions, and turbulence. { ə'küs·tik 'rāˌdär }

**acoustic radiator** [ENG ACOUS] A vibrating surface that produces sound waves, such as a loudspeaker cone or a headphone diaphragm. { ə'küs·tik 'rād·ēˌād·ər }

**acoustic radiometer** [ENG] An instrument for measuring sound intensity by determining the unidirectional steady-state pressure caused by the reflection or absorption of a sound wave at a boundary. { ə'küs·tik ˌrād·ē'ä·məd·ər }

**acoustic ratio** [ENG ACOUS] The ratio of the intensity of sound radiated directly from a source to the intensity of sound reverberating from the

walls of an enclosure, at a given point in the enclosure. { ə'küs·tik 'rā·shō }

**acoustic reflex enclosure** [ENG ACOUS] A loudspeaker cabinet designed with a port to allow a low-frequency contribution from the rear of the speaker cone to be radiated forward. { ə'küs·tik 'rē,fleks in,klō·zhər }

**acoustic regeneration** *See* acoustic feedback. { ə'küs·tik rē,jen·ə'rā·shən }

**acoustic seal** [ENG ACOUS] A joint between two parts to provide acoustical coupling with low losses of energy, such as between an earphone and the human ear. { ə'küs·tik 'sēl }

**acoustic signature** [ENG] In acoustic detection, the profile characteristic of a particular object or class of objects, such as a school of fish or a specific ocean-bottom formation. { ə'küs·tik 'sig·nə·chər }

**acoustic spectrograph** [ENG] A spectrograph used with sound waves of various frequencies to study the transmission and reflection properties of ocean thermal layers and marine life. { ə'küs·tik 'spek·trə,graf }

**acoustic spectrometer** [ENG ACOUS] An instrument that measures the intensities of the various frequency components of a complex sound wave. Also known as audio spectrometer. { ə'küs·tik spek'träm·əd·ər }

**acoustic strain gage** [ENG] An instrument used for measuring structural strains; consists of a length of fine wire mounted so its tension varies with strain; the wire is plucked with an electromagnetic device, and the resulting frequency of vibration is measured to determine the amount of strain. { ə'küs·tik ,strān ,gāj }

**acoustic theodolite** [ENG] An instrument that uses sound waves to provide a continuous vertical profile of ocean currents at a specific location. { ə'küs·tik thē'äd·əl,īt }

**acoustic transducer** [ENG ACOUS] A device that converts acoustic energy to electrical or mechanical energy, such as a microphone or phonograph pickup. { ə'küs·tik tranz'dü·sər }

**acoustic transformer** [ENG ACOUS] A device, such as a horn or megaphone, for increasing the efficiency of sound radiation. { ə'küs·tik tranz 'fȯr·mər }

**acoustic treatment** [BUILD] The use of sound-absorbing materials to give a room a desired degree of freedom from echo and reverberation. { ə'küs·tik 'trēt·mənt }

**acoustic-wave-based sensor** [ENG] A device that employs a surface acoustic wave, a thickness-shear-mode resonance (a resonant oscillation of a thin plate of material), or other type of acoustic wave to measure the physical properties of a thin film or liquid layer or, in combination with chemically sensitive thin films, to detect the presence and concentration of chemical analytes. { ə¦kü·stik 'wāv,bāst ,sen·sər }

**acoustic well logging** [ENG] A ground exploration method that uses a high-energy sound source and a receiver, both underground. { ə'küs·tik 'wel ,läg·iŋ }

**acoustoelectronics** [ENG ACOUS] The branch of electronics that involves use of acoustic waves at microwave frequencies (above 500 megahertz), traveling on or in piezoelectric or other solid substrates. Also known as pretersonics. { ə¦küs·tō·ə,lek¦trän·iks }

**acquisition** [ENG] The process of pointing an antenna or a telescope so that it is properly oriented to allow gathering of tracking or telemetry data from a satellite or space probe. { ,ak·wə'zish·ən }

**acquisition and tracking radar** [ENG] A radar set capable of locking onto a received signal and tracking the object emitting the signal; the radar may be airborne or on the ground. { ,ak·wə'zish·ən ən 'trak·iŋ ,rā,där }

**acre** [MECH] A unit of area, equal to 43,560 square feet, or to 4046.8564224 square meters. { 'ā·kər }

**acrometer** [ENG] An instrument to measure the density of oils. { ə'kräm·əd·ər }

**actinogram** [ENG] The record of heat from a source, such as the sun, as detected by a recording actinometer. { ,ak'tin·ə,gram }

**actinograph** [ENG] A recording actinometer. { ,ak'tin·ə,graf }

**actinometer** [ENG] Any instrument used to measure the intensity of radiant energy, particularly that of the sun. { ,ak·tə'näm·əd·ər }

**action** [MECH] An integral associated with the trajectory of a system in configuration space, equal to the sum of the integrals of the generalized momenta of the system over their canonically conjugate coordinates. Also known as phase integral. { 'ak·shən }

**activate** [ELEC] To make a cell or battery operative by addition of a liquid. [ELECTR] To treat the filament, cathode, or target of a vacuum tube to increase electron emission. [ENG] To set up conditions so that the object will function as designed or required. { 'ak·tə,vāt }

**activated sludge** [CIV ENG] A semiliquid mass removed from the liquid flow of sewage and subjected to aeration and aerobic microbial action; the end product is dark to golden brown, partially decomposed, granular, and flocculent, and has an earthy odor when fresh. { 'ak·tə,vād·əd 'sləj }

**activated-sludge effluent** [CIV ENG] The liquid from the activated-sludge treatment that is further processed by chlorination or by oxidation. { 'ak·tə,vād·əd ,sləj 'ef,lü·ənt }

**activated-sludge process** [CIV ENG] A sewage treatment process in which the sludge in the secondary stage is put into aeration tanks to facilitate aerobic decomposition by microorganisms; the sludge and supernatant liquor are separated in a settling tank; the supernatant liquor or effluent is further treated by chlorination or oxidation. { 'ak·tə,vād·əd ,sləj 'prä,səs }

**active accommodation** [CONT SYS] The alteration of preprogrammed robotic motions by the integrated effects of sensors, controllers, and the robotic motion itself. { 'ak·tiv ə,käm·ə'dā·shən }

**active area** [ELECTR] The area of a metallic rectifier that acts as the rectifying junction and conducts current in the forward direction. { 'ak·tiv 'er·ē·ə }

**active-cord mechanism** [MECH ENG] A slender, chainlike grouping of joints and links that makes active and flexible winding motions under the control of actuators attached along its body. { 'ak·tiv ˈkȯrd 'mek·əˌniz·əm }

**active detection system** [ENG] A guidance system which emits energy as a means of detection; for example, sonar and radar. { 'ak·tiv di'tek·shən ˌsis·təm }

**active earth pressure** [CIV ENG] The horizontal pressure that an earth mass exerts on a wall. { 'ak·tiv 'ərth 'presh·ər }

**active illumination** [ENG] Lighting whose direction, intensity, and pattern are controlled by commands or signals. { 'ak·tiv əˌlüm·ə'nā·shən }

**active infrared detection system** [ENG] An infrared detection system in which a beam of infrared rays is transmitted toward possible targets, and rays reflected from a target are detected. { 'ak·tiv 'in·frəˌred di'tek·shən ˌsis·təm }

**active leaf** [BUILD] In a door with two leaves, the leaf which carries the latching or locking mechanism. Also known as active door. { 'ak·tiv 'lēf }

**active material** [ELEC] **1.** A fluorescent material used in screens for cathode-ray tubes. **2.** An energy-storing material, such as lead oxide, used in the plates of a storage battery. **3.** A material, such as the iron of a core or the copper of a winding, that is involved in energy conversion in a circuit. **4.** In a battery, the chemically reactive material in either of the electrodes that participates in the charge and discharge reactions. [ELECTR] The material of the cathode of an electron tube that emits electrons when heated. { 'ak·tiv mə'tir·ē·əl }

**active sludge** [CIV ENG] A sludge rich in destructive bacteria used to break down raw sewage. { 'ak·tiv 'sləj }

**active solar system** [MECH ENG] A solar heating or cooling system that operates by mechanical means, such as motors, pumps, or valves. { 'ak·tiv 'sō·lər ˌsis·təm }

**active sonar** [ENG] A system consisting of one or more transducers to send and receive sound, equipment for the generation and detection of the electrical impulses to and from the transducer, and a display or recorder system for the observation of the received signals. { 'ak·tiv 'sōˌnär }

**active system** [ENG] In radio and radar, a system that requires transmitting equipment, such as a beacon or transponder. { 'ak·tiv 'sis·təm }

**active vibration suppression** [MECH ENG] The prevention of undesirable vibration by techniques involving feedback control of the vibratory motion, whereby the forces designed to reduce the vibration depend on the system displacements and velocities. { 'ak·tiv vī'brā·shən səˌpresh·ən }

**activity** [SYS ENG] The representation in a PERT or critical-path-method network of a task that takes up both time and resources and whose performance is necessary for the system to move from one event to the next. { ˌak'tiv·əd·ē }

**activity chart** [IND ENG] A tabular presentation of a series of operations of a process plotted against a time scale. { ˌak'tiv·əd·ē ˌchärt }

**activity duration** [SYS ENG] In critical-path-method terminology, the estimated amount of time required to complete an activity. { ˌak'tiv·əd·ē dəˈrā·shən }

**activity sampling** *See* work sampling. { ˌak'tiv·əd·ē ˌsam·pliŋ }

**actual cost** [IND ENG] Cost determined by an allocation of cost factors recorded during production. { 'ak·chə·wəl 'kȯst }

**actual cubic feet per minute** [CHEM ENG] A measure of the volume of gas at operating temperature and pressure, as distinct from volume of gas at standard temperature and pressure. Abbreviated acfm. { 'ak·chə·wəl 'kyü·bik ˌfēt pər 'min·ət }

**actual horsepower** *See* actual power. { 'ak·chə·wəl 'hȯrsˌpaù·ər }

**actual power** [MECH ENG] The power delivered at the output shaft of a source of power. Also known as actual horsepower. { 'ak·chə·wəl 'paù·ər }

**actual time** [IND ENG] Time taken by a worker to perform a given task. { 'ak·chə·wəl tīm }

**actuate** [MECH ENG] To put into motion or mechanical action, as by an actuator. { 'ak·chə·wāt }

**actuated roller switch** [MECH ENG] A centrifugal sequence-control switch that is placed in contact with a belt conveyor, immediately preceding the conveyor which it controls. { 'ak·chəˌwād·əd 'rō·lər 'swich }

**actuating system** [CONT SYS] An electric, hydraulic, or other system that supplies and transmits energy for the operation of other mechanisms or systems. { 'ak·chəˌwād·iŋ ˌsis·təm }

**actuator** [CONT SYS] A mechanism to activate process control equipment by use of pneumatic, hydraulic, or electronic signals; for example, a valve actuator for opening or closing a valve to control the rate of fluid flow. [ENG ACOUS] An auxiliary external electrode used to apply a known electrostatic force to the diaphragm of a microphone for calibration purposes. Also known as electrostatic actuator. [MECH ENG] A device that produces mechanical force by means of pressurized fluid. { 'ak·chəˌwād·ər }

**adamantine drill** [MECH ENG] A core drill with hardened steel shot pellets that revolve under the rim of the rotating tube; employed in rotary drilling in very hard ground. { ˌad·əˈman,tēn 'dril }

**Adam's catalyst** [CHEM ENG] Finely divided plantinum(IV) oxide, made by fusing hexachloroplatinic(IV) acid with $NaNO_3$. { 'a·dəmz 'kad·əl·əst }

**ada mud** [ENG] A conditioning material added to drilling mud to obtain satisfactory cores and samples of formations. { 'ā·də ˌməd }

**adapter** [ENG] A device used to make electrical or mechanical connections between items not originally intended for use together. { ə'dap·tər }

**adaptive branch** [CONT SYS] A branch instruction in the computer program controlling a robot that may lead the robot to execute a series of instructions, depending on external conditions. { ə'dap·tiv 'branch }

**adaptive control** [CONT SYS] A control method in which one or more parameters are sensed and used to vary the feedback control signals in order to satisfy the performance criteria. { ə'dap·tiv kən'trōl }

**adaptive-control function** [CONT SYS] That level in the functional decomposition of a large-scale control system which updates parameters of the optimizing control function to achieve a best fit to current plant behavior, and updates parameters of the direct control function to achieve good dynamic response of the closed-loop system. { ə'dap·tiv kən'trōl ˌfəŋk·shən }

**adaptive robot** [CONT SYS] A robot that can alter its responses according to changes in the environment. { ə'dap·tiv 'rōˌbät }

**adaptive structure** [ENG] A structure whose geometric and inherent structural characteristics can be changed beneficially in response to external stimulation by either remote commands or automatic means. { əˌdap·tiv 'strək·chər }

**adaptive system** [SYS ENG] A system that can change itself in response to changes in its environment in such a way that its performance improves through a continuing interaction with its surroundings. { ə'dap·tiv 'sis·təm }

**adaptometer** [ENG] An instrument that measures the lowest brightness of an extended area that can barely be detected by the eye. { ˌaˌdap'tä·məd·ər }

**addendum** [DES ENG] The radial distance between two concentric circles on a gear, one being that whose radius extends to the top of a gear tooth (addendum circle) and the other being that which will roll without slipping on a circle on a mating gear (pitch line). { ə'den·dəm }

**addendum circle** [DES ENG] The circle on a gear passing through the tops of the teeth. { ə'den·dəm ˌsər·kəl }

**adder** [ELECTR] A circuit in which two or more signals are combined to give an output-signal amplitude that is proportional to the sum of the input-signal amplitudes. Also known as adder circuit. { 'ad·ər }

**adding tape** [ENG] A surveyor's tape that is calibrated from 0 to 100 by full feet (or meters) in one direction, and has 1 additional foot (or meter) beyond the zero end which is subdivided in tenths or hundredths. { 'ad·iŋ ˌtāp }

**additive synthesis** [ENG ACOUS] A method of synthesizing complex tones by adding together an appropriate number of simple sine waves at harmonically related frequencies. { ¦ad·ə·div 'sin·thə·səs }

**adhesion** [ENG] Intimate sticking together of metal surfaces under compressive stresses by formation of metallic bonds. [MECH] The force of static friction between two bodies, or the effects of this force. { ad'hē·zhən }

**adhesional work** [THERMO] The work required to separate a unit area of a surface at which two substances are in contact. Also known as work of adhesion. { ad'hē·zhən·əl ˌwərk }

**adhesive bond** [MECH] The forces such as dipole bonds which attract adhesives and base materials to each other. { ad'hēz·iv 'bänd }

**adhesive bonding** [ENG] The fastening together of two or more solids by the use of glue, cement, or other adhesive. { ad'hēz·iv 'bänd·iŋ }

**adhesive strength** [ENG] The strength of an adhesive bond, usually measured as a force required to separate two objects of standard bonded area, by either shear or tensile stress. { ad'hēz·iv 'streŋkth }

**adiabatic** [THERMO] Referring to any change in which there is no gain or loss of heat. { ¦ad·ē·ə¦bad·ik }

**adiabatic compression** [THERMO] A reduction in volume of a substance without heat flow, in or out. { ¦ad·ē·ə¦bad·ik kəm'presh·ən }

**adiabatic cooling** [THERMO] A process in which the temperature of a system is reduced without any heat being exchanged between the system and its surroundings. { ¦ad·ē·ə¦bad·ik 'kül·iŋ }

**adiabatic curing** [ENG] The curing of concrete or mortar under conditions in which there is no loss or gain of heat. { ¦ad·ē·ə¦bad·ik 'kyůr·iŋ }

**adiabatic engine** [MECH ENG] A heat engine or thermodynamic system in which there is no gain or loss of heat. { ¦ad·ē·ə¦bad·ik 'en·jən }

**adiabatic envelope** [THERMO] A surface enclosing a thermodynamic system in an equilibrium which can be disturbed only by long-range forces or by motion of part of the envelope; intuitively, this means that no heat can flow through the surface. { ¦ad·ē·ə¦bad·ik 'en·vəˌlōp }

**adiabatic expansion** [THERMO] Increase in volume without heat flow, in or out. { ¦ad·ē·ə¦bad·ik ik'span·chən }

**adiabatic extrusion** [ENG] Forming plastic objects by energy produced by driving the plastic mass through an extruder without heat flow. { ¦ad·ē·ə¦bad·ik ik'strü·zhən }

**adiabatic process** [THERMO] Any thermodynamic procedure which takes place in a system without the exchange of heat with the surroundings. { ¦ad·ē·ə¦bad·ik prä·səs }

**adiabatic vaporization** [THERMO] Vaporization of a liquid with virtually no heat exchange between it and its surroundings. { ¦ad·ē·ə¦bad·ik ˌvā·pər·ə'zā·shən }

**adit** [CIV ENG] An access tunnel used for excavation of the main tunnel. { 'ad·ət }

**adjustable base anchor** [BUILD] An item which holds a doorframe above a finished floor. { ə'jəs·tə·bəl ¦bās 'aŋ·kər }

**adjustable parallels** [ENG] Wedge-shaped iron bars placed with the thin end of one on the thick end of the other, so that the top face of the upper and the bottom face of the lower remain parallel, but the distance between the two faces is adjustable; the bars can be locked in position by a screw to prevent shifting. { ə'jəs·tə·bəl 'par·ə,lelz }

**adjustable square** [ENG] A try square with an arm that is at right angles to the ruler; the position of the arm can be changed to form an L or a T. Also known as double square. { ə'jəs·tə·bəl 'skwer }

**adjustable wrench** [ENG] A wrench with one jaw which is fixed and another which is adjustable; the size is adjusted by a knurled screw. { ə'jəs·tə·bəl 'rench }

**adjusting** [ENG] In measurement technology, setting or compensating a measuring instrument or a weight in such a way that the indicated value deviates as little as possible from the actual value. { ə'jəst·iŋ }

**adjutage** [ENG] A tube attached to a container of liquid at an orifice to facilitate or regulate outflow. { 'aj·ə,tazh }

**admittance** [ELEC] A measure of how readily alternating current will flow in a circuit; the reciprocal of impedance, it is expressed in siemens. { əd'mit·əns }

**adobe construction** [BUILD] Wall construction with sun-dried blocks of adobe soil. { ə'dō·bē kən'strək·shən }

**ADP** *See* automatic data processing.

**ADR studio** [ENG ACOUS] A sound-recording studio used in motion-picture and television production to allow an actor who did not intelligibly record his or her speech during the original filming or video recording to do so by watching himself or herself on the screen and repeating the original speech with lip synchronism; it is equipped with facilities for recreating the acoustical liveness and background sound of the environment of the original dialog. Derived from automatic dialog replacement studio. Also known as postsynchronizing studio. { ¦ā¦dē'är ¸stüd·ē·ō }

**adsorption system** [MECH ENG] A device that dehumidifies air by bringing it into contact with a solid adsorbing substance. { ad'sȯrp·shən ¸sis·təm }

**advance** [CIV ENG] In railway engineering, a length of track that extends beyond the signal that controls it. [MECH ENG] To effect the earlier occurrence of an event, for example, spark advance or injection advance. { əd'vans }

**advanced programmatic risk analysis** [IND ENG] A method for managing engineering programs with multiple projects and strict resource constraints which balances both technical and management risks. { əd¦vanst ¸prō·grə¦mad·ik 'risk ə¸nal·əsəs }

**advanced sewage treatment** *See* tertiary sewage treatment. { əd¦vanst 'sü·ij ¸trēt·mənt }

**advance signal** [CIV ENG] A signal in a block system up to which a train may proceed within a block that is not completely cleared. { əd'vans 'sig·nəl }

**advance slope grouting** [ENG] A grouting technique in which the front of the mass of grout is forced to move horizontally through preplaced aggregate. { əd'vans 'slōp 'graůd·iŋ }

**advance slope method** [ENG] A method of concrete placement in which the face of the fresh concrete, which is not vertical, moves forward as the concrete is placed. { əd'vans 'slōp ¸meth·əd }

**adz** [DES ENG] A cutting tool with a thin arched blade, sharpened on the concave side, at right angles on the handle; used for rough dressing of timber. { adz }

**adz block** [MECH ENG] The part of a machine for wood planing that carries the cutters. { 'adz ¸bläk }

**aerated flow** [ENG] Flowing liquid in which gas is dispersed as fine bubbles throughout the liquid. { 'e¸rād·əd 'flō }

**aeration** [ENG] **1.** Exposing to the action of air. **2.** Causing air to bubble through. **3.** Introducing air into a solution by spraying, stirring, or similar method. **4.** Supplying or infusing with air, as in sand or soil. { e'rā·shən }

**aeration tank** [ENG] A fluid-holding tank with provisions to aerate its contents by bubbling air or another gas through the liquid or by spraying the liquid into the air. { e'rā·shən ¸taŋk }

**aerator** [DES ENG] A tool having a roller equipped with hollow fins; used to remove cores of soil from turf. [ENG] **1.** One who aerates. **2.** Equipment used for aeration. **3.** Any device for supplying air or gas under pressure, as for fumigating, welding, or ventilating. [MECH ENG] Equipment used to inject compressed air into sewage in the treatment process. { 'e¸rād·ər }

**aerial cableway** *See* aerial tramway. { 'e·rē·əl 'kā·bəl¸wā }

**aerial photogrammetry** [ENG] Use of aerial photographs to make accurate measurements in surveying and mapmaking. { 'e·rē·əl ¸fōt·ə'gram·ə·trē }

**aerial photographic reconnaissance** *See* aerial photoreconnaissance. { 'e·rē·əl ¸fōd·ə¦graf·ik ri'kän·ə·səns }

**aerial photography** [ENG] The making of photographs of the ground surface from an aircraft, spacecraft, or rocket. Also known as aerophotography. { 'e·rē·əl fə'täg·rə·fē }

**aerial photoreconnaissance** [ENG] The obtaining of information by air photography; the three types are strategic, tactical, and survey-cartographic photoreconnaissance. Also known as aerial photographic reconnaissance. { 'e·rē·əl ¸fōd·ō¸ri'kän·ə·səns }

**aerial reconnaissance** [ENG] The collection of information by visual, electronic, or photographic means while aloft. { 'e·rē·əl ¸ri'kän·ə·səns }

**aerial ropeway** *See* aerial tramway. { 'e·rē·əl 'rōp¸wā }

**aerial spud** [MECH ENG] A cable for moving and anchoring a dredge. { 'e·rē·əl 'spəd }

**aerial survey** [ENG] A survey utilizing photographic, electronic, or other data obtained from an airborne station. Also known as aerosurvey; air survey. { 'e·rē·əl 'sər·vā }

**aerial tramway** [MECH ENG] A system for transporting bulk materials that consists of one or more cables supported by steel towers and is capable of carrying a traveling carriage from which loaded buckets can be lowered or raised. Also known as aerial cableway; aerial ropeway. { 'e·rē·əl 'tram,wā }

**aeroballistics** [MECH] The study of the interaction of projectiles or high-speed vehicles with the atmosphere. { ,e·rō·bə'lis·tiks }

**aerobic-anaerobic interface** [CIV ENG] That point in bacterial action in the body of a sewage sludge or compost heap where both aerobic and anaerobic microorganisms participate, and the decomposition of the material goes no further. { e'rōb·ik 'an·ə,rōb·ik 'in·tər,fās }

**aerobic-anaerobic lagoon** [CIV ENG] A pond in which the solids from a sewage plant are placed in the lower layer; the solids are partially decomposed by anaerobic bacteria, while air or oxygen is bubbled through the upper layer to create an aerobic condition. { e'rōb·ik 'an·ə,rōb·ik lə'gün }

**aerobic digestion** [CHEM ENG] Digestion of matter suspended or dissolved in waste by microorganisms under favorable conditions of oxygenation. { e'rōb·ik də'jes·chən }

**aerobic lagoon** [CIV ENG] An aerated pond in which sewage solids are placed, and are decomposed by aerobic bacteria. Also known as aerobic pond. { e'rō·bik lə'gün }

**aerobic pond** *See* aerobic lagoon. { e'rō·bik 'pand }

**aerochlorination** [CIV ENG] Treatment of sewage with compressed air and chlorine gas to remove fatty substances. { ,e·rō,klȯr·ə'nā·shən }

**aerodrome** *See* airport. { 'e·rō,drōm }

**aerodynamic balance** [ENG] A balance used for the measurement of the forces exerted on the surfaces of instruments exposed to flowing air; frequently used in tests made on models in wind tunnels. { ,e·ro·dī'nam·ik 'bal·ənс }

**aerodynamic trajectory** [MECH] A trajectory or part of a trajectory in which the missile or vehicle encounters sufficient air resistance to stabilize its flight or to modify its course significantly. { ,e·ro·dī'nam·ik trə'jek·trē }

**aeroelasticity** [MECH] The deformation of structurally elastic bodies in response to aerodynamic loads. { ,e·rō·i,las'tis·əd·ē }

**aerofall mill** [MECH ENG] A grinding mill of large diameter with either lumps of ore, pebbles, or steel balls as crushing bodies; the dry load is airswept to remove mesh material. { 'e·rō,fȯl ,mil }

**aerofilter** [CIV ENG] A filter bed for sewage treatment consisting of coarse material and operated at high speed, often with recirculation. { 'e·rō,fil·tər }

**aerograph** [ENG] Any self-recording instrument carried aloft by any means to obtain meteorological data. { 'e·rō,graf }

**aerometeorograph** [ENG] A self-recording instrument used on aircraft for the simultaneous recording of atmospheric pressure, temperature, and humidity. { ,e·ro,mēd·ē'ȯr·ə,graf }

**aerometer** [ENG] An instrument to ascertain the weight or density of air or other gases. { e'rä·məd·ər }

**aerophotography** *See* aerial photography. { ,e·rō·fə'täg·rə'fē }

**aerosol generator** [MECH ENG] A mechanical means of producing a system of dispersed phase and dispersing medium, that is, an aerosol. { 'e·rə,sȯl 'jen·ə,rād·ər }

**aerospace engineering** [ENG] Engineering pertaining to the design and construction of aircraft and space vehicles and of power units, and to the special problems of flight in both the earth's atmosphere and space, as in the flight of air vehicles and in the launching, guidance, and control of missiles, earth satellites, and space vehicles and probes. { 'e·rō,spās ,en·jə'nir·iŋ }

**aerospace industry** [ENG] Industry concerned with the use of vehicles in both the earth's atmosphere and space. { 'e·rō,spās 'in·dəs·trē }

**aerostatic balance** [ENG] An instrument for weighing air. { ,e·rō'stad·ik 'bal·ənс }

**aerosurvey** *See* aerial survey. { 'e·rō,sər,vā }

**aerotrain** [ENG] A train that is propelled by a fan jet engine and floats on a cushion of low-pressure air, traveling at speeds up to 267 miles (430 kilometers) per hour. { 'e·rō,trān }

**aesthesiometer** *See* esthesiometer. { es,thē·zē'äm·əd·ər }

**affreightment** [IND ENG] The lease of a vessel for the transportation of goods. { ə'frāt·mənt }

**A frame** [BUILD] A dwelling whose main frames are in the shape of the letter A. [ENG] Two poles supported in an upright position by braces or guys and used for lifting equipment. Also known as double mast. { 'ā ,frām }

**afterboil** [MECH ENG] In an automotive engine, coolant boiling after the engine has stopped because of the inability of the engine at rest to dissipate excess heat. { 'af·tər,bȯil }

**afterburning** [MECH ENG] Combustion in an internal combustion engine following the maximum pressure of explosion. { 'af·tər,bərn·iŋ }

**aftercondenser** [MECH ENG] A condenser in the second stage of a two-stage ejector; used in steam power plants, refrigeration systems, and air conditioning systems. { 'af·tər·kən'dens·ər }

**aftercooler** [MECH ENG] A heat exchanger which cools air that has been compressed; used on turbocharged engines. { 'af·tər,kül·ər }

**aftercooling** [MECH ENG] The cooling of a gas after its compression. { 'af·tər,kül·iŋ }

**afterfilter** [MECH ENG] In an air-conditioning system, a high-efficiency filter located near a terminal unit. Also known as final filter. { 'af·tər,fil·tər }

**afterrunning** [MECH ENG] In an automotive engine, continued operation of the engine after the ignition switch is turned off. Also known as dieseling; run-on. { 'af·tər,rən·iŋ }

**after top dead center** [MECH ENG] The position of the piston after reaching the top of its stroke in an automotive engine. { 'af·tər 'täp 'ded 'sen·tər }

**agger** [CIV ENG] A material used for road fill over low ground. { 'a·jər }

**aggregate bin** [ENG] A structure designed for storing and dispensing dry granular construction materials such as sand, crushed stone, and gravel; usually has a hopperlike bottom that funnels the material to a gate under the structure. { 'ag·rə·gət ,bin }

**aggregate interlock** [ENG] The projection of aggregate particles or portions thereof from one side of a joint or crack in concrete into recesses in the other side so as to effect load transfer in compression and shear, and to maintain mutual alignment. { 'ag·rə·gət 'in·tər,läk }

**aggregate production scheduling** [IND ENG] A type of planning at a broad level without consideration of individual products and activities in order to develop a program of output that will meet future demand under given constraints. { ¦ag·ri·gət prə¦dək·shən ,skej·ə·liŋ }

**aggressive carbon dioxide** [CHEM ENG] The carbon dioxide dissolved in water in excess of the amount required to precipitate a specified concentration of calcium ions as calcium carbonate; used as a measure of the corrosivity and scaling properties of water. { ə'gres·iv 'kär·bən dī'äk,sīd }

**agile manufacturing** [IND ENG] Operations that can be rapidly reconfigured to satisfy changing market demands. { ¦a·jəl ,man·yü'fak·chə·riŋ }

**aging** [ELEC] Allowing a permanent magnet, capacitor, meter, or other device to remain in storage for a period of time, sometimes with a voltage applied, until the characteristics of the device become essentially constant. [ENG] **1.** The changing of the characteristics of a device due to its use. **2.** Operation of a product before shipment to stabilize characteristics or detect early failures. { 'ā·jiŋ }

**agitating speed** [MECH ENG] The rate of rotation of the drum or blades of a truck mixer or other device used for agitation of mixed concrete. { 'aj·ə,tād·iŋ ,spēd }

**agitating truck** [MECH ENG] A vehicle carrying a drum or agitator body, in which freshly mixed concrete can be conveyed from the point of mixing to that of placing, the drum being rotated continuously to agitate the contents. { 'aj·ə,tād·iŋ ,trək }

**agitator** [MECH ENG] A device for keeping liquids and solids in liquids in motion by mixing, stirring, or shaking. { 'aj·ə,tād·ər }

**agitator body** [MECH ENG] A truck-mounted drum for transporting freshly mixed concrete; rotation of internal paddles or of the drum prevents the setting of the mixture prior to delivery. { 'aj·ə,tād·ər 'bäd·ē }

**agricultural pipe drain** [CIV ENG] A system of porous or perforated pipes laid in a trench filled with gravel or the like; used for draining subsoil. { ¦ag·rə¦kəl·chə·rəl ,pīp ,drān }

**agricultural robot** [CONT SYS] A robot used to pick and harvest farm products and fruits. { ¦ag·rə¦kəl·chə·rəl 'rō,bät }

**AGV** *See* automated guided vehicle.

**aided tracking** [ENG] A system of radar-tracking a target signal in bearing, elevation, or range, or any combination of these variables, in which the rate of motion of the tracking equipment is machine-controlled in collaboration with an operator so as to minimize tracking error. { 'ād·əd 'trak·iŋ }

**aided-tracking mechanism** [ENG] A device consisting of a motor and variable-speed drive which provides a means of setting a desired tracking rate into a director or other fire-control instrument, so that the process of tracking is carried out automatically at the set rate until it is changed manually. { 'ād·əd 'trak·iŋ ,mek·ə,niz·əm }

**aided-tracking ratio** [ENG] The ratio between the constant velocity of the aided-tracking mechanism and the velocity of the moving target. { 'ād·əd 'trak·iŋ ,rā·shō }

**aiguille** [ENG] A slender form of drill used for boring or drilling a blasthole in rock. { ,ā'gwēl }

**aiming circle** [ENG] An instrument for measuring angles in azimuth and elevation in connection with artillery firing and general topographic work; equipped with fine and coarse azimuth micrometers and a magnetic needle. { 'ām·iŋ ,sər·kəl }

**aiming screws** [MECH ENG] On an automotive vehicle, spring-loaded screws designed to secure headlights to a support frame and permit aiming of the headlights in horizontal and vertical planes. { 'aim·iŋ ,skrüz }

**AIR** *See* air-injection reactor. { er }

**air-actuated** [ENG] Powered by compressed air. { 'er 'ak·chə,wād·əd }

**air-arc furnace** [ENG] An arc furnace designed to power wind tunnels, the air being superheated to 20,000 K and expanded to emerge at supersonic speeds. { 'er ,ärk 'fər·nəs }

**air aspirator valve** [MECH ENG] On certain automotive engines, a one-way valve installed on the exhaust manifold to allow air to enter the exhaust system; provides extra oxygen to convert carbon monoxide to carbon dioxide. Also known as gulp valve. { 'er 'as·pə,rād·ər ,valv }

**air-assist forming** [ENG] A plastics thermoforming method in which air pressure is used to partially preform a sheet before it enters the mold. { 'er ə'sist 'fȯrm·iŋ }

**air-atomizing oil burner** [ENG] An oil burner in which a stream of fuel oil is broken into very fine droplets through the action of compressed air. { 'er 'at·ə'mīz·iŋ ,ȯil 'bərn·ər }

**air bag** [MECH ENG] An automotive vehicle passenger safety device consisting of a passive restraint in the form of a bag which is automatically

inflated with gas to provide cushioned protection against the impact of a collision. { 'er ˌbag }

**air belt** [MECH ENG] The chamber which equalizes the pressure that is blasted into the cupola at the tuyeres. { 'er ˌbelt }

**air bind** [ENG] The presence of air in a conduit or pump which impedes passage of the liquid. { 'er ˌbīnd }

**airblasting** [ENG] A blasting technique in which air at very high pressure is piped to a steel shell in a shot hole and discharged. Also known as air breaking. { 'erˌblast·iŋ }

**air bleeder** [MECH ENG] A device, such as a needle valve, for removing air from a hydraulic system. { 'er 'blēd·ər }

**airborne collision warning system** [ENG] A system such as a radar set or radio receiver carried by an aircraft to warn of the danger of possible collision. { 'erˌbȯrn kə'lizh·ən 'wȯrn·iŋ ˌsis·təm }

**airborne detector** [ENG] A device, transported by an aircraft, whose function is to locate or identify an air or surface object. { 'erˌbȯrn di 'tek·tər }

**airborne electronic survey control** [ENG] The airborne portion of very accurate positioning systems used in controlling surveys from aircraft. { 'erˌbȯrn iˌlek'trän·ik 'sər·vā kən'trōl }

**airborne intercept radar** [ENG] Airborne radar used to track and "lock on" to another aircraft to be intercepted or followed. { 'erˌbȯrn 'in·tərˌsept ˌrāˌdär }

**airborne magnetometer** [ENG] An airborne instrument used to measure the magnetic field of the earth. { 'erˌbȯrn ˌmag·nə'täm·əd·ər }

**airborne profile recorder** [ENG] An electronic instrument that emits a pulsed-type radar signal from an aircraft to measure vertical distances between the aircraft and the earth's surface. Abbreviated APR. Also known as terrain profile recorder (TPR). { 'erˌbȯrn 'prōˌfīl riˌkȯrd·ər }

**airborne radar** [ENG] Radar equipment carried by aircraft to assist in navigation by pilotage, to determine drift, and to locate weather disturbances; a very important use is locating other aircraft either for avoidance or attack. { 'er ˌbȯrn 'rāˌdär }

**airborne waste** [ENG] Vapors, gases, or particulates introduced into the atmosphere by evaporation, chemical, or combustion processes; a frequent cause of smog and an irritant to eyes and breathing passages. { 'erˌbȯrn 'wāst }

**air-bound** [ENG] Of a pipe or apparatus, containing a pocket of air that prevents or reduces the desired liquid flow. { 'er ˌbaůnd }

**air brake** [MECH ENG] An energy-conversion mechanism activated by air pressure and used to retard, stop, or hold a vehicle or, generally, any moving element. { 'er ˌbrāk }

**air breaking** *See* airblasting. { 'er ˌbrāk·iŋ }

**air-breathing** [MECH ENG] Of an engine or aerodynamic vehicle, required to take in air for the purpose of combustion. { 'er 'brēt͟h·iŋ }

**air cap** [MECH ENG] A device used in thermal spraying which directs the air pattern for purposes of atomization. { 'er ˌkap }

**air casing** [ENG] A metal casing surrounding a pipe or reservoir and having a space between to prevent heat transmission. { 'er ˌkās·iŋ }

**air cell** [ELECTR] A cell in which depolarization at the positive electrode is accomplished chemically by reduction of the oxygen in the air. [MECH ENG] A small auxiliary combustion chamber used to promote turbulence and improve combustion in certain types of diesel engines. { 'er ˌsel }

**air chamber** [MECH ENG] A pressure vessel, partially filled with air, for converting pulsating flow to steady flow of water in a pipeline, as with a reciprocating pump. { 'er ˌchām·bər }

**air change** [ENG] A measure of the movement of a given volume of air in or out of a building or room in a specified time period; usually expressed in cubic feet per minute. { 'er ˌchānj }

**air check** [ENG ACOUS] A recording made of a live radio broadcast for filing purposes at the broadcasting facility. { 'er ˌchek }

**air classifier** [MECH ENG] A device to separate particles by size through the action of a stream of air. Also known as air elutriator. { 'er 'klas·əˌfī·ər }

**air cleaner** [ENG] Any of various devices designed to remove particles and aerosols of specific sizes from air; examples are screens, settling chambers, filters, wet collectors, and electrostatic precipitators. { 'er ˌklēn·ər }

**Airco-Hoover sweetening** [CHEM ENG] Removal of mercaptans from gasoline by caustic and water washes, then heating the dried gasoline and passing it with some oxygen through a reactor containing a slurry of diatomaceous earth impregnated with copper chloride; the oxygen regenerates the catalyst. { 'erˌkō 'hüv·ər 'swēt·niŋ }

**air compressor** [MECH ENG] A machine that increases the pressure of air by increasing its density and delivering the fluid against the connected system resistance on the discharge side. { 'er ˌkəm'pres·ər }

**air-compressor unloader** [MECH ENG] A device for control of air volume flowing through an air compressor. { 'er ˌkəm'pres·ər ən'lōd·ər }

**air-compressor valve** [MECH ENG] A device for controlling the flow into or out of the cylinder of a compressor. { 'er ˌkəm'pres·ər ˌvalv }

**air condenser** [MECH ENG] **1.** A steam condenser in which the heat exchange occurs through metal walls separating the steam from cooling air. Also known as air-cooled condenser. **2.** A device that removes vapors, such as of oil or water, from the airstream in a compressed-air line. { 'er ˌkən'dens·ər }

**air conditioner** [MECH ENG] A mechanism primarily for comfort cooling that lowers the temperature and reduces the humidity of air in buildings. { 'er ˌkən'dish·ən·ər }

**air conditioning** [MECH ENG] The maintenance of certain aspects of the environment within a defined space to facilitate the function of that space; aspects controlled include air temperature and motion, radiant heat level, moisture, and concentration of pollutants such as dust, microorganisms, and gases. Also known as climate control. { 'er ˌkən'dish·ən·iŋ }

**air conveyor** *See* pneumatic conveyor. { 'er kənˌvā·ər }

**air-cooled engine** [MECH ENG] An engine cooled directly by a stream of air without the interposition of a liquid medium. { 'er ˌküld 'en·jən }

**air-cooled heat exchanger** [MECH ENG] A finned-tube (extended-surface) heat exchanger with hot fluids inside the tubes, and cooling air that is fan-blown (forced draft) or fan-pulled (induced draft) across the tube bank. { 'er ˌküld ˌhēt ˌiks'chānj·ər }

**air cooling** [MECH ENG] Lowering of air temperature for comfort, process control, or food preservation. { 'er ˌkül·iŋ }

**air course** *See* airway. { 'er ˌkȯrs }

**aircraft detection** [ENG] The sensing and discovery of the presence of aircraft; major techniques include radar, acoustical, and optical methods. { 'erˌkraft di'tek·shən }

**aircraft impactor** [ENG] An instrument carried by an aircraft for the purpose of obtaining samples of airborne particles. { 'erˌkraft im'pak·tər }

**air-cure** [CHEM ENG] To vulcanize at ordinary room temperatures, or without the aid of heat. { 'er ˌkyür }

**air curtain** [MECH ENG] A stream of high-velocity temperature-controlled air which is directed downward across an opening; it excludes insects, exterior drafts, and so forth, prevents the transfer of heat across it, and permits air-conditioning of a space with an open entrance. { 'er ˌkərt·ən }

**air cushion** [MECH ENG] A mechanical device using trapped air to arrest motion without shock. { 'er ˌkúsh·ən }

**air-cushion vehicle** [MECH ENG] A transportation device supported by low-pressure, low-velocity air capable of traveling equally well over water, ice, marsh, or relatively level land. Also known as ground-effect machine (GEM); hovercraft. { 'er ˌkúsh·ən ˌvē·ə·kəl }

**air-cut** [ENG] Referring to the inadvertent mechanical incorporation of air into a liquid system. { 'er ˌkət }

**air cycle** [MECH ENG] A refrigeration cycle characterized by the working fluid, air, remaining as a gas throughout the cycle rather than being condensed to a liquid; used primarily in airplane air conditioning. { 'er ˌsī·kəl }

**air cylinder** [MECH ENG] A cylinder in which air is compressed by a piston, compressed air is stored, or air drives a piston. { 'er ˌsil·ən·dər }

**air density** [MECH] The mass per unit volume of air. { 'er ˌden·səd·ē }

**air diffuser** [BUILD] An air distribution outlet, usually located in the ceiling and consisting of deflecting vanes discharging supply air in various directions and planes, and arranged to promote mixing of the supplied air with the air already in the room. { 'er di¦fyüz·ər }

**air-distributing acoustical ceiling** [BUILD] A suspended acoustical ceiling in which the board or tile is provided with small, evenly distributed mechanical perforations; designed to provide a desired flow of air from a pressurized plenum above. { 'er di'strib·yəd·iŋ ə'kü·sti·kəl 'sēl·iŋ }

**air diving** [ENG] A type of diving in which the diver's breathing medium is a normal atmospheric mixture of oxygen and nitrogen; limited to depths of 190 feet (58 meters). { 'er ˌdīv·iŋ }

**air drain** [CIV ENG] An empty space left around the external foundation wall of a building to prevent the earth from lying against it and causing dampness. { 'er ˌdrān }

**airdraulic** [MECH ENG] Combining pneumatic and hydraulic action for operation. { ˌer'drȯl·ik }

**air drill** [MECH ENG] A drill powered by compressed air. { ¦er ˌdril }

**air drying** [ENG] Removing moisture from a material by exposure to air to the extent that no further moisture is released on contact with air; important in lumber manufacture. { ¦er 'drī·iŋ }

**air duct** *See* airflow duct. { ¦er ˌdəkt }

**air ejector** [MECH ENG] A device that uses a fluid jet to remove air or other gases, as from a steam condenser. { ¦er i'jek·tər }

**air eliminator** [MECH ENG] In a piping system, a device used to remove air from water, steam, or refrigerant. { ¦er i'lim·əˌnād·ər }

**air elutriator** *See* air classifier. { ¦er ē'lü·trēˌād·ər }

**air engine** [MECH ENG] An engine in which compressed air is the actuating fluid. { ¦er 'en·jən }

**air entrainment** [ENG] The inclusion of minute bubbles of air in cement or concrete through the addition of some material during grinding or mixing to reduce the surface tension of the water, giving improved properties for the end product. { ¦er in'trān·mənt }

**air escape** [DES ENG] A device that is fitted to a pipe carrying a liquid for releasing excess air; it contains a valve that controls air release while preventing loss of liquid. { 'er əˌskāp }

**air-exhaust ventilator** [MECH ENG] Any air-exhaust unit used to carry away dirt particles, odors, or fumes. { 'er ig'zȯst 'ven·təˌlād·ər }

**airfield** [CIV ENG] The area of an airport for the takeoff and landing of airplanes. { 'erˌfēld }

**air filter** [ENG] A device that reduces the concentration of solid particles in an airstream to a level that can be tolerated in a process or space occupancy; a component of most systems in which air is used for industrial processes, ventilation, or comfort air conditioning. { 'er ˌfil·tər }

**air flotation** *See* dissolved air flotation. { 'er flō'tā·shən }

**airflow duct** [ENG] A pipe, tube, or channel through which air moves into or out of an enclosed space. Also known as air duct. { 'er ˌflō ˌdəkt }

**airflow orifice** [ENG] An opening through which air moves out of an enclosed space. { 'er,flō 'ȯr·ə·fəs }

**airflow pipe** [ENG] A tube through which air is conveyed from one location to another. { 'er ˌflō ˌpīp }

**air-fuel mixture** [MECH ENG] In a carbureted gasoline engine, the charge of air and fuel that is mixed in the appropriate ratio in the carburetor and subsequently fed into the combustion chamber. { 'er 'fyül ˌmiks·chər }

**air gage** [ENG] **1.** A device that measures air pressure. **2.** A device that compares the shape of a machined surface to that of a reference surface by measuring the rate of passage of air between the surfaces. { 'er ˌgāj }

**air gap** [ELECTR] **1.** A gap or an equivalent filler of nonmagnetic material across the core of a choke, transformer, or other magnetic device. **2.** A spark gap consisting of two electrodes separated by air. **3.** The space between the stator and rotor in a motor or generator. [ENG] **1.** The distance between two components or parts. **2.** In plastic extrusion coating, the distance from the opening of the extrusion die to the nip formed by the pressure and chill rolls. **3.** The unobstructed vertical distance between the lowest opening of a faucet (or the like) which supplies a plumbing fixture (such as a tank or washbowl) and the level at which the fixture will overflow. { 'er ˌgap }

**air grating** [BUILD] A fixed metal grille on the exterior of a building through which air is brought into or discharged from the building for purposes of ventilation. { 'er ˌgrād·iŋ }

**air hammer** *See* pneumatic hammer. { 'er ˌham·ər }

**air-handling system** [MECH ENG] An air-conditioning system in which an air-handling unit provides part of the treatment of the air. { 'er ˈhand·liŋ ˌsis·təm }

**air-handling unit** [MECH ENG] A packaged assembly of air-conditioning components (coils, filters, fan humidifier, and so forth) which provides for the treatment of air before it is distributed. { 'er ˈhand·liŋ ˌyü·nət }

**air heater** *See* air preheater. { 'er ˌhēd·ər }

**air-heating system** *See* air preheater. { 'er ˌhēd·iŋ 'sis·təm }

**air hoist** [MECH ENG] A lifting tackle or tugger constructed with cylinders and pistons for reciprocating motion and air motors for rotary motion, all powered by compressed air. Also known as pneumatic hoist. { 'er ˌhȯist }

**air horn** [MECH ENG] In an automotive engine, the upper portion of the carburetor barrel through which entering air passes in quantities controlled by the choke plate and the throttle plate. { 'er ˌhȯrn }

**air horsepower** [MECH ENG] The theoretical (minimum) power required to deliver the specified quantity of air under the specified pressure conditions in a fan, blower, compressor, or vacuum pump. Abbreviated air hp. { 'er 'hȯrs ˌpaú·ər }

**air hp** *See* air horsepower.

**air-injection reactor** [MECH ENG] A unit installed in an automotive engine which mixes fresh air with hot exhaust gases in the exhaust manifold to react with any gasoline that has escaped unburned from the cylinders. Abbreviated AIR. { 'er inˈjek·shən rē'ak·tər }

**air-injection system** [MECH ENG] A device that uses compressed air to inject the fuel into the cylinder of an internal combustion engine. Also known as thermactor. { 'er inˈjek·shən ˌsis·təm }

**air inlet** [MECH ENG] In an air-conditioning system, a device through which air is exhausted from a room or building. { 'er ˈinˌlet }

**air-inlet valve** [MECH ENG] In a heating/air-conditioning system of a motor vehicle, a valve in the plenum blower assembly that permits selection of either inside or outside air. { 'er ˈinˌlet ˌvalv }

**air knife** [ENG] A device that uses a thin, flat jet of air to remove the excess coating from freshly coated paper. { 'er ˌnīf }

**air-knife coating** [ENG] An even film of coating left on paper after treatment with an air knife. { 'er ˈnīf ˌkōd·iŋ }

**air-lance** [ENG] To direct a pressurized-air stream to remove unwanted accumulations, as in boiler-wall cleaning. { 'er ˌlans }

**air leakage** [MECH ENG] **1.** In ductwork, air which escapes from a joint, coupling, and such. **2.** The undesired leakage or uncontrolled passage of air from a ventilation system. { 'er ˌlēk·əj }

**airless spraying** [ENG] The spraying of paint by means of high fluid pressure and special equipment. Also known as hydraulic spraying. { 'er·ləs 'sprā·iŋ }

**air lift** [MECH ENG] **1.** Equipment for lifting slurry or dry powder through pipes by means of compressed air. **2.** *See* air-lift pump. { ˈer ˈlift }

**air-lift hammer** [MECH ENG] A gravity drop hammer used in closed die forging in which the ram is raised to its starting point by means of an air cylinder. { 'erˌlift 'ham·ər }

**air-lift pump** [MECH ENG] A device composed of two pipes, one inside the other, used to extract water from a well; the lower end of the pipes is submerged, and air is delivered through the inner pipe to form a mixture of air and water which rises in the outer pipe above the water in the well; also used to move corrosive liquids, mill tailings, and sand. Also known as air lift. { 'er ˌlift 'pəmp }

**air line** [ENG] A fault, in the form of an elongated bubble, in glass tubing. Also known as hairline. [MECH ENG] A duct, hose, or pipe that supplies compressed air to a pneumatic tool or piece of equipment. { 'er ˌlīn }

**air-line lubricator** *See* line oiler. { 'er ˌlīn 'lü·brəˌkād·ər }

**air lock** [ENG] **1.** A chamber capable of being hermetically sealed that provides for passage between two places of different pressure, such as between an altitude chamber and the outside

atmosphere, or between the outside atmosphere and the work area in a tunnel or shaft being excavated through soil subjected to water pressure higher than atmospheric. Also known as lock. **2.** An air bubble in a pipeline which impedes liquid flow. **3.** A depression on the surface of a molded plastic part that results from air trapped between the surface of the mold and the plastic. { 'er ˌläk }

**air-lock strip** [BUILD] The weather stripping which is fastened to the edges of each wing of a revolving door. { 'er ˌläk ˌstrip }

**air meter** [ENG] A device that measures the flow of air, or gas, expressed in volumetric or weight units per unit time. Also known as airometer. { 'er ˌmēd·ər }

**air mileage indicator** [ENG] An instrument on an airplane which continuously indicates mileage through the air. { ¦er ˌmī·lij 'in·dəˌkād·ər }

**air mileage unit** [ENG] A device which derives continuously and automatically the air distance flown, and feeds this information into other units, such as an air mileage indicator. { 'er ˌmī·lij ˌyü·nət }

**air-mixing plenum** [MECH ENG] In an air-conditioning system, a chamber in which the recirculating air is mixed with air from outdoors. { 'er ˌmiks·iŋ 'plēn·əm }

**air monitoring** [CIV ENG] A practice of continuous air sampling by various levels of government or particular industries. { 'er ˌmän·ə·triŋ }

**air motor** [MECH ENG] A device in which the pressure of confined air causes the rotation of a rotor or the movement of a piston. { 'er ˌmōd·ər }

**air nozzle** [MECH ENG] In an automotive engine, a device for supplying air to the air-injection reactor. { 'er ˌnäz·əl }

**airometer** [ENG] **1.** An apparatus for both holding air and measuring the quantity of air admitted into it. **2.** *See* air meter. { ˌer'ä·məd·ər }

**air outlet** [MECH ENG] In an air-conditioning system, a device at the end of a duct through which air is supplied to a space. { 'er ˌaůt·lət }

**air-permeability test** [ENG] A test for the measurement of the fineness of powdered materials, such as portland cement. { ¦er ˌpər·mē·ə'bil·ə·dē ˌtest }

**airplane flare** [ENG] A flare, often magnesium, that is dropped from an airplane to illuminate a ground area; a small parachute decreases the rate of descent. { 'erˌplān ˌfler }

**air pocket** [ENG] An air-filled space that is normally occupied by a liquid. Also known as air trap. { 'er ˌpäk·ət }

**air-pollution control** [ENG] A practical means of treating polluting sources to maintain a desired degree of air cleanliness. { ¦er pə'lü·shən kən ˌtrōl }

**airport** [CIV ENG] A terminal facility used for aircraft takeoff and landing and including facilities for handling passengers and cargo and for servicing aircraft. Also known as aerodrome. { 'erˌpȯrt }

**airport engineering** [CIV ENG] The planning, design, construction, and operation and maintenance of facilities providing for the landing and takeoff, loading and unloading, servicing, maintenance, and storage of aircraft. { 'erˌpȯrt enˌjə'nir·iŋ }

**air preheater** [MECH ENG] A device used in steam boilers to transfer heat from the flue gases to the combustion air before the latter enters the furnace. Also known as air heater; air-heating system. { 'er ˌprē'hēd·ər }

**airproof** *See* airtight. { 'erˌprüf }

**air propeller** [MECH ENG] A rotating fan for moving air. { 'er prəˌpel·ər }

**air pump** [MECH ENG] A device for removing air from an enclosed space or for adding air to an enclosed space. { 'er ˌpəmp }

**air puncher** [ENG] A machine consisting essentially of a reciprocating chisel or pick, driven by air. { 'er ˌpən·chər }

**air purge** [MECH ENG] Removal of particulate matter from air within an enclosed vessel by means of air displacement. { 'er ˌpərj }

**air-raid shelter** [CIV ENG] A chamber, often underground, provided with living facilities and food, for sheltering people against air attacks. { ¦er ˌrād ¦shel·tər }

**air receiver** [MECH ENG] A vessel designed for compressed-air installations that is used both to store the compressed air and to permit pressure to be equalized in the system. { 'er riˌsē·vər }

**air register** [ENG] A device attached to an air-distributing duct for the purpose of controlling the discharge of air into the space to be heated, cooled, or ventilated. { 'er ˌrej·ə·stər }

**air regulator** [MECH ENG] A device for regulating airflow, as in the burner of a furnace. { ¦er ¦reg·yəˌlād·ər }

**air reheater** [MECH ENG] In a heating system, any device used to add heat to the air circulating in the system. { ¦er ˌrē¦hēd·ər }

**air release valve** [MECH ENG] A valve, usually manually operated, which is used to release air from a water pipe or fitting. { 'er ri¦lēs ˌvalv }

**air resistance** [MECH] Wind drag giving rise to forces and wear on buildings and other structures. { 'er ri'zis·təns }

**air ring** [ENG] In plastics forming, a circular manifold which distributes an even flow of cool air into a hollow tubular form passing through the manifold. { 'er ˌriŋ }

**air sampling** [ENG] The collection and analysis of samples of air to measure the amounts of various pollutants or other substances in the air, or the air's radioactivity. { 'er ˌsam·pliŋ }

**air scoop** [DES ENG] An air-duct cowl projecting from the outer surface of an aircraft or automobile, which is designed to utilize the dynamic pressure of the airstream to maintain a flow of air. { 'er ˌsküp }

**air screw** [MECH ENG] A screw propeller that operates in air. { 'er ˌskrü }

**air-seasoned** [ENG] Treated by exposure to air to give a desired quality. { 'er ˌsēz·ənd }

**air separator** [MECH ENG] A device that uses an air current to separate a material from another of greater density or particles from others of greater size. { ¦er ˌsep·əˌrād·ər }

**air shaft** [BUILD] An open space surrounded by the walls of a building or buildings to provide ventilation for windows. Also known as air well. { 'er ˌshaft }

**air shot** [ENG] A shot prepared by loading (charging) so that an air space is left in contact with the explosive for the purpose of lessening its shattering effect. { 'er ˌshät }

**Airslide conveyor** [MECH ENG] An air-activated gravity-type conveyor, of the Fuller Company, using low-pressure air to aerate or fluidize pulverized material to a degree which will permit it to flow on a slight incline by the force of gravity. { ¦erˌslīd kənˈvā·ər }

**air space** [ENG] An enclosed space containing air in a wall for thermal insulation. { ¦er ¦spās }

**airspeed head** [ENG] Any instrument or device, usually a pitot tube, mounted on an aircraft for receiving the static and dynamic pressures of the air used by the airspeed indicator. { 'erˌspēd ˌhed }

**airspeed indicator** [ENG] A device that computes and displays the speed of an aircraft relative to the air mass in which the aircraft is flying. { ¦erˌspēd ˌin·dəˌkād·ər }

**air spring** [MECH ENG] A spring in which the energy storage element is air confined in a container that includes an elastomeric bellows or diaphragm. { 'er ˌspriŋ }

**air-standard cycle** [THERMO] A thermodynamic cycle in which the working fluid is considered to be a perfect gas with such properties of air as a volume of 12.4 cubic feet per pound at 14.7 pounds per square inch (approximately 0.7756 cubic meter per kilogram at 101.36 kilopascals) and 492°R and a ratio of specific heats of 1:4. { ¦er ¦stan·dərd 'sī·kəl }

**air-standard engine** [MECH ENG] A heat engine operated in an air-standard cycle. { ¦er ¦stan·dərd 'en·jən }

**air starting valve** [MECH ENG] A device that admits compressed air to an air starter. { 'er ¦stärd·iŋ ˌvalv }

**air stripping** [CHEM ENG] The process of bubbling air through water to remove volatile organic substances from the water. { 'er ˌstrip·iŋ }

**air-supply mask** *See* air-tube breathing apparatus. { 'er səˈplī ˌmask }

**air surveillance** [ENG] Systematic observation of the airspace by visual, electronic, or other means, primarily for identifying all aircraft in that airspace, and determining their movements. { 'er sərˈvā·ləns }

**air surveillance radar** [ENG] Radar of moderate range providing position of aircraft by azimuth and range data without elevation data; used for air-traffic control. { ¦er sərˈvā·ləns ¦raˌdär }

**air survey** *See* aerial survey. { ¦er ¦sərˌvā }

**air-suspension encapsulation** [CHEM ENG] A technique for microencapsulation of various types of solid particles; the particles undergo a series of cycles in which they are first suspended by a vertical current of air while they are sprayed with a solution of coating material, and are then moved by the airstream into a region where they undergo a drying treatment. Also known as Wurster process. { 'ər səˈspen·shən inˌkap·səˈlā·shən }

**air-suspension system** [MECH ENG] Parts of an automotive vehicle that are intermediate between the wheels and the frame, and support the car body and frame by means of a cushion of air to absorb road shock caused by passage of the wheels over irregularities. { 'er səˈspen·shən ¦sis·təm }

**air sweetening** [CHEM ENG] A process in which air or oxygen is used to oxidize lead mercaptides to disulfides instead of using elemental sulfur. { 'er ˌswēt·ən·iŋ }

**air system** [MECH ENG] A mechanical refrigeration system in which air serves as the refrigerant in a cycle comprising compressor, heat exchanger, expander, and refrigerating core. { 'er ˌsis·təm }

**air terminal** [CIV ENG] A facility providing a place of assembly and amenities for airline passengers and space for administrative functions. [ELEC] A structure, such as a tower, that serves as a lightning arrester. { 'er ˌtərm·ən·əl }

**air thermometer** [ENG] A device that measures the temperature of an enclosed space by means of variations in the pressure or volume of air contained in a bulb placed in the space. { ¦er thəˈmäm·əd·ər }

**airtight** [ENG] Not permitting the passage of air. Also known as airproof. { 'erˌtīt }

**air-to-air resistance** [CIV ENG] The resistance provided by the wall of a building to the flow of heat. { ¦er tü ¦er riˈsis·təns }

**air toxics** *See* hazardous air pollutants. { 'er ¦täk·siks }

**air trap** [CIV ENG] A U-shaped pipe filled with water that prevents the escape of foul air or gas from such systems as drains and sewers. *See* air pocket. { 'er ˌtrap }

**air-tube breathing apparatus** [ENG] A device consisting of a smoke helmet, mask, or mouthpiece supplied with fresh air by means of a flexible tube. Also known as air-supply mask. { ¦er ˌtüb 'brēth·iŋ ˌa·pəˈrad·əs }

**air-tube clutch** [MECH ENG] A clutch fitted with a tube whose inflation causes the clutch to engage, and deflation, to disengage. { 'er ¦tüb ˌkləch }

**air valve** [MECH ENG] A valve that automatically lets air out of or into a liquid-carrying pipe when the internal pressure drops below atmospheric. { 'er ˌvalv }

**air vessel** [ENG] **1.** An enclosed volume of air which uses the compressibility of air to minimize water hammer. Also known as accumulator. **2.** An enclosed chamber using the compressibility of air to promote a more uniform flow of water in a piping system. { 'er ˌves·əl }

**air washer** [MECH ENG] **1.** A device for cooling and cleaning air in which the entering warm,

moist air is cooled below its dew point by refrigerated water so that although the air leaves close to saturation with water, it has less moisture per unit volume than when it entered. **2.** Apparatus to wash particulates and soluble impurities from air by passing the airstream through a liquid bath or spray. { 'er ˌwash·ər }

**air-water jet** [ENG] A jet of mixed air and water which leaves a nozzle at high velocity; used in cleaning the surfaces of concrete or rock. { ¦er ¦wȯd·ər 'jet }

**air-water storage tank** [ENG] A water storage tank in which the air above the water is compressed. { ¦er ¦wȯd·ər 'stȯr·ij ˌtaŋk }

**airway** [BUILD] A passage for ventilation between thermal insulation and roof boards. { 'erˌwā }

**air well** *See* air shaft. { 'er ˌwel }

**Airy points** [ENG] The points at which a horizontal rod is optionally supported to avoid its bending. { ¦er·ē ˌpȯints }

**Airy stress function** [MECH] A biharmonic function of two variables whose second partial derivatives give the stress components of a body subject to a plane strain. { ¦er·ē 'stres ˌfəŋk·shən }

**aisleway** [CIV ENG] A passage or walkway within a factory, storage building, or shop permitting the flow of inside traffic. { 'īlˌwā }

**Aitken dust counter** [ENG] An instrument for determining the dust content of the atmosphere. Also known as Aitken nucleus counter. { ¦āt·kən 'dəst ˌkaunt·ər }

**Aitken nucleus counter** *See* Aitken dust counter. { ¦āt·kən 'nü·klē·əs ˌkaunt·ər }

**alarm gage** [ENG] A device that actuates a signal either when the steam pressure in a boiler is too high or when the water level in a boiler is too low. { ə'lärm ˌgaj }

**alarm system** [ENG] A system which operates a warning device after the occurrence of a dangerous or undesirable condition. { ə'lärm ˌsis·təm }

**alarm valve** [ENG] A device that sounds an alarm when water flows in an automatic sprinkler system. { ə'lärm ˌvalv }

**albedometer** [ENG] An instrument used for the measurement of the reflecting power, that is, the albedo, of a surface. { al·bə'dä·məd·ər }

**Alberger process** [CHEM ENG] A method of manufacturing salt by heating brine at high pressure and passing it to a graveler which removes calcium sulfate; the salt crystallizes as the pressure is reduced and thus is separated from the brine. { 'äl·bər·gər 'präs·əs }

**alcoholimeter** *See* alcoholometer. { ˌal·kəˌhȯ'lim·əd·ər }

**alcoholmeter** *See* alcoholometer. { 'al·kəˌhȯl ˌmēd·ər }

**alcoholometer** [ENG] A device, such as a form of hydrometer, that measures the quantity of an alcohol contained in a liquid. Also known as alcoholimeter; alcoholmeter. { ˌal·kəˌhȯ'lä·məd·ər }

**alcohol thermometer** [ENG] A liquid-in-glass thermometer that uses ethyl alcohol as its working substance. { 'al·kəˌhȯl thər'mäm·əd·ər }

**alidade** [ENG] **1.** An instrument for topographic surveying and mapping by the plane-table method. **2.** Any sighting device employed for angular measurement. { 'al·əˌdād }

**aligning drift** [MECH ENG] A rod or bar that is used for aligning parts during assembly. { ə'līn·iŋ ˌdrift }

**alignment** [CIV ENG] In a survey for a highway, railroad, or similar installation, a ground plan that shows the horizontal direction of the route. [ELECTR] The process of adjusting components of a system for proper interrelationship, including the adjustment of tuned circuits for proper frequency response and the time synchronization of the components of a system. [ENG] Placing of surveying points along a straight line. { ə'līn·mənt }

**alignment correction** [ENG] A correction applied to the measured length of a line to allow for not holding the tape exactly in a vertical plane of the line. { ə'līn·mənt kə'rek·shən }

**alignment pin** [DES ENG] Pin in the center of the base of an octal, loctal, or other tube having a single vertical projecting rib that aids in correctly inserting the tube in its socket. { ə'līn·mənt ˌpin }

**alignment wire** *See* ground wire. { ə'līn·mənt ˌwīr }

**alkali ion diode** [ENG] In testing for leaks, a device which senses the presence of halogen gases by the use of positive ions of alkali metal on the heated diode surfaces. { 'al·kəˌlī 'ī·ən 'dīˌōd }

**alkaline wash** [CHEM ENG] The removal of impurities from kerosine,used for illuminating purposes, by caustic soda solution. { 'al·kəˌlīn ˌwäsh }

**Alkar process** [CHEM ENG] Catalytic alkylation of aromatic hydrocarbons with olefins to produce alkylaromatics; for example, production of ethylbenzene from benzene and ethylene. { 'alˌkar 'präs·əs }

**alkylate bottom** [CHEM ENG] Residue from fractionation of total alkylate which boils at a higher temperature than aviation gasolines. { 'al·kəˌlāt 'bäd·əm }

**alkylation** [CHEM ENG] A refinery process for chemically combining isoparaffin with olefin hydrocarbons. { ˌal·kə'lā·shən }

**allège** [BUILD] A part of a wall which is thinner than the rest, especially the spandrel under a window. { a'lezh }

**Allen screw** [DES ENG] A screw or bolt which has an axial hexagonal socket in its head. { 'al·ən ˌskrü }

**Allen wrench** [DES ENG] A wrench made from a straight or bent hexagonal rod, used to turn an Allen screw. { 'al·ən ˌrench }

**alligator shears** [ENG] A cutting tool with a fixed lower blade and a movable upper blade (shearing arm) that moves in an arc around a fulcrum pin; used mainly for shearing applications that do not require great accuracy. { 'al·əˌgād·ər ˌshirz }

**alligator wrench** [DES ENG] A wrench having fixed jaws forming a V, with teeth on one or both jaws. { 'al·ə,gād·ər ,rench }

**allocate** [IND ENG] To assign a portion of a resource to an activity. { 'a·lō,kāt }

**allowable bearing value** [CIV ENG] The maximum permissible pressure on foundation soil that provides adequate safety against rupture of the soil mass or movement of the foundation of such magnitude as to impair the structure imposing the pressure. Also known as allowable soil pressure. { ə'laù·ə·bəl 'ber·iŋ ,val·yü }

**allowable load** [MECH] The maximum force that may be safely applied to a solid, or is permitted by applicable regulators. { ə'laù·ə·bəl 'lōd }

**allowable soil pressure** *See* allowable bearing value. { ə'laù·ə·bəl 'sȯil ,presh·ər }

**allowable stress** [MECH] The maximum force per unit area that may be safely applied to a solid. { ə'laù·ə·bəl 'stres }

**allowance** [DES ENG] An intentional difference in sizes of two mating parts, allowing clearance usually for a film of oil, for running or sliding fits. { ə'laù·əns }

**allowed hours** *See* standard hour. { ə'laùd 'aù·ərz }

**allowed time** [IND ENG] Amount of time allowed each employee for personal needs during a work cycle. { ə'laùd 'tīm }

**alloy junction** [ELECTR] A junction produced by alloying one or more impurity metals to a semiconductor to form a *p* or *n* region, depending on the impurity used. Also known as fused junction. { 'a,lȯi ,jəŋk·shən }

**alloy-junction diode** [ELECTR] A junction diode made by placing a pill of doped alloying material on a semiconductor material and heating until the molten alloy melts a portion of the semiconductor, resulting in a *pn* junction when the dissolved semiconductor recrystallizes. Also known as fused-junction diode. { 'a,lȯi ¦jəŋk·shən 'dī,ōd }

**all-translational system** [CONT SYS] A simple robotic system in which there is no rotation of the robot or its components during movements of the robot's body. { ¦ȯl ,tranz'lā·shən·əl 'sis·təm }

**all-weather airport** [CIV ENG] An airport with facilities to permit the landing of qualified aircraft and aircrewmen without regard to operational weather limits. { 'ȯl ¦weth·ər 'er,pȯrt }

**alpha** [ELECTR] The ratio between the change in collector current and the change in emitter current of a transistor. { 'al·fə }

**alpha cutoff frequency** [ELECTR] The frequency at the high end of a transistor's range at which current amplification drops 3 decibels below its low-frequency value. { 'al·fə 'kəd,ȯf ,frē·kwən·sē }

**alpha-ray vacuum gage** [ENG] An ionization gage in which the ionization is produced by alpha particles emitted by a radioactive source, instead of by electrons emitted from a hot filament; used chiefly for pressures from $10^{-3}$ to 10 torrs. Also known as alphatron. { 'al·fə ,rā 'vak·yüm ,gāj }

**alphatron** *See* alpha-ray vacuum gage. { 'al·fə,trän }

**alt** *See* altitude.

**altazimuth** [ENG] An instrument equipped with both horizontal and vertical graduated circles, for the simultaneous observation of horizontal and vertical directions or angles. Also known as astronomical theodolite; universal instrument. { al'taz·ə·məth }

**alt-azimuth mounting** *See* altitude-azimuth mounting. { ,alt 'az·ə·məth ,maùnt·iŋ }

**alternate energy** [ENG] Any source of energy other than fossil fuels that is used for constructive purposes. { 'ȯl·tər·nət 'en·ər·jē }

**alternating current** [ELEC] Electric current that reverses direction periodically, usually many times per second. Abbreviated ac. { ¦ȯl·tər,nād·iŋ ¦kər·ənt }

**alternating-current welder** [ENG] A welding machine utilizing alternating current for welding purposes. { ¦ȯl·tər,nād·iŋ ¦kər·ənt 'weld·ər }

**alternating stress** [MECH] A stress produced in a material by forces which are such that each force alternately acts in opposite directions. { 'ȯl·tər·nād·iŋ 'stres }

**altigraph** [ENG] A pressure altimeter that has a recording mechanism to show the changes in altitude. { 'al·tə,graf }

**altimeter** [ENG] An instrument which determines the altitude of an object with respect to a fixed level, such as sea level; there are two common types: the aneroid altimeter and the radio altimeter. { al'tim·əd·ər }

**altimeter corrections** [ENG] Corrections which must be made to the readings of a pressure altimeter to obtain true altitudes; involve horizontal pressure gradient error and air temperature error. { al'tim·əd·ər kə'rek·shənz }

**altimeter setting** [ENG] The value of atmospheric pressure to which the scale of an aneroid altimeter is set; after United States practice, the pressure that will indicate airport elevation when the altimeter is 10 feet (3 meters) above the runway (approximately cockpit height). { al 'tim·əd·ər ,sed·iŋ }

**altimeter-setting indicator** [ENG] A precision aneroid barometer calibrated to indicate directly the local altimeter setting. { al'tim·əd·ər ¦sed·iŋ 'in·də,kād·ər }

**altimetry** [ENG] The measurement of heights in the atmosphere (altitude), generally by an altimeter. { al'tim·ə·trē }

**altitude** Abbreviated alt. [ENG] **1.** Height, measured as distance along the extended earth's radius above a given datum, such as average sea level. **2.** Angular displacement above the horizon measured by an altitude curve. { 'al·tə,tüd }

**altitude azimuth** [ENG] An azimuth determined by solution of the navigational triangle with altitude, declination, and latitude given. { 'al·tə,tüd 'az·ə·məth }

**altitude-azimuth mounting** [ENG] A two-axis telescope mounting in which the azimuth of the direction in which the telescope is pointed is

determined by rotation about a vertical axis and the corresponding altitude is determined by rotation about a horizontal axis; computer-controlled motors must move the telescope in both altitude and azimuth to compensate for the earth's rotation. Also known as alt-azimuth mounting. { ¦al·tə¸tüd 'az·ə·məth ¸maünt·iŋ }

**altitude chamber** [ENG] A chamber within which the air pressure, temperature, and so on can be adjusted to simulate conditions at different altitudes; used for experimentation and testing. { 'al·tə¸tüd ¸chām·bər }

**altitude curve** [ENG] The arc of a vertical circle between the horizon and a point on the celestial sphere, measured upward from the horizon. { 'al·tə¸tüd ¸kərv }

**altitude datum** [ENG] The arbitrary level from which heights are reckoned. { 'al·tə¸tüd ¸dad·əm }

**altitude difference** [ENG] The difference between computed and observed altitudes, or between precomputed and sextant altitudes. Also known as altitude intercept; intercept. { 'al·tə¸tüd 'dif·rəns }

**altitude intercept** *See* altitude difference. { 'al·tə¸tüd 'in·tər¸sept }

**aluminize** [ENG] To apply a film of aluminum to a material, such as glass. { ə'lüm·ə¸nīz }

**AM** *See* amplitude modulation.

**A-mast** [ENG] An A-shaped arrangement of upright poles for supporting a mechanism designed to lift heavy loads. { 'ā ¸mast }

**ambient** [ENG] Surrounding; especially, of or pertaining to the environment about a flying aircraft or other body but undisturbed or unaffected by it, as in ambient air or ambient temperature. { 'am·bē·ənt }

**American basement** [BUILD] A basement located above ground level and containing the building's main entrance. { ə'mer·ə·kən 'bās·mənt }

**American bond** [CIV ENG] A bond in which every fifth, sixth, or seventh course of a wall consists of headers and the other courses consist of stretchers. Also known as common bond; Scotch bond. { ə'mer·ə·kən 'bänd }

**American caisson** *See* box caisson. { ə'mer·ə·kən 'kā¸sän }

**American filter** *See* disk filter. { ə'mer·ə·kən 'fil·tər }

**American melting point** [CHEM ENG] A temperature 3°F (1.7°C) higher than the American Society for Testing and Materials Method D87 paraffin-wax melting point. { ə'mer·ə·kən 'melt·iŋ ¸pȯint }

**American standard beam** [CIV ENG] A type of I beam made of hot-rolled structural steel. { ə'mer·ə·kən 'stan·dərd 'bēm }

**American standard channel** [CIV ENG] A C-shaped structural member made of hot-rolled structural steel. { ə'mer·ə·kən 'stan·dərd 'chan·əl }

**American standard pipe thread** [DES ENG] Taper, straight, or dryseal pipe thread whose dimensions conform to those of a particular series of specified sizes established as a standard in the United States. Also known as Briggs pipe thread. { ə'mer·ə·kən 'stan·dərd 'pīp ¸thred }

**American standard screw thread** [DES ENG] Screw thread whose dimensions conform to those of a particular series of specified sizes established as a standard in the United States; used for bolts, nuts, and machine screws. { ə'mer·ə·kən 'stan·dərd 'skrü ¸thred }

**American system drill** *See* churn drill. { ə'mer·ə·kən ¦sis·təm ¸dril }

**American Table of Distances** [ENG] Published data concerning the safe storage of explosives and ammunition. { ə'mer·ə·kən ¸tā·bəl əv 'dis·təns·əz }

**ammeter** [ENG] An instrument for measuring the magnitude of electric current flow. Also known as electric current meter. { 'a¸mēd·ər }

**ammonia absorption refrigerator** [MECH ENG] An absorption-cycle refrigerator which uses ammonia as the circulating refrigerant. { ə'mōn·yə əb¦sorp·shən ri'frij·ə¸rād·ər }

**ammonia compressor** [MECH ENG] A device that decreases the volume of a quantity of gaseous ammonia by the amplification of pressure; used in refrigeration systems. { ə'mōn·yə kəm'pres·ər }

**ammonia condenser** [MECH ENG] A device in an ammonia refrigerating system that raises the pressure of the ammonia gas in the evaporating coil, conditions the ammonia, and delivers it to the condensing system. { ə'mōn·yə kən'dens·ər }

**ammonia liquor** [CHEM ENG] Water solution of ammonia, ammonium compounds, and impurities, obtained from destructive distillation of bituminous coal. { ə'mōn·yə 'lik·ər }

**ammonia meter** [ENG] A hydrometer designed specifically to determine the density of aqueous ammonia solutions. { ə'mō·nyə ¸mēd·ər }

**ammonia synthesis** [CHEM ENG] Chemical combination of nitrogen and hydrogen gases at high temperature and pressure in the presence of a catalyst to form ammonia. { ə'mōn·yə 'sin·thə·səs }

**ammonia valve** [ENG] A valve that is resistant to corrosion by ammonia. { ə'mōn·yə ¸valv }

**ammonoxidation** *See* ammoxidation. { ¸a·mən¸äk·sə'dā·shən }

**ammoxidation** [CHEM ENG] A process in which mixtures of propylene, ammonia, and oxygen are converted in the presence of a catalyst, with acrylonitrile as the primary product. Also known as ammonoxidation; oxyamination. { ¸am¸äk·sə'dā·shən }

**amortize** [IND ENG] To reduce gradually an obligation, such as a mortgage, by periodically paying a part of the principal as well as the interest. { 'am·ər¸tīz }

**amount limit** [IND ENG] In a test for a fixed quantity of work, the time required to complete the work or the total amount of work that can be completed in an unlimited time. { ə'maünt ¸lim·ət }

**amp** *See* amperage; ampere. { amp }

**ampacity** [ELEC] Current-carrying capacity in amperes; used as a rating for power cables. { am'pas·əd·ē }

**amperage** [ELEC] The amount of electric current in amperes. Abbreviated amp. { 'am·prij }

**ampere** [ELEC] The unit of electric current in the rationalized meter-kilogram-second system of units; defined in terms of the force of attraction between two parallel current-carrying conductors. Abbreviated a; A; amp. { 'am,pir }

**ampere-hour meter** [ENG] A device that measures the total electric charge that passes a given point during a given period of time. { 'am,pir ¦au̇·ər ˌmēd·ər }

**amperometric transducer** [ENG] A transducer in which the concentration of a dissolved substance is determined from the electric current produced between two electrodes immersed in the test solution when one of the electrodes is kept at a selected electric potential with respect to the solution. { am,pir·ə¦me·trik tranz'dū·sər }

**amphibious** [MECH ENG] Said of vehicles or equipment designed to be operated or used on either land or water. { ˌam'fib·ē·əs }

**amplification factor** [ELECTR] In a vacuum tube, the ratio of the incremental change in plate voltage to a given small change in grid voltage, under the conditions that the plate current and all other electrode voltages are held constant. { ˌam·plə·fə'kā·shən ˌfak·tər }

**amplification noise** [ELECTR] Noise generated in the vacuum tubes, transistors, or integrated circuits of an amplifier. { ˌam·plə·fə'kā·shən ˌnȯiz }

**amplifier** [ENG] A device capable of increasing the magnitude or power level of a physical quantity, such as an electric current or a hydraulic mechanical force, that is varying with time, without distorting the wave shape of the quantity. { 'am·plə,fī·ər }

**amplifier-type meter** [ENG] An electric meter whose characteristics have been enhanced by the use of preamplification for the signal input eventually used to actuate the meter. { 'am·plə,fī·ər ¦tīp 'mēd·ər }

**amplify** [ENG ACOUS] To strengthen a signal by increasing its amplitude or by raising its level. { 'am·plə,fī }

**amplitude-frequency response** *See* frequency response. { 'am·plə,tüd 'frē·kwən·sē ri'späns }

**amplitude-modulated indicator** [ENG] A general class of radar indicators, in which the sweep of the electron beam is deflected vertically or horizontally from a base line to indicate the existence of an echo from a target. Also known as deflection-modulated indicator; intensity-modulated indicator. { 'am·plə,tüd ¦mäj·ə,lād·əd ¦in·də,kād·ər }

**amplitude modulation** [ELECTR] Abbreviated AM. **1.** Modulation in which the aplitude of a wave is the characteristic varied in accordance with the intelligence to be transmitted. **2.** In telemetry, those systems of modulation in which each component frequency $f$ of the transmitted intelligence produces a pair of sideband frequencies at carrier frequency plus $f$ and carrier minus $f$. { 'am·plə,tüd ˌmaj·ə'lā·shən }

**amylograph** [ENG] An instrument used to measure and record the viscosity of starch and flour pastes and the temperature at which they gelatinize. { ə'mīl·ə,graf }

**analemma** [CIV ENG] Any raised construction which serves as a support or rest. { ˌan·ə'lem·ə }

**analog** [ELECTR] **1.** A physical variable which remains similar to another variable insofar as the proportional relationships are the same over some specified range; for example, a temperature may be represented by a voltage which is its analog. **2.** Pertaining to devices, data, circuits, or systems that operate with variables which are represented by continuously measured voltages or other quantities. { 'an·əl,äg }

**analog output** [CONT SYS] Transducer output in which the amplitude is continuously proportional to a function of the stimulus. { 'an·əl,äg 'au̇t,pu̇t }

**analog readout** [ENG] A scale on a balance that continuously indicates measurement values by the position of an index mark, either a line or a pointer, opposite a graduated scale which is usually marked with numbers. { 'an·əl,äg 'rēd,au̇t }

**analog signal** [ELECTR] A nominally continuous electrical signal that varies in amplitude or frequency in response to changes in sound, light, heat, position, or pressure. { 'an·əl,äg 'sig·nəl }

**analog switch** [ELECTR] **1.** A device that either transmits an analog signal without distortion or completely blocks it. **2.** Any solid-state device, with or without a driver, capable of bilaterally switching voltages or current. { 'an·əl,äg ˌswich }

**analog-to-digital converter** [ELECTR] A device which translates continuous analog signals into proportional discrete digital signals. { ¦an·əl,äg tə ¦dij·ət·əl kən'vərd·ər }

**analog-to-frequency converter** [ELECTR] A converter in which an analog input in some form other than frequency is converted to a proportional change in frequency. { ¦an·əl,äg tə ¦frē·kwən·sē kən'vərd·ər }

**analog voltage** [ELECTR] A voltage that varies in a continuous fashion in accordance with the magnitude of a measured variable. { 'an·əl,äg 'vōl·tij }

**analytical aerotriangulation** [ENG] Analytical phototriangulation, performed with aerial photographs. { ˌan·əl'id·ə·kəl ¦er·ō,trī,aŋ·gyə'lā·shən }

**analytical balance** [ENG] A balance with a sensitivity of 0.1–0.01 milligram. { ˌan·əl'id·ə·kəl 'bal·əns }

**analytical centrifugation** [ENG] Centrifugation following precipitation to separate solids from solid-liquid suspensions; faster than filtration. { ˌan·əl'id·ə·kəl sen,trif·ə'gā·shən }

**analytical nadir-point triangulation** [ENG] Radial triangulation performed by computational routines in which nadir points are utilized as radial centers. { ˌan·əlˈid·ə·kəl ˈnāˌdir ˈpȯint ˌtrīˌaŋ·gyəˈlā·shən }

**analytical orientation** [ENG] The computational steps required to determine tilt, direction of principal line, flight height, angular elements, and linear elements in preparing aerial photographs for rectification. { ˌan·əlˈid·ə·kəl ˌȯr·ē·ənˈtā·shən }

**analytical photogrammetry** [ENG] A method of photogrammetry in which solutions are obtained by mathematical methods. { ˌan·əlˈid·ə·kəl ˌfōd·əˈgram·ə·trē }

**analytical photography** [ENG] Photography, either motion picture or still, accomplished to determine (by qualitative, quantitative, or any other means) whether a particular phenomenon does or does not occur. { ˌan·əlˈid·ə·kəl fəˈtäg·rə·fē }

**analytical phototriangulation** [ENG] A phototriangulation procedure in which the spatial solution is obtained by computational routines. { ˌan·əlˈid·ə·kəl ˌfōd·ōˌtrīˌaŋ·gyəˈlā·shən }

**analytical radar prediction** [ENG] Prediction based on proven formulas, power tables, or graphs; considers surface height, structural and terrain information, and criteria for radar reflectivity together with the aspect angle and range to the target. { ˌan·əlˈid·ə·kəl ˈrāˌdär prəˈdik·shən }

**analytical radial triangulation** [ENG] Radial triangulation performed by computational routines. { ˌan·əlˈid·ə·kəl ˈrād·ē·əl ˌtriˌaŋ·gyəˈlā·shən }

**analytical three-point resection radial triangulation** [ENG] A method of computing the coordinates of the ground principal points of overlapping aerial photographs by resecting on three horizontal control points appearing in the overlap area. { ˌan·əlˈid·ə·kəl ˈthrē ˈpȯint rēˈsek·shən ˈrād·ē·əl ˌtriˌaŋ·gyəˈlā·shən }

**analytical ultracentrifuge** [ENG] An ultracentrifuge that uses one of three optical systems (schlieren, Rayleigh, or absorption) for the accurate determination of sedimentation velocity or equilibrium. { ˌan·əlˈid·ə·kəl ˈəl·trəˈsen·trəˌfyüj }

**analytic mechanics** [MECH] The application of differential and integral calculus to classical (nonquantum) mechanics. { ˌan·əlˈid·ik miˈkan·iks }

**analyzer** [ENG] A multifunction test meter, measuring volts, ohms, and amperes. Also known as set analyzer. [MECH ENG] The component of an absorption refrigeration system where the mixture of water vapor and ammonia vapor leaving the generator meets the relatively cool solution of ammonia in water entering the generator and loses some of its vapor content. { ˈan·əˌlīz·ər }

**anchor** [CIV ENG] A device connecting a structure to a heavy masonry or concrete object to a metal plate or to the ground to hold the structure in place. [ENG] A device, such as a metal rod, wire,or strap, for fixing one object to another, such as specially formed metal connectors used to fasten together timbers, masonry, or trusses. [MECH ENG] **1.** In steam plowing, a vehicle located on the side of the field opposite that of the engine and maintaining the tension on the endless wire by means of a pulley. **2.** A device for a piping system that maintains the correct position and direction of the pipes and controls pipe movement occurring as a result of thermal expansion. { ˈaŋ·kər }

**anchorage** [CIV ENG] **1.** An area where a vessel anchors or may anchor because of either suitability or designation. Also known as anchor station. **2.** A device which anchors tendons to the posttensioned concrete member. **3.** In pretensioning, a device used to anchor tendons temporarily during the hardening of the concrete. **4.** *See* deadman. { ˈaŋ·kə·rij }

**anchorage deformation** [CIV ENG] The shortening of tendons due to their modification or slippage when the prestressing force is transferred to the anchorage device. Also known as anchorage slip. { ˈaŋ·kə·rij dēˌfȯrˈmā·shən }

**anchorage slip** *See* anchorage deformation. { ˈaŋ·kə·rij ˌslip }

**anchorage zone** [CIV ENG] **1.** In posttensioning, the region adjacent to the anchorage for the tendon which is subjected to secondary stresses as a result of the distribution of the prestressing force. **2.** In pretensioning, the region in which transfer bond stresses are developed. { ˈaŋ·kə·rij ˌzōn }

**anchor and collar** [DES ENG] A door or gate hinge whose socket is attached to an anchor embedded in the masonry. { ˈaŋ·kər ən ˈkäl·ər }

**anchor block** [BUILD] A block of wood, replacing a brick in a wall to provide a nailing or fastening surface. [CIV ENG] *See* deadman. { ˈaŋ·kər ˌbläk }

**anchor bolt** [CIV ENG] A bolt used with its head embedded in masonry or concrete and its threaded part protruding to hold a structure or machinery in place. Also known as anchor rod. { ˈaŋ·kər ˌbōlt }

**anchor buoy** [ENG] One of a series of buoys marking the limits of an anchorage. { ˈaŋ·kər ˌbȯi }

**anchor charge** [ENG] A procedure that allows several charges to be preloaded in a seismic shot hole; the bottom charges are fired first, and the upper charges are held down by anchors. { ˈaŋ·kər ˌchärj }

**anchored bulkhead** [CIV ENG] A bulkhead secured to anchor piles. { ˈaŋ·kərd ˈbəlkˌhed }

**anchor log** [CIV ENG] A log, beam, or concrete block buried in the earth and used to hold a guy rope firmly. Also known as deadman; ground anchor. { ˈaŋ·kər ˌläg }

**anchor nut** [DES ENG] A nut in the form of a tapped insert forced under steady pressure into a hole in sheet metal. { ˈaŋ·kər ˌnət }

**anchor pile** [CIV ENG] A pile that is located on the land side of a bulkhead or pier and anchors it

through such devices as rods, cables, and chains. { 'aŋ·kər ˌpīl }

**anchor plate** [CIV ENG] A metal or wooden plate fastened to or embedded in a support, such as a floor, and used to hold a supporting cable firmly. { 'aŋ·kər ˌplāt }

**anchor rod** *See* anchor bolt. { 'aŋ·kər ˌräd }

**anchor station** *See* anchorage. { 'aŋ·kər ˌstā·shən }

**anchor tower** [CIV ENG] **1.** A tower which is a part of a crane staging or stiffleg derrick and serves as an anchor. **2.** A tower that supports and anchors an overhead transmission line. { 'aŋ·kər ˌtaù·ər }

**anchor wall** *See* deadman. { 'aŋ·kər ˌwȯl }

**AND circuit** *See* AND gate. { 'and ˌsər·kət }

**AND gate** [ELECTR] A circuit which has two or more input-signal ports and which delivers an output only if and when every input signal port is simultaneously energized. Also known as AND circuit; passive AND gate. { 'and ˌgāt }

**AND/NOR gate** [ELECTR] A single logic element whose operation is equivalent to that of two AND gates with outputs feeding into a NOR gate. { ¦and ¦nȯr ˌgāt }

**AND NOT gate** [ELECTR] A coincidence circuit that performs the logic operation AND NOT, under which a result is true only if statement A is true and statement B is not. Also known as A AND NOT B gate. { ¦and ¦nät ˌgāt }

**AND-OR circuit** [ELECTR] Gating circuit that produces a prescribed output condition when several possible combined input signals are applied; exhibits the characteristics of the AND gate and the OR gate. { ¦and ¦ȯr ˌsər·kət }

**AND-OR-INVERT gate** [ELECTR] A logic circuit with four inputs, $a_1$, $a_2$, $b_1$, and $b_2$, whose output is 0 only if either $a_1$ and $a_2$ or $b_1$ and $b_2$ are 1. Abbreviated A-O-I gate. { ¦and ¦ȯr in'vərt ˌgāt }

**Andrade's creep law** [MECH] A law which states that creep exhibits a transient state in which strain is proportional to the cube root of time and then a steady state in which strain is proportional to time. { 'anˌdrādz 'krēp ˌlȯ }

**Andrews's curves** [THERMO] A series of isotherms for carbon dioxide, showing the dependence of pressure on volume at various temperatures. { 'anˌdrüz ˌkərvz }

**anechoic chamber** [ENG] **1.** A test room in which all surfaces are lined with a sound-absorbing material to reduce reflections of sound to a minimum. Also known as dead room; free-field room. **2.** A room completely lined with a material that absorbs radio waves at a particular frequency or over a range of frequencies; used principally at microwave frequencies, such as for measuring radar beam cross sections. { ¦anə¦kō·ik 'chām·bər }

**anelasticity** [MECH] Deviation from a proportional relationship between stress and strain. { ¦anə·las¦tis·əd·ē }

**anemobiagraph** [ENG] A recording pressure-tube anemometer in which the wind scale of the float manometer is linear through the use of springs; an example is the Dines anemometer. { ¦a·nə·mə'bī·əˌgraf }

**anemoclinometer** [ENG] A type of instrument which measures the inclination of the wind to the horizontal plane. { ¦a·nəˌmō·klə¦näm·əd·ər }

**anemogram** [ENG] A record made by an anemograph. { ə'nēm·əˌgram }

**anemograph** [ENG] **1.** An instrument which records wind velocities. **2.** A recording anemometer. { ə'nēm·əˌgraf }

**anemometer** [ENG] A device which measures air speed. { ˌan·ə'mäm·əd·ər }

**anemoscope** [ENG] An instrument for indicating the direction of the wind. { ə'nēm·əˌskōp }

**anemovane** [ENG] A combined contact anemometer and wind vane used in the Canadian Meteorological Service. { ¦an·ə·mō¦vān }

**aneroid** [ENG] **1.** Containing no liquid or using no liquid. **2.** *See* aneroid barometer. { 'an·əˌrȯid }

**aneroid altimeter** [ENG] An altimeter containing an aneroid barometer that actuates the indicator. { 'an·əˌrȯid al'tim·əd·ər }

**aneroid barograph** [ENG] An aneroid barometer arranged so that the deflection of the aneroid capsule actuates a pen which graphs a record on a rotating drum. Also known as aneroidograph; barograph; barometrograph. { 'an·əˌrȯid 'bar·əˌgraf }

**aneroid barometer** [ENG] A barometer which utilizes an aneroid capsule. Also known as aneroid. { 'an·əˌrȯid bə'räm·əd·ər }

**aneroid calorimeter** [ENG] A calorimeter that uses a metal of high thermal conductivity as a heat reservoir. { 'an·əˌrȯid ˌkal·ə'rim·əd·ər }

**aneroid capsule** [ENG] A thin, disk-shaped box or capsule, usually metallic, partially evacuated and sealed, held extended by a spring, which expands and contracts with changes in atmospheric or gas pressure. Also known as bellows. { 'an·əˌrȯid 'kap·səl }

**aneroid diaphragm** [ENG] A thin plate, usually metal, covering the end of an aneroid capsule and moving axially as the ambient gas pressure increases or decreases. { 'an·əˌrȯid 'di·əˌfram }

**aneroid flowmeter** [ENG] A mechanism to measure fluid flow rate by pressure of the fluid against a bellows counterbalanced by a calibrated spring. { 'an·əˌrȯid 'flōˌmēd·ər }

**aneroid liquid-level meter** [ENG] A mechanism to measure fluid depth by pressure of the fluid against a bellows which in turn acts on a manometer or signal transmitter. { 'an·əˌrȯid ¦lik·wəd ¦lev·əl ˌmed·ər }

**aneroidograph** *See* aneroid barograph. { 'an·əˌrȯid·ə·graf }

**aneroid valve** [MECH ENG] A valve actuated or controlled by an aneroid capsule. { 'an·əˌrȯid 'valv }

**angel echo** [ENG] A radar echo from a region where there are no visible targets; may be caused by insects, birds, or refractive index variations in the atmosphere. { 'ān·jəl ˌek·ō }

**angle back-pressure valve** [MECH ENG] A back-pressure valve with its outlet opening at right angles to its inlet opening. { 'aŋ·gəl 'bak ˌpresh·ər ˌvalv }

**angle bar** [BUILD] An upright bar at the meeting of two faces of a polygonal window, bay window, or bow window. { 'aŋ·gəl ˌbär }

**angle bead** [BUILD] A strip, usually of metal or wood, set at the corner of a plaster wall to protect the corner or serve as a guide to float the plaster flush with it. { 'aŋ·gəl ˌbēd }

**angle beam** [ENG] Ultrasonic waves transmitted for the inspection of a metallic surface at an angle measured from the beam center line to a normal to the test surface. { 'aŋ·gəl ˌbēm }

**angle blasting** [ENG] Sandblasting, or the like, at an angle of less than 90°. { 'aŋ·gəl ˌblast·iŋ }

**angle block** [ENG] A small block of wood used to fasten adjacent pieces, usually at right angles, or glued into the corner of a wooden frame to stiffen it. Also known as glue block. { 'aŋ·gəl ˌbläk }

**angle board** [DES ENG] A board whose surface is cut at a desired angle; serves as a guide for cutting or planing other boards at the same angle. { 'aŋ·gəl ˌbȯrd }

**angle bond** [CIV ENG] A tie used to bond masonry work at wall corners. { 'aŋ·gəl ˌbänd }

**angle brace** [ENG] A brace across the interior angle of two members that meet at an angle. Also known as angle tie. { 'aŋ·gəl ˌbrās }

**angle brick** [ENG] Any brick having an oblique shape to fit an oblique, salient corner. { 'aŋ·gəl ˌbrik }

**angle clip** [CIV ENG] A short strip of angle iron used to secure structural elements at right angles. { 'aŋ·gəl ˌklip }

**angle closer** [ENG] A specially shaped brick used to close the bond at the corner of a wall. { 'aŋ·gəl ˌklōz·ər }

**angle collar** [DES ENG] A cast-iron pipe fitting which has a socket at each end for joining with the spigot ends of two pipes that are not in alignment. { 'aŋ·gəl ˌkäl·ər }

**angle-control section** *See* crossover. { 'aŋ·gəl kənˌtrōl ˌsek·shən }

**angle divider** [DES ENG] A square for setting or bisecting angles; one side is an adjustable hinged blade. { 'aŋ·gəl də'vīd·ər }

**angle dozer** [MECH ENG] A power-operated machine fitted with a blade, adjustable in height and angle, for pushing, sidecasting, and spreading loose excavated material as for opencast pits, clearing land, or leveling runways. Also known as angling dozer. { 'aŋ·gəlˌdōz·ər }

**angle equation** [ENG] A condition equation which expresses the relationship between the sum of the measured angles of a closed figure and the theoretical value of that sum, the unknowns being the corrections to the observed directions or angles, depending on which are used in the adjustment. Also known as triangle equation. { 'aŋ·gəl iˌkwā·zhən }

**angle fillet** [ENG] A wooden strip, triangular in cross section, which is used to cover the internal joint between two surfaces meeting at an angle of less than 180°. { 'aŋ·gəl ˌfil·ət }

**angle fishplates** [CIV ENG] Plates which join the rails and prevent the rail joint from sagging where heavy cars and locomotives are used. Also known as angle; angle bar. { 'aŋ·gəl 'fishˌplāts }

**angle float** [ENG] A trowel having two edge surfaces bent at 90°; used to finish corners in freshly poured concrete and in plastering. { 'aŋ·gəl ˌflōt }

**angle gauge** [CIV ENG] A template used to set or check angles in building construction. { 'aŋ·gəl ˌgāj }

**angle gear** *See* angular gear. { 'aŋ·gəl ˌgēr }

**angle globe valve** [ENG] A globe valve having an angular configuration that permits it to be fitted at bends in pipework. { ¦aŋ·gəl ¦glōb ¦valv }

**angle hip tile** *See* arris hip tile. { 'aŋ·gəl 'hip ˌtīl }

**angle iron** [CIV ENG] **1.** An L-shaped cleat or brace. **2.** A length of steel having a cross section resembling the letter L. { 'aŋ·gəl ˌī·ərn }

**angle joint** [ENG] A joint between two pieces of lumber which results in a change in direction. { 'aŋ·gəl ˌjȯint }

**angle lacing** [CIV ENG] A system of lacing in which angle irons are used in place of bars. { 'aŋ·gəl ˌlās·iŋ }

**angle method of adjustment** [ENG] A method of adjustment of observations which determines corrections to observed angles. { 'aŋ·gəl ˌmeth·əd əv ə'jəs·mənt }

**angle of action** [MECH ENG] The angle of revolution of either of two wheels in gear during which any particular tooth remains in contact. { 'aŋ·gəl əv 'ak·shən }

**angle of advance** *See* angular advance. { 'aŋ·gəl əv əd'vans }

**angle of approach** [CIV ENG] The maximum angle of an incline onto which a vehicle can move from a horizontal plane without interference. [MECH ENG] The angle that is turned through by either of paired wheels in gear from the first contact between a pair of teeth until the pitch points of these teeth fall together. { 'aŋ·gəl əv ə'prōch }

**angle of bite** *See* angle of nip. { 'aŋ·gəl əv 'bīt }

**angle of departure** [CIV ENG] The maximum angle of an incline from which a vehicle can move onto a horizontal plane without interference, such as from rear bumpers. [ELECTR] *See* angle of radiation. { 'aŋ·gəl əv di'pär·chər }

**angle of depression** [ENG] The angle in a vertical plane between the horizontal and a descending line. Also known as depression angle; descending vertical angle; minus angle. { 'aŋ·gəl əv di'presh·ən }

**angle of elevation** [ENG] The angle in a vertical plane between the local horizontal and an ascending line, as from an observer to an object; used in astronomy, surveying, and so on. Also known as ascending vertical angle; elevation angle. { 'aŋ·gəl əv ˌel·ə'vā·shən }

**angle of external friction** [ENG] The angle between the abscissa and the tangent of the curve representing the relationship of shearing resistance to normal stress acting between soil and the surface of another material. Also known as angle of wall friction. { 'aŋ·gəl əv ek'stərn·əl 'frik·shən }

**angle of fall** [MECH] The vertical angle at the level point, between the line of fall and the base of the trajectory. { 'aŋ·gəl əv 'fȯl }

**angle of impact** [MECH] The acute angle between the tangent to the trajectory at the point of impact of a projectile and the plane tangent to the surface of the ground or target at the point of impact. { 'aŋ·gəl əv 'im,pakt }

**angle of nip** [MECH ENG] The largest angle that will just grip a lump between the jaws, rolls, or mantle and ring of a crusher. Also known as angle of bite; nip. { 'aŋ·gəl əv 'nip }

**angle of obliquity** *See* angle of pressure. { 'aŋ·gəl əv ō'blik·wəd·ē }

**angle of orientation** [MECH] Of a projectile in flight, the angle between the plane determined by the axis of the projectile and the tangent to the trajectory (direction of motion), and the vertical plane including the tangent to the trajectory. { 'aŋ·gəl əv ˌȯr·ē·ən'tā·shən }

**angle of pressure** [DES ENG] The angle between the profile of a gear tooth and a radial line at its pitch point. Also known as angle of obliquity. { 'aŋ·gəl əv 'presh·ər }

**angle of recess** [MECH ENG] The angle that is turned through by either of two wheels in gear, from the coincidence of the pitch points of a pair of teeth until the last point of contact of the teeth. { 'aŋ·gəl əv 'rē,ses }

**angle of repose** [ENG] *See* angle of rest. [MECH] The angle between the horizontal and the plane of contact between two bodies when the upper body is just about to slide over the lower. Also known as angle of friction. { 'aŋ·gəl əv ri'pōz }

**angle of rest** [ENG] The maximum slope at which a heap of any loose or fragmented solid material will stand without sliding, or will come to rest when poured or dumped in a pile or on a slope. Also known as angle of repose. { 'aŋ·gəl əv 'rest }

**angle of thread** [DES ENG] The angle occurring between the sides of a screw thread, measured in an axial plane. { 'aŋ·gəl əv 'thred }

**angle of torsion** [MECH] The angle through which a part of an object such as a shaft or wire is rotated from its normal position when a torque is applied. Also known as angle of twist. { 'aŋ·gəl əv 'tȯr·shən }

**angle of twist** *See* angle of torsion. { 'aŋ·gəl əv 'twist }

**angle of wall friction** *See* angle of external friction. { 'aŋ·gəl əv ¦wȯl ˌfrik·shən }

**angle of wrap** [DES ENG] On a band brake mechanism, the distance, expressed in degrees, that the brake band wraps around the brake flange. { 'aŋ·gəl əv 'rap }

**angle paddle** [ENG] A hand tool used to finish a plastered surface. { 'aŋ·gəl ˌpad·əl }

**angle plate** [DES ENG] An L-shaped plate or a plate having an angular section. { 'aŋ·gəl ˌplāt }

**angle post** [BUILD] A railing support used at a landing or other break in the stairs. { 'aŋ·gəl ˌpōst }

**angle press** [MECH ENG] A hydraulic plastics-molding press with both horizontal and vertical rams; used to produce complex moldings with deep undercuts. { 'aŋ·gəl ˌpres }

**angle rafter** [BUILD] A rafter, such as a hip rafter, at the angle of the roof. { 'aŋ·gəl ˌraf·tər }

**angle section** [CIV ENG] A structural steel member having an L-shaped cross section. { 'aŋ·gəl ˌsek·shən }

**angle-stem thermometer** [ENG] A device used to measure temperatures in oil-custody tanks; the angle of the calibrated stem may be 90° or greater to the sensitive portion of the thermometer, as needed to fit the tank shell contour. { 'aŋ·gəl ¦stem thər'mäm·əd·ər }

**angle stile** [BUILD] A narrow strip of wood used to conceal the joint between a wall and a vertical wood surface which makes an angle with the wall, as at the edge of a corner cabinet. { 'aŋ·gəl ˌstīl }

**angle structure** [CIV ENG] A method of building a tower for mechanical strength in which braces are placed at angles with respect to the vertical support rods. { 'aŋ·gəl ˌstrək·chər }

**angle strut** [CIV ENG] An angle-shaped structural member which is designed to carry a compression load. { 'aŋ·gəl ˌstrət }

**angle valve** [DES ENG] A manually operated valve with its outlet opening oriented at right angles to its inlet opening; used for regulating the flow of a fluid in a pipe. { 'aŋ·gəl ˌvalv }

**angle variable** [MECH] The dynamical variable $w$ conjugate to the action variable J, defined only for periodic motion. { 'aŋ·gəl 'ver·ē·ə·bəl }

**angling dozer** *See* angle dozer. { 'aŋ·gliŋ ˌdōz·ər }

**angstrom** [MECH] A unit of length, $10^{-10}$ meter, used primarily to express wavelengths of optical spectra. Abbreviated A; Å. Also known as tenthmeter. { 'aŋ·strəm }

**Ångström compensation pyrheliometer** [ENG] A pyrheliometer consisting of two identical Manganin strips, one shaded, the other exposed to sunlight; an electrical current is passed through the shaded strip to raise its temperature to that of the exposed strip, and the electric power required to accomplish this is a measure of the solar radiation. { 'ȯŋ·strəm käm·pən'sā·shən ¦pīr,hē,lē'äm·əd·ər }

**angular acceleration** [MECH] The time rate of change of angular velocity. { 'aŋ·gyə·lər ak,sel·ə'rā·shən }

**angular accelerometer** [ENG] An accelerometer that measures the rate of change of angular velocity between two objects under observation. { 'aŋ·gyə·lər ak,sel·ə'räm·əd·ər }

**angular advance** [MECH ENG] The amount by which the angle between the crank of a steam

engine and the virtual crank radius of the eccentric exceeds a right angle. Also known as angle of advance; angular lead. { 'aŋ·gyə·lər əd'vans }

**angular bitstalk** *See* angular bitstock. { 'aŋ·gyə·lər 'bit,stȯk }

**angular bitstock** [MECH ENG] A bitstock whose handles are positioned to permit its use in corners and other cramped areas. Also known as angular bitstalk. { 'aŋ·gyə·lər 'bit,stäk }

**angular clearance** [DES ENG] The relieved space located below the straight of a die, to permit passage of blanks or slugs. { 'aŋ·gyə·lər 'klir·ənts }

**angular-contact bearing** [MECH ENG] A rolling-contact antifriction bearing designed to carry heavy thrust loads and also radial loads. { 'aŋ·gyə·lər 'kän,takt ,ber·iŋ }

**angular cutter** [MECH ENG] A tool-steel cutter used for finishing surfaces at angles greater or less than 90° with its axis of rotation. { 'an·gyə·lər 'kəd·ər }

**angular error of closure** *See* error of closure. { 'an·gyə·lər 'er·ər əv 'klōzh·ər }

**angular gear** [MECH ENG] A gear that transmits motion between two rotating shafts that are not parallel. Also known as angle gear. { 'an·gyə·lər 'gēr }

**angular impulse** [MECH] The integral of the torque applied to a body over time. { 'an·gyə·lər 'im,pəls }

**angular lead** *See* angular advance. { 'aŋ·gyə·lər 'lēd }

**angular length** [MECH] A length expressed in the unit of the length per radian or degree of a specified wave. { 'aŋ·gyə·lər 'leŋkth }

**angular milling** [MECH ENG] Milling surfaces that are flat and at an angle to the axis of the spindle of the milling machine. { 'aŋ·gyə·lər 'mil·iŋ }

**angular momentum** [MECH] **1.** The cross product of a vector from a specified reference point to a particle, with the particle's linear momentum. Also known as moment of momentum. **2.** For a system of particles, the vector sum of the angular momenta (first definition) of the particles. { 'aŋ·gyə·lər mə'ment·əm }

**angular pitch** [DES ENG] The angle determined by the length along the pitch circle of a gear between successive teeth. { 'aŋ·gyə·lər 'pich }

**angular rate** *See* angular speed. { 'aŋ·gyə·lər ,rāt }

**angular shear** [MECH ENG] A shear effected by two cutting edges inclined to each other to reduce the force needed for shearing. { 'aŋ·gyə·lər 'shēr }

**angular speed** [MECH] Change of direction per unit time, as of a target on a radar screen, without regard to the direction of the rotation axis; in other words, the magnitude of the angular velocity vector. Also known as angular rate. { 'aŋ·gyə·lər 'spēd }

**angular travel error** [MECH] The error which is introduced into a predicted angle obtained by multiplying an instantaneous angular velocity by a time of flight. { 'aŋ·gyə·lər 'trav·əl ,er·ər }

**angular velocity** [MECH] The time rate of change of angular displacement. { 'aŋ·gyə·lər və'läs·əd·ē }

**angulator** [ENG] An instrument for converting angles measured on an oblique plane to their corresponding projections on a horizontal plane; the rectoblique plotter and the photoangulator are types. { 'aŋ·gyə,lād·ər }

**aniline point** [CHEM ENG] The minimum temperature for a complete mixing of aniline and materials such as gasoline; used in some specifications to indicate the aromatic content of oils and to calculate approximate heat of combustion. { 'an·əl·ən ,pȯint }

**animal balance** [ENG] A balance designed to weigh living animals, with a readout or display relatively unaffected by the pulse or movements of the animal. { 'an·ə·məl ,bal·ənts }

**animal power** [MECH ENG] The time rate at which muscular work is done by a work animal, such as a horse, bullock, or elephant. { 'an·ə·məl ,paù·ər }

**anisotropic membrane** [CHEM ENG] An ultrafiltration membrane which has a thin skin at the separating surface and is supported by a spongy sublayer of membrane material. { ¦a,nī·sə¦träp·ik 'mem,brān }

**anker** [MECH] A unit of capacity equal to 10 U.S. gallons (37.854 liters); used to measure liquids, especially honey, oil, vinegar, spirits, and wine. { 'aŋ·kər }

**anneal** [ENG] To treat a metal, alloy, or glass with heat and then cool to remove internal stresses and to make the material less brittle. Also known as temper. { ə'nēl }

**annealing furnace** [ENG] A furnace for annealing metals or glass. Also known as annealing oven. { ə'nēl·iŋ ,fər·nəs }

**annealing oven** *See* annealing furnace. { ə'nēl·iŋ ,əv·ən }

**annealing point** [THERMO] The temperature at which the viscosity of a glass is $10^{13.0}$ poises. Also known as annealing temperature; 13.0 temperature. { ə'nēl·iŋ ,pȯint }

**annealing temperature** *See* annealing point. { ə'nēl·iŋ ,tem·prə·chər }

**annual cost comparison** [IND ENG] A method of selecting from among several alternative projects or courses of action on the basis of their annual costs, including depreciation. { 'an·yə·wəl 'kȯst kəm,par·ə·sən }

**annular auger** [DES ENG] A ring-shaped boring tool which cuts an annular channel, leaving the core intact. { 'an·yə·lər 'ȯg·ər }

**annular gear** [DES ENG] A gear having a cylindrical form. { 'an·yə·lər 'gir }

**annular nozzle** [DES ENG] A nozzle with a ring-shaped orifice. { 'an·yə·lər 'näz·əl }

**annular section** [ENG] The open space between two concentric tubes, pipes, or vessels. { 'an·yə·lər 'sek·shən }

**annunciator** [ENG] A signaling apparatus which operates electromagnetically and serves to indicate visually, or visually and audibly, whether a current is flowing, has flowed, or has changed

direction of flow in one or more circuits. { ə'nən·sē·ād·ər }

**anode** [ELEC] The terminal at which current enters a primary cell or storage battery; it is positive with respect to the device, and negative with respect to the external circuit. [ELECTR] **1.** The collector of electrons in an electron tube. Also known as plate; positive electrode. **2.** In a semiconductor diode, the terminal toward which forward current flows from the external circuit. { 'a,nōd }

**anode current** [ELECTR] The electron current flowing through an electron tube from the cathode to the anode. Also known as plate current. { 'a,nōd ,kər·ənt }

**anomalous expansion** [THERMO] An increase in the volume of a substance that results from a decrease in its temperature, such as is displayed by water at temperatures between 0 and 4°C (32 and 39°F). { ə'näm·ə·ləs ik'span·shən }

**anomaly finder** [ENG] A computer-controlled data-plotting system used on ships to measure and record seismic, gravity, magnetic, and other geophysical data and water depth, time, course, and speed. { ə'näm·ə·lē ,fīn·dər }

**anonymous dimensionless group 1–4** [CHEM ENG] Four of the dimensionless groups, used to solve problems in transfer processes, gas absorption in wetted-wall columns, and laminar boundary-layer flow. { ə'nän·ə·məs di¦men·shən·ləs 'grüp ¦wən tə ¦fôr }

**antenna circuit** [ELECTR] A complete electric circuit which includes an antenna. { an'ten·ə ,sər·kət }

**antenna tilt error** [ENG] Angular difference between the tilt angle of a radar antenna shown on a mechanical indicator, and the electrical center of the radar beam. { an'ten·ə 'tilt ,er·ər }

**anticathode** [ELECTR] The anode or target of an x-ray tube, on which the stream of electrons from the cathode is focused and from which x-rays are emitted. { ¦an·tē'kath,ōd }

**antichlor** [CHEM ENG] A chemical used in the manufacture of paper or textiles to remove excess chlorine or bleaching solution. { ¦an·ti'klȯr }

**anticollision radar** [ENG] A radar set designed to give warning of possible collisions during movements of ships or aircraft. { ,an·tē·kə'li·zhən ,rā,där }

**anticreeper** [CIV ENG] A device attached to a railroad rail to prevent it from moving in the direction of its length. { 'an·tē,krēp·ər }

**antidieseling solenoid** *See* idle-stop solenoid. { ,ant·i¦dēz·əl·iŋ 'sō·lə,nȯid }

**antifriction** [MECH] Making friction smaller in magnitude. [MECH ENG] Employing a rolling contact instead of a sliding contact. { ,an·tē 'frik·shən }

**antifriction bearing** [MECH ENG] Any bearing having the capability of reducing friction effectively. { ,an·tē'frik·shən ,ber·iŋ }

**antifriction material** [ENG] A machine element made of Babbitt metal, lignum vitae, rubber, or a combination of a soft, easily deformable metal overlaid on a hard, resistant one. { ,an·tē'frik·shən mə'tir·ē·əl }

**anti-g suit** *See* g suit. { ¦an·tē¦jē ,süt }

**antiknock blending value** [ENG] The numerical improvement by an antiknock additive to gasoline octane, often a greater amount than the additive's own octane value. { 'an·tē,näk 'blend·iŋ ,val·yü }

**antiknock rating** [ENG] Measurement of the ability of an automotive gasoline to resist detonation or pinging in spark-ignited engines. { 'an·tē,näk 'rād·iŋ }

**antilock braking system** [MECH ENG] For vehicles, a sensor-control system found in braking systems which prevents wheel lockup while allowing the brakes to continue slowing the wheel. Abbreviated ABS. { ¦an·tē,läk 'brāk·iŋ ,sis·təm }

**antimagnetic** [ENG] Constructed so as to avoid the influence of magnetic fields, usually by the use of nonmagnetic materials and by magnetic shielding. { ,an·tē,mag'ned·ik }

**antinoise microphone** [ENG ACOUS] Microphone with characteristics which discriminate against acoustic noise. { ¦an·tē¦nȯiz 'mi·krə ,fōn }

**antiozonant** [CHEM ENG] A protective agent which can be added to rubber during processing to diminish the deteriorating effects of ozone. { ,an·tē'ō·zə·nənt }

**antipercolator** [MECH ENG] In an automotive engine, a valve in the carburetor that is designed to vent vapor when the throttle plate is closed; prevents fuel from dropping into the carburetor due to unvented pressure. { ,an·tē'pər·kə ,lād·ər }

**antiquing** [ENG] **1.** Producing a rich glow on the surface of a leather by applying stain, wax, or oil, allowing it to set, and rubbing or brushing the leather. **2.** A technique of handling wet paint to expose parts of the undercoat, by combing, graining, or marbling. Also known as broken-color work. { an'tēk·iŋ }

**antirad** [CHEM ENG] An inhibitor incorporated into rubber during manufacturing to reduce the degrading effects of radiation. { ¦an·te¦rad }

**antiradar coating** [ENG] A surface treatment used to reduce the reflection of electromagnetic waves so as to avoid radar detection. { ,an·tē'rā ,där ¦kōd·iŋ }

**antirattle spring** [MECH ENG] In an automotive vehicle, a spring installed to hold parts in the clutches and the disk brakes together; prevents rattling. { 'an·tē'rad·əl 'spriŋ }

**anti-redeposition agent** [CHEM ENG] An additive used in a detergent to help prevent soil from resettling on a fabric after it has been removed during washing. { ¦an·tē,rē,dep·ə'zish·ən ,ā·jənt }

**antireflection coating** [ENG] The application of a thin film of dielectric material to a surface to reduce its reflection and to increase its transmission of light or other electromagnetic radiation. { ,an·tē·ri'flek·shən ,kōd·iŋ }

**antiresonance** [ELEC] *See* parallel resonance.

[ENG] The condition for which the impedance of a given electric, acoustic, or dynamic system is very high, approaching infinity. { ˌan·tē'rez·ən·əns }

**antiskid plate** [ENG] A sheet of metal roughed on both sides and placed between piled objects, such as boxes in a freight car, to prevent sliding. { ˌan·tēˌskid ˌplāt }

**antismudge ring** [BUILD] A frame attached around a ceiling-mounted air diffuser, to minimize the formation of rings of dirt on the ceiling. { ˌan·tēˌsməj 'riŋ }

**antitheft device** [MECH ENG] A piece of equipment installed on an automotive vehicle in order to prevent or slow down theft; designs include mechanical locks on the steering wheel and ignition switch as well as other means of shutting off the ignition system, shutting off fuel flow, or sounding an alarm. { ˌan·tē'theft diˌvīs }

**anvil** [ENG] **1.** The part of a machine that absorbs the energy delivered by a sharp force or blow. **2.** The stationary end of a micrometer caliper. { 'an·vəl }

**AOQL** *See* average outgoing quality limit.

**aperiodic waves** [ELEC] The transient current wave in a series circuit with resistance R, inductance L, and capacitance C when $R^2C = 4L$. { ˌa,pir·ēˌäd·ik 'wāvz }

**aperture** [ELECTR] An opening through which electrons, light, radio waves, or other radiation can pass. { 'ap·əˌchər }

**aperture disk** [ENG] A disk with a small round opening used in a densitometer to vary the amount of light or the area to be measured. { 'ap·əˌchər ˌdisk }

**apex** [ENG] In architecture or construction, the highest point, peak, or tip of any structure. { 'āˌpeks }

**apical angle** [MECH] The angle between the tangents to the curve outlining the contour of a projectile at its tip. { 'ap·i·kəl 'aŋ·gəl }

**API scale** [CHEM ENG] The American Petroleum Institute hydrometer scale for the measurement of the specific gravity of liquids; used primarily in the American petroleum industry. { ˌāˌpēˌpēˌī ˌskāl }

**apophorometer** [ENG] An apparatus used to identify minerals by sublimation. { ˌap·ə·fə'räm·əd·ər }

**apothecaries' dram** *See* dram. { ə'päth·əˌker·ēz 'dram }

**apothecaries' ounce** *See* ounce. { ə'päth·əˌker·ēz 'aůns }

**apothecaries' pound** *See* pound. { ə'päth·əˌker·ēz 'paůnd }

**apparent expansion** [THERMO] The expansion of a liquid with temperature, as measured in a graduated container without taking into account the container's expansion. { ə'pa·rənt ik'span·shən }

**apparent force** [MECH] A force introduced in a relative coordinate system in order that Newton's laws be satisfied in the system; examples are the Coriolis force and the centrifugal force incorporated in gravity. { ə'pa·rənt 'fȯrs }

**apparent gravity** *See* acceleration of gravity. { ə'pa·rənt 'grav·əd·ē }

**apparent motion** *See* relative motion. { ə'pa·rənt 'mō·shən }

**apparent source** *See* effective center. { ə'pa·rənt 'sȯrs }

**apparent weight** [MECH] For a body immersed in a fluid (such as air), the resultant of the gravitational force and the buoyant force of the fluid acting on the body; equal in magnitude to the true weight minus the weight of the displaced fluid. { ə'pa·rənt 'wāt }

**appliance** [ENG] A piece of equipment that draws electric or other energy and produces a desired work-saving or other result, such as an electric heater, a radio, or an electronic range. { ə'plī·əns }

**appliance panel** [ENG] In electric systems, a metal housing containing two or more devices (such as fuses) for protection against excessive current in circuits which supply portable electric appliances. { ə'plī·əns ˌpan·əl }

**applied research** [ENG] Research directed toward using knowledge gained by basic research to make things or to create situations that will serve a practical or utilitarian purpose. { ə'plīd riˌsərch }

**applied strategic research** [ENG] Research done to provide a basic understanding of a current applied project. { ə'plīd strə'tē·jik riˌsərch }

**applied trim** [BUILD] Supplementary and separate decorative strips of wood or moldings applied to the face or sides of a frame, such as a doorframe. { ə'plīd 'trim }

**approach** [MECH ENG] The difference between the temperature of the water leaving a cooling tower and the wet-bulb temperature of the surrounding air. { ə'prōch }

**approach signal** [CIV ENG] A railway signal warning an engineer of a signal ahead that displays a restrictive indication. { ə'prōch ˌsig·nəl }

**approach vector** [CONT SYS] A vector that describes the orientation of a robot gripper and points in the direction from which the gripper approaches a workpiece. { ə'prōch ˌvek·tər }

**apron** [BUILD] **1.** A board on an interior wall beneath a windowsill. **2.** The vertical rear panel of a sink attached to a wall. **3.** A section of a concrete slab extending beyond the face of a building on adjacent ground. Also known as skirt; skirting. **4.** A vertical panel installed behind a sink or lavatory. [CIV ENG] **1.** A hard-surfaced area, usually paved, adjacent to a ship or the like, used to park, load, unload, or service vehicles. **2.** A covering of a material such as concrete or timber over soil to prevent erosion by flowing water, as at the bottom of a dam. **3.** A concrete or wooden shield that is situated along the bank of a river, along a sea wall, or below a dam. **4.** In a railroad system, a bridge structure that carries tracks and is hinged to land for connecting the deck of a railroad-car ferry

to the shore. [MECH ENG] A plate serving to protect or cover a machine. { 'ā·prən }

**apron conveyor** [MECH ENG] A conveyor used for carrying granular or lumpy material and consisting of two strands of roller chain separated by overlapping plates, forming the carrying surface, with sides 2–6 inches (5–15 centimeters) high. { 'ā·prən kən,vā·ər }

**apron feeder** [MECH ENG] A limited-length version of apron conveyor used for controlled-rate feeding of pulverized materials to a process or packaging unit. Also known as plate-belt feeder; plate feeder. { 'ā·prən ,fēd·ər }

**apron flashing** [BUILD] **1.** The flashing that covers the joint between a vertical surface and a sloping roof, as at the lower edge of a chimney. **2.** The flashing that diverts water from a vertical surface into a gutter. { 'ā·prən ,flash·iŋ }

**apron lining** [BUILD] The piece of boarding which covers the rough apron piece of a staircase. { 'ā·prən ,līn·iŋ }

**apron piece** [BUILD] A beam that supports a landing or a series of winders in a staircase. { 'ā·prən ,pēs }

**apron rail** [BUILD] A lock rail having a raised ornamental molding. { 'ā·prən ,rāl }

**apron wall** [BUILD] In an exterior wall, a panel which extends downward from a windowsill to the top of a window below. { 'ā·prən ,wȯl }

**AQL** *See* acceptable quality level.

**aqualung** [ENG] A self-contained underwater breathing apparatus (scuba) of the demand or open-circuit type developed by J.Y. Cousteau. { 'ak·wə,ləŋ }

**aqueduct** [CIV ENG] An artificial tube or channel for conveying water. { 'ak·wə,dəkt }

**arbitration** [IND ENG] A semijudicial means of settling labor-management disputes in which both sides agree to be bound by the decision of one or more neutral persons selected by some method mutually agreed upon. { ,ar·bə'trā·shən }

**arbor** [MECH ENG] **1.** A cylindrical device positioned between the spindle and outer bearing of a milling machine and designed to hold a milling cutter. **2.** A shaft or spindle used to hold a revolving cutting tool or the work to be cut. { 'ar·bər }

**arbor collar** [ENG] A cylindrical spacer that positions and secures a revolving cutter on an arbor. { 'ar·bər ,käl·ər }

**arbor hole** [DES ENG] A hole in a revolving cutter or grinding wheel for mounting it on an arbor. { 'är·bər ,hōl }

**arbor press** [MECH ENG] A machine used for forcing an arbor or a mandrel into drilled or bored parts preparatory to turning or grinding. Also known as mandrel press. { 'är·bər ,pres }

**arbor support** [ENG] A device to support the outer end or intermediate point of an arbor. { 'är·bər sə,pȯrt }

**arc** *See* electric arc.The graduated scale of an instrument for measuring angles, as a marine sextant; readings obtained on that part of the arc beginning at zero and extending in the direction usually considered positive are popularly said to be on the arc, and those beginning at zero and extending in the opposite direction are said to be off the arc. { ärk }

**arc force** [MECH] The force of a plasma arc through a nozzle or opening. { 'ärk ,fȯrs }

**arch** [CIV ENG] A structure curved and so designed that when it is subjected to vertical loads, its two end supports exert reaction forces with inwardly directed horizontal components; common uses for the arch are as a bridge, support for a roadway or railroad track, or part of a building. { ärch }

**arch band** [CIV ENG] Any narrow elongated surface forming part of or connected with an arch. { 'ärch ,band }

**arch bar** [BUILD] **1.** A curved chimney bar. **2.** A curved bar in a window sash. { 'ärch ,bar }

**arch beam** [CIV ENG] A curved beam, used in construction, with a longitudinal section bounded by two arcs having different radii and centers of curvature so that the beam cross section is larger at either end than at the center. { 'ärch ,bēm }

**arch brace** [BUILD] A curved brace, usually used in pairs to support a roof frame and give the effect of an arch. { 'ärch ,brās }

**arch bridge** [CIV ENG] A bridge having arches as the main supports. { 'ärch ,brij }

**arch center** [CIV ENG] A temporary structure for support of the parts of a masonry or concrete arch during its construction. { 'ärch ¦sen·tər }

**arch corner bead** [BUILD] A corner bead which is cut on the job; used to form and reinforce the curved portion of arch openings. { 'ärch ¦kȯr·nər ,bēd }

**arch dam** [CIV ENG] A dam having a curved face on the downstream side, the curve being roughly a portion of a cylinder whose axis is vertical. { 'ärch ,dam }

**arched construction** [BUILD] A method of construction relying on arches and vaults to support walls and floors. { ¦ärcht kən'strək·shən }

**arch girder** [CIV ENG] A normal H-section steel girder bent to a circular shape. { 'ärch ,gər·dər }

**arch-gravity dam** [CIV ENG] An arch dam stabilized by gravity due to great mass and breadth of the base. { 'ärch ¦grav·əd·ē ,dam }

**Archimedes' screw** [MECH ENG] A device for raising water by means of a rotating broad-threaded screw or spirally bent tube within an inclined hollow cylinder. { ¦är·kə¦mēd,ēz 'skrü }

**arching** [CIV ENG] **1.** The transfer of stress from a yielding part of a soil mass to adjoining less-yielding or restrained parts of the mass. **2.** A system of arches. **3.** The arched part of a structure. { 'ärch·iŋ }

**architectural acoustics** [CIV ENG] The science of planning and building a structure to ensure the most advantageous flow of sound to all listeners. { ¦är·kə¦tek·chər·əl ə'kü·stiks }

**architectural engineering** [CIV ENG] The branch of engineering dealing primarily with building

materials and components and with the design of structural systems for buildings, in contrast to heavy construction such as bridges. { ¦ärkə¦tek·chər·əl ˌen·jə'nir·iŋ }

**architectural millwork** [CIV ENG] Ready-made millwork especially fabricated to meet the specifications for a particular job, as distinguished from standard or stock items or sizes. Also known as custom millwork. { ¦ärkə¦tek·chər·əl 'milˌwərk }

**architectural volume** [CIV ENG] The cubic content of a building calculated by multiplying the floor area by the height. { ¦ärkə¦tek·chər·əl 'väl·yəm }

**architecture** [ENG] **1.** The art and science of designing buildings. **2.** The product of this art and science. { 'ärkəˌtek·chər }

**arch press** [MECH ENG] A punch press having an arch-shaped frame to permit operations on wide work. { 'ärch ˌpres }

**arch rib** [CIV ENG] One of a set of projecting molded members subdividing the undersurface of an arch. { 'ärch ˌrib }

**arch ring** [CIV ENG] A curved member that provides the main support of an arched structure. { 'ärch ˌriŋ }

**arch truss** [CIV ENG] A truss having the form of an arch or arches. { 'ärch ˌtrəs }

**arc of action** *See* arc of contact. { ¦ärk əv 'ak·shən }

**arc of approach** [DES ENG] In toothed gearing, the part of the arc of contact along which the flank of the driving wheel contacts the face of the driven wheel. { ¦ärk əv ə'prōch }

**arc of contact** [MECH ENG] **1.** The angular distance over which a gear tooth travels while it is in contact with its mating tooth. Also known as arc of action. **2.** The angular distance a pulley travels while in contact with a belt or rope. { ¦ärk əv 'känˌtakt }

**arc of recess** [DES ENG] In toothed gearing, the part of the arc of contact wherein the face of the driving wheel touches the flank of the driven wheel. { ¦ärk əv 'rēˌses }

**arcometer** [ENG] A device for determining the density of a liquid by measuring the apparent weight loss of a solid of known mass and volume when it is immersed in the liquid. { är'käm·əd·ər }

**arc process** [CHEM ENG] A former process that used electric arcs for fixation (oxidation) of atmospheric nitrogen to manufacture nitric acid. { ¦ärk ¦präs·əs }

**arcticization** [ENG] The preparation of equipment for operation in an environment of extremely low temperatures. { ¦ärd·ikˌī'zā·shən }

**arc triangulation** [ENG] A system of triangulation in which an arc of a great circle on the surface of the earth is followed in order to tie in two distant points. { 'ärk ˌtriˌaŋ·gyə'lā·shən }

**are** [MECH] A unit of area, used mainly in agriculture, equal to 100 square meters. { är }

**area coverage** [ENG] Complete coverage of an area by aerial photography having parallel overlapping flight lines and stereoscopic overlap between exposures in the line of flight. { 'er·ē·ə 'kəv·rij }

**area drain** [CIV ENG] A receptacle designed to collect surface or rain water from an open area. { 'er·ē·ə ¦drān }

**area landfill** [CIV ENG] A sanitary landfill operation that takes care of the solid waste of more than one municipality in a region. { 'er·ē·ə 'landˌfil }

**area light** [CIV ENG] **1.** A source of light with significant dimensions in two directions, such as a window or luminous ceiling. **2.** A light used to illuminate large areas. { 'er·ē·ə ˌlīt }

**area meter** [ENG] A mechanism to measure fluid flow rate through a fixed-area conduit by the movement of a weighted piston or float supported by the flowing fluid; includes rotameters and piston-type meters. { 'er·ē·ə ˌmēd·ər }

**area of use** [ENG] For a balance depending on gravitational acceleration, an area that includes a sufficient number of locations providing a mean value for the gravitational acceleration of the given balance. { 'er·ē·ə əv 'yüs }

**area survey** [ENG] A survey of areas large enough to require loops of control. { 'er·ē·ə ¦sərˌvā }

**area triangulation** [ENG] A system of triangulation designed to progress in every direction from a control point. { 'er·ē·ə ˌtrīˌaŋ·gyə'lā·shən }

**area wall** [CIV ENG] A retaining wall around an areaway. { 'er·ē·ə ˌwȯl }

**areaway** [CIV ENG] An open space at subsurface level adjacent to a building, providing access to and utilities for a basement. { 'er·ē·əˌwā }

**Argand lamp** [ENG] A gas lamp having a tube-shaped wick, allowing a current of air inside as well as outside the flame. { 'ärˌgän 'lamp }

**argentometer** [ENG] A hydrometer used to find the amount of silver salt in a solution. { ˌärjən'täm·əd·ər }

**Arkansas stone** [ENG] A whetstone made of Arkansas stone, for sharpening edged tools. { 'är·kənˌsȯ ˌstōn }

**ARL** *See* acceptable reliability level.

**arm** [CONT SYS] A robot component consiting of an interconnected set of links and powered joints that move and support the wrist socket and end effector. [ELEC] *See* branch. [ENG ACOUS] *See* tone arm. { ärm }

**arm conveyor** [MECH ENG] A conveyor in the form of an endless belt or chain to which are attached projecting arms or shelves which carry the materials. { ¦ärm kən'vā·ər }

**arm elevator** [MECH ENG] A chain elevator with protruding arms to cradle fixed-shape objects, such as drums or barrels, as they are moved upward. { ¦ärm ˌel·ə'vād·ər }

**armored faceplate** [DES ENG] A tamper-proof faceplate or lock front, mortised in the edge of a door to cover the lock mechanism. { 'ärməd 'fās,plāt }

**armored front** [DES ENG] A lock front used on mortise locks that consists of two plates, the

underplate and the finish plate. { 'är·mərd 'frənt }

**armor plate** [BUILD] A metal plate which protects the lower part of a door from kicks and scratches, covering the door to a height usually 39 inches (1 meter) or more. { 'är·mər ˌplāt }

**arm solution** [CONT SYS] The computation performed by a robot controller to calculate the joint positions required to achieve desired tool positions. { 'ärm səˌlü·shən }

**arm-tool aggregate** [IND ENG] A biomechanical unit comprising the arm and the tool that it holds and manipulates. { ˌärm ˌtül 'ag·rə·gət }

**aromatization** [CHEM ENG] Conversion of any nonaromatic hydrocarbon structure to aromatic hydrocarbon, particularly petroleum. { əˌrō·məd·əˈzā·shən }

**arostat process** [CHEM ENG] A process in which aromatic molecules are saturated by catalytic hydrogenation to produce high-quality jet fuels, low-aromatic-content solvents, and high-purity cyclohexane from benzene. { 'ar·əˌstat ˌpräs·əs }

**array** [ELECTR] A group of components such as antennas, reflectors, or directors arranged to provide a desired variation of radiation transmission or reception with direction. { ə'rā }

**array radar** [ENG] A radar incorporating a multiplicity of phased antenna elements. { ə'rā 'rāˌdär }

**array sonar** [ENG] A sonar system incorporating a phased array of radiating and receiving transducers. { ə'rā 'sōˌnär }

**arrester** [ELEC] *See* lightning arrester. [ENG] A wire screen at the top of an incinerator or chimney which prevents sparks or burning material from leaving the stack. { ə'res·tər }

**arrestment device** [ENG] A locking mechanism installed on a balance for holding one of several levers in place; serves to protect the balance. { ə'rest·mənt diˌvīs }

**arrière-voussure** [BUILD] **1.** An arch or vault in a thick wall carrying the thickness of the wall, especially one over a door or window frame. **2.** A relieving arch behind the face of a wall. { 'ar·ēˌerˌvü'sür }

**arris fillet** [BUILD] A triangular wooden piece that raises the slates of a roof against a chimney or wall so that rain runs off. { 'ar·əs ˌfil·ət }

**arris gutter** [BUILD] A V-shaped wooden gutter fixed to the eaves of a building. { 'ar·əs ˌgəd·ər }

**arris hip tile** [BUILD] A special roof tile having an L-shaped cross section, made to fit over the hip of a roof. Also known as hip tile. { 'ar·əs 'hip ˌtīl }

**arris rail** [CIV ENG] A rail of triangular section, usually formed by slitting diagonally a strip of square section. { 'ar·əs ˌrāl }

**arrissing tool** [ENG] A tool similar to a float, but having a form suitable for rounding an edge of freshly placed concrete. { 'ar·əs·iŋ ˌtül }

**arris tile** [BUILD] Any angularly shaped tile. { 'ar·əs ˌtīl }

**arrisways** [CIV ENG] Diagonally, in respect to the manner of laying tiles, slates, bricks, or timber. Also known as arriswise. { 'ar·əsˌwāz }

**arriswise** *See* arrisways. { 'ar·əsˌwīz }

**arrival rate** [IND ENG] The mean number of new calling units arriving at a service facility per unit time. { əˈrī·vəl ˌrāt }

**articulated drop chute** [ENG] A drop chute, for a falling stream of concrete, which consists of a vertical succession of tapered metal cylinders, so designed that the lower end of each cylinder fits into the upper end of the one below. { är 'tik·yəˌlād·əd 'dräp ˌshüt }

**articulated leader** [MECH ENG] A wheel-mounted transport unit with a pivotal loading element used in earth moving. { är'tik·yəˌlād·əd 'lēd·ər }

**articulated structure** [CIV ENG] A structure in which relative motion is allowed to occur between parts, usually by means of a hinged or sliding joint or joints. { är'tik·yəˌlād·əd 'strək·chər }

**articulated train** [ENG] A railroad train whose cars are permanently or semipermanently connected. { är'tik·yəˌlād·əd 'trān }

**articulation** [CONT SYS] The manner and actions of joining components of a robot with connecting parts or links that allow motion. { är ˌtik·yə'lā·shən }

**articulation point** *See* cut point. { är,tik·yə'lā·shən ˌpȯint }

**artificial atmosphere** [CHEM ENG] A mixture of gases used in industrial operations in place of air; classified as an active, or process, atmosphere, or an inactive, or protective, atmosphere. { ˌärd·əˌfish·əl 'at·məˌsfir }

**artificial ear** [ENG ACOUS] A device designed to duplicate the frequency response, acoustic impedance, threshold sensitivity, and relative perception of loudness, consisting of a special-microphone enclosed in a box with properties similar to those of the human ear. { ˌärd·əˌfish·əl 'ir }

**artificial ground** [ELEC] A common correction for a radio-frequency electrical or electronic circuit that is not directly connected to the earth. { ˌärd·əˌfish·əl 'graůnd }

**artificial harbor** [CIV ENG] **1.** A harbor protected by breakwaters. **2.** A harbor formed by dredging. { ˌärd·əˌfish·əl 'här·bər }

**artificial monument** [ENG] A relatively permanent object made by humans, such as an abutment or stone marker, used to identify the location of a survey station or corner. { ˌärd·əˌfish·əl 'män·yə·mənt }

**artificial nourishment** [CIV ENG] The process of replenishing a beach by artificial means, such as the deposition of dredged material. { ˌärd·əˌfish·əl 'nər·ish·mənt }

**artificial recharge** [CIV ENG] The recharge of an aquifier depleted by abnormally large withdrawals, by the use of injection wells and other techniques. { ˌärd·əˌfish·əl 'rēˌchärj }

**artificial variable** [IND ENG] One type of variable introduced in a linear program model in order to find an initial basic feasible solution; an

artificial variable is used for equality constraints and for greater-than or equal inequality constraints. { ¦ärd·ə¦fish·əl 'ver·ē·ə·bəl }

**artificial voice** [ENG ACOUS] **1.** Small loudspeaker mounted in a shaped baffle which is proportioned to simulate the acoustical constants of the human head; used for calibrating and testing close-talking microphones. **2.** Synthetic speech produced by a multiple tone generator; used to produce a voice reply in some real-time computer applications. { ¦ärd·ə¦fish·əl 'vȯis }

**artificial weathering** [ENG] The controlled production of changes in materials under laboratory conditions to simulate actual outdoor exposure. { ¦ärd·ə¦fish·əl 'weth·ə·riŋ }

**asbestos-cement cladding** [BUILD] Asbestos board and component wall systems, directly supported by wall framing, forming a wall or wall facing. { as'bes·təs si¦ment 'klad·iŋ }

**as-built drawing** *See* as-fitted drawing. { ¦az ¦bilt 'drȯ·iŋ }

**as-built schedule** [IND ENG] The final schedule for a project, reflecting the actual scope, actual completion dates, actual duration of the specified activities, and start dates. { ¦az ¦bilt ¦skej·əl }

**ascending branch** [MECH] The portion of the trajectory between the origin and the summit on which a projectile climbs and its altitude constantly increases. { ə'send·iŋ 'branch }

**ascending vertical angle** *See* angle of elevation. { ə'send·iŋ ¦vərd·i·kəl 'aŋ·gəl }

**as-fitted drawing** [ENG] A drawing as amended after completion of an industrial facility in order to provide an accurate record of the details of the entire installation in their final form. Also known as as-built drawing; as-made drawing. { ¦az ¦fid·əd 'drȯ·iŋ }

**ash** [ENG] An undesirable constituent of diesel fuel whose quantitative measurement indicates degree of fuel cleanliness and freedom from abrasive material. { ash }

**ash collector** *See* dust chamber. { 'ash kə'lek·tər }

**ash conveyor** [MECH ENG] A device that transports refuse from a furnace by fluid or mechanical means. { 'ash kən'vā·ər }

**ash dump** [ENG] An opening in the floor of a fireplace or firebox through which ashes are swept to an ash pit below. { 'ash ˌdəmp }

**ash furnace** [ENG] A furnace in which materials are fritted for glassmaking. { 'ash 'fər·nəs }

**ashlar** [CIV ENG] Masonry with an exposed side of square or rectangular stones. { 'ash·lər }

**ashlar line** [BUILD] The outer line of a wall above any projecting base. { 'ash·lər ˌlīn }

**ash pan** [ENG] A metal receptacle beneath a fireplace or furnace grating for collection and removal of ashes. { 'ash ˌpan }

**ash pit** [BUILD] The ash-collecting area beneath a fireplace hearth. { 'ash ˌpit }

**ash pit door** [ENG] A cast-iron door providing access to an ash pit for ash removal. { 'ash ˌpit ˌdȯr }

**A size** [ENG] **1.** One of a series of sizes to which trimmed paper and board are manufactured; for size AN, with N equal to any integer from 0 to 10, the length of the longer side is $2^{-(2N-1)/4}$ meters, while the length of the shorter side is $2^{-(2N+1)/4}$ meters, with both lengths rounded off to the nearest millimeter. **2.** Of a sheet of paper, the dimensions 8.5 inches by 11 inches (216 millimeters by 279 millimeters). { 'ā ˌsīz }

**as-made drawing** *See* as-fitted drawing. { ¦az ¦mād 'drȯ·iŋ }

**aspect** [CIV ENG] Of railway signals, what the engineer sees when viewing the blades or lights in their relative positions or colors. { 'aˌspekt }

**aspect angle** [ENG] The angle formed between the longitudinal axis of a projectile in flight and the axis of a radar beam. { 'aˌspekt ˌaŋ·gəl }

**aspect ratio** [DES ENG] **1.** The ratio of frame width to frame height in television; it is 4:3 in the United States and Britain. **2.** In any rectangular configuration (such as the cross section of a rectangular duct), the ratio of the longer dimension to the shorter. [MECH ENG] In an automotive vehicle, the ratio of the height of a tire to its width. Also known as tire profile. { 'aˌspekt ˌrā·shō }

**asphalt cutter** [MECH ENG] A powered machine having a rotating abrasive blade; used to saw through bituminous surfacing material. { 'aˌsfȯlt ˌkəd·ər }

**asphalt heater** [ENG] A piece of equipment for raising the temperature of bitumen used in paving. { 'aˌsfȯlt 'hēd·ər }

**asphalt leveling course** [CIV ENG] A layer of an asphalt-aggregate mixture of variable thickness, used to eliminate irregularities in contour of an existing surface, prior to the placement of a superimposed layer. { 'aˌsfȯlt 'lev·əl·iŋ ˌkȯrs }

**asphalt overlay** [CIV ENG] One or more layers of asphalt construction on an existing pavement. { 'aˌsfȯlt 'ov·ərˌlā }

**asphalt pavement** [CIV ENG] A pavement consisting of a surface layer of mineral aggregate, coated and cemented together with asphalt cement on supporting layers. { 'aˌsfȯlt 'pāv·mənt }

**asphalt soil stabilization** [CIV ENG] The treatment of naturally occurring nonplastic or moderately plastic soil with liquid asphalt at normal temperatures to improve the load-bearing qualities of the soil. { 'aˌsfȯlt ¦sȯil ˌstāb·ə·lə'zā·shən }

**aspirating burner** [ENG] A burner in which combustion air at high velocity is drawn over an orifice, creating a negative static pressure and thereby sucking fuel into the stream of air; the mixture of air and fuel is conducted into a combustion chamber, where the fuel is burned in suspension. { 'as·pəˌrād·iŋ 'bər·nər }

**aspiration meteorograph** [ENG] An instrument for the continuous recording of two or more meteorological parameters, with the ventilation being provided by a suction fan. { ˌas·pə'rā·shən ˌmēd·ē'ȯr·əˌgraf }

**aspiration psychrometer** [ENG] A psychrometer in which the ventilation is provided by a suction fan. { ˌas·pə'rā·shən ˌsi'kräm·əd·ər }

**aspiration thermograph** [ENG] A thermograph in which ventilation is provided by a suction fan. { ˌas·pə'rā·shən 'thərm·əˌgraf }

**aspirator** [ENG] Any instrument or apparatus that utilizes a vacuum to draw up gases or granular materials. { 'as·pəˌrād·ər }

**assay balance** [ENG] A sensitive balance used in the assaying of gold, silver, and other precious metals. { 'aˌsā ˌbal·əns }

**assembling bolt** [CIV ENG] A threaded bolt for holding together temporarily the several parts of a structure during riveting. { ə'sem·bliŋ ˌbōlt }

**assembly** [MECH ENG] A unit containing the component parts of a mechanism, machine, or similar device. { ə'sem·blē }

**assembly line** [IND ENG] A mass-production arrangement whereby the work in process is progressively transferred from one operation to the next until the product is assembled. { ə'sem·blē ˌlīn }

**assembly-line balancing** [IND ENG] Assigning numbers of operators or machines to each operation of an assembly line so as to meet the required production rate with a minimum of idle time. { ə'sem·blē ˌlīn 'bal·ənsˌiŋ }

**assembly machine** [MECH ENG] A machine in a manufacturing facility that produces a configuration of some practical value from discrete components. { ə'sem·blē məˌshēn }

**assembly method** [IND ENG] The technique used to assemble a manufactured product, such as hand assembly, progressive line assembly, and automatic assembly. { ə'sem·blē ˌmeth·əd }

**assembly time** [ENG] **1.** The elapsed time after the application of an adhesive until its strength becomes effective. **2.** The time elapsed in performing an assembly or subassembly operation. { ə'sem·blē ˌtīm }

**assets** [IND ENG] All the resources, rights, and property owned by a person or a company; the book value of these items as shown on the balance sheet. { 'aˌsets }

**assignable cause** [IND ENG] Any identifiable factor which causes variation in a process outside the predicted limits, thereby altering quality. { ə'sīn·ə·bəl ˈkȯz }

**assize** [CIV ENG] **1.** A cylindrical block of stone forming one unit in a column. **2.** A layer of stonework. { ə'sīz }

**Assmann psychrometer** [ENG] A special form of the aspiration psychrometer in which the thermometric elements are well shielded from radiation. { 'äsˌmän ˌsīˈkräm·əd·ər }

**assumed plane coordinates** [ENG] A local plane-coordinate system set up at the convenience of the surveyor. { ə'sümd ˌplān ˌkōˈȯrd·nəts }

**astatic galvanometer** [ENG] A sensitive galvanometer designed to be independent of the earth's magnetic field. { ā'stad·ik ˌgal·və'näm·əd·ər }

**astatic governor** *See* isochronous governor. { ā 'stad·ik gəv·ə·nər }

**astatic gravimeter** [ENG] A sensitive gravimeter designed to measure small changes in gravity. { ā'stad·ik gra'vim·əd·ər }

**astatic magnetometer** [ENG] A magnetometer for determining the gradient of a magnetic field by measuring the difference in reading from two magnetometers placed at different positions. { ā'stad·ik ˌmag·nə'täm·əd·ər }

**astatic wattmeter** [ENG] An electrodynamic wattmeter designed to be insensitive to uniform external magnetic fields. { ā'stad·ik 'wätˌmēd·ər }

**astatized gravimeter** [ENG] A gravimeter, sometimes referred to as unstable, where the force of gravity is maintained in an unstable equilibrium with the restoring force. { 'as·təˌtīzd gra'vim·əd·ər }

**astern** [ENG] To the rear of an aircraft, vehicle, or vessel; behind; from the back. { ə'stərn }

**astragal** [BUILD] **1.** A small convex molding decorated with a string of beads or bead-and-reel shapes. **2.** A plain bead molding. **3.** A member, or combination of members, fixed to one of a pair of doors or casement windows to cover the joint between the meeting stiles and to close the clearance gap. { 'as·trə·gəl }

**astragal front** [DES ENG] A lock front which is shaped to fit the edge of a door with an astragal molding. { 'as·trə·gəl ˈfrənt }

**astral lamp** [ENG] An Argand lamp designed so that its light is not prevented from reaching a table beneath it by the flattened annular reservoir holding the oil. { 'as·trəl ˌlamp }

**astroballistics** [MECH] The study of phenomena arising out of the motion of a solid through a gas at speeds high enough to cause ablation; for example, the interaction of a meteoroid with the atmosphere. { ˌas·trō·bə'lis·tiks }

**astrolabe** [ENG] An instrument designed to observe the positions and measure the altitudes of celestial bodies. { 'as·trəˌlāb }

**astronomical instruments** [ENG] Specific kinds of telescopes and ancillary equipment used by astronomers to study the positions, motions, and composition of stars and members of the solar system. { ˌas·trə'näm·ə·kəl 'in·strə·mənts }

**astronomical theodolite** *See* altazimuth. { ˌas·trə'näm·ə·kəl thē'äd·əlˌīt }

**astronomical traverse** [ENG] A survey traverse in which the geographic positions of the stations are obtained from astronomical observations, and lengths and azimuths of lines are obtained by computation. { ˌas·trə'näm·ə·kəl trə'vərs }

**asymmetric rotor** [MECH ENG] A rotating element for which the axis (center of rotation) is not centered in the element. { ˌā·səˈme·trik 'rōd·ər }

**asymmetric top** [MECH] A system in which all three principal moments of inertia are different. { ˌā·səˈme·trik 'täp }

**asynchronous control** [CONT SYS] A method of control in which the time allotted for performing

an operation depends on the time actually required for the operation, rather than on a predetermined fraction of a fixed machine cycle. { ā'siŋ·krə·nəs kən'trōl }

**asynchronous device** [CONT SYS] A device in which the speed of operation is not related to any frequency in the system to which it is connected. { ā'siŋ·krə·nəs di'vīs }

**asynchronous operation** [ELECTR] An operation that is started by a completion signal from a previous operation, proceeds at the maximum speed of the circuits until finished, and then generates its own completion signal. { ā'siŋ·krə·nəs ˌäp·ə'rā·shən }

**asynchronous timing** [IND ENG] A simulation method for queues in which the system model is updated at each arrival or departure, resulting in the master clock being increased by a variable amount. { ā'siŋ·krə·nəs 'tīm·iŋ }

**at** *See* technical atmosphere.

**ata** [MECH] A unit of absolute pressure in the metric technical system equal to 1 technical atmosphere. { 'a·tə }

**athermalize** [ENG] To make independent of temperature or of thermal effects. { ¦ā'thər·məˌlīz }

**atm** *See* atmosphere.

**atmidometer** *See* atmometer. { ˌat·mə'däm·əd·ər }

**atmometer** [ENG] The general name for an instrument which measures the evaporation rate of water into the atmosphere. Also known as atmidometer; evaporation gage; evaporimeter. { ət'mäm·əd·ər }

**atmosphere** [MECH] A unit of pressure equal to 101.325 kilopascals, which is the air pressure measured at mean sea level. Abbreviated atm. Also known as standard atmosphere. { 'at·məˌsfir }

**atmospheric cooler** [MECH ENG] A fluids cooler that utilizes the cooling effect of ambient air surrounding the hot, fluids-filled tubes. { ¦at·mə¦sfir·ik 'kül·ər }

**atmospheric distillation** [CHEM ENG] Distillation operation conducted at atmospheric pressure, in contrast to vacuum distillation or pressure distillation. { ¦at·mə¦sfir·ik ˌdis·tə'lā·shən }

**atmospheric impurity** [ENG] An extraneous substance that is mixed as a contaminant with the air of the atmosphere. { ¦at·mə¦sfir·ik im 'pyür·əd·ē }

**atmospheric noise** [ELECTR] Noise heard during radio reception due to atmospheric interference. { ¦at·mə¦sfir·ik 'nȯiz }

**atmospheric steam curing** [ENG] The steam curing of concrete or cement products at atmospheric pressure, usually at a maximum ambient temperature between 100 and 200°F (40 and 95°C). { ¦at·mə¦sfir·ik 'stēm 'kyür·iŋ }

**atomic force microscope** [ENG] A device for mapping surface atomic structure by measuring the force acting on the tip of a sharply pointed wire or other object that is moved over the surface. { ə¦täm·ik ¦fȯrs 'mī¦krəˌskōp }

**atomic moisture meter** [ENG] An instrument that measures the moisture content of coal instantaneously and continuously by bombarding it with neutrons and measuring the neutrons which bounce back to a detector tube after striking hydrogen atoms of water. { ə'täm·ik 'mȯis·chər ˌmēd·ər }

**atomic power plant** *See* nuclear power plant. { ə'täm·ik 'pau·ər ˌplant }

**atomization** [MECH ENG] The mechanical subdivision of a bulk liquid or meltable solid, such as certain metals, to produce drops, which vary in diameter depending on the process from under 10 to over 1000 micrometers. { ˌad·ə·mə'zā·shən }

**atomizer** [MECH ENG] A device that produces a mechanical subdivision of a bulk liquid, as by spraying, sprinkling, misting, or nebulizing. { 'ad·əˌmīz·ər }

**atomizer burner** [MECH ENG] A liquid-fuel burner that atomizes the unignited fuel into a fine spray as it enters the combustion zone. { 'ad·əˌmīz·ər ¦bər·nər }

**atomizer mill** [MECH ENG] A solids grinder, the product from which is a fine powder. { 'ad·əˌmīz·ər ˌmil }

**atomizing humidifier** [MECH ENG] A humidifier in which tiny particles of water are introduced into a stream of air. { 'ad·əˌmīz·iŋ ˌhyü'mid·əˌfī·ər }

**atom probe** [ENG] An instrument for identifying a single atom or molecule on a metal surface; it consists of a field ion microscope with a probe hole in its screen opening into a mass spectrometer; atoms that are removed from the specimen by pulsed field evaporation fly through the probe hole and are detected in the mass spectrometer. { 'ad·əm ˌprōb }

**attached thermometer** [ENG] A thermometer which is attached to an instrument to determine its operating temperature. { ə'tacht thər'mäm·əd·ər }

**attemperation** [ENG] The regulation of the temperature of a substance. { əˌtem·pə'rā·shən }

**attemperation of steam** [MECH ENG] The controlled cooling, in a steam boiler, of steam at the superheater outlet or between the primary and secondary stages of the superheater to regulate the final steam temperature. { əˌtem·pə'rā·shən əv 'stēm }

**attenuate** [ENG ACOUS] To weaken a signal by reducing its level. { ə'ten·yəˌwāt }

**attenuation** [ELEC] The exponential decrease with distance in the amplitude of an electrical signal traveling along a very long uniform transmission line, due to conductor and dielectric losses. [ENG] A process by which a material is fabricated into a thin, slender configuration, such as forming a fiber from molten glass. { əˌten·yə'wā·shən }

**attic** [BUILD] The part of a building immediately below the roof and entirely or partly within the roof framing. { 'ad·ik }

**attic tank** [BUILD] An open tank which is installed above the highest plumbing fixture in a

building and which supplies water to the fixtures by gravity. { 'ad·ik ˌtaŋk }

**atticurge** [BUILD] Of a doorway, having jambs which are inclined slightly inward, so that the opening is wider at the threshold than at the top. { 'ad·əˌkərj }

**attic ventilator** [BUILD] A mechanical fan located in the attic space of a residence; usually moves large quantities of air at a relatively low velocity. { 'ad·ik 'vent·əlˌād·ər }

**attraction gripper** [CONT SYS] A robot component that uses adhesion, suction, or magnetic forces to grasp a workpiece. { ə'trak·shən ˌgrip·ər }

**attribute sampling** [IND ENG] A quality-control inspection method in which the sampled articles are classified only as defective or nondefective. { 'aˑtrəˌbyüt ˌsam·pliŋ }

**attributes testing** [ENG] A reliability test procedure in which the items under test are classified according to qualitative characteristics. { 'aˑtrəˌbyüts ˌtest·iŋ }

**attrition mill** [MECH ENG] A machine in which materials are pulverized between two toothed metal disks rotating in opposite directions. { ə'trish·ən ˌmil }

**Atwood machine** [MECH ENG] A device comprising a pulley over which is passed a stretch-free cord with a weight hanging on each end. { 'atˌwůd mə'shēn }

**audible leak detector** [ENG] A device used as an auxiliary to the main leak detector for conversion of the output signal into audible sound. { ¦ȯd·ə·bəl 'lēk diˌtek·tər }

**audio-frequency meter** [ENG] One of a number of types of frequency meters usable in the audio range; for example, a resonant-reed frequency meter. { 'ȯd·ē·ō ¦frē·kwən·sē ˌmēd·ər }

**audiometer** [ENG] An instrument composed of an oscillator, amplifier, and attenuator and used to measure hearing acuity for pure tones, speech, and bone conduction. { ˌȯd·ē'äm·əd·ər }

**audio-modulated radiosonde** [ENG] A radiosonde with a carrier wave modulated by audio-frequency signals whose frequency is controlled by the sensing elements of the instrument. { ¦ȯd·ē·oˌ¦mäj·əˑlād·əd ¦rād·ē·ōˌsänd }

**audio patch bay** [ENG ACOUS] Specific patch panels provided to terminate all audio circuits and equipment used in a channel and technical control facility; this equipment can also be found in transmitting and receiving stations. { 'ȯd·ē·ō ¦pach ˌbā }

**audio spectrometer** *See* acoustic spectrometer. { 'ȯd·ē·ō spek'träm·əd·ər }

**audio system** *See* sound-reproducing system. { 'ȯd·ē·ō ˌsis·təm }

**audio taper** [ENG ACOUS] A special type of potentiometer used in a volume-control apparatus to compensate for the nonlinearity of human hearing and give the impression of a linear increase in audibility as volume is raised. Also known as linear taper. { 'ȯd·ē·ō ˌtā·pər }

**audiphone** [ENG ACOUS] A device that enables persons with certain types of deafness to hear, consisting of a plate or diaphragm that is placed against the teeth and transmits sound vibrations to the inner ear. { 'ȯd·əˌfōn }

**auger** [DES ENG] **1.** A wood-boring tool that consists of a shank with spiral channels ending in two spurs, a central tapered feed screw, and a pair of cutting lips. **2.** A large augerlike tool for boring into soil. { 'ȯ·gər }

**auger bit** [DES ENG] a A bit shaped like an auger but without a handle; used for wood boring and for earth drilling. { 'ȯ·gər ˌbit }

**auger boring** [ENG] **1.** The hole drilled by the use of auger equipment. **2.** *See* auger drilling. { 'ȯ·gər ˌbȯr·iŋ }

**auger conveyor** *See* screw conveyor. { 'ȯ·gər kən'vā·ər }

**auger drilling** [ENG] A method of drilling in which penetration is accomplished by the cutting or gouging action of chisel-type cutting edges forced into the substance by rotation of the auger bit. Also known as auger boring. { 'ȯ·gər ˌdril·iŋ }

**auger packer** [MECH ENG] A feed mechanism that uses a continuous auger or screw inside a cylindrical sleeve to feed hard-to-flow granulated solids into shipping containers, such as bags or drums. { 'ȯ·gər 'pak·ər }

**auget** [ENG] A priming tube, used in blasting. Also spelled augette. { ȯ'zhet }

**augette** *See* auget. { ȯ'zhet }

**auralization** *See* virtual acoustics. { ˌȯr·əl·ə'zā·shən }

**autoadaptivity** [CONT SYS] The ability of an advanced robot to sense the environment, accept commands, and analyze and execute operations. { ¦ȯd·ȯ·ˌə¸dap'tiv·əd·ē }

**autoclave** [ENG] An airtight vessel for heating and sometimes agitating its contents under high steam pressure; used for industrial processing, sterilizing, and cooking with moist or dry heat at high temperatures. { 'ȯd·ōˌklāv }

**autoclave curing** [ENG] Steam curing of concrete products, sand-lime brick, asbestos cement products, hydrous calcium silicate insulation products, or cement in an autoclave at maximum ambient temperatures generally between 340 and 420°F (170 and 215°C). { 'ȯd·ōˌklāv 'kyůr·iŋ }

**autoclave molding** [ENG] A method of curing reinforced plastics that uses an autoclave with 50–100 pounds per square inch (345–690 kilopascals) steam pressure to set the resin. { 'ȯd·ōˌklāv ¦mōld·iŋ }

**autocorrelation** [ELECTR] A technique used to detect cyclic activity in a complex signal. { ¦ȯd·ōˌkär·əˈlā·shən }

**autofrettage** [ENG] A process for manufacturing gun barrels; prestressing the metal increases the load at which its permanent deformation occurs. { 'ȯd·ōˌfred·ij }

**autogenous grinding** [MECH ENG] The secondary grinding of material by tumbling the material in a revolving cylinder, without balls or bars taking part in the operation. { ȯ'täj·əˑnəs 'grīnd·iŋ }

**autogenous healing** [ENG] A natural process of closing and filling cracks in concrete or mortar while it is kept damp. { ȯ'täj·ə·nəs 'hēl·iŋ }

**autogenous mill** *See* autogenous tumbling mill. { ȯ'täj·ə·nəs 'mil }

**autogenous tumbling mill** [MECH ENG] A type of ball-mill grinder utilizing as the grinding medium the coarse feed (incoming) material. Also known as autogenous mill. { ȯ'täj·ə·nəs 'təm·bliŋ ˌmil }

**autoignition** [MECH ENG] Spontaneous ignition of some or all of the fuel-air mixture in the combustion chamber of an internal combustion engine. Also known as spontaneous combustion. { ˌȯd·ō·ig'nish·ən }

**automanual system** [CIV ENG] A railroad signal system in which signals are set manually but are activated automatically to return to the danger position by a passing train. { ˌȯd·ō¦man· yə·wəl 'sis·təm }

**automated guided vehicle** [IND ENG] In a flexible manufacturing system, a driverless computer-controlled vehicle equipped with guidance and collision-avoidance systems and used to transport workpieces and tools between work stations. Abbreviated AGV. { ˌȯd·ə¦mād·əd ¦gīd·əd 'vē·ə·kəl }

**automated guided vehicle system** [CONT SYS] A computer-controlled system that uses pallets and other interface equipment to transport workpieces to numerically controlled machine tools and other equipment in a flexible manufacturing system, moving in a predetermined pattern to ensure automatic, accurate, and rapid work-machine contact. { 'ȯd·əˌmād·əd ¦gīd·əd 'vē·ə·kəl ˌsis·təm }

**automatic** [ENG] Having a self-acting mechanism that performs a required act at a predetermined time or in response to certain conditions. { ˌȯd·ə¦mad·ik }

**automatic balance** [ENG] A balance capable of performing weighing procedures without the intervention of an operator. { ˌȯd·ə¦mad·ik 'ba·ləns }

**automatic batcher** [MECH ENG] A batcher for concrete which is actuated by a single starter switch, opens automatically at the start of the weighing operations of each material, and closes automatically when the designated weight of each material has been reached. { ˌȯd·ə¦mad·ik 'bach·ər }

**automatic calibration** [ENG] A process in which an electronic device automatically performs the recalibration of a measuring range of a weighing instrument, for example an electronic balance. { ˌȯd·ə¦mad·ik ˌkal·ə'brā·shən }

**automatic check-out system** [CONT SYS] A system utilizing test equipment capable of automatically and simultaneously providing actions and information which will ultimately result in the efficient operation of tested equipment while keeping time to a minimum. { ˌȯd·ə¦mad·ik 'chekˌau̇t ˌsis·təm }

**automatic choke** [MECH ENG] A system for enriching the air-fuel mixture in a cold automotive engine when the accelerator is first depressed; the choke plate opens automatically when the engine achieves normal operating temperature. { ˌȯd·ə¦mad·ik 'chōk }

**automatic control** [CONT SYS] Control in which regulating and switching operations are performed automatically in response to predetermined conditions. Also known as automatic regulation. { ˌȯd·ə¦mad·ik kənˌtrōl }

**automatic control balance** [ENG] An automatic balance fitted with an accessory which determines whether a package has been filled within preselected limits. Also known as checkweigher. { ˌȯd·ə¦mad·ik kən¦trōl ˌbal·ənsˌ }

**automatic-control block diagram** [CONT SYS] A diagrammatic representation of the mathematical relationships defining the flow of information and energy through the automatic control system, in which the components of the control system are represented as functional blocks in series and parallel arrangements according to their position in the actual control system. { ˌȯd·ə¦mad·ik kən'trōl 'bläk ˌdī·əˌgram }

**automatic-control error coefficient** [CONT SYS] Three numerical quantities that are used as a measure of the steady-state errors of an automatic control system when the system is subjected to constant, ramp, or parabolic inputs. { ˌȯd·ə¦mad·ik kən'trōl 'er·ər ˌkō·ə'fish·ənt }

**automatic-control frequency response** [CONT SYS] The steady-state output of an automatic control system for sinusoidal inputs of varying frequency. { ˌȯd·ə¦mad·ik 'frē·kwən·sē riˌspäns }

**automatic controller** [CONT SYS] An instrument that continuously measures the value of a variable quantity or condition and then automatically acts on the controlled equipment to correct any deviation from a desired preset value. Also known as automatic regulator; controller. { ˌȯd·ə¦mad·ik kən¦trōl·ər }

**automatic-control servo valve** [CONT SYS] A mechanically or electrically actuated servo valve controlling the direction and volume of fluid flow in a hydraulic automatic control system. { ˌȯd·ə¦mad·ik kən'trōl 'sər·vō ˌvalv }

**automatic-control stability** [CONT SYS] The property of an automatic control system whose performance is such that the amplitude of transient oscillations decreases with time and the system reaches a steady state. { ˌȯd·ə¦mad·ik kən'trōl stəˌbil·ə·dē }

**automatic control system** [CONT SYS] A control system having one or more automatic controllers connected in closed loops with one or more processes. Also known as regulating system. { ˌȯd·ə¦mad·ik kən'trōl ˌsis·təm }

**automatic-control transient analysis** [CONT SYS] The analysis of the behavior of the output variable of an automatic control system as the system changes from one steady-state condition to another in terms of such quantities as maximum overshoot, rise time, and response time. { ˌȯd·ə¦mad·ik kən'trōl 'tranˌzhənt əˌnal·ə·səs }

**automatic coupling** [MECH ENG] A device

which couples rail cars when they are bumped together. { ˌȯd·əˌmad·ik 'kəp·liŋ }

**automatic data processing** [ENG] The machine performance, with little or no human assistance, of any of a variety of tasks involving informational data; examples include automatic and responsive reading, computation, writing, speaking, directing artillery, and the running of an entire factory. Abbreviated ADP. { ˌȯd·əˌmad·ik ˌdad·ə 'präsˌəs·iŋ }

**automatic dialog replacement studio** *See* ADR studio. { ˌȯd·əˌmad·ik ˌdī·əˌläg riˈplās·mənt ˌstüd·ēˌō }

**automatic door bottom** [ENG] A movable plunger, in the form of a horizontal bar at the bottom of a door, which drops automatically when the door is closed, sealing the threshold and reducing noise transmission. Also known as automatic threshold closer. { ˌȯd·əˌmad·ik 'dȯr ˌbäd·əm }

**automatic drill** [DES ENG] A straight brace for bits whose shank comprises a coarse-pitch screw sliding in a threaded tube with a handle at the end; the device is operated by pushing the handle. { ˌȯd·əˌmad·ik 'dril }

**automatic fire pump** [MECH ENG] A pump which provides the required water pressure in a fire standpipe or sprinkler system; when the water pressure in the system drops below a preselected value, a sensor causes the pump to start. { ˌȯd·əˌmad·ik ˌfīr ˌpəmp }

**automatic flushing system** [CIV ENG] A water tank system which provides automatically for the periodic flushing of urinals or other plumbing fixtures, or of pipes having too small a slope to drain effectively. { ˌȯd·əˌmad·ik 'fləsh·iŋ ˌsis·təm }

**automatic ignition** [ENG] A device that lights the fuel in a gas burner when the gas-control valve is turned on. { ˌȯd·əˌmad·ik igˈnish·ən }

**automatic indexing** [CONT SYS] The procedure for determining the orientation and position of a workpiece with respect to an automatically controlled machine, such as a robot manipulator, that is to perform an operation on it. { ˌȯd·əˌmad·ik 'inˌdeks·iŋ }

**automatic level control** [ELECTR] A circuit that keeps the output of a radio transmitter, tape recorder, or other device essentially constant, even in the presence of large changes in the input amplitude. Abbreviated ALC. [MECH ENG] In an automotive vehicle, a system in which two air-chamber shock absorbers in the rear are fed compressed air by an electric compressor; pressure in the air chambers is determined automatically by sensors to maintain the vehicle at a predetermined height regardless of load. { ˌȯd·əˌmad·ik 'lev·əl kənˌtrōl }

**automatic microfiller** [ENG] A device used to place microfilm in jackets at relatively high speeds. { ˌȯd·əˌmad·ik 'mi·krōˌfil·ər }

**automatic mold** [ENG] A mold used in injection or compression molding of plastic objects so that repeated molding cycles are possible, including ejection, without manual assistance. { ˌȯd·əˌmad·ik 'mōld }

**automatic press** [MECH ENG] A press in which mechanical feeding of the work is synchronized with the press action. { ˌȯd·əˌmad·ik 'pres }

**automatic pumping station** [CHEM ENG] An installation on a pipeline that automatically provides the proper pressure when a fluid is being transported. { ˌȯd·əˌmad·ik 'pəmp·iŋ ˌstā·shən }

**automatic ranging** *See* autoranging. { ˌȯd·əˌmad·ik 'rānj·iŋ }

**automatic record changer** [ENG ACOUS] An electric phonograph that automatically plays a number of records one after another. { ˌȯd·əˌmad·ik 'rek·ərd ˌchānj·ər }

**automatic regulation** *See* automatic control. { ˌȯd·əˌmad·ik ˌreg·yəˈlā·shən }

**automatic regulator** *See* automatic controller. { ˌȯd·əˌmad·ik 'reg·yəˌlād·ər }

**automatic sampler** [MECH ENG] A mechanical device to sample process streams (gas, liquid, or solid) either continuously or at preset time intervals. { ˌȯd·əˌmad·ik 'sam·plər }

**automatic screw machine** [MECH ENG] A machine designed to automatically produce finished parts from bar stock at high production rates; the term is not an exact, specific machine-tool classification. { ˌȯd·əˌmad·ik 'skrü məˌshēn }

**automatic shut-off** [ENG ACOUS] A switch in some tape recorders which automatically stops the machine when the tape ends or breaks. { ˌȯd·əˌmad·ik 'shədˌȯf }

**automatic slips** [ENG] A pneumatic or hydraulic device for setting and removing slips automatically. Also known as power slips. { ˌȯd·əˌmad·ik 'slips }

**automatic stoker** [MECH ENG] A device that supplies fuel to a boiler furnace by mechanical means. Also known as mechanical stoker. { ˌȯd·əˌmad·ik 'stōk·ər }

**automatic test equipment** [ENG] Test equipment that makes two or more tests in sequence without manual intervention; it usually stops when the first out-of-tolerance value is detected. { ˌȯd·əˌmad·ik 'test iˌkwip·mənt }

**automatic threshold closer** *See* automatic door bottom. { ˌȯd·əˌmad·ik 'threshˌhōld ˌklōz·ər }

**automatic time switch** [ENG] Combination of a switch with an electric or spring-wound clock, arranged to turn an apparatus on and off at predetermined times. { ˌȯd·əˌmad·ik ˌtīm ˌswich }

**automatic track shift** [ENG ACOUS] A system used with multiple-track magnetic tape recorders to index the tape head, after one track is played, to the correct position for the start of the next track. { ˌȯd·əˌmad·ik 'trak ˌshift }

**automatic tuning system** [CONT SYS] An electrical, mechanical, or electromechanical system that tunes a radio receiver or transmitter automatically to a predetermined frequency when a button or lever is pressed, a knob turned, or

a telephone-type dial operated. { ¦ȯd·ə¦mad·ik 'tün·iŋ ˌsis·təm }

**automatic-type belt-tensioning device** [MECH ENG] Any device which maintains a predetermined tension in a conveyor belt. { ¦ȯd·ə¦mad·ik ˌtīp 'belt ¦ten·shən·iŋ diˌvīs }

**automatic volume compressor** *See* volume compressor. { ¦ȯd·ə¦mad·ik 'väl·yəm kəmˌpres·ər }

**automatic volume expander** *See* volume expander. { ¦ȯd·ə¦mad·ik 'väl·yəm ikˌspand·ər }

**automatic wet-pipe sprinkler system** [ENG] A sprinkler system, all of whose parts are filled with water at sufficient pressure to provide an immediate continuous discharge if the system is activated. { ¦ȯd·ə¦mad·ik ¦wet ¦pīp 'spriŋk·lər ˌsis·təm }

**automatic zero setting** [ENG] A system for automatic correction of zero-point drifts or for compensation of soiling of load receivers on a balance by means of a special accessory component. { ¦ȯd·ə¦mad·ik 'zir·ō ˌsed·iŋ }

**automation** [ENG] **1.** The use of technology to ease human labor or extend the mental or physical capabilities of humans. **2.** The mechanisms, machines, and systems that save or eliminate labor, or imitate actions typically associated with human beings. { ˌȯd·ə'mā·shən }

**automechanism** [CONT SYS] A machine or other device that operates automatically or under control of a servomechanism. { ¦ȯd·ō'mek·əˌniz·əm }

**automobile** [MECH ENG] A four-wheeled, trackless, self-propelled vehicle for land transportation of as many as eight people. Also known as car. { ˌȯd·ə·mə'bēl }

**automobile chassis** [MECH ENG] The automobile frame, together with the wheels, power train, brakes, engine, and steering system. { ˌȯd·ə·mə'bēl 'chas·ē }

**automotive air conditioning** [MECH ENG] A system for maintaining comfort of occupants of automobiles, buses, and trucks, limited to air cooling, air heating, ventilation, and occasionally dehumidification. { ¦ȯd·ə¦mōd·iv 'er kən ˌdish·ən·iŋ }

**automotive body** [ENG] An enclosure mounted on and attached to the frame of an automotive vehicle, to contain passengers and luggage, or in the case of commercial vehicles the commodities being carried. { ¦ȯd·ə¦mōd·iv 'bäd·ē }

**automotive brake** [MECH ENG] A friction mechanism that slows or stops the rotation of the wheels of an automotive vehicle, so that tire traction slows or stops the vehicle. { ¦ȯd·ə'mōd·iv 'brāk }

**automotive engine** [MECH ENG] The fuel-consuming machine that provides the motive power for automobiles, airplanes, tractors, buses, and motorcycles and is carried in the vehicle. { ¦ȯd·ə¦mōd·iv 'en·jən }

**automotive engineering** [MECH ENG] The branch of mechanical engineering concerned primarily with the special problems of land transportation by a four-wheeled, trackless, automotive vehicle. { ¦ȯd·ə¦mōd·iv ˌen·jə'nir·iŋ }

**automotive frame** [ENG] The basic structure of all automotive vehicles, except tractors, which is supported by the suspension and upon which or attached to which are the power plant, transmission, clutch, and body or seat for the driver. { ¦ȯd·ə¦mōd·iv 'frām }

**automotive ignition system** [MECH ENG] A device in an automotive vehicle which initiates the chemical reaction between fuel and air in the cylinder charge. { ¦ȯd·ə¦mōd·iv ig'nish·ən ˌsis·təm }

**automotive steering** [MECH ENG] Mechanical means by which a driver controls the course of a moving automobile, bus, truck, or tractor. { ¦ȯd·ə¦mōd·iv 'stir·iŋ }

**automotive suspension** [MECH ENG] The springs and related parts intermediate between the wheels and frame of an automotive vehicle that support the frame on the wheels and absorb road shock caused by passage of the wheels over irregularities. { ¦ȯd·ə¦mōd·iv səs'pen·chən }

**automotive transmission** [MECH ENG] A device for providing different gear or drive ratios between the engine and drive wheels of an automotive vehicle, a principal function being to enable the vehicle to accelerate from rest through a wide speed range while the engine operates within its most effective range. { ¦ȯd·ə¦mōd·iv tranz 'mish·ən }

**automotive vehicle** [MECH ENG] A self-propelled vehicle or machine for land transportation of people or commodities or for moving materials, such as a passenger car, bus, truck, motorcycle, tractor, airplane, motorboat, or earthmover. { ¦ȯd·ə¦mōd·iv 'vē·ə·kəl }

**autonomous robot** [ENG] A robot that not only can maintain its own stability as it moves, but also can plan its movements. { ȯ¦tän·ə·məs 'rōˌbät }

**autonomous vehicle** [ENG] A vehicle that is able to plan its path and to execute its plan without human intervention. { ȯ¦tän·ə·məs 'vē·ə·kəl }

**autopatrol** [MECH ENG] A self-powered blade grader. Also known as motor grader. { 'ȯd·ō·pəˌtrōl }

**autoradar plot** *See* chart comparison unit. { ¦ȯd·ōˌrāˌdär ˌplät }

**autoradiography** [ENG] A technique for detecting radioactivity in a specimen by producing an image on a photographic film or plate. Also known as radioautography. { ¦ȯd·ōˌrād·ē'äg·rə·fē }

**autorail** [MECH ENG] A self-propelled vehicle having both flange wheels and pneumatic tires to permit operation on both rails and roadways. { 'ȯd·ōˌrāl }

**autoranging** [ENG] Automatic switching of a multirange meter from its lowest to the next higher range, with the switching process repeated until a range is reached for which the full-scale value is not exceeded. Also known as automatic ranging. { 'ȯd·ōˌrānj·iŋ }

**autoreducing tachymeter** [ENG] A class of tachymeter by which horizontal and height distances are read simultaneously. { ˌȯd·ō·riˌdüs·iŋ tə'kim·əd·ər }

**autorotation** [MECH] **1.** Rotation about any axis of a body that is symmetrical and exposed to a uniform airstream and maintained only by aerodynamic moments. **2.** Rotation of a stalled symmetrical airfoil parallel to the direction of the wind. { ˌȯd·ōˌrō'tā·shən }

**autosled** [MECH ENG] A propeller-driven machine equipped with runners and wheels and adaptable to use on snow, ice, or bare roads. { 'ȯd·ōˌsled }

**autostability** [CONT SYS] The ability of a device (such as a servomechanism) to hold a steady position, either by virtue of its shape and proportions, or by control by a servomechanism. { ˌȯd·ō·stə'bil·əd·ē }

**auxanometer** [ENG] An instrument used to detect and measure plant growth rate. { ˌȯg·zə'näm·əd·ər }

**auxiliary dead latch** [DES ENG] A supplementary latch in a lock which automatically deadlocks the main latch bolt when the door is closed. Also known as auxiliary latch bolt; deadlocking latch bolt; trigger bolt. { ȯg'zil·yə·rē 'ded ˌlach }

**auxiliary latch bolt** *See* auxiliary dead latch. { ȯg 'zil·yə·rē 'lach ˌbōlt }

**auxiliary power plant** [MECH ENG] Ancillary equipment, such as pumps, fans, and soot blowers, used with the main boiler, turbine, engine, waterwheel, or generator of a power-generating station. { ȯg'zil·yə·rē 'paù·ər ˌplant }

**auxiliary rafter** [BUILD] A member strengthening the principal rafter in a truss. { ȯg'zil·yə·rē 'raf·tər }

**auxiliary reinforcement** [CIV ENG] In a prestressed structural member, any reinforcement in addition to that whose function is prestressing. { ȯg'zil·yə·rē ˌrē·ən'fórs·mənt }

**auxiliary rim lock** [DES ENG] A secondary or extra lock that is surface-mounted on a door to provide additional security. { ȯg'zil·yə·rē 'rim ˌläk }

**auxiliary rope-fastening device** [MECH ENG] A device attached to an elevator car, to a counterweight, or to the overhead dead-end rope-hitch support, that automatically supports the car or counterweight in case the fastening for the wire rope (cable) fails. { ȯg'zil·yə·rē 'rōp ˌfas·ən·iŋ diˌvīs }

**auxiliary thermometer** [ENG] A mercury-in-glass thermometer attached to the stem of a reversing thermometer and read at the same time as the reversing thermometer so that the correction to the reading of the latter, resulting from change in temperature since reversal, can be computed. { ȯg'zil·yə·rē thər'mäm·əd·ər }

**auxograph** [ENG] An automatic device that records changes in the volume of a body. { 'ȯk·səˌgraf }

**auxometer** [ENG] An instrument that measures the magnification of a lens system. { ˌȯk'säm·əd·ər }

**availability** [SYS ENG] The probability that a system is operating satisfactorily at any point in time, excluding times when the system is under repair. { əˌvāl·ə'bil·ə·dē }

**availability ratio** [IND ENG] The ratio of the amount of time a system is actually available for use to the amount of time it is supposed to be available. { əˌvāl·ə'bil·əd·ē 'rā·shō }

**available draft** [MECH ENG] The usable differential pressure in the combustion air in a furnace, used to sustain combustion of fuel or to transport products of combustion. { ə'vāl·ə·bəl 'draft }

**available energy** [MECH ENG] Energy which can in principle be converted to mechanical work. { ə'vāl·ə·bəl 'en·ər·jē }

**available heat** [MECH ENG] The heat per unit mass of a working substance that could be transformed into work in an engine under ideal conditions for a given amount of heat per unit mass furnished to the working substance. { ə'vāl·ə·bəl 'hēt }

**available motions inventory** [IND ENG] A list of all motions available to a human for performing a specific task. { əˌvāl·ə·bəl ˌmō·shənz 'in·venˌtȯr·ē }

**avalanche** [ELECTR] **1.** The cumulative process in which an electron or other charged particle accelerated by a strong electric field collides with and ionizes gas molecules, thereby releasing new electrons which in turn have more collisions, so that the discharge is thus self-maintained. Also known as avalanche effect; cascade; cumulative ionization; electron avalanche; Townsend avalanche; Townsend ionization. **2.** Cumulative multiplication of carriers in a semiconductor as a result of avalanche breakdown. Also known as avalanche effect. { 'av·əˌlanch }

**avalanche breakdown** [ELECTR] Nondestructive breakdown in a semiconductor diode when the electric field across the barrier region is strong enough so that current carriers collide with valence electrons to produce ionization and cumulative multiplication of carriers. { 'av·əˌlanch 'brāk,daùn }

**avalanche diode** [ELECTR] A semiconductor breakdown diode, usually made of silicon, in which avalanche breakdown occurs across the entire *pn* junction and voltage drop is then essentially constant and independent of current; the two most important types are IMPATT and TRAPATT diodes. { 'av·əˌlanch 'dīˌōd }

**avalanche effect** *See* avalanche. { 'av·əˌlanch iˌfekt }

**avalanche impedance** [ELECTR] The complex ratio of the reverse voltage of a device that undergoes avalanche breakdown to the reverse current. { 'av·əˌlanch im'pēd·əns }

**avalanche-induced migration** [ELECTR] A technique of forming interconnections in a field-programmable logic array by applying appropriate voltages for shorting selected base-emitter junctions. { 'av·əˌlanch inˌdüsd ˌmī'grā·shən }

**avalanche noise** [ELECTR] **1.** A junction phenomenon in a semiconductor in which carriers

in a high-voltage gradient develop sufficient energy to dislodge additional carriers through physical impact; this agitation creates ragged current flows which are indicated by noise. **2.** The noise produced when a junction diode is operated at the onset of avalanche breakdown. { 'av·əˌlanch ˌnōiz }

**avalanche oscillator** [ELECTR] An oscillator that uses an avalanche diode as a negative resistance to achieve one-step conversion from direct-current to microwave outputs in the gigahertz range. { 'av·əˌlanch ˈäs·əˌlād·ər }

**avalanche photodiode** [ELECTR] A photodiode operated in the avalanche breakdown region to achieve internal photocurrent multiplication, thereby providing rapid light-controlled switching operation. { 'av·əˌlanch ˌfōd·ōˈdīˌōd }

**avalanche protector** [MECH ENG] Guard plates installed on an excavator to prevent loose material from sliding into the wheels or tracks. { 'av·əˌlanch prəˌtek·tər }

**avalanche transistor** [ELECTR] A transistor that utilizes avalanche breakdown to produce chain generation of charge-carrying hole-electron pairs. { 'av·əˌlanch tranˈzis·tər }

**avalanche voltage** [ELECTR] The reverse voltage required to cause avalanche breakdown in a *pn* semiconductor junction. { 'av·əˌlanch ˌvōl·tij }

**average acoustic output** [ENG ACOUS] Vibratory energy output of a transducer measured by a radiation pressure balance; expressed in terms of watts per unit area of the transducer face. { 'av·rij əˈkü·stik 'aůtˌpůt }

**average noise figure** [ELECTR] Ratio in a transducer of total output noise power to the portion thereof attributable to thermal noise in the input termination, the total noise being summed over frequencies from zero to infinity, and the noise temperature of the input termination being standard (290 K). { 'av·rij ˈnōiz ˌfig·yər }

**average outgoing quality limit** [IND ENG] The average quality of all lots that pass quality inspection, expressed in terms of percent defective. Abbreviated AOQL. { 'av·rij 'aůtˌgō·iŋ 'kwäl·əd·ē ˌlim·ət }

**average power output** [ELECTR] Radio-frequency power, in an audio-modulation transmitter, delivered to the transmitter output terminals, averaged over a modulation cycle. { 'av·rij 'paů·ər 'aůtˌpůt }

**average sample number** [IND ENG] An anticipated number of pieces that must be inspected to determine the acceptability of a particular lot. { 'av·rij ˈsam·pəl ˌnəm·bər }

**averaging** [CONT SYS] The reduction of noise received by a robot sensor by screening it over a period of time. { 'av· rij·iŋ }

**averaging device** [ENG] A device for obtaining the arithmetic mean of a number of readings, as on a bubble sextant. { 'av·rij·iŋ diˈvīs }

**averaging pitot tube** [ENG] A flowmeter that consists of a rod extending across a pipe with several interconnected upstream holes, which simulate an array of pitot tubes across the pipe, and a downstream hole for the static pressure reference. { 'av·rij·iŋ ˌpēˌtō ˌtüb }

**aviation method** [ENG] Determination of knock-limiting power, under lean-mixture conditions, of fuels used in spark-ignition aircraft engines. { ˌā·vēˈā·shən 'meth·əd }

**avionics** [ENG] The design and production of airborne electrical and electronic devices; term is derived from aviation electronics. { ˌā·vēˈän·iks }

**avogram** [MECH] A unit of mass, equal to 1 gram divided by the Avogadro number. { 'a·vəˌgram }

**avoidable delay** [IND ENG] An interruption under the control of the operator during the normal operating time. { əˈvóid·ə·bəl diˈlā }

**avoirdupois pound** *See* pound. { ˌav·ərd·əˈpóiz ˈpaůnd }

**avoirdupois weight** [MECH] The system of units which has been commonly used in English-speaking countries for measurement of the mass of any substance except precious stones, precious metals, and drugs; it is based on the pound (approximately 453.6 grams) and includes the short ton (2000 pounds), long ton (2240 pounds), ounce (one-sixteenth pound), and dram (one-sixteenth ounce). { ˌav·ərd·əˈpóiz ˈwāt }

**awl** [DES ENG] A point tool with a short wooden handle used to mark surfaces and to make small holes, as in leather or wood. { ȯl }

**awning window** [BUILD] A window consisting of a series of vertically arranged, top-hinged rectangular sections; designed to admit air while excluding rain. { ˈón·iŋ ˌwin·dō }

**ax** [DES ENG] An implement consisting of a heavy metal wedge-shaped head with one or two cutting edges and a relatively long wooden handle; used for chopping wood and felling trees. { aks }

**axed brick** [ENG] A brick, shaped with an ax, that has not been trimmed. Also known as rough-axed brick. { ˈakst ˈbrik }

**axhammer** [DES ENG] An ax having one cutting edge and one hammer face. { ˈaksˌham·ər }

**axial fan** [MECH ENG] A fan whose housing confines the gas flow to the direction along the rotating shaft at both the inlet and outlet. { 'ak·sē·əl 'fan }

**axial-flow compressor** [MECH ENG] A fluid compressor that accelerates the fluid in a direction generally parallel to the rotating shaft. { 'ak·sē·əl 'flō kəmˈpres·ər }

**axial-flow pump** [MECH ENG] A pump having an axial-flow or propeller-type impeller; used when maximum capacity and minimum head are desired. Also known as propeller pump. { 'ak·sē·əl 'flō ˌpəmp }

**axial force diagram** [CIV ENG] In statics, a graphical representation of the axial load acting at each section of a structural member, plotted to scale and with proper sign as an ordinate at each point of the member and along a reference line representing the length of the member. { 'ak·sē·əl ˈfórs ˌdi·əˌgram }

**axial hydraulic thrust** [MECH ENG] In single-stage and multistage pumps, the summation of unbalanced impeller forces acting in the axial direction. { 'ak·sē·əl hī'drȯ·lik 'thrəst }

**axial lead** [ELEC] A wire lead extending from the end along the axis of a resistor, capacitor, or other component. { 'ak·sē·əl 'lēd }

**axial load** [MECH] A force with its resultant passing through the centroid of a particular section and being perpendicular to the plane of the section. { 'ak·sē·əl 'lōd }

**axial modulus** [MECH] The ratio of a simple tension stress applied to a material to the resulting strain parallel to the tension when the sides of the sample are restricted so that there is no lateral deformation. Also known as modulus of simple longitudinal extension. { ¦ak·sē·əl 'mäj·ə·ləs }

**axial moment of inertia** [MECH] For any object rotating about an axis, the sum of its component masses times the square of the distance to the axis. { 'ak·sē·əl 'mō·mənt əv in'ər·shə }

**axial nozzle** [MECH ENG] An inlet or outlet connection installed in the head of a shell-and-tube exchanger and aligned normal to the plane in which the tube lies. { ¦ak·sē·əl 'näz·əl }

**axial rake** [MECH ENG] The angle between the face of a blade of a milling cutter or reamer and a line parallel to its axis of rotation. { 'ak·sē·əl 'rāk }

**axial relief** [MECH ENG] The relief behind the end cutting edge of a milling cutter. { 'ak·sē·əl ri'lēf }

**axial runout** [MECH ENG] The total amount, along the axis of rotation, by which the rotation of a cutting tool deviates from a plane. { 'ak·sē·əl 'rən,aůt }

**axial-type mass flowmeter** [ENG] An instrument in which fluid in a pipe is made to rotate at a constant speed by a motor-driven impeller, and the torque required by a second, stationary impeller to straighten the flow again is a direct measurement of mass flow. { 'ak·sē·əl ¦tīp 'mas 'flō,med·ər }

**axis** [MECH] A line about which a body rotates. { 'ak·səs }

**axis of freedom** [DES ENG] An axis in a gyro about which a gimbal provides a degree of freedom. { 'ak·səs əv frēd·əm }

**axis of rotation** [MECH] A straight line passing through the points of a rotating rigid body that remain stationary, while the other points of the body move in circles about the axis. { 'ak·səs əv rō'tā·shən }

**axis of sighting** [ENG] A line taken through the sights of a gun, or through the optical center and centers of curvature of lenses in any telescopic instrument. { 'ak·səs əv 'sīd·iŋ }

**axis of symmetry** [MECH] An imaginary line about which a geometrical figure is symmetric. Also known as symmetry axis. { 'ak·səs əv 'sim·ə·trē }

**axis of torsion** [MECH] An axis parallel to the generators of a cylinder undergoing torsion, located so that the displacement of any point on the axis lies along the axis. Also known as axis of twist. { ¦ak·səs əv 'tȯr·shən }

**axis of twist** *See* axis of torsion. { ¦ak·səs əv 'twist }

**axle** [MECH ENG] A supporting member that carries a wheel and either rotates with the wheel to transmit mechanical power to or from it, or allows the wheel to rotate freely on it. { 'ak·səl }

**axle box** [ENG] A bushing through which an axle passes in the hub of a wheel. { 'ak·səl ˌbäks }

**axle ratio** [MECH ENG] In an automotive vehicle, the ratio of the speed in revolutions per minute of the drive shaft to that of the drive wheels. { 'ak·səl 'rā·shō }

**axometer** [ENG] An instrument that locates the optical axis of a lens, particularly a lens used in eyeglasses. { ak'säm·əd·ər }

**azel mounting** *See* altazimuth mounting. { 'az·əl ˌmaůnt·iŋ }

**azeotropic distillation** [CHEM ENG] A process by which a liquid mixture is separated into pure components with the help of an additional substance or solvent. { ¦āz·ē·a ̇trō·pik ˌdis·tə'lā·shən }

**azimuth** [ENG] In directional drilling, the direction of the face of the deviation tool with respect to magnetic north. { 'az·ə·məth }

**azimuth-adjustment slide rule** [ENG] A circular slide rule by which a known angular correction for fire at one elevation can be changed to the proper correction for any other elevation. { 'az·ə·məth ə¦jəs·mənt 'slīd ˌrül }

**azimuth alignment** [ENG ACOUS] The condition whereby the center lines of the playback- and recording-head gaps are exactly perpendicular to the magnetic tape and parallel to each other. { 'az·ə·məth a'līn·mənt }

**azimuth angle** [ENG] An angle in triangulation or in traverse through which the computation of azimuth is carried. { 'az·ə·məth 'aŋ·gəl }

**azimuth bar** *See* azimuth instrument. { 'az·ə·məth ˌbär }

**azimuth circle** [DES ENG] A ring calibrated from 0 to 360° over a compass, compass repeater, radar plan position indicator, direction finder, and so on, which provides means for observing compass bearings and azimuths. { 'az·ə·məth ˌsər·kəl }

**azimuth dial** [ENG] Any horizontal circle dial that reads azimuth. { 'az·ə·məth ˌdīl }

**azimuth error** [ENG] An error in the indicated azimuth of a target detected by radar. { 'az·ə·məth ˌer·ər }

**azimuth indicator** [ENG] An approach-radar scope which displays azimuth information. { 'az·ə·məth ˌin·də ̇kād·ər }

**azimuth instrument** [ENG] An instrument for measuring azimuths, particularly a device which fits over a central pivot in the glass cover of a magnetic compass. Also known as azimuth bar; bearing bar. { 'az·ə·məth ˌin·strə·mənt }

**azimuth line** [ENG] A radial line from the principal point, isocenter, or nadir point of a photograph, representing the direction to a similar point of an adjacent photograph in the same

flight line; used extensively in radial triangulation. { 'az·ə·məth ˌlīn }

**azimuth marker** [ENG] **1.** A scale encircling the plan position indicator scope of a radar on which the azimuth of a target from the radar may be measured. **2.** Any of the reference limits inserted electronically at 10 or 15° intervals which extend radially from the relative position of the radar on an off-center plan position indicator scope. { 'az·ə·məth ˌmär·kər }

**azimuth scale** [ENG] A graduated angle-measuring device on instruments, gun carriages, and so forth that indicates azimuth. { 'az·ə·məth ˌskāl }

**azimuth-stabilized plan position indicator** [ENG] A north-upward plan position indicator (PPI), a radarscope, which is stabilized by a gyrocompass so that either true or magnetic north is always at the top of the scope regardless of vehicle orientation. { 'az·ə·məth ¦stə·bəˌlīzd 'plan pə'zish·ən 'in·dəˌkād·ər }

**azimuth transfer** [ENG] Connecting, with a straight line, the nadir points of two vertical photographs selected from overlapping flights. { 'az·ə·məth 'tranzˌfər }

**azimuth traverse** [ENG] A survey traverse in which the direction of the measured course is determined by azimuth and verified by back azimuth. { 'az·ə·məth trə'vərs }

**Azusa** [ENG] A continuous-wave, high-accuracy, phase-comparison, single-station tracking system operating at C-band and giving two direction cosines and slant range which can be used to determine space position and velocity of a vehicle (usually a rocket or a missile). { ə'züs·ə }

# B

**backacter** *See* backhoe. { 'bak,ak·tər }

**backband** [BUILD] A piece of millwork used around a rectangular window or door casing as a cover for the gap between the casing and the wall or as a decorative feature. Also known as backbend. { 'bak,band }

**backbend** [BUILD] **1.** At the outer edge of a metal door or window frame, the face which returns to the wall surface. **2.** *See* backband. { 'bak,bend }

**back bias** [ELECTR] **1.** Degenerative or regenerative voltage which is fed back to circuits before its originating point; usually applied to a control anode of a tube or other device. **2.** Voltage applied to a grid of a tube (or tubes) or electrode of another device to reduce a condition which has been upset by some external cause. { 'bak ,bī·əs }

**back boxing** *See* backlining. { 'bak ¦bäk·siŋ }

**backbreak** *See* overbreak. { 'bak,brāk }

**back check** [DES ENG] In a hydraulic door closer, a mechanism that slows the speed with which a door may be opened. { 'bak ,chek }

**backdigger** *See* backhoe. { 'bak¦dig·ər }

**back-draft damper** [MECH ENG] A damper with blades actuated by gravity, permitting air to pass through them in one direction only. { 'bak ,draft 'dam·pər }

**back edging** [ENG] Cutting through a glazed ceramic pipe by first chipping through the glaze around the outside and then chipping the pipe itself. { 'bak ,ej·iŋ }

**back end** *See* thrust yoke. { 'bak ,end }

**backfill** [CIV ENG] Earth refilling a trench or an excavation around a building, bridge abutment, and the like. { 'bak,fil }

**back fillet** [BUILD] The return of the margin of a groin, doorjamb, or window jamb when it projects beyond a wall. { 'bak ,fil·ət }

**backfire** [CIV ENG] A fire that is started in order to burn against and cut off a spreading fire. [ELECTR] *See* arcback. [ENG] Momentary backward burning of flame into the tip of a torch. Also known as flashback. [MECH ENG] In an internal combustion engine, an improperly timed explosion of the fuel mixture in a cylinder, especially one occurring during the period that the exhaust or intake valve is open and resulting in a loud detonation. { 'bak,fīr }

**backflap hinge** [DES ENG] A hinge having a flat plate or strap which is screwed to the face of a shutter or door. Also known as flap hinge. { 'bak,flap ,hinj }

**backflow** [CIV ENG] The flow of water or other liquids, mixtures, or substances into the distributing pipes of a potable supply of water from any other than its intended source. { 'bak,flō }

**backflow connection** [CIV ENG] Any arrangement of pipes, plumbing fixtures, drains, and so forth, in which backflow can occur. { 'bak,flō kə'nek·shən }

**backflow preventer** *See* vacuum breaker. { 'bak ,flō pri'ven·tər }

**backflow valve** *See* backwater valve. { 'bak,flō ,valv }

**backfurrow** [CIV ENG] In an excavation procedure, the first cut made on undisturbed land. { 'bak,fər·ō }

**back gearing** [MECH ENG] The technique of using gears on machine tools to obtain an increase in the number of speed changes that can be gotten with cone belt drives. { 'bak ,gir·iŋ }

**background discrimination** [ENG] The ability of a measuring instrument, circuit, or other device to distinguish signal from background noise. { 'bak,graůnd dis,krim·ə'nā·shən }

**background noise** [ENG] The undesired signals that are always present in an electronic or other system, independent of whether or not the desired signal is present. { 'bak,graůnd ,nȯiz }

**background returns** [ENG] **1.** Signals on a radar screen from objects which are of no interest. **2.** *See* clutter. { 'bak,graůnd ri'tərnz }

**background signal** [ENG] The output of a leak detector caused by residual gas to which the detector element reacts. { 'bak,graůnd ,sig·nəl }

**back gutter** [BUILD] A gutter installed on the uphill side of a chimney on a sloping roof to divert water around the chimney. { 'bak ,gəd·ər }

**back hearth** [BUILD] That part of the hearth (or floor) which is contained within the fireplace itself. Also known as inner hearth. { 'bak ,härth }

**backhoe** [MECH ENG] An excavator fitted with a hinged arm to which is rigidly attached a bucket that is drawn toward the machine in operation. Also known as backacter; backdigger; dragshovel; pullshovel. { 'bak ,hō }

**backing** [CIV ENG] **1.** The unexposed, rough masonry surface of a wall that is faced with finer work. **2.** The earth backfill of a retaining wall. [ELECTR] Flexible material, usually cellulose acetate or polyester, used on magnetic tape as the carrier for the oxide coating. { 'bak·iŋ }

**backing board** [BUILD] In a suspended acoustical ceiling, a flat sheet of gypsum board to which acoustical tile is attached by adhesive or mechanical means. { 'bak·iŋ ˌbȯrd }

**backing brick** [CIV ENG] A relatively low-quality brick used behind face brick or other masonry. { 'bak·iŋ ˌbrik }

**backing off** [ENG] Removing excessive body metal from badly worn bits. { 'bak·iŋ ˈȯf }

**backing plate** [ENG] A plate used to support the hardware for the cavity used in plastics injection molding. { 'bak·iŋ ˌplāt }

**backing pump** [MECH ENG] A vacuum pump, in a vacuum system using two pumps in tandem, which works directly to the atmosphere and reduces the pressure to an intermediate value, usually between 100 and 0.1 pascals. Also known as fore pump. { 'bak·iŋ ˌpəmp }

**backing ring** [ENG] A strip of metal attached at a pipe joint at the root of a weld to prevent spatter and to ensure the integrity of the weld. { 'bak·iŋ ˌriŋ }

**backing space** [ENG] Space between a fore pump and a diffusion pump in a leak-testing system. { 'bak·iŋ ˌspās }

**backing-space technique** [ENG] Testing for leaks by connecting a leak detector to the backing space. { 'bak·iŋ ˌspās ˌtek'nēk }

**backing up** [CIV ENG] In masonry, the laying of backing brick. { 'bak·iŋ ˈəp }

**back jamb** *See* backlining. { 'bak ˌjam }

**backjoint** [CIV ENG] In masonry, a rabbet such as that made on the inner side of a chimneypiece to receive a slip. { 'bakˌjȯint }

**backlash** [DES ENG] The amount by which the tooth space of a gear exceeds the tooth thickness of the mating gear along the pitch circles. [ELECTR] A small reverse current in a rectifier tube caused by the motion of positive ions produced in the gas by the impact of thermoelectrons. [ENG] **1.** Relative motion of mechanical parts caused by looseness. **2.** The difference between the actual values of a quantity when a dial controlling this quantity is brought to a given position by a clockwise rotation and when it is brought to the same position by a counterclockwise rotation. { 'bakˌlash }

**backlining** [BUILD] **1.** A thin strip which lines a window casing, next to the wall and opposite the pulley stile, and provides a smooth surface for the working of the weighted sash. Also known as back boxing; back jamb. **2.** That piece of framing forming the back recess for boxing shutters. { 'bakˌlīn·iŋ }

**back lintel** [BUILD] A lintel which supports the backing of a masonry wall, as opposed to the lintel supporting the facing material. { 'bak ˌlin·təl }

**backlog** [IND ENG] **1.** An accumulation of orders promising future work and profit. **2.** An accumulation of unprocessed materials or unperformed tasks. { 'bakˌläg }

**back mixing** [CHEM ENG] The tendency of reacted chemicals to intermingle with unreacted feed in reactors, such as stirred tanks, packed towers, and baffled tanks. { 'bak ˌmik·siŋ }

**back nailing** [BUILD] Nailing the plies of a built-up roof to the substrate to prevent slippage. { 'bak ˌnāl·iŋ }

**back nut** [DES ENG] **1.** A threaded nut, one side of which is dished to retain a grommet; used in forming a watertight pipe joint. **2.** A locking nut on the shank of a pipe fitting, tap, or valve. { 'bak ˌnət }

**back off** [ENG] **1.** To unscrew or disconnect. **2.** To withdraw the drill bit from a borehole. **3.** To withdraw a cutting tool or grinding wheel from contact with the workpiece. { 'bak ˌȯf }

**back order** [IND ENG] **1.** An order held for future completion. **2.** A new order placed for previously unavailable materials of an old order. { 'bak ˌȯrd·ər }

**backplastering** [BUILD] A coat of plaster applied to the back side of lath, opposite the finished surface. { 'bakˌplas·triŋ }

**backplate** [BUILD] A plate, usually metal or wood, which serves as a backing for a structural member. { 'bakˌplāt }

**backplate lamp holder** [DES ENG] A lamp holder, integrally mounted on a plate, which is designed for screwing to a flat surface. { 'bak ˌplāt 'lamp ˌhōl·dər }

**back pressure** [MECH] Pressure due to a force that is operating in a direction opposite to that being considered, such as that of a fluid flow. [MECH ENG] Resistance transferred from rock into the drill stem when the bit is being fed at a faster rate than the bit can cut. { 'bak ˌpresh·ər }

**back-pressure-relief port** [ENG] In a plastics extrusion die, an opening for the release of excess material. { 'bak ˌpresh·ər ri'lēf ˌpȯrt }

**back rake** [DES ENG] An angle on a single-point turning tool measured between the plane of the tool face and the reference plane. { 'bak ˌrāk }

**back-run process** [CHEM ENG] A process for manufacturing water gas in which part of the run is made down, by passing steam through the superheater, thence up through the carburetor, down through the generator, and direct to the scrubbers. { 'bak ˌrən 'präs·əs }

**backsaw** [DES ENG] A fine-tooth saw with its upper edge stiffened by a metal rib to ensure straight cuts. { 'bakˌsȯ }

**backscatter gage** [ENG] A radar instrument used to measure the radiation scattered at 180° to the direction of the incident wave. { 'bak ˈskad·ər ˌgaj }

**backscattering thickness gage** [ENG] A device that uses a radioactive source for measuring the thickness of materials, such as coatings, in which the source and the instrument measuring the radiation are mounted on the same side of the

material, the backscattered radiation thus being measured. { 'bakˌskad·ə·riŋ 'thik·nəs ˌgāj }

**backset** [BUILD] The horizontal distance from the face of a lock or latch to the center of the keyhole, knob, or lock cylinder. { 'bakˌset }

**backsight** [ENG] **1.** A sight on a previously established survey point or line. **2.** Reading a leveling rod in its unchanged position after moving the leveling instrument to a different location. { 'bakˌsīt }

**backsight method** [ENG] **1.** A plane-table traversing method in which the table orientation produces the alignment of the alidade on an established map line, the table being rotated until the line of sight is coincident with the corresponding ground line. **2.** Sighting two pieces of equipment directly at each other in order to orient and synchronize one with the other in azimuth and elevation. { 'bakˌsīt 'meth·əd }

**back siphonage** [CIV ENG] The flowing back of used, contaminated, or polluted water from a plumbing fixture or vessel into the pipe which feeds it; caused by reduced pressure in the pipe. { 'bak ˌsī·fən·ij }

**back solution** [CONT SYS] The calculation of the tool-coordinated positions that correspond to specified robotic joint positions. { 'bak səˌlü·shən }

**backspace** [MECH ENG] To move a typewriter carriage back one space by depressing a backspace key. { 'bakˌspās }

**backstay** [ENG] **1.** A supporting cable that prevents a more or less vertical object from falling forward. **2.** A spring used to keep together the cutting edges of purchase shears. **3.** A rod that runs from either end of a carriage's rear axle to the reach. **4.** A leather strip that covers and strengthens a shoe's back seam. { 'bakˌstā }

**back sweetening** [CHEM ENG] The controlled addition of commercial-grade mercaptans to a petroleum stock having excess free sulfur in order to reduce free sulfur by forming a disulfide. { 'bak ˌswēt·ən·iŋ }

**backup** [BUILD] That part of a masonry wall behind the exterior facing. [CIV ENG] Overflow in a drain or piping system, due to stoppage. [ENG] **1.** An item under development intended to perform the same general functions that another item also under development performs. **2.** A compressible material used behind a sealant to reduce its depth and to support the sealant against sag or indentation. { 'bakˌəp }

**backup strip** [BUILD] A wood strip which is fixed at the corner of a partition or wall to provide a nailing surface for ends of lath. Also known as lathing board. { 'bakˌəp ˌstrip }

**backup system** [SYS ENG] A system, normally redundant but kept available to replace a system which may fail in operation. { 'bakˌəp ˌsis·təm }

**backup tong** [ENG] A heavy device used on a drill pipe to loosen the tool joints. { 'bakˌəp ˌtäng }

**back vent** [CIV ENG] An individual vent for a plumbing fixture located on the downstream (sewer) side of a trap to protect the trap against siphonage. { 'bak ˌvent }

**backward-bladed aerodynamic fan** [MECH ENG] A fan that consists of several streamlined blades mounted in a revolving casing. { 'bak·wərd ˌblād·əd ˌer·ō·dī'nam·ik ˌfan }

**backward pass** [IND ENG] The calculation of late finish times (dates) for all uncompleted network activities for a specific project by subtracting durations of uncompleted activities from the scheduled finish time of the final activity. { 'bak·wərd 'pas }

**backwash** [CHEM ENG] **1.** In an ion-exchange resin system, an upward flow of water through a resin bed that cleans and reclassifies the resin particles after exhaustion. **2.** *See* blowback. { 'bakˌwäsh }

**backwater valve** [ENG] A type of check valve in a drainage pipe; reversal of flow causes the valve to close, thereby cutting off flow. Also known as backflow valve. { 'bakˌwȯd·ər ˌvalv }

**badger** [DES ENG] *See* badger plane. [ENG] A tool used inside a pipe or culvert to remove any excess mortar or deposits. { 'baj·ər }

**badger plane** [DES ENG] A hand plane whose mouth is cut obliquely from side to side, so that the plane can work close up to a corner. Also known as badger. { 'baj·ər ˌplān }

**baffle** [ELEC] Device for deflecting oil or gas in a circuit breaker. [ELECTR] An auxiliary member in a gas tube used, for example, to control the flow of mercury particles or deionize the mercury following conduction. [ENG] A plate that regulates the flow of a fluid, as in a steam-boiler flue or a gasoline muffler. [ENG ACOUS] A cabinet or partition used with a loudspeaker to reduce interaction between sound waves produced simultaneously by the two surfaces of the diaphragm. { 'baf·əl }

**bag** [ENG] **1.** A flexible cover used in bag molding. **2.** A container made of paper, plastic, or cloth without rigid walls to transport or store material. { bag }

**bag filter** [ENG] Filtering apparatus with porous cloth or felt bags through which dust-laden gases are sent, leaving the dust on the inner surfaces of the bags. { 'bag ˌfil·tər }

**baghouse** [ENG] The large chamber or room for holding bag filters used to filter gas streams from a furnace. { 'bagˌhaùs }

**bag molding** [ENG] A method of molding plastic or plywood-plastic combinations into curved shapes, in which fluid pressure acting through a flexible cover, or bag, presses the material to be molded against a rigid die. { 'bag ˌmōld·iŋ }

**Bagnold number** [ENG] A dimensionless number used in saltation studies. { 'bag·nəld ˌnəm·bər }

**bag plug** [ENG] An inflatable drain stopper, located at the lowest point of a piping system, that acts to seal a pipe when inflated. { 'bag ˌpləg }

**bag trap** [ENG] An S-shaped trap in which the vertical inlet and outlet pipes are in alignment. { 'bag ˌtrap }

**baguette** *See* bead molding. { ba'get }

**bail** [ENG] A loop of heavy wire snap-fitted around two or more parts of a connector or other device to hold the parts together. { bāl }

**bailer** [ENG] A long, cylindrical vessel fitted with a bail at the upper end and a flap or tongue valve at the lower extremity; used to remove water, sand, and mud- or cuttings-laden fluids from a borehole. Also known as bailing bucket. { 'bāl·ər }

**Bailey bridge** [CIV ENG] A lattice bridge built of interchangeable panels connected at the corners with steel pins, permitting rapid construction; developed in Britain about 1942 as a military bridge. { 'bāl·ē ˌbrij }

**Bailey meter** [ENG] A flowmeter consisting of a helical quarter-turn vane which operates a counter to record the total weight of granular material flowing through vertical or near-vertical ducts, spouts, or pipes. { 'bāl·ē ˌmēd·ər }

**bailing** [ENG] Removal of the cuttings from a well during cable-tool drilling, or of the liquid from a well, by means of a bailer. { 'bāl·iŋ }

**bailing bucket** *See* bailer. { 'bāl·iŋ ˌbək·ət }

**bailing drum** [ENG] A reel for winding bailing line. { 'bāl·iŋ ˌdrəm }

**bailing line** [ENG] A cable attached to the bailer of a derrick; it is passed over a sheave at the top of the derrick and spooled on a reel. { 'bāl·iŋ ˌlīn }

**baked finish** [ENG] A paint or varnish finish obtained by baking, usually at temperatures above 150°F (65°C), thereby developing a tough, durable film. { 'bākt 'fin·ish }

**bakeout** [ENG] The degassing of surfaces of a vacuum system by heating during the pumping process. { 'bākˌaůt }

**baker bell dolphin** [CIV ENG] A dolphin consisting of a heavy bell-shaped cap pivoted on a group of piles; a blow from a ship will tilt the bell, thus absorbing energy. { 'bāk·ər ˌbel ˌdäl·fən }

**baking** [ENG] The use of heat on fresh paint films to speed the evaporation of thinners and to promote the reaction of binder components so as to form a hard polymeric film. Also known as stoving. { 'bāk·iŋ }

**balance** [ELEC] The state of an electrical network when it is adjusted so that voltage in one branch induces or causes no current in another branch. [ENG] An instrument for measuring mass or weight. { 'bal·əns }

**balance arm** [BUILD] On a projected window, a side supporting arm which is constructed so that the center of gravity of the sash is not changed appreciably when the window is opened. { 'bal·əns ˌärm }

**balance bar** *See* balance beam. { 'bal·əns ˌbär }

**balance beam** [CIV ENG] A long beam, attached to a gate (or drawbridge, and such) so as to counterbalance the weight of the gate during opening or closing. Also known as balance bar. { 'bal·əns ˌbēm }

**balanced armature unit** [ENG ACOUS] Driving unit used in magnetic loudspeakers, consisting of an iron armature pivoted between the poles of a permanent magnet and surrounded by coils carrying the audio-frequency current; variations in audio-frequency current cause corresponding changes in armature magnetism and corresponding movements of the armature with respect to the poles of the permanent magnet. { 'bal·ənst 'ärm·ə·chər ˌyü·nət }

**balanced construction** [BUILD] A plywood or sandwich-panel construction which has an odd number of plies laminated together so that the construction is identical on both sides of a plane through the center of the panel. { 'bal·ənst kən'strək·shən }

**balanced design** [ENG] A winding pattern used in fabricating filament-wound reinforced plastics that renders the stresses in all the filaments equal. { 'bal·ənst di'zīn }

**balanced door** [BUILD] A door equipped with double-pivoted hardware which is partially counterbalanced to provide easier operation. { 'bal·ənst 'dȯr }

**balanced draft** [ENG] The maintenance of a constant draft in a furnace by monitoring both the incoming air and products of combustion. { 'bal·ənst 'draft }

**balanced earthwork** [CIV ENG] Cut-and-fill work in which the amount of fill equals the amount of material excavated. { 'bal·ənst 'ərthˌwərk }

**balanced line** [ELEC] A transmission line consisting of two conductors capable of being operated so that the voltages of the two conductors at any transverse plane are equal in magnitude and opposite in polarity with respect to ground. [IND ENG] A production line for which the time cycles of the operators are made approximately equal so that the work flows at a desired steady rate from one operator to the next. { 'bal·ənst ˌlīn }

**balanced method** [ENG] Method of measurement in which the reading is taken at zero; it may be a visual or audible reading, and in the latter case the null is the no-sound setting. { 'bal·ənst ˌmeth·əd }

**balanced reinforcement** [CIV ENG] An amount and distribution of steel reinforcement in a flexural reinforced concrete member such that the allowable tensile stress in the steel and the allowable compressive stress in the concrete are attained simultaneously. { 'bal·ənst ˌrē·ən 'fȯr·smənt }

**balanced sash** [BUILD] In a double-hung window, a sash which opens by being raised or lowered and which is balanced with counterweights or pretensioned springs so that little force is required to move the sash. { 'bal·ənst ˌsash }

**balanced step** [BUILD] One of a series of winders arranged so that the width of each winder tread (at the narrow end) is almost equal to the tread width in the straight portion of the adjacent stair flight. Also known as dancing step; dancing winder. { 'bal·ənst ˌstep }

**balanced valve** [ENG] A valve having equal fluid pressure in both the opening and closing directions. { 'bal·ənst ˌvalv }

**balance method** *See* null method. { 'bal·əns ˌmeth·əd }

**balance pipe** [ENG] A pipe in a compressed-air piping system that is used to displace trapped air so that the condensate can flow freely into the trap. { 'bal·əns ˌpīpe }

**balance tool** [MECH ENG] A tool designed for taking the first cuts when the external surface of a piece in a lathe is being machined; it is supported in the tool holder at an unvarying angle. { 'bal·əns ˌtül }

**balance wheel** [MECH ENG] **1.** A wheel which governs or stabilizes the movement of a mechanism. **2.** *See* flywheel. { 'bal·əns ˌwēl }

**balancing a survey** [ENG] Distributing corrections through any traverse to eliminate the error of closure and to obtain an adjusted position for each traverse station. Also known as traverse adjustment. { 'bal·ən·siŋ ə 'sərˌvā }

**balancing delay** [IND ENG] In motion study, idleness of one hand while the other is active to catch up. { 'bal·ən·siŋ diˌlā }

**balancing plug cock** *See* balancing valve. { 'bal·ən·siŋ 'pləg ˌkäk }

**balancing valve** [ENG] A valve used in a pipe for controlling fluid flow; not usually used to shut off the flow. Also known as balancing plug cock. { 'bal·ən·siŋ ˌvalv }

**balconet** [BUILD] A pseudobalcony; a low ornamental railing at a window, projecting only slightly beyond the threshold or sill. { ˌbal·kəˈnet }

**balcony** [BUILD] A deck which projects from a building wall above ground level. { 'bal·kə·nē }

**balcony outlet** [BUILD] In a vertical rainwater pipe that passes through an exterior balcony, a fitting which provides an inlet for the drainage of rainwater from the balcony. { 'bal·kə·nē ˈaůtˌlet }

**bale** [IND ENG] **1.** A large package of material, pressed tightly together, tied with rope, wire, or hoops and usually covered with wrapping. **2.** The amount of material in a bale; sometimes used as a unit of measure, as 500 pounds (227 kilograms) of cotton in the United States. { bāl }

**baler** [MECH ENG] A machine which takes large quantities of raw or finished materials and binds them with rope or metal straps or wires into a large package. { 'bāl·ər }

**baling** [CIV ENG] A technique used to convert loose refuse into heavy blocks by compaction; the blocks are then burned and are buried in sanitary landfill. { 'bāl·iŋ }

**balk** [BUILD] A squared timber used in building construction. [CIV ENG] A low ridge of earth that marks a boundary line. { bȯk }

**balking** [IND ENG] The refusal of a customer to enter a queue for some reason, such as insufficient waiting room. { 'bȯk·iŋ }

**ball** [MECH ENG] In fine grinding, one of the crushing bodies used in a ball mill. { bȯl }

**ball-and-race-type pulverizer** [MECH ENG] A grinding machine in which balls rotate under an applied force between two races to crush materials, such as coal, to fine consistency. Also known as ball-bearing pulverizer. { ˈbȯl ən ˈrās ˌtīp 'pəl·vəˌrīz·ər }

**ball-and-ring method** *See* ring-and-ball test. { ˈbȯl ən 'riŋ ˌmeth·əd }

**ball-and-socket joint** [MECH ENG] A joint in which a member ending in a ball is joined to a member ending in a socket so that relative movement is permitted within a certain angle in all planes passing through a line. Also known as ball joint. { ˈbȯl ən 'säk·ət ˌjȯint }

**ball-and-trunnion joint** [MECH ENG] A joint in which a universal joint and a slip joint are combined in a single assembly. { ˈbȯl ən 'trən·yən ˌjȯint }

**ballast** [CIV ENG] Crushed stone used in a railroad bed to support the ties, hold the track in line, and help drainage. [ELEC] A circuit element that serves to limit an electric current or to provide a starting voltage, as in certain types of lamps, such as in fluorescent ceiling fixtures. { 'bal·əst }

**ball bearing** [MECH ENG] An antifriction bearing permitting free motion between moving and fixed parts by means of balls confined between outer and inner rings. { ˌbȯl 'ber·iŋ }

**ball-bearing hinge** [MECH ENG] A hinge which is equipped with ball bearings between the hinge knuckles in order to reduce friction. { ˌbȯl 'ber·iŋ ˌhinj }

**ball-bearing pulverizer** *See* ball-and-race-type pulverizer. { ˌbȯl 'ber·iŋ 'pəl·vəˌrīz·ər }

**ball bonding** [ENG] The making of electrical connections in which a flame is used to cut a wire, the molten end of which solidifies as a ball, which is pressed against the bonding pad on an integrated circuit. { 'bȯl ˌbänd·iŋ }

**ball breaker** [ENG] **1.** A steel or iron ball that is hoisted by a derrick and allowed to fall on blocks of waste stone to break them or to swing against old buildings to demolish them. Also known as skull cracker; wrecking ball. **2.** A coring and sampling device consisting of a hollow glass ball, 3 to 5 inches (7.5 to 12.5 centimeters) in diameter, held in a frame attached to the trigger line above the triggering weight of the corer; used to indicate contact between corer and bottom. { 'bȯl ˈbrāk·ər }

**ball bushing** [MECH ENG] A type of ball bearing that allows motion of the shaft in its axial direction. { 'bȯl ˌbůsh·iŋ }

**ball catch** [DES ENG] A door fastener having a contained metal ball which is under pressure from a spring; the ball engages a striking plate and keeps the door from opening until force is applied. { 'bȯl ˌkach }

**ball check valve** [ENG] A valve having a ball held by a spring against a seat; used to permit flow in one direction only. { 'bȯl 'chek ˌvalv }

**ball float** [MECH ENG] A floating device, usually approximately spherical, which is used to operate a ball valve. { 'bȯl ˌflōt }

**ball-float liquid-level meter** [ENG] A float which rises and falls with liquid level, actuating a

pointer adjacent to a calibrated scale in order to measure the level of a liquid in a tank or other container. { 'bȯl ˌflōt ¦lik·wəd ¦lev·əl ˌmēd·ər }

**ball grinder** *See* ball mill. { 'bȯl ˌgrind·ər }

**ballhead** [MECH ENG] That part of the governor which contains flyweights whose force is balanced, at least in part, by the force of compression of a speeder spring. { 'bȯlˌhed }

**Balling hydrometer** [ENG] A type of saccharometer used to determine the density of sugar solutions. { 'bȯl·iŋ hī'dräm·əd·ər }

**ballistic body** [ENG] A body free to move, behave, and be modified in appearance, contour, or texture by ambient conditions, substances, or forces, such as by the pressure of gases in a gun, by rifling in a barrel, by gravity, by temperature, or by air particles. { bə'lis·tik ˌbäd·ē }

**ballistic coefficient** [MECH] The numerical measure of the ability of a missile to overcome air resistance; dependent upon the mass, diameter, and form factor. { bə'lis·tik ˌkō·ə'fish·ənt }

**ballistic conditions** [MECH] Conditions which affect the motion of a projectile in the bore and through the atmosphere, including muzzle velocity, weight of projectile, size and shape of projectile, rotation of the earth, density of the air, temperature or elasticity of the air, and the wind. { bə'lis·tik kən'dish·ənz }

**ballistic curve** [MECH] The curve described by the path of a bullet, a bomb, or other projectile as determined by the ballistic conditions, by the propulsive force, and by gravity. { bə'lis·tik 'kərv }

**ballistic deflection** [MECH] The deflection of a missile due to its ballistic characteristics. { bə'lis·tik di'flek·shən }

**ballistic density** [MECH] A representation of the atmospheric density encountered by a projectile in flight, expressed as a percentage of the density according to the standard artillery atmosphere. { bə'lis·tik 'den·səd·ē }

**ballistic efficiency** [MECH] **1.** The ability of a projectile to overcome the resistance of the air; depends chiefly on the weight, diameter, and shape of the projectile. **2.** The external efficiency of a rocket or other jet engine of a missile. { bə'lis·tik i'fish·ən·sē }

**ballistic entry** [MECH] Movement of a ballistic body from without to within a planetary atmosphere. { bə'lis·tik 'en·trē }

**ballistic instrument** [ENG] Any instrument, such as a ballistic galvanometer or a ballistic pendulum, that measures an impact or sudden pulse of energy. { bə'lis·tik 'in·strə·mənt }

**ballistic limit** [MECH] The minimum velocity at which a particular armor-piercing projectile is expected to consistently and completely penetrate armor plate of given thickness and physical properties at a specified angle of obliquity. { bə'lis·tik 'lim·ət }

**ballistic magnetometer** [ENG] A magnetometer designed to employ the transient voltage induced in a coil when either the magnetized sample or coil are moved relative to each other. { bə'lis·tik ˌmag·nə'täm·əd·ər }

**ballistic measurement** [MECH] Any measurement in which an impulse is applied to a device such as the bob of a ballistic pendulum, or the moving part of a ballistic galvanometer, and the subsequent motion of the device is used to determine the magnitude of the impulse, and, from this magnitude, the quantity to be measured. { bə'lis·tik 'mezh·ər·mənt }

**ballistic pendulum** [ENG] A device which uses the deflection of a suspended weight to determine the momentum of a projectile. { bə'lis·tik 'pen·jə·ləm }

**ballistics** [MECH] Branch of applied mechanics which deals with the motion and behavior characteristics of missiles, that is, projectiles, bombs, rockets, guided missiles, and so forth, and of accompanying phenomena. { bə'lis·tiks }

**ballistic separator** [CIV ENG] A device that takes out noncompostable material like stones, glass, metal, and rubber, from solid waste by passing the waste over a rotor that has impellers to fling the material in the air; the lighter organic (compostable) material travels a shorter distance than the heavier (noncompostable) material. { bə'lis·tik 'sep·əˌrād·ər }

**ballistics of penetration** [MECH] That part of terminal ballistics which treats of the motion of a projectile as it forces its way into targets of solid or semisolid substances, such as earth, concrete, or steel. { bə'lis·tiks əv pen·ə'trā·shən }

**ballistic table** [MECH] Compilation of ballistic data from which trajectory elements such as angle of fall, range to summit, time of flight, and ordinate at any time, can be obtained. { bə'lis·tik 'tā·bəl }

**ballistic temperature** [MECH] That temperature (in °F) which, when regarded as a surface temperature and used in conjunction with the lapse rate of the standard artillery atmosphere, would produce the same effect on a projectile as the actual temperature distribution encountered by the projectile in flight. { bə'lis·tik 'tem·prə·chər }

**ballistic trajectory** [MECH] The trajectory followed by a body being acted upon only by gravitational forces and resistance of the medium through which it passes. { bə'lis·tik trə'jek·tə·rē }

**ballistic uniformity** [MECH] The capability of a propellant, when fired under identical conditions from round to round, to impart uniform muzzle velocity and produce similar interior ballistic results. { bə'lis·tik ˌyü·nə'fȯr·məd·ē }

**ballistic vehicle** [ENG] A nonlifting vehicle; a vehicle that follows a ballistic trajectory. { bə'lis·tik 'vē·ə·kəl }

**ballistic wave** [MECH] An audible disturbance caused by compression of air ahead of a missile in flight. { bə'lis·tik ˌwāv }

**ballistic wind** [MECH] That constant wind which would produce the same effect upon the trajectory of a projectile as the actual wind encountered in flight. { bə'lis·tik 'wind }

**ball mill** [MECH ENG] A pulverizer that consists of a horizontal rotating cylinder, up to three diameters in length, containing a charge of tumbling or cascading steel balls, pebbles, or rods. Also known as ball grinder. { 'bȯl ˌmil }

**balloon framing** [CIV ENG] Framing for a building in which each stud is one piece from roof to foundation. { bə'lün ˌfram·iŋ }

**balloting** [MECH] A tossing or bounding movement of a projectile, within the limits of the bore diameter, while moving through the bore under the influence of the propellant gases. { 'bal·əd·iŋ }

**ball-peen hammer** [ENG] A hammer with a ball at one end of the head; used in riveting and forming metal. { 'bȯlˌpēn 'ham·ər }

**ball pendulum test** [ENG] A test for measuring the strength of explosives; consists of measuring the swing of a pendulum produced by the explosion of a weighed charge of material. { 'bȯl 'pen·jə·ləm ˌtest }

**ball race** [DES ENG] A track, channel, or groove in which ball bearings turn. { 'bȯl ˌrās }

**ball screw** [MECH ENG] An element used to convert rotation to longitudinal motion, consisting of a threaded rod linked to a threaded nut by ball bearings constrained to roll in the space formed by the threads, in order to reduce friction. { 'bȯl ˌskrü }

**ball test** [CIV ENG] In a drain, a test for freedom from obstruction and for circularity in which a ball (less than the diameter of the drain by a specified amount) is rolled through the drain. { 'bȯl ˌtest }

**ball-up** [ENG] **1.** During a drilling operation, collection by a portion of the drilling equipment of a mass of viscous consolidated material. **2.** Failure of an anchor to hold on a soft bottom, by pulling out with a large ball of mud attached. { 'bȯl ˌəp }

**ball valve** [MECH ENG] A valve in which the fluid flow is regulated by a ball moving relative to a spherical socket as a result of fluid pressure and the weight of the ball. { 'bȯl ˌvalv }

**baluster** [BUILD] A post which supports a handrail and encloses the open sections of a stairway. { 'bal·ə·stər }

**balustrade** [BUILD] The railing assembly of a stairway consisting of the handrail, balusters, and usually a bottom rail. { 'bal·əˌstrād }

**band** [BUILD] Any horizontal flat member or molding or group of moldings projecting slightly from a wall plane and usually marking a division in the wall. Also known as band course; band molding. [DES ENG] A strip or cord crossing the back of a book to which the sections are sewn. { band }

**bandage** [BUILD] A strap, band, ring, or chain placed around a structure to secure and hold its parts together, as around the springing of a dome. [ELEC] Rubber ribbon about 4 inches (10 centimeters) wide for temporarily protecting a telephone or coaxial splice from moisture. { 'ban·dij }

**band brake** [MECH ENG] A brake in which the frictional force is applied by increasing the tension in a flexible band to tighten it around the drum. { 'band ˌbrāk }

**band chain** [ENG] A steel or Invar tape, graduated in feet and at least 100 feet (30.5 meters) long, used for accurate surveying. { 'band ˌchān }

**band clamp** [DES ENG] A two-piece metal clamp, secured by bolts at both ends; used to hold riser pipes. { 'band ˌklamp }

**band clutch** [MECH ENG] A friction clutch in which a steel band, lined with fabric, contracts onto the clutch rim. { 'band ˌkləch }

**band course** *See* band. { 'band ˌkȯrs }

**banding** [DES ENG] A strip of fabric which is used for bands. hydIn a glacier, a structure of alternate ice layers of different textures and appearance. { 'band·iŋ }

**band molding** *See* band. { 'band ˌmōld·iŋ }

**band-pass** [ELECTR] A range, in hertz or kilohertz, expressing the difference between the limiting frequencies at which a desired fraction (usually half power) of the maximum output is obtained. { 'band ˌpas }

**band-pass amplifier** [ELECTR] An amplifier designed to pass a definite band of frequencies with essentially uniform response. { 'band ˌpas ¦am·pləˌfī·ər }

**band-pass filter** [ELECTR] An electric filter which transmits more or less uniformly in a certain band, outside of which the frequency components are attenuated. { 'band ˌpas ˌfil·tər }

**band-pass response** [ELECTR] Response characteristics in which a definite band of frequencies is transmitted uniformly. Also known as flat top response. { 'band ˌpas ri'späns }

**band-pass system** [ENG ACOUS] A loudspeaker system, often used for subwoofers, in which the speaker is mounted inside an enclosure on a shelf that divides the enclosure into two parts, and one or both parts are coupled to the outside by a vent; the frequency response of the system is that of a fourth-order band-pass filter (one vent) or an asymmetrical sixth-order band-pass filter (two vents). { 'band,pas ˌsis·təm }

**band-rejection filter** *See* band-stop filter. { 'band ri'jek·shən ˌfil·tər }

**band saw** [MECH ENG] A power-operated woodworking saw consisting basically of a flexible band of steel having teeth on one edge, running over two vertical pulleys, and operated under tension. { 'band ˌsȯ }

**band selector** [ELECTR] A switch that selects any of the bands in which a receiver, signal generator, or transmitter is designed to operate and usually has two or more sections to make the required changes in all tuning circuits simultaneously. Also known as band switch. { 'band sə'lek·tər }

**band wheel** [MECH ENG] In a drilling operation, a large wheel that transmits power from the engine to the walking beam. { 'band ˌwēl }

**bang-bang control** [CONT SYS] A type of automatic control system in which the applied control signals assume either their maximum or minimum values. { ¦baŋ ¦baŋ kən'trōl }

**bang-bang-off control** *See* bang-zero-bang control. { ¦baŋ ¦baŋ 'ȯf kən,trōl }

**bang-bang robot** [CONT SYS] A simple robot that can make only two types of motions. { ¦baŋ ¦baŋ 'rō,bät }

**bang-zero-bang control** [CONT SYS] A type of control in which the control values are at their maximum, zero, or minimum. Also known as bang-bang-off control. { ¦baŋ ˌzir·ō 'baŋ kən,trōl }

**banister** [BUILD] A handrail for a staircase. { 'ban·ə·stər }

**bank** [CIV ENG] *See* embankment. [ELEC] **1.** A number of similar electrical devices, such as resistors, connected together for use as a single device. **2.** An assemblage of fixed contacts over which one or more wipers or brushes move in order to establish electrical connections in automatic switching. [ENG] A pipework installation in which the pipes are set parallel to each other in proximity. [IND ENG] The amount of material allowed to accumulate at a point on a production line where it is not employed or worked upon, to permit reasonable fluctuations in line speed before and after the point. Also known as float. { baŋk }

**banker** [ENG] The bench or table upon which bricklayers and stonemasons prepare and shape their material. { 'baŋ·kər }

**bank material** [CIV ENG] Soil or rock in place before excavation or blasting. { 'baŋk mə'tir·ē·əl }

**bank measure** [CIV ENG] The volume of a given portion of soil or rock as measured in its original position before excavation. { 'baŋk ˌmezh·ər }

**bar** [MECH] A unit of pressure equal to $10^5$ pascals, or $10^5$ newtons per square meter, or $10^6$ dynes per square centimeter. { bär }

**Bárány chair** [ENG] A chair in which a person is revolved to test his susceptibility to vertigo. { bə'rän·ē ˌcher }

**barb bolt** [DES ENG] A bolt having jagged edges to prevent its being withdrawn from the object into which it is driven. Also known as rag bolt. { 'bärb ˌbōlt }

**bar bending** [CIV ENG] In reinforced concrete construction, the process of bending reinforcing bars to various shapes. { 'bär ˌben·diŋ }

**bar chair** *See* bar support. { 'bär ˌcher }

**bar clamp** [DES ENG] A clamping device consisting of a long bar with adjustable clamping jaws; used in carpentry. { 'bär ˌklamp }

**bare board** [ELECTR] A printed circuit board with conductors but no electronic components. { ¦ber 'bȯrd }

**bareboat charter** [IND ENG] An agreement to charter a ship without its crew or stores; the fee for its use for a predetermined period of time is based on the price per ton of cargo handled. { 'ber,bōt ˌchärd·ər }

**barefaced tenon** [ENG] A tenon having a shoulder cut on one side only. { 'ber,fāst ¦ten·ən }

**bare tube** [ENG] In a heat exchanger, a tube whose inner and outer surfaces are both smooth. { ¦ber 'tüb }

**bargeboard** *See* vergeboard. { 'bärj,bȯrd }

**barge couple** [BUILD] **1.** One of two rafters that support that part of a gable roof which projects beyond the gable wall. **2.** One of the rafters (under the barge course) which serve as grounds for the vergeboards and carry the plastering or boarding of the soffits. Also known as barge rafter. { bärj ˌkəp·əl }

**barge course** [BUILD] **1.** The coping of a wall, formed by a course of bricks set on edge. **2.** In a tiled roof, the part of the tiling which projects beyond the principal rafters where there is a gable. { 'bärj ˌkȯrs }

**barge rafter** *See* barge couple. { 'bärj ˌraf·tər }

**barge spike** *See* boat spike. { 'bärj ˌspīk }

**barge stone** [BUILD] One of the stones, generally projecting, which form the sloping top of a gable built of masonry. { 'bärj ˌstōn }

**bar hole** [ENG] A small-diameter hole made in the ground along the route of a gas pipe in a bar test survey. { 'bär ˌhōl }

**Bari-Sol process** [CHEM ENG] Removal of waxes from liquid hydrocarbons by extraction of the wax with a mixed ethylene dichloride-benzene solvent, followed by separation from the hydrocarbon in a centrifuge. { ¦bär·ē ¦säl ˌpräs·əs }

**bar joist** [BUILD] A small steel truss with wire or rod web lacing used for roof and floor supports. { 'bär ˌjȯist }

**barker** [DES ENG] *See* bark spud. [ENG] A machine, used mainly in pulp mills, which removes the bark from logs. { 'bär·kər }

**barkometer** [CHEM ENG] A hydrometer calibrated to test the strength of tanning liquors used in tanning leather. { bär'käm·əd·ər }

**bark spud** [DES ENG] A tool which peels off bark. Also known as barker. { 'bark ˌspəd }

**bar linkage** [MECH ENG] A set of bars joined together at pivots by means of pins or equivalent devices; used to transmit power and information. { 'bär ˌliŋ·kij }

**Barlow's equation** [MECH] A formula, $t = DP/2S$, used in computing the strength of cylinders subject to internal pressures, where $t$ is the thickness of the cylinder in inches, D the outside diameter in inches, P the pressure in pounds per square inch, and S the allowable tensile strength in pounds per square inch. { 'bär,lōz i'kwā·zhən }

**barnacle** [ENG] A nodelike deposit that occurs on the surface of a heat exchanger tube or an evaporating device and has a semigranular outer shell bonded to the fouled surface, enclosing a slurry of putrefying organisms. { 'bär·nə·kəl }

**barodynamics** [MECH] The mechanics of heavy structures which may collapse under their own weight. { ˌbar·ə·dī'nam·iks }

**barogram** [ENG] The record of an aneroid barograph. { 'bar·ə,gram }

**barograph** *See* aneroid barograph. { 'bar·ə,graf }

**barometer** [ENG] An absolute pressure gage specifically designed to measure atmospheric pressure. { bə'räm·əd·ər }

**barometric** [ENG] Pertaining to a barometer or to the results obtained by using a barometer. { bar·ə'me·trik }

**barometric altimeter** *See* pressure altimeter. { bar·ə'met·rik al'tim·əd·ər }

**barometric condenser** [MECH ENG] A contact condenser that uses a long, vertical pipe into which the condensate and cooling liquid flow to accomplish their removal by the pressure created at the lower end of the pipe. { bar·ə'met·rik kən'den·sər }

**barometric draft regulator** [MECH ENG] A damper usually installed in the breeching between a boiler and chimney; permits air to enter the breeching automatically as required, to maintain a constant overfire draft in the combustion chamber. { bar·ə'met·rik 'draft reg·yə 'lād·ər }

**barometric elevation** [ENG] An elevation above mean sea level estimated from the difference in atmospheric pressure between the point in question and an elevation of known value. { bar·ə'met·rik el·ə'vā·shən }

**barometric fuse** [ENG] A fuse that functions as a result of change in the pressure exerted by the surrounding air. { bar·ə'met·rik 'fyüz }

**barometric hypsometry** [ENG] The determination of elevations by means of either mercurial or aneroid barometers. { bar·ə'met·rik hip'säm·ə·trē }

**barometric leveling** [ENG] The measurement of approximate elevation differences in surveying with the aid of a barometer; used especially for large areas. { bar·ə'met·rik 'lev·əl·iŋ }

**barometric switch** *See* baroswitch. { bar·ə'met·rik 'swich }

**barometrograph** *See* aneroid barograph. { bar·ə'me·trə,graf }

**barometry** [ENG] The study of the measurement of atmospheric pressure, with particular reference to ascertaining and correcting the errors of the different types of barometer. { bə'räm·ə·trē }

**baromil** [MECH] The unit of length used in graduating a mercury barometer in the centimeter-gram-second system. { 'bar·ə,mil }

**baroscope** [ENG] An apparatus which demonstrates the equality of the weight of air displaced by an object and its loss of weight in air. { 'bar·ə,skōp }

**barostat** [ENG] A mechanism which maintains constant pressure inside a chamber. { 'bar·ə,stat }

**baroswitch** [ENG] **1.** A pressure-operated switching device used in a radiosonde which determines whether temperature, humidity, or reference signals will be transmitted. **2.** Any switch operated by a change in barometric pressure. Also known as barometric switch. { 'bar·ə,swich }

**barothermogram** [ENG] The record made by a barothermograph. { ¦bar·ō'thər·mə,gram }

**barothermograph** [ENG] An instrument which automatically records pressure and temperature. { ¦bar·ō'thər·mə,graf }

**barothermohygrogram** [ENG] The record made by a barothermohygrograph. { ¦bar·ō¦thər·mō'hī·grə, gram }

**barothermohygrograph** [ENG] An instrument that produces graphs of atmospheric pressure, temperature, and humidity on a single sheet of paper. { ¦bar·ō¦thər·mō'hī·grə,graf }

**barotropic phenomenon** [THERMO] The sinking of a vapor beneath the surface of a liquid when the vapor phase has the greater density. { ˌbar·ə'träp·ik fə'näm·ə,nän }

**bar post** [CIV ENG] One of the posts driven into the ground to form the sides of a field gate. { 'bär ˌpōst }

**barrage** [CIV ENG] An artificial dam which increases the depth of water of a river or watercourse, or diverts it into a channel for navigation or irrigation. { bə'räzh }

**barrage-type spillway** [CIV ENG] A passage for surplus water with sluice gates across the width of the entrance. { bə'räzh ˌtīp 'spilˌwā }

**barred-and-braced gate** [CIV ENG] A gate with a diagonal brace to reinforce the horizontal timbers. { ¦bärd ən ¦brāst 'gāt }

**barred gate** [CIV ENG] A gate with one or more horizontal timber rails. { ¦bärd 'gāt }

**barrel** [DES ENG] **1.** A container having a circular lateral cross section that is largest in the middle, and ends that are flat; often made of staves held together by hoops. **2.** A piece of small pipe inserted in the end of a cartridge to carry the squib to the powder. **3.** That portion of a pipe having a constant bore and wall thickness. [MECH] Abbreviated bbl. **1.** The unit of liquid volume equal to 31.5 gallons (approximately 119 liters). **2.** The unit of liquid volume for petroleum equal to 42 gallons (approximately 158 liters). **3.** The unit of dry volume equal to 105 quarts (approximately 116 liters). **4.** A unit of weight that varies in size according to the commodity being weighed. { 'bar·əl }

**barrel bolt** [DES ENG] A door bolt which moves in a cylindrical casing; not driven by a key. Also known as tower bolt. { 'bar·əl ˌbōlt }

**barrel compressor** [MECH ENG] A centrifugal compressor having a barrel-shaped housing. { 'bar·əl kəm,pres·ər }

**barrel drain** [CIV ENG] Any drain which is cylindrical. { 'bar·əl ˌdrān }

**barrel-etch reactor** [ENG] A type of plasma reactor in which the specimens to be etched are placed in a quartz support stand and a plasma is generated that diffuses and contacts them. { ¦bar·əl ¦ech rē'ak·tər }

**barrel fitting** [DES ENG] A short length of threaded connecting pipe. { 'bar·əl ˌfid·iŋ }

**barrelhead** [DES ENG] The flat end of a barrel. { 'bar·əl,hed }

**barrel roof** [BUILD] **1.** A roof of semicylindrical

section; capable of spanning long distances parallel to the axis of the cylinder. **2.** *See* barrel vault. { 'bar·əl ˌrüf }

**barrels per calendar day** [CHEM ENG] A unit measuring the average rate of oil processing in a petroleum refinery, with allowances for downtime over a period of time. Abbreviated BCD. { 'bar·əlz pər ¦kal·ən·dər ˌdā }

**barrels per day** [CHEM ENG] A unit measuring the rate at which petroleum is produced at the refinery. Abbreviated BD; bpd. { 'bar·əlz pər 'dā }

**barrels per month** [CHEM ENG] A unit measuring the rate at which petroleum is produced at the refinery. Abbreviated BM; bpm. { 'bar·əlz pər 'mənth }

**barrels per stream day** [CHEM ENG] A measurement used to denote rate of oil or oil-product flow while a fluid-processing unit is in continuous operation. Abbreviated BSD. { 'bar·əlz pər ¦strēm ˌdā }

**barren liquor** [CHEM ENG] Liquid (liquor) from filter-cake washing in which there is little or no recovery value; for example, barren cyanide liquor from washing of gold cake slimes. { 'bar·ən ¦lik·ər }

**barricade** [ENG] Structure composed essentially of concrete, earth, metal, or wood, or any combination thereof, and so constructed as to reduce or confine the blast effect and fragmentation of an explosion. { 'bar·əˌkād }

**barricade shield** [ENG] A type of movable shield made of a material designed to absorb ionizing radiation, for protection from radiation. { 'bar·əˌkād ˌshēld }

**barrier capacitance** [ELECTR] The capacitance that exists between the *p*-type and *n*-type semiconductor materials in a semiconductor *pn* junction that is reverse-biased so that it does not conduct. Also known as depletion-layer capacitance; junction capacitance. { 'bar·ē·ər kəˌpas·əd·əns }

**barrier curb** [CIV ENG] A curb with vertical sides high enough to keep vehicles from crossing it. { 'bar·ē·ər ˌkərb }

**barrier layer** *See* depletion layer. { 'bar·ē·ər ˌlā·ər }

**barrier separation** [CHEM ENG] The separation of a two-component gaseous mixture by selective diffusion of one component through a separative barrier (microporous metal or nonporous polymeric). { 'bar·ē·ər sep·ə'rā·shən }

**barrier shield** [ENG] A wall or enclosure made of a material designed to absorb ionizing radiation, shielding the operator from an area where radioactive material is being used or processed by remote-control equipment. { 'bar·ē·ər ˌshēld }

**barrow** *See* handbarrow; wheelbarrow. { 'ba·rō }

**barrow run** [CIV ENG] A temporary pathway of wood planks or sheets to provide a smooth access for wheeled materials-handling carriers on a building site. { 'ba·rō ˌrən }

**bar sash lift** [BUILD] A type of handle, attached to the bottom rail of a sash, for raising or lowering it. { 'bär 'sash ˌlift }

**bar screen** [MECH ENG] A sieve with parallel steel bars for separating small from large pieces of crushed rock. { 'bär ˌskrēn }

**bar strainer** [DES ENG] A screening device consisting of a bar or a number or parallel bars; used to prevent objects from entering a drain. { 'bär ˌstrān·ər }

**bar support** [CIV ENG] A device used to support or hold steel reinforcing bars in proper position before or during the placement of concrete. Also known as bar chair. { 'bär sə'pȯrt }

**bar test survey** [ENG] A leakage survey in which bar holes are driven or bored at regular intervals along the way of an underground gas pipe and the atmosphere in the holes is tested with a combustible gas detector or such. { 'bär ˌtest 'sərˌvā }

**Barth plan** [IND ENG] A wage incentive plan intended for a low task and for all efficiency points and defined as: earning = rate per hour × square root of the product (hours standard × hours actual). { 'bärth ˌplan }

**bar turret lathe** [MECH ENG] A turret lathe in which the bar stock is slid through the headstock and collet on line with the turning axis of the lathe and held firmly by the closed collet. { 'bär 'tər·ət ˌlāth }

**bar-type grating** [CIV ENG] An open grid assembly of metal bars in which the bearing bars (running in one direction) are spaced by rigid attachment to crossbars. { 'bär ˌtīp 'grād·iŋ }

**barycentric energy** [MECH] The energy of a system in its center-of-mass frame. { ˌbar·ə'sen·trik 'en·ər·jē }

**barye** [MECH] The pressure unit of the centimeter-gram-second system of physical units; equal to 1 dyne per square centimeter (0.001 millibar). Also known as microbar. { 'ba·rē }

**basal tunnel** [ENG] A water supply tunnel constructed along the basal water table. { 'bā·səl 'tən·əl }

**bascule** [ENG] A structure that rotates about an axis, as a seesaw, with a counterbalance (for the weight of the structure) at one end. { 'baˌskül }

**bascule bridge** [CIV ENG] A movable bridge consisting primarily of a cantilever span extending across a channel; it rotates about a horizontal axis parallel with the waterway. { 'baˌskül ˌbrij }

**bascule leaf** [CIV ENG] The span of a bascule bridge. { 'baˌskül ˌlēf }

**base** [CHEM ENG] The primary substance in solution in crude oil, and remaining after distillation. [ELECTR] **1.** The region that lies between an emitter and a collector of a transistor and into which minority carriers are injected. **2.** The part of an electron tube that has the pins, leads, or other terminals to which external connections are made either directly or through a socket. **3.** The plastic, ceramic, or other insulating board that supports a printed wiring pattern. [ENG] Foundation or part upon which an object or instrument rests. { bās }

**base anchor** [BUILD] The metal piece attached to the base of a doorframe for the purpose of securing the frame to the floor. { 'bās ˌaŋ·kər }

**base apparatus** [ENG] Any apparatus designed for use in measuring with accuracy and precision the length of a base line in triangulation, or the length of a line in first- or second-order traverse. { 'bās ˌap·ə'rad·əs }

**base bias** [ELECTR] The direct voltage that is applied to the majority-carrier contact (base) of a transistor. { 'bās ˌbī·əs }

**base block** [BUILD] **1.** A block of any material, generally with little or no ornament, forming the lowest member of a base, or itself fulfilling the functions of a base, as a member applied to the foot of a door or to window trim. **2.** A rectangular block at the base of a casing or column which the baseboard abuts. **3.** *See* skirting block. { 'bās ˌbläk }

**baseboard** [BUILD] A finish board covering the interior wall at the junction of the wall and the floor. Also known as skirt; skirting. { 'bās,bȯrd }

**baseboard heater** [BUILD] Heating elements installed in panels along the baseboard of a wall. { 'bās,bȯrd 'hēd·ər }

**baseboard radiator** [CIV ENG] A heating unit which is located at the lower portion of a wall and to which heat is supplied by hot water, warm air, steam, or electricity. { 'bās,bȯrd 'rād·ē ˌād·ər }

**base cap** *See* base molding. { 'bās ˌkap }

**base circle** [DES ENG] The circle on a gear such that each tooth-profile curve is an involute of it. { 'bās ˌsər·kəl }

**base correction** [ENG] The adjustment made to reduce measurements taken in field exploration to express them with reference to the base station values. { 'bās kə'rek·shən }

**base course** [BUILD] The lowest course or first course of a wall. [CIV ENG] The first layer of material laid down in construction of a pavement. { 'bās ˌkȯrs }

**base elbow** [DES ENG] A cast-iron pipe elbow having a baseplate or flange which is cast on it and by which it is supported. { 'bās ˈel,bō }

**base electrode** [ELECTR] An ohmic or majority carrier contact to the base region of a transistor. { 'bās i'lek,trōd }

**base flashing** [BUILD] **1.** The flashing provided by upturned edges of a watertight membrane on a roof. **2.** Any metal or composition flashing at the joint between a roofing surface and a vertical surface, such as a wall or parapet. { 'bās ˌflash·iŋ }

**base isolators** [CIV ENG] Components placed within a building (not always at the base) which are relatively flexible in the lateral direction, yet can sustain the vertical load. When an earthquake causes ground motions, base isolators allow the structure to respond much more slowly than it would without them, resulting in lower seismic demand on the structure. Isolators may be laminated steel with high-quality rubber pads, sometimes incorporating lead or other energy-absorbing materials. { 'bās ˌī·sə'lād·ərz }

**base line** Abbreviated BL. [ELECTR] The line traced on amplitude-modulated indicators which corresponds to the power level of the weakest echo detected by the radar; it is retraced with every pulse transmitted by the radar but appears as a nearly continuous display on the scope. [ENG] **1.** A surveyed line, established with more than usual care, to which surveys are referred for coordination and correlation. **2.** A cardinal line extending east and west along the astronomic parallel passing through the initial point, along which standard township, section, and quarter-section corners are established. { 'bās ˌlīn }

**base-line check** *See* ground check. { 'bās ˌlīn ˌchek }

**basement** [BUILD] A building story which is wholly or less than half below ground; it is generally used for living space. { 'bās·mənt }

**basement wall** [BUILD] A foundation wall which encloses a usable area under a building. { 'bās·mənt ˌwȯl }

**base molding** [BUILD] Molding used to trim the upper edge of interior baseboard. Also known as base cap. { 'bās ˌmōld·iŋ }

**base net** [ENG] A system, in surveying, of quadrilaterals and triangles that include and are quite close to a base line in a triangulation system. { 'bās ˈnet }

**base pin** *See* pin. { 'bās ˌpin }

**base plate** [DES ENG] The part of a theodolite which carries the lower ends of the three foot screws and attaches the theodolite to the tripod for surveying. [ENG] A metal plate that provides support or a foundation. { 'bās ˌplāt }

**base pressure** [MECH] A pressure used as a reference base, for example, atmospheric pressure. { 'bās ˈpresh·ər }

**base screed** [ENG] A metal screed with expanded or short perforated flanges that serves as a dividing strip between plaster and cement and acts as a guide to indicate proper thickness of cement or plaster. { 'bās ˌskrēd }

**base sheet** [BUILD] Saturated or coated felt sheeting which is laid as the first ply in a built-up roofing membrane. { 'bās ˌshēt }

**base shoe** [BUILD] A molding at the base of a baseboard. { 'bās ˌshü }

**base shoe corner** [BUILD] A molding piece or block applied in the corner of a room to eliminate the need for mitering the base shoe. { 'bās ˈshü ˌkȯr·nər }

**base station** [ENG] The point from which a survey begins. { 'bās ˌstā·shən }

**base tee** [DES ENG] A pipe tee with a connected baseplate for supporting it. { 'bās ˌtē }

**base tile** [BUILD] The lowest course of tiles in a tiled wall. { 'bās ˌtīl }

**base time** *See* normal element time; normal time. { 'bās ˌtīm }

**basic element** *See* elemental motion. { 'bā·sik 'el·ə·mənt }

**basic feasible solution** [IND ENG] A basic solution to a linear program model in which all the variables are nonnegative. { 'bā·sik ¦fēz·ə·bəl sə'lü·shən }

**basic grasp** [IND ENG] Any one of the fundamental means of taking hold of an object. { 'bā·sik ¦grasp }

**basic motion** [IND ENG] A single, complete movement of a body member; determined by motion studies. { 'bā·sik 'mō·shən }

**basic motion-time study** [IND ENG] A system of predetermined motion-time standards for basic motions. Abbreviated BMT study. { 'bā·sik 'mō·shən 'tīm ˌstəd·ē }

**basic solution** [IND ENG] A solution to a linear program model, consisting of $m$ equations in $n$ variables, obtained by solving for $m$ variables in terms of the remaining $(n - m)$ variables and setting the $(n - m)$ variables equal to zero. { 'bā·sik sə'lü·shən }

**basic truss** [MECH] A framework of bars arranged so that for any given loading of the bars the forces on the bars are uniquely determined by the laws of statics. { ¦bās·ik 'trəs }

**basin** [CIV ENG] **1.** A dock employing floodgates to keep water level constant during tidal variations. **2.** A harbor for small craft. [DES ENG] An open-top vessel with relatively low sloping sides for holding liquids. { 'bās·ən }

**basket** [DES ENG] A lightweight container with perforations. [MECH ENG] A type of single-tube core barrel made from thin-wall tubing with the lower end notched into points, which is intended to pick up a sample of granular or plastic rock material by bending in on striking the bottom of the borehole or solid layer; may be used to recover an article dropped into a borehole. Also known as basket barrel; basket tube; sawtooth barrel. { 'bas·kət }

**basket strainer** [CHEM ENG] A porous-sided or screen-covered vessel used to screen solid particles out of liquid or gas streams. { 'bas·kət ˌstrān·ər }

**basket sub** [ENG] A fishing tool run above a bit or a mill to recover small nondrillable pieces of metal or debris in the well. { 'bas·kət ˌsəb }

**basket-weave** [BUILD] A checkerboard pattern of bricks, flat or on edge. { 'bas·kət ˌwēv }

**bass reflex baffle** [ENG ACOUS] A loudspeaker baffle having an opening of such size that bass frequencies from the rear of the loudspeaker emerge to reinforce those radiated directly forward. { ¦bas 'rē,fleks ˌbaf·əl }

**bass trap** [ENG ACOUS] Any device used in a sound-recording studio to absorb sound at frequencies less than about 100 hertz. { 'bās ˌtrap }

**bassy** [ENG ACOUS] Pertaining to sound reproduction that overemphasizes low-frequency notes. { 'bās·ē }

**bastard-cut file** [DES ENG] A file that has coarser teeth than a rough-cut file. { 'bas·tərd ¦kət ˌfīl }

**bastard pointing** *See* bastard tuck pointing. { 'bas·tərd ˌpȯint·iŋ }

**bastard thread** [DES ENG] A screw thread that does not match any standard threads. { 'bas·tərd ˌthred }

**bastard tuck pointing** [BUILD] An imitation tuck pointing in which the external face is parallel to the wall, but projects slightly and casts a shadow. Also known as bastard pointing. { 'bas·tərd ¦tək ˌpȯint·iŋ }

**bat bolt** [DES ENG] A bolt whose butt or tang is bashed or jagged. { 'bat ˌbōlt }

**batch** [ENG] **1.** The quantity of material required for or produced by one operation. **2.** An amount of material subjected to some unit chemical process or physical mixing process to make the final product substantially uniform. { bach }

**batch box** [ENG] A container of known volume used to measure and mix the constituents of a batch of concrete, plaster, or mortar, to ensure proper proportions. { 'bach ˌbäks }

**batch distillation** [CHEM ENG] Distillation where the entire batch of liquid feed is placed into the still at the beginning of the operation, in contrast to continuous distillation, where liquid is fed continuously into the still. { 'bach dis·tə'lā·shən }

**batched water** [ENG] The mixing water added to a concrete or mortar mixture before or during the initial stages of mixing. { 'bacht ˌwȯd·ər }

**batcher** [MECH ENG] A machine in which the ingredients of concrete are measured and combined into batches before being discharged to the concrete mixer. { 'bach·ər }

**batching** [ENG] Weighing or measuring the volume of the ingredients of a batch of concrete or mortar, and then introducing these ingredients into a mixer. { 'bach·iŋ }

**batch manufacturing** [IND ENG] The manufacture of parts in discrete runs or lots, generally interspersed with other production procedures. { 'bach ˌman·ə'fak·chər·iŋ }

**batch mixer** [MECH ENG] A machine which mixes concrete or mortar in batches, as opposed to a continuous mixer. { 'bach ˌmik·sər }

**batch plant** [ENG] An operating installation of equipment including batchers and mixers as required for batching or for batching and mixing concrete materials. { 'bach ˌplant }

**batch process** [ENG] A process that is not in continuous or mass production; operations are carried out with discrete quantities of material or a limited number of items. { 'bach ˌpräs·əs }

**batch production** *See* series production. { 'bach prə'dək·shən }

**batch reactor** [CHEM ENG] A chemical reactor in which the reactants and catalyst are introduced in the desired quantities and the vessel is then closed to the delivery of additional material. { 'bach rē,ak·tər }

**batch rectification** [CHEM ENG] Batch distillation in which the boiled-off vapor is re-condensed into liquid form and refluxed back into the still to make contact with the rising vapors. { 'bach ˌrek·tə·fə'kā·shən }

**batch treatment** [CHEM ENG] A corrosion control procedure in which chemical corrosion inhibitors are injected into the lines of a production system. { 'bach ˌtrēt·mənt }

**batch-type furnace** [MECH ENG] A furnace used for heat treatment of materials, with or without direct firing; loading and unloading operations are carried out through a single door or slot. { 'bach ˌtīp 'fər·nəs }

**bathometer** [ENG] A mechanism which measures depths in water. { bə'thäm·əd·ər }

**bathtub curve** [IND ENG] An equipment failure-rate curve with an initial sharply declining failure rate, followed by a prolonged constant-average failure rate, after which the failure rate again increases sharply. { 'bathˌtəb ˌkərv }

**bathyclinograph** [ENG] A mechanism which measures vertical currents in the deep sea. { ˌbath·əˈklīn·əˌgraf }

**bathyconductograph** [ENG] A device to measure the electrical conductivity of sea water at various depths from a moving ship. { ˌbath·ə·kən'dək·təˌgraf }

**bathygram** [ENG] A graph recording the measurements of sonic sounding instruments. { 'bath·əˌgram }

**bathymetry** [ENG] The science of measuring ocean depths in order to determine the sea floor topography. { bə'thim·ə·trē }

**bathythermogram** [ENG] The record that is made by a bathythermograph. { ˌbath·əˈthər·məˌgram }

**bathythermograph** [ENG] A device for obtaining a record of temperature against depth (actually, pressure) in the ocean from a ship underway. Abbreviated BT. Also known as bathythermosphere. { ˌbath·əˈthər·məˌgraf }

**bathythermosphere** *See* bathythermograph. { ˌbath·əˈthər·məˌsfir }

**bating** [CHEM ENG] Cleaning of depilated leather hides by the action of tryptic enzymes. { 'bād·iŋ }

**batted work** [ENG] A hand-dressed stone surface scored from top to bottom in narrow parallel strokes (usually 8–10 per inch or 20–25 per centimeter) by use of a batting tool. { 'bad·əd ˌwərk }

**batten** [BUILD] **1.** A sawed timber strip of specific dimension-usually 7 inches (18 centimeters) broad, less than 4 inches (10 centimeters) thick, and more than 6 feet (1.8 meters) long-used for outside walls of houses, flooring, and such. **2.** A strip of wood nailed across a door or other structure made of parallel boards to strengthen it and prevent warping. **3.** *See* furring. { 'bat·ən }

**batten door** [BUILD] A wood door without stiles which is constructed of vertical boards held together by horizontal battens on the back side. Also known as ledged door. { 'bat·ən ˌdȯr }

**battened column** [CIV ENG] A column consisting of two longitudinal shafts, rigidly connected to each other by batten plates. { 'bat·ənd 'käl·əm }

**battened wall** [BUILD] A wall to which battens have been affixed. Also known as strapped wall. { 'bat·ənd 'wȯl }

**batten plate** [CIV ENG] A rectangular plate used to connect two parallel structural steel members by riveting or welding. { 'bat·ən ˌplāt }

**batten roll** [BUILD] In metal roofing, a roll joint formed over a triangular-shaped wood piece. Also known as conical roll. { 'bat·ən ˌrōl }

**batten seam** [BUILD] A seam in metal roofing which is formed around a wood strip. { 'bat·ən ˌsēm }

**batter** [CIV ENG] A uniformly steep slope in a retaining wall or pier; inclination is expressed as 1 foot horizontally per vertical unit (in feet). { 'bad·ər }

**batter board** [CIV ENG] Horizontal boards nailed to corner posts located just outside the corners of a proposed building to assist in the accurate layout of foundation and excavation lines. { 'bad·ər ˌbȯrd }

**batter brace** [CIV ENG] A diagonal brace which reinforces one end of a truss. Also known as batter post. { 'bad·ər ˌbrās }

**batter level** [ENG] A device for measuring the inclination of a slope. { 'bad·ər ˌlev·əl }

**batter pile** [CIV ENG] A pile driven at an inclination to the vertical to provide resistance to horizontal forces. Also known as brace pile; spur pile. { 'bad·ər ˌpīl }

**batter post** [CIV ENG] **1.** A post at one side of a gateway or at a corner of a building for protection against vehicles. **2.** *See* batter brace. { 'bad·ər ˌpōst }

**batter stick** [CIV ENG] A tapered board which is hung vertically and used to test the batter of a wall surface. { 'bad·ər ˌstik }

**battery** [CHEM ENG] A series of distillation columns or other processing equipment operated as a single unit. [ELEC] A direct-current voltage source made up of one or more units that convert chemical, thermal, nuclear, or solar energy into electrical energy. { 'bad·ə·rē }

**battery limits** [CHEM ENG] An area in a refinery or chemical plant encompassing a processing unit or battery of units along with their related utilities and services. { 'bad·ə·rē ˌlim·əts }

**batting tool** [ENG] A mason's chisel usually $3–4\frac{1}{2}$ inches (7.6–11.4 centimeters) wide, used to dress stone to a striated surface. { 'bad·iŋ ˌtül }

**bauxite treating** [CHEM ENG] A catalytic petroleum process in which a vaporized petroleum fraction is passed through beds of bauxite; conversion of many different sulfur compounds, particularly mercaptans into hydrogen sulfide, takes place. { 'bȯkˌsīt ˌtrēd·iŋ }

**b axis** [MECH ENG] The angle that specifies the rotation of a machine tool about the $y$ axis. { 'bē ˌak·səs }

**bay** [ENG] A housing used for equipment. { bā }

**bayonet coupling** [DES ENG] A coupling in which two or more pins extend out from a plug and engage in grooves in the side of a socket. { ˌbā·əˈnet ˌkəp·liŋ }

**bayonet socket** [DES ENG] A socket, having J-shaped slots on opposite sides, into which a

bayonet base or coupling is inserted against a spring and rotated until its pins are seated firmly in the slots. { ¦bā·ə'net ¦säk·ət }

**bayonet-tube exchanger** [MECH ENG] A dual-tube apparatus with heating (or cooling) fluid flowing into the inner tube and out of the annular space between the inner and outer tubes; can be inserted into tanks or other process vessels to heat or cool the liquid contents. { ¦bā·ə'net ˌtüb iks'chānj·ər }

**B-B fraction** [CHEM ENG] A mixture of butanes and butenes distilled from a solution of light liquid hydrocarbons. { ¦bē¦bē ¦frak·shən }

**bbl** *See* barrel.

**BCD** *See* barrels per calendar day.

**BD** *See* barrels per day.

**BDC** *See* bottom dead center.

**bdft** *See* board-foot.

**beacon tracking** [ENG] The tracking of a moving object by means of signals emitted from a transmitter or transponder within or attached to the object. { 'bē·kən ˌtrak·iŋ }

**bead** [DES ENG] A projecting rim or band. { bēd }

**bead and butt** [BUILD] Framed work in which the panel is flush with the framing and has a bead run on two edges in the direction of the grain; the ends are left plain. Also known as bead butt; bead butt work. { ¦bēd ən 'bət }

**bead-and-flush panel** *See* beadflush panel. { ¦bēd ən 'fləsh ˌpan·əl }

**bead and quirk** *See* quirk bead. { ¦bēd ən 'kwərk }

**bead and reel** [BUILD] A semiround convex molding decorated with a pattern of disks alternating with round or elongated beads. Also known as reel and bead. { ¦bēd ən 'rēl }

**bead butt** *See* bead and butt. { 'bēd ˌbət }

**bead, butt, and square** [BUILD] Framed work similar to bead and butt but having the panels flush on the beaded face only, and showing square reveals on the other. { ¦bēd ˌbət ən 'skwār }

**bead butt work** *See* bead and butt. { 'bēd ˌbət ˌwərk }

**beaded molding** [BUILD] A molding or cornice bearing a cast plaster string of beads. { 'bēd·əd ¦mōl·diŋ }

**beaded tube end** [MECH ENG] The exposed portion of a rolled tube which is rounded back against the sheet in which the tube is rolled. { 'bēd·əd 'tüb ˌend }

**beadflush panel** [BUILD] A panel which is flush with the surrounding framing and finished with a flush bead on all edges of the panel. Also known as bead-and-flush panel. { 'bēd,fləsh ˌpan·əl }

**beading** [BUILD] Collectively, the bead moldings used in ornamenting a given surface. { 'bēd·iŋ }

**beading plane** [DES ENG] A plane having a curved cutting edge for shaping beads in wood. Also known as bead plane. { 'bēd·iŋ ˌplān }

**bead-jointed** [ENG] Of a carpentry joint, having a bead along the edge of one piece to make the joint less conspicuous. { 'bēd ˌjòin·təd }

**bead molding** [BUILD] A small, convex molding of semicircular or greater profile. Also known as baguette. { 'bēd ˌmōl·diŋ }

**bead plane** *See* beading plane. { 'bēd ˌplān }

**beaking joint** [BUILD] A joint formed by several heading joints occurring in one continuous line; especially used in connection with the laying of floor planks. { 'bēk·iŋ ˌjòint }

**beam** [CIV ENG] A body, with one dimension large compared with the other dimensions, whose function is to carry lateral loads (perpendicular to the large dimension) and bending movements. { bēm }

**beam-and-girder construction** [BUILD] A system of floor construction in which the load is distributed by slabs to spaced beams and girders. { ¦bēm ən 'gər·dər kən'strək·shən }

**beam-and-slab floor** [BUILD] A floor system in which a concrete floor slab is supported by reinforced concrete beams. { ¦bēm ən ¦slab ˌflȯr }

**Beaman stadia arc** [ENG] An attachment to an alidade consisting of a stadia arc on the outer edge of the visual vertical arc; enables the observer to determine the difference in elevation of the instrument and stadia rod without employing vertical angles. { 'bē·mən 'stād·ē·ə ˌärk }

**beam bearing plate** [CIV ENG] A foundation plate (usually of metal) placed beneath the end of a beam, at its point of support, to distribute the end load at the point. { 'bēm ˌber·iŋ ˌplāt }

**beam blocking** [BUILD] **1.** Boxing-in or covering a joist, beam, or girder to give the appearance of a larger beam. **2.** Strips of wood used to create a false beam. { 'bēm ˌbläk·iŋ }

**beam bolster** [CIV ENG] A rod which provides support for steel reinforcement in formwork for a reinforced concrete beam. { 'bēm ˌbōl·stər }

**beam box** *See* wall box. { 'bēm ˌbäks }

**beam brick** [BUILD] A face brick which is used to bond to a poured-in-place concrete lintel. { 'bēm ˌbrik }

**beam bridge** [CIV ENG] A fixed structure consisting of a series of steel or concrete beams placed parallel to traffic and supporting the roadway directly on their top flanges. { 'bēm ˌbrij }

**beam clip** [ENG] A device for attaching a pipe hanger to its associated structural beam when it is undesirable to weld the pipe hanger to supporting structural steelwork. Also known as girder clamp; girder clip. { 'bēm ˌklip }

**beam column** [CIV ENG] A structural member subjected simultaneously to axial load and bending moments produced by lateral forces or eccentricity of the longitudinal load. { 'bēm ˌkäl·əm }

**beam-deflection amplifier** [MECH ENG] A jet-interaction fluidic device in which the direction of a supply jet is varied by flow from one or more control jets which are oriented at approximately 90° to the supply jet. { 'bēm di'flek·shən 'am·plə,fī·ər }

**beam fill** [BUILD] Masonry, brickwork, or cement fill, usually between joists or horizontal beams

at their supports; provides increased fire resistance. { 'bēm ˌfil }

**beam form** [CIV ENG] A form which gives the necessary shape, suppport, and finish to a concrete beam. { 'bēm ˌfȯrm }

**beamhouse** [CHEM ENG] A place where the initial wet operations of tanning, involving soaking in water and solutions of alkali, are carried out. { 'bēmˌhaùs }

**beam pattern** *See* directivity pattern. { 'bēm ˌpad·ərn }

**beam pocket** [CIV ENG] **1.** In a vertical structural member, an opening to receive a beam. **2.** An opening in the form for a column or girder where the form for an intersecting beam is framed. { 'bēm ˌpäk·ət }

**beam splice** [CIV ENG] A connection between two lengths of a beam or girder; may be shear or moment connections. { 'bēm ˌsplīs }

**beam spread** [ENG] The angle of divergence from the central axis of an electromagnetic or acoustic beam as it travels through a material. { 'bēm ˌspred }

**Beams servoed rotational method** [ENG] A method of measuring the gravitational constant by determining the inertial reaction of a torsional pendulum to the angular acceleration of a rotating table that is required to cancel the attraction of the pendulum to two large masses. { 'bēmz 'sərˌvōd rō'tā·shən·əl ˌmeth·əd }

**beam test** [CIV ENG] A test of the flexural strength (modulus of rupture) of concrete from measurements on a standard reinforced concrete beam. { 'bēm ˌtest }

**bean** [ENG] A restriction, such as a nipple, which is placed in a pipe to reduce the rate of fluid flow. { bēn }

**bearer** [CIV ENG] Any horizontal beam, joist, or member which supports a load. { 'ber·ər }

**bearing** [CIV ENG] That portion of a beam, truss, or other structural member which rests on the supports. [MECH ENG] A machine part that supports another part which rotates, slides, or oscillates in or on it. { 'ber·iŋ }

**bearing bar** [BUILD] A wrought-iron bar placed on masonry to provide a level support for floor joists. [CIV ENG] A load-carrying bar which supports a grating and which extends in the direction of the grating span. [ENG] *See* azimuth instrument. { 'ber·iŋ ˌbär }

**bearing cap** [DES ENG] A device designed to fit around a bearing to support or immobilize it. { 'ber·iŋ ˌkap }

**bearing capacity** [MECH] Load per unit area which can be safely supported by the ground. { 'ber·iŋ kə'pas·əd·ē }

**bearing circle** [ENG] A ring designed to fit snugly over a compass or compass repeater, and provided with vanes for observing compass bearings. { 'ber·iŋ ˌsər·kəl }

**bearing cursor** [ENG] Of a radar set, the radial line inscribed on a transparent disk which can be rotated manually about an axis coincident with the center of the plan position indicator; used for bearing determination. Also known as mechanical bearing cursor. { 'ber·iŋ ˌkər·sər }

**bearing distance** [CIV ENG] The length of a beam between its bearing supports. { 'ber·iŋ ˌdis·təns }

**bearing partition** [BUILD] A partition which supports a vertical load. { 'ber·iŋ pər'tish·ən }

**bearing pile** [ENG] A vertical post or pile which carries the weight of a foundation, transmitting the load of a structure to the bedrock or subsoil without detrimental settlement. { 'ber·iŋ ˌpīl }

**bearing plate** [CIV ENG] A flat steel plate used under the end of a wall-bearing beam to distribute the load over a broader area. { 'ber·iŋ ˌplāt }

**bearing pressure** [MECH] Load on a bearing surface divided by its area. Also known as bearing stress. { 'ber·iŋ ˌpresh·ər }

**bearing strain** [MECH] The deformation of bearing parts subjected to a load. { 'ber·iŋ ˌstrān }

**bearing strength** [MECH] The maximum load that a column, wall, footing, or joint will sustain at failure, divided by the effective bearing area. { 'ber·iŋ ˌstrenkth }

**bearing stress** *See* bearing pressure. { 'ber·iŋ ˌstres }

**bearing test** [ENG] A test of the bearing capacities of pile foundations, such as a field loading test of an individual pile; a laboratory test of soil samples for bearing capacities. { 'ber·iŋ ˌtest }

**bearing wall** [CIV ENG] A wall capable of supporting an imposed load. Also known as structural wall. { 'ber·iŋ ˌwȯl }

**bear trap gate** [CIV ENG] A type of crest gate with an upstream leaf and a downstream leaf which rest in a horizontal position, one leaf overlapping the other, when the gate is lowered. { 'ber ˌtrap ˌgāt }

**beater** [ENG] **1.** A tool for packing in material to fill a blasthole containing a charge of powder. **2.** A laborer who shovels or dumps asbestos fibers and sprays them with water in order to prepare them for the beating. [MECH ENG] A machine that cuts or beats paper stock. { 'bēd·ər }

**beater mill** *See* hammer mill. { 'bēd·ər ˌmil }

**beating** [ENG] A process that reduces asbestos fibers to pulp for making asbestos paper. { 'bēd·iŋ }

**Beattie and Bridgman equation** [THERMO] An equation that relates the pressure, volume, and temperature of a real gas to the gas constant. { ˌbēd·ē ən ˌbrij·mən i'kwā·zhən }

**beat tone** [ENG ACOUS] Musical tone due to beats, produced by the heterodyning of two high-frequency wave trains. { 'bēt ˌtōn }

**bêche** [MECH ENG] A pneumatic forge hammer having an air-operated ram and an air-compressing cylinder integral with the frame. { besh }

**Beckmann thermometer** [ENG] A sensitive thermometer with an adjustable range so that small differences in temperature can be measured. { 'bek·män ther'mäm·əd·ər }

**bed** [CIV ENG] **1.** In masonry and bricklaying, the side of a masonry unit on which the unit lies in the course of the wall; the underside when

the unit is placed horizontally. **2.** The layer of mortar on which a masonry unit is set. [MECH ENG] The part of a machine having precisely machined ways or bearing surfaces which support or align other machine parts. { bed }

**Bedaux plan** [IND ENG] A wage incentive plan in which work is standardized into man-minute units called bedaux (B); 60 B per hour is 100% productivity, and earnings are based on work units per length of time. { bə'dō ˌplan }

**bedding** [CIV ENG] **1.** Mortar, putty, or other substance used to secure a firm and even bearing, such as putty laid in the rabbet of a window frame, or mortar used to lay bricks. **2.** A base which is prepared in soil or concrete for laying masonry or concrete. { 'bed·iŋ }

**bedding course** [CIV ENG] The first layer of mortar at the bottom of masonry. { 'bed·iŋ ˌkȯrs }

**bedding dot** [BUILD] A small spot of plaster built out to the face of a finished wall or ceiling; serves as a screed for leveling and plumbing in the application of plaster. { 'bed·iŋ ˌdät }

**bed joint** [CIV ENG] **1.** A horizontal layer of mortar on which masonry units are laid. **2.** One of the radial joints in an arch. { 'bed ˌjȯint }

**bed molding** [BUILD] **1.** The lowest member of a band of moldings. **2.** Any molding under a projection, such as between eaves and sidewalls. { 'bed ˌmōl·diŋ }

**beehive oven** [ENG] An arched oven that carbonizes coal into coke by using the heat of combustion of gases that are formed, and of a small part of the coke that is formed, with no recovery of by-products. { 'bēˌhīv ˌəv·ən }

**beetle** *See* rammer. { 'bēd·əl }

**behavioral dynamics** [IND ENG] **1.** The behavioral operating characteristics of individuals and groups in terms of how these people are conditioned by their working environments. **2.** The interactions between individuals or groups in the workplace. { bi'hā·vyə·rəl dī'nam·iks }

**Belfast truss** [CIV ENG] A bowstring beam for large spans, having the upper member bent and the lower member horizontal; constructed entirely of timber components. { 'belˌfast 'trəs }

**bell** [ENG] **1.** A hollow metallic cylinder closed at one end and flared at the other; it is used as a fixed-pitch musical instrument or signaling device and is set vibrating by a clapper or tongue which strikes the lip. **2.** *See* bell tap. { bel }

**bell-and-spigot joint** [ENG] A pipe joint in which a pipe ending in a bell-like shape is joined to a pipe ending in a spigotlike shape. { ¦bel ən 'spik·ət ˌjȯint }

**bell cap** [CHEM ENG] A hemispherical or triangular metal casting used on distillation-column trays to force upflowing vapors to bubble through layers of downcoming liquid. { 'bel ˌkap }

**belled caisson** [CIV ENG] A type of drilled caisson with a flared bottom. { 'beld 'kāˌsän }

**bell glass** *See* bell jar. { 'bel ˌglas }

**bell jar** [ENG] A bell-shaped vessel, usually made of glass, which is used for enclosing a vacuum, holding gases, or covering objects. Also known as bell glass. { 'bel ˌjär }

**bell-jar testing** [ENG] A leak testing method in which a vessel is filled with tracer gas and placed in a vacuum chamber; leaks are evidenced by gas drawn into the vacuum chamber. { 'bel ˌjär ˌtes·tiŋ }

**bell-joint clamp** [ENG] A clamp applied to a bell-and-spigot joint to prevent leakage. { 'bel ˌjȯint ˌklamp }

**Bellman's principle of optimality** [IND ENG] The principle that an optimal sequence of decisions in a multistage decision process problem has the property that whatever the initial state and decisions are, the remaining decisions must constitute an optimal policy with regard to the state resulting from the first decisions. { 'bel·mənz 'prin·sə·pəl əv ˌäp·tə'mal·əd·ē }

**bell mouth** [DES ENG] A flared mouth on a pipe opening or other orifice. [ENG] A defect which occurs during metal drilling in which a twist drill produces a hole that is not a perfect circle. { 'bel ˌmauth }

**bellows** [ENG] **1.** A mechanism that expands and contracts, or has a rising and falling top, to suck in air through a valve and blow it out through a tube. **2.** Any of several types of enclosures which have accordionlike walls, allowing one to vary the volume. **3.** *See* aneroid capsule. { 'bel·ōz }

**bellows expansion joint** [DES ENG] In a run of piping, a joint formed with a flexible metal bellows which compress or stretch to compensate for linear expansion or contraction of the run of piping. { 'bel·ōz ik'span·shən ˌjȯint }

**bellows gage** [ENG] A device for measuring pressure in which the pressure on a bellows, with the end plate attached to a spring, causes a measurable movement of the plate. { 'bel·ōz ˌgāj }

**bellows gas meter** [ENG] A device for measuring the total volume of a continuous gas flow stream in which the motion of two bellows, alternately filled with and exhausted of the gas, actuates a register. { 'bel·ōz ¦gas ˌmēd·ər }

**bellows seal** [MECH ENG] A boiler seal in the form of a bellows which prevents leakage of air or gas. { 'bel·ōz ˌsēl }

**bell-type manometer** [ENG] A differential pressure gage in which one pressure input is fed into an inverted cuplike container floating in liquid, and the other pressure input presses down upon the top of the container so that its level in the liquid is the measure of differential pressure. { 'belˌtīp mə'näm·əd·ər }

**belt** [CIV ENG] In brickwork, a projecting row (or rows) of bricks, or an inserted row made of a different kind of brick. [MECH ENG] A flexible band used to connect pulleys or to convey materials by transmitting motion and power. { belt }

**belt conveyor** [MECH ENG] A heavy-duty conveyor consisting essentially of a head or drive pulley, a take-up pulley, a level or inclined endless belt made of canvas, rubber, or metal, and carrying and return idlers. { 'belt kən'vā·ər }

**belt course** *See* string course. { 'belt ˌkȯrs }

**belt drive** [MECH ENG] The transmission of power between shafts by means of a belt connecting pulleys on the shafts. { 'belt ˌdrīv }

**belted-bias tire** *See* bias-belted tire. { ˈbel·təd ˌbī·əs ˈtīr }

**belt feeder** [MECH ENG] A short belt conveyor used to transfer granulated or powdered solids from a storage or supply point to an end-use point; for example, from a bin hopper to a chemical reactor. { 'belt ˌfēd·ər }

**belt guard** [MECH ENG] A cover designed to protect a belt as well as the pulleys it connects. { 'belt ˌgärd }

**belt highway** *See* beltway. { ˈbelt ˈhīˌwā }

**belt sander** [MECH ENG] A portable sanding tool having a power-driven abrasive-coated continuous belt. { 'belt ˌsan·dər }

**belt shifter** [MECH ENG] A device with fingerlike projections used to shift a belt from one pulley to another or to replace a belt which has slipped off a pulley. { 'belt ˌshif·tər }

**belt slip** [MECH ENG] The difference in speed between the driving drum and belt conveyor. { 'belt ˌslip }

**belt tightener** [MECH ENG] In a belt drive, a device that takes up the slack in a belt that has become stretched and permanently lengthened. { 'belt ˌtīt·nər }

**beltway** [CIV ENG] A highway that encircles an urban area along its perimeter. Also known as belt highway; ring road. { 'beltˌwā }

**bench assembly** [ENG] A technique of fitting and joining parts using a bench as a work surface. { 'bench əˈsem·blē }

**bench check** [IND ENG] A workshop or servicing bay check which includes the typical check or actual functional test of an item to ascertain what is to be done to return the item to a serviceable condition or ascertain the item's temporary or permanent disposition. { 'bench ˌchek }

**bench dog** [ENG] A wood or metal peg, placed in a slot or hole at the end of a bench; used to keep a workpiece from slipping. { 'bench ˌdȯg }

**bench hook** [ENG] Any device used on a carpenter's bench to keep work from moving toward the rear of the bench. Also known as side hook. { 'bench ˌhůk }

**benching** [CIV ENG] **1.** Concrete laid on the side slopes of drainage channels where the slopes are interrupted by manholes, and so forth. **2.** Concrete laid on sloping sites as a safeguard against sliding. **3.** Concrete laid along the sides of a pipeline to provide additional support. { 'bench·iŋ }

**bench lathe** [MECH ENG] A small engine or toolroom lathe suitable for attachment to a workbench; bed length usually does not exceed 6 feet (1.8 meters) and workpieces are generally small. { 'bench ˌlāth }

**benchmark** [ENG] A relatively permanent natural or artificial object bearing a marked point whose elevation above or below an adopted datum—for example, sea level—is known. Abbreviated BM. [IND ENG] A standard of measurement possessing sufficient identifiable characteristics common to the individual units of a population to facilitate economical and efficient comparison of attributes for units selected from a sample. { 'benchˌmärk }

**benchmark index** [IND ENG] In manufacturing and mining, an index designed to reflect changes in output occurring between census years. { 'benchˌmärk 'inˌdeks }

**benchmark job** [IND ENG] A job that can be related or compared to other jobs in terms of common characteristics and considered an acceptable gauge for other jobs without the need of direct measurements. { 'benchˌmärk ˌjäb }

**bench photometer** [ENG] A device which uses an optical bench with the two light sources to be compared mounted one at each end; the comparison between the two illuminations is made by a device moved along the bench until matching brightnesses appear. { 'bench fəˈtäm·əd·ər }

**bench plane** [DES ENG] A plane used primarily in benchwork on flat surfaces, such as a block plane or jack plane. { 'bench ˌplān }

**bench sander** [MECH ENG] A stationary power sander, usually mounted on a table or stand, which is equipped with a rotating abrasive disk or belt. { 'bench ˌsan·dər }

**bench-scale testing** [ENG] Testing of materials, methods, or chemical processes on a small scale, such as on a laboratory worktable. { 'bench ˌskāl 'tes·tiŋ }

**bench stop** [ENG] A bench hook which is used to fasten work in place, often by means of a screw. { 'bench ˌstäp }

**bench table** [BUILD] A projecting course of masonry at the foot of an interior wall or around a column; generally wide enough to form a seat. { 'bench ˌtā·bəl }

**bench vise** [ENG] An ordinary vise fixed to a workbench. { 'bench ˌvīs }

**benchwork** [ENG] Any work performed at a workbench rather than on machines or in the field. { 'benchˌwərk }

**bend** [DES ENG] **1.** The characteristic of an object, such as a machine part, that is curved. **2.** A section of pipe that is curved. **3.** A knot formed by a rope fastened to an object or another rope. { bend }

**bend allowance** [DES ENG] Length of the arc of the neutral axis between the tangent points of a bend in any material. { 'bend əˈlaů·əns }

**bender** *See* bending machine. { 'ben·dər }

**bending** [ENG] **1.** The forming of a metal part, by pressure, into a curved or angular shape, or the stretching or flanging of it along a curved path. **2.** The forming of a wooden member to a desired shape by pressure after it has been softened or plasticized by heat and moisture. { 'ben·diŋ }

**bending brake** [MECH ENG] A press brake for

making sharply angular linear bends in sheet metal. { 'ben·diŋ ˌbrāk }

**bending iron** [ENG] A tool used to straighten or to expand flexible pipe, especially lead pipe. { 'ben·diŋ ˌī·ərn }

**bending machine** [MECH ENG] A machine for bending a metal or wooden part by pressure. Also known as bender. { 'ben·diŋ məˌshēn }

**bending moment** [MECH] Algebraic sum of all moments located between a cross section and one end of a structural member; a bending moment that bends the beam convex downward is positive, and one that bends it convex upward is negative. { 'ben·diŋ ˌmō·mənt }

**bending-moment diagram** [MECH] A diagram showing the bending moment at every point along the length of a beam plotted as an ordinate. { 'ben·diŋ ˌmō·mənt ˌdī·əˌgram }

**bending schedule** [CIV ENG] A chart showing the shapes and dimensions of every reinforcing bar and the number of bars required on a particular job for the construction of a reinforced concrete structure. { 'ben·diŋ ˌskej·əl }

**bending stress** [MECH] An internal tensile or compressive longitudinal stress developed in a beam in response to curvature induced by an external load. { 'ben·diŋ ˌstres }

**Bendix-Weiss universal joint** [MECH ENG] A universal joint that provides for constant angular velocity of the driven shaft by transmitting the torque through a set of four balls lying in the plane that contains the bisector of, and is perpendicular to, the plane of the angle between the shafts. { ˈben,diks ˈwīs ˌyü·nə'vər·səl ˌjȯint }

**bend radius** [DES ENG] The radius corresponding to the curvature of a bent specimen or part, as measured at the inside surface of the bend. { 'bend ˌrād·ē·əs }

**bend wheel** [MECH ENG] A wheel used to interrupt and change the normal path of travel of the conveying or driving medium; most generally used to effect a change in direction of conveyor travel from inclined to horizontal or a similar change. { 'bend ˌwēl }

**Benioff extensometer** [ENG] A linear strainmeter for measuring the change in distance between two reference points separated by 60–90 feet (20–30 meters) or more; used to observe earth tides. { 'ben·ē·ȯf ˌekˌsten'säm·əd·ər }

**bent** [CIV ENG] A framework support transverse to the length of a structure. { bent }

**bent bar** [CIV ENG] A longitudinal reinforcing bar which is bent to pass from one face of a structural member to the other face. { 'bent ˌbär }

**bent-tube boiler** [MECH ENG] A water-tube steam boiler in which the tubes terminate in upper and lower steam-and-water drums. Also known as drum-type boiler. { 'bent ˌtüb 'bȯil·ər }

**bentwood** [ENG] Wood formed to shape by bending, rather than by carving or machining. { 'bentˌwůd }

**benzol-acetone process** [CHEM ENG] A solvent dewaxing process in which a mixture of the solvent and oil containing wax is cooled until the wax solidifies and is then removed by filtration. { 'benˌzȯl 'asˑəˌtōn ˌpräs·əs }

**Bergius process** [CHEM ENG] Treatment of carbonaceous matter, such as coal or cellulosic materials, with hydrogen at elevated pressures and temperatures in the presence of a catalyst, to form an oil similar to crude petroleum. Also known as coal hydrogenation. { 'ber·gē·əs 'präs·əs }

**Berl saddle** [CHEM ENG] A type of column packing used in distillation columns. { 'bərl ˌsad·əl }

**berm** [CIV ENG] A horizontal ledge cut between the foot and top of an embankment to stabilize the slope by intercepting sliding earth. { bərm }

**Bernoulli-Euler law** [MECH] A law stating that the curvature of a beam is proportional to the bending moment. { berˌnü·lē ˈȯil·ər ˈlȯ }

**Berthelot method** [THERMO] A method of measuring the latent heat of vaporization of a liquid that involves determining the temperature rise of a water bath that encloses a tube in which a given amount of vapor is condensed. { 'berˌtəˌlō ˌmeth·əd }

**Berthon dynamometer** [ENG] An instrument for measuring the diameters of small objects, consisting of two metal straightedges inclined at a small angle and rigidly joined together; a scale on one of the straightedges is used to read the diameters of objects inserted between them. { 'bərˌthän ˌdī·nə'mäm·əd·ər }

**beryllium detector** [ENG] An instrument designed to detect and analyze for beryllium by gamma-ray activation analysis. Also known as berylometer. { bəˈril·ē·əm di'tek·tər }

**berylometer** *See* beryllium detector. { ˌber·əˈläm·əd·ər }

**best commercial practice** [ENG] A manufacturing standard for a process vessel which has not been designed according to standard codes, such as the American Society of Mechanical Engineers Boiler Code. { ˌbest kəˈmər·shəl 'prak·təs }

**beta** [ELECTR] The current gain of a transistor that is connected as a grounded-emitter amplifier, expressed as the ratio of change in collector current to resulting change in base current, the collector voltage being constant. { 'bād·ə }

**beta-cutoff frequency** [ELECTR] The frequency at which the current amplification of an amplifier transistor drops to 3 decibels below its value at 1 kilohertz. { 'bād·ə 'kəd,ȯf ˌfrē·kwən·sē }

**Bethell process** *See* full-cell process. { 'beth·əl 'präs·əs }

**Betterton-Kroll process** [CHEM ENG] A method for obtaining pure bismuth from softened and desilverized lead. { ˈbed·ər·tən ˈkrōl ˌpräs·əs }

**Betti reciprocal theorem** [MECH] A theorem in the mathematical theory of elasticity which states that if an elastic body is subjected to two systems of surface and body forces, then the work that would be done by the first system acting through the displacements resulting from

the second system equals the work that would be done by the second system acting through the displacements resulting from the first system. { 'bāt·tē ri'sip·rə·kəl ˌthir·əm }

**Betti's method** [MECH] A method of finding the solution of the equations of equilibrium of an elastic body whose surface displacements are specified; it uses the fact that the dilatation is a harmonic function to reduce the problem to the Dirichlet problem. { 'bät·tēz ˌmeth·əd }

**Betz momentum theory** [MECH ENG] A theory of windmill performance that considers the deceleration in the air traversing the windmill disk. { 'bets mə'ment·əm ˌthē·ə·rē }

**bevel** [DES ENG] **1.** The angle between one line or surface and another line or surface, or the horizontal, when this angle is not a right angle. **2.** A sloping surface or line. { 'bev·əl }

**beveled closer** *See* king closer. { ˌbev·əld 'klō·zər }

**bevel gear** [MECH ENG] One of a pair of gears used to connect two shafts whose axes intersect. { 'bev·əl ˌgir }

**beveling** *See* chamfering. { 'bev·ə·liŋ }

**bezel** [DES ENG] **1.** A grooved rim used to hold a transparent glass or plastic window or lens for a meter, tuning dial, or some other indicating device. **2.** A sloping face on a cutting tool. { 'bez·əl }

**B-H meter** [ENG] A device used to measure the intrinsic hysteresis loop of a sample of magnetic material. { ˌbē'ˌāch ˌmēd·ər }

**bhp** *See* boiler horsepower; brake horsepower.

**bias** [ELEC] **1.** A direct-current voltage used on signaling or telegraph relays or electromagnets to secure desired time spacing of transitions from marking to spacing. **2.** The restraint of a relay armature by spring tension to secure a desired time spacing of transitions from marking to spacing. **3.** The effect on teleprinter signals produced by the electrical characteristics of the line and equipment. **4.** The force applied to a relay to hold it in a given position. [ELECTR] **1.** A direct-current voltage applied to a transistor control electrode to establish the desired operating point. **2.** *See* grid bias. { 'bī·əs }

**bias-belted tire** [ENG] A motor-vehicle pneumatic tire constructed with a belt of textile cord, steel, or fiber glass around the tire underneath the tread and on top of the ply cords, and laid at an acute angle to the center line of the tread. Also known as belted-bias tire. { ˌbī·əs ˌbel·təd 'tīr }

**bias compensation** [ENG ACOUS] The application of an outward-directed tension to the pickup arm of a record player to counteract the tendency of the arm to slide toward the center. { 'bī·əs ˌkäm·pənˌsā·shən }

**bias current** [ELECTR] **1.** An alternating electric current above about 40,000 hertz added to the audio current being recorded on magnetic tape to reduce distortion. **2.** An electric current flowing through the base-emitter junction of a transistor and adjusted to set the operating point of the transistor. { 'bī·əs ˌkər·ənt }

**bias distortion** [ELECTR] Distortion resulting from the operation on a nonlinear portion of the characteristic curve of a vacuum tube or other device, due to improper biasing. { 'bī·əs dis 'tȯr·shən }

**bias-ply tire** [ENG] A motor-vehicle pneumatic tire that has crossed layers of ply cord set diagonally to the center line of the tread. { ˌbī·əs ˌplī 'tīr }

**bias voltage** [ELECTR] A voltage applied or developed between two electrodes as a bias. { 'bī·əs ˌvōl·tij }

**biaxial stress** [MECH] The condition in which there are three mutually perpendicular principal stresses; two act in the same plane and one is zero. { bī'ak·sē·əl ˌstress }

**Biazzi process** [CHEM ENG] A continuous-flow process for the nitration of glycerin to nitroglycerin; also used to produce glycol dinitrate and diethylene glycol nitrate. { bē'at·sē ˌpräs·əs }

**bibb cock** *See* bibcock. { 'bib ˌkäk }

**bibcock** [DES ENG] A faucet or stopcock whose nozzle is bent downward. Also spelled bibb cock. { 'bibˌkäk }

**bicable tramway** [MECH ENG] A tramway consisting of two stationary cables on which the wheeled carriages travel, and an endless rope, which propels the carriages. { 'bīˌkā·bəl 'tramˌwā }

**BiCMOS technology** [ELECTR] An integrated circuit technology that combines bipolar transistors and CMOS devices on the same chip. { ˌbī'sē‚mȯs tekˌnäl·ə·jē }

**bicycle** [MECH ENG] A human-powered land vehicle with two wheels, one behind the other, usually propelled by the action of the rider's feet on the pedals. { 'bīˌsik·əl }

**bid** [ENG] An estimate of costs for specified construction, equipment, or services proposed to a customer company by one or more supplier or contractor companies. { bid }

**bidirectional** [ENG] Being directionally responsive to inputs in opposite directions. { ˌbī·də'rek·shən·əl }

**bidirectional microphone** [ENG ACOUS] A microphone that responds equally well to sounds reaching it from the front and rear, corresponding to sound incidences of 0 and 180°. { ˌbī·də'rek·shən·əl 'mī·krəˌfōn }

**Bierbaum scratch hardness test** [ENG] A test for the hardness of a solid sample by microscopic measurement of the width of scratch made by a diamond point under preset pressure. { 'bir ˌbaüm ¦skrach 'härd·nəs ˌtest }

**biface tool** [DES ENG] A tool, as an ax, made from a coil flattened on both sides to form a V-shaped cutting edge. { 'bīˌfās 'tül }

**bifacial** [DES ENG] Of a tool, having both sides alike. { bī'fā·shəl }

**bifilar electrometer** [ENG] An electrostatic voltmeter in which two conducting quartz fibers, stretched by a small weight or spring, are separated by their attraction in opposite directions toward two plate electrodes carrying the voltage to be measured. { bī'fi·lər i·lek'träm·əd·ər }

**bifilar micrometer** *See* filar micrometer. { bī'fi·lər mī'kräm·əd·ər }

**bifilar suspension** [ENG] The suspension of a body from two parallel threads, wires, or strips. { bī'fi·lər səs'pen·shən }

**bilateral tolerance** [DES ENG] The amount that the size of a machine part is allowed to vary above or below a basic dimension; for example, 3.650 ± 0.003 centimeters indicates a tolerance of ± 0.003 centimeter. { bī'lad·ə·rəl 'täl·ə·rəns }

**bilge block** [CIV ENG] A wooden support under the turn of a ship's bilge in dry dock. { 'bilj ˌbläk }

**bill** [DES ENG] One blade of a pair of scissors. { bil }

**billet** [ENG] In a hydraulic extrusion press, a large cylindrical cake of plastic material placed within the pressing chamber. { 'bil·ət }

**bimetallic strip** [ENG] A strip formed of two dissimilar metals welded together; different temperature coefficients of expansion of the metals cause the strip to bend or curl when the temperature changes. { ¦bī·mə'tal·ik ˌstrip }

**bimetallic thermometer** [ENG] A temperature-measuring instrument in which the differential thermal expansion of thin, dissimilar metals, bonded together into a narrow strip and coiled into the shape of a helix or spiral, is used to actuate a pointer. Also known as differential thermometer. { ¦bī·mə'tal·ik thər'mäm·əd·ər }

**bin** [ENG] An enclosed space, box, or frame for the storage of bulk substance. { bin }

**binary component** [ELECTR] An electronic component that can be in either of two conditions at any given time. Also known as binary device. { 'bīn·ə·rē kəm'pō·nənt }

**binary counter** *See* binary scaler. { 'bīn·ə·rē 'kaunt·ər }

**binary device** *See* binary component. { 'bīn·ə·rē di'vīs }

**binary encoder** [ELECTR] An encoder that changes angular, linear, or other forms of input data into binary coded output characters. { 'bīn·ə·rē en'kōd·ər }

**binary logic** [ELECTR] An assembly of digital logic elements which operate with two distinct states. { 'bīn·ə·rē 'läj·ik }

**binary scaler** [ELECTR] A scaler that produces one output pulse for every two input pulses. Also known as binary counter; scale-of-two circuit. { 'bīn·ə·rē ¦skā·lər }

**binary separation** [CHEM ENG] Separation by distillation or solvent extraction of a fully miscible liquid mixture of two chemical compounds. { 'bīn·ə·rē sep·ə'rā·shən }

**binary signal** [ELECTR] A voltage or current which carries information by varying between two possible values, corresponding to 0 and 1 in the binary system. { 'bīn·ə·rē 'sig·nəl }

**binary system** [ENG] Any system containing two principal components. { 'bīn·ə·rē 'sis·təm }

**binder course** [CIV ENG] Coarse aggregate with a bituminous binder between the foundation course and the wearing course of a pavement. { 'bīn·dər ˌkȯrs }

**binderless briquetting** [ENG] The briquetting of coal by the application of pressure without the addition of a binder. { 'bīn·dər·ləs bri'ked·iŋ }

**binding post** [ELEC] A manually turned screw terminal used for making electrical connections. { 'bīn·diŋ ˌpōst }

**bind-seize** *See* freeze. { ¦bīnd ¦sēz }

**biochemical profile** [IND ENG] Data recorded by both electromyographic and biomechanical means during the performance of a task to evaluate changes in the functional capacity of a worker resulting from modifications in human-equipment interfaces. { ¦bī·ō'kem·ə·kəl 'prōˌfīl }

**biocontrol system** [CONT SYS] A mechanical system that is controlled by biological signals, for example, a prosthesis controlled by muscle activity. { ˌbī·ō·kən'trōl ˌsis·təm }

**bioengineering** [ENG] The application of engineering knowledge to the fields of medicine and biology. { ˌbī·ōˌen·jə'nir·iŋ }

**biofilter** [ENG] An emission control device that uses microorganisms to destroy volatile organic compounds and hazardous air pollutants. { 'bī·ōˌfil·tər }

**bioinstrumentation** [ENG] The use of instruments attached to animals and man to record biological parameters such as breathing rate, pulse rate, body temperature, or oxygen in the blood. { ¦bī·ōˌin·strə·mən'tā·shən }

**biomedical engineering** [ENG] The application of engineering technology to the solution of medical problems; examples are the development of prostheses such as artificial valves for the heart, various types of sensors for the blind, and automated artificial limbs. { ˌbī·ō'med·ə·kəl ˌen·jə'nir·iŋ }

**bionics** [ENG] The study of systems, particularly electronic systems, which function after the manner of living systems. { bī'än·iks }

**biopak** [ENG] A container for housing a living organism in a habitable environment and for recording biological functions during space flight. { 'bī·ōˌpak }

**biosolid** [CIV ENG] A recyclable, primarily organic solid material produced by wastewater treatment processes. { ¦bī·ōˌsäl·əd }

**biostabilizer** [CIV ENG] A component in mechanized composting systems; consists of a drum in which moistened solid waste is comminuted and tumbled for about 5 days until the aeration and biodegradation turns the waste into a fine dark compost. { ˌbī·ō'stāb·əlˌīz·ər }

**biotechnical robot** [CONT SYS] A robot that requires the presence of a human operator in order to function. { ¦bī·ō¦tek·nə·kəl 'rōˌbät }

**biotelemetry** [ENG] The use of telemetry techniques, especially radio waves, to study behavior and physiology of living things. { ¦bī·ō·tə'lem·ə·trē }

**Biot-Fourier equation** [THERMO] An equation for heat conduction which states that the rate of change of temperature at any point divided

by the thermal diffusivity equals the Laplacian of the temperature. { ¦byō ¦fūr·yā i'kwā·zhən }

**biotron** [ENG] A test chamber used for biological research within which the environmental conditions can be completely controlled, thus allowing observations of the effect of variations in environment on living organisms. { 'bī·ə,trän }

**bipolar amplifier** [ELECTR] An amplifier capable of supplying a pair of output signals corresponding to the positive or negative polarity of the input signal. { bī'pō·lər 'am·plə,fī·ər }

**bipolar circuit** [ELECTR] A logic circuit in which zeros and ones are treated in a symmetric or bipolar manner, rather than by the presence or absence of a signal; for example, a balanced arrangement in a square-loop-ferrite magnetic circuit. { bī'pō·lər 'sər·kət }

**bipolar electrode** [ELEC] Electrode, without metallic connection with the current supply, one face of which acts as anode surface and the opposite face as a cathode surface when an electric current is passed through a cell. { bī'pō·lər i'lek,trōd }

**bipolar integrated circuit** [ELECTR] An integrated circuit in which the principal element is the bipolar junction transistor. { bī'pō·lər 'in·tə,grād·əd 'sər·kət }

**bipolar junction transistor** [ELECTR] A bipolar transistor that is composed entirely of one type of semiconductor, silicon. Abbreviated BJT. Also known as silicon homojunction. { ¦bī,pōl·ər ,jəŋk·shən tran'zis·tər }

**bipolar magnetic driving unit** [ENG ACOUS] Headphone or loudspeaker unit having two magnetic poles acting directly on a flexible iron diaphragm. { bī'pō·lər mag'ned·ik 'driv·iŋ ,yü·nət }

**bipolar spin device** *See* magnetic switch. { ¦bī,pō·lər 'spin di,vīs }

**bipolar spin switch** *See* magnetic switch. { ¦bī,pō·lər 'spin ,swich }

**bipolar transistor** [ELECTR] A transistor that uses both positive and negative charge carriers. { bī'pō·lər tranz'is·tər }

**birdcaged wire** [ENG] Wire rope whose strands have been distorted into the shape of a birdcage by a sudden release of a load during a hoisting operation. { 'bərd,kājd ,wīr }

**Birkeland-Eyde process** [CHEM ENG] An arc process of nitrogen fixation in which air passes through an alternating-current arc flattened by a magnetic field to form about 1% nitric oxide. { ¦bərk·lənd ¦ī·də 'präs·əs }

**Birmingham wire gage** [DES ENG] A system of standard sizes of brass wire, telegraph wire, steel tubing, seamless tubing, sheet spring steel, strip steel, and steel plates, bands, and hoops. Abbreviated BWG. { 'bər·miŋ·əm 'wīr ,gāj }

**birth-death process** [IND ENG] A simple queuing model in which units to be served arrive (birth) and depart (death) in a completely random manner. { ¦bərth ¦deth ,prä,səs }

**biscuit** *See* preform. { 'bis·kət }

**bistable circuit** [ELECTR] A circuit with two stable states such that the transition between the states cannot be accomplished by self-triggering. { ¦bī¦stā·bəl ,sar·kət }

**bistable unit** [ENG] A physical element that can be made to assume either of two stable states; a binary cell is an example. { ¦bī¦stā·bəl 'yü·nət }

**bistatic radar** [ENG] Radar system in which the receiver is some distance from the transmitter, with separate antennas for each. { 'bī,stad·ik 'rā,där }

**bit** [DES ENG] **1.** A machine part for drilling or boring. **2.** The cutting plate of a plane. **3.** The blade of a cutting tool such as an ax. **4.** A removable tooth of a saw. **5.** Any cutting device which is attached to or part of a drill rod or drill string to bore or penetrate rocks. { bit }

**bit blank** [DES ENG] A steel bit in which diamonds or other cutting media may be inset by hand peening or attached by a mechanical process such as casting, sintering, or brazing. Also known as bit shank; blank; blank bit; shank. { 'bit ,blaŋk }

**bit breaker** [DES ENG] A heavy plate that fits in a rotary table for holding the drill bit while it is being inserted or broken out of the drill stem. { 'bit ,brāk·ər }

**bit cone** *See* roller cone bit. { 'bit ,kōn }

**bit drag** [DES ENG] A rotary-drilling bit that has serrated teeth. Also known as drag bit. { 'bit ,drag }

**bite** [ENG] In glazing, the length of overlap of the inner edge of a frame over the edge of the glass. { bīt }

**bit matrix** [ENG] The material, usually powdered and fused tungsten carbide, into which diamonds are set in the manufacture of diamond bits. { 'bit ,mā·triks }

**bitrochanteric width** [IND ENG] A measurement corresponding to hip breadth that is used in seating design. { ,bī·trə,kan¦ter·ik 'width }

**bit shank** *See* bit blank. { 'bit ,shaŋk }

**bittern** [CHEM ENG] Concentrated sea water or brine containing the bromides and magnesium and calcium salts left in solution after sodium chloride has been removed by crystallization. { 'bid·ərn }

**bituminous distributor** [MECH ENG] A tank truck having a perforated spray bar and used for pumping hot bituminous material onto the surface of a road or driveway. { bī¦tüm·ə·nəs dis'trib·yəd·ər }

**bivane** [ENG] A double-jointed vane which measures vertical as well as horizontal wind direction. { 'bī,vān }

**blackbody** [THERMO] An ideal body which would absorb all incident radiation and reflect none. Also known as hohlraum; ideal radiator. { 'blak¦bäd·ē }

**blackbody radiation** [THERMO] The emission of radiant energy which would take place from a blackbody at a fixed temperature; it takes place at a rate expressed by the Stefan-Boltzmann law, with a spectral energy distribution described by Planck's equation. { 'blak¦bäd·ē ,rā·dē'ā·shən }

**blackbody temperature** [THERMO] The temperature of a blackbody that emits the same amount of heat radiation per unit area as a given object; measured by a total radiation pyrometer. Also known as brightness temperature. { 'blak¦bäd·ē ˌtem·prə·chər }

**black box** [ENG] Any component, usually electronic and having known input and output, that can be readily inserted into or removed from a specific place in a larger system without knowledge of the component's detailed internal structure. { 'blak ˌbäks }

**black-bulb thermometer** [ENG] A thermometer whose sensitive element has been made to approximate a blackbody by covering it with lampblack. { 'blak ˌbəlb thər'mäm·əd·ər }

**black smoke** [ENG] A smoke that has many particulates in it from inefficient combustion; comes from burning fossil fuel, either coal or oil. { ¦blak 'smōk }

**black-surface enclosure** [THERMO] An enclosure for which the interior surfaces of the walls possess the radiation characteristics of a blackbody. { 'blak ˌsər·fəs in'klozh·ər }

**blacktop paver** [MECH ENG] A construction vehicle that spreads a specified thickness of bituminous mixture over a prepared surface. { 'blakˌtäp ˌpāv·ər }

**bladder press** [MECH ENG] A machine which simultaneously molds and cures (vulcanizes) a pneumatic tire. { 'blad·ər ˌpres }

**blade** [ELEC] A flat moving conductor in a switch. [ENG] **1.** A broad, flat arm of a fan, turbine, or propeller. **2.** The broad, flat surface of a bulldozer or snowplow by which the material is moved. **3.** The part of a cutting tool, such as a saw, that cuts. { blād }

**bladed-surface aerator** [CIV ENG] A bladed, rotating component of a water treatment plant; used to infuse air into the water. { 'blad·əd ˌsər·fəs 'erˌād·ər }

**Blake jaw crusher** [MECH ENG] A crusher with one fixed jaw plate and one pivoted at the top so as to give the greatest movement on the smallest lump. { 'blāk 'jȯ ˌkrəsh·ər }

**blank** [DES ENG] *See* bit blank. [ELECTR] To cut off the electron beam of a television picture tube, camera tube, or cathode-ray oscilloscope tube during the process of retrace by applying a rectangular pulse voltage to the grid or cathode during each retrace interval. Also known as beam blank. [ENG] **1.** The result of the final cutting operation on a natural crystal. **2.** *See* blind. { blaŋk }

**blank bit** *See* bit blank. { 'blaŋk ˌbit }

**blanket gas** [CHEM ENG] A gas phase introduced into a vessel above a liquid phase to prevent contamination of the liquid, reduce hazard of detonation, or to exert pressure on the liquid. Also known as cushion gas. { 'blaŋ·kət ˌgas }

**blank flange** [DES ENG] A solid disk used to close off or seal a companion flange. { 'blaŋk 'flanj }

**blankholder slide** [MECH ENG] The outer slide of a double-action power press; it is usually operated by toggles or cams. { 'blaŋkˌhōl·dər ˌslīd }

**blanking** [ENG] **1.** The closing off of flow through a liquid-containing process pipe by the insertion of solid disks at joints or unions; used during maintenance and repair work as a safety precaution. Also known as blinding. **2.** Cutting of plastic or metal sheets into shapes by striking with a punch. Also known as die cutting. { 'blaŋk·iŋ }

**blast** [ENG] The setting off of a heavy explosive charge. { blast }

**blast burner** [ENG] A burner in which a controlled burst of air or oxygen under pressure is supplied to the illuminating gas used. Also known as blast lamp. { 'blast ˌbər·nər }

**blast cleaning** [ENG] Any cleaning process in which an abrasive is directed at high velocity toward the surface being cleaned, for example, sand blasting. { 'blast ˌklēn·iŋ }

**blast ditching** [CIV ENG] The use of explosives to aid in ditch excavation, such as for laying pipelines. { 'blast ˌdich·iŋ }

**blaster** [ENG] A device for detonating an explosive charge; usually consists of a machine by which an operator, by pressing downward or otherwise moving a handle of the device, may generate a powerful transient electric current which is transmitted to an electric blasting cap. Also known as blasting machine. { 'blas·tər }

**blast freezer** [ENG] An upright freezer in which very cold air circulated by blowers is used for rapid freezing of food. { 'blast ˌfrē·zər }

**blast heater** [MECH ENG] A heater that has a set of heat-transfer coils through which air is forced by a fan operating at a relatively high velocity. { 'blast ˌhēd·ər }

**blasthole** [ENG] **1.** A hole that takes a heavy charge of explosive. **2.** The hole through which water enters in the bottom of a pump stock. { 'blastˌhōl }

**blasthole drilling** [ENG] Drilling to produce a series of holes for placement of blasting charges. { 'blastˌhōl ˌdril·iŋ }

**blasting** [ENG] **1.** Cleaning materials by a blast of air that blows small abrasive particles against the surface. **2.** The act of detonating an explosive. { 'blas·tiŋ }

**blasting cap** [ENG] A copper shell closed at one end and containing a charge of detonating compound, which is ignited by electric current or the spark of a fuse; used for detonating high explosives. { 'blas·tiŋ ˌkap }

**blasting fuse** [ENG] A core of gunpowder in the center of jute, yarn, and so on for igniting an explosive charge in a shothole. { 'blas·tiŋ ˌfyüz }

**blasting machine** *See* blaster. { 'blas·tiŋ mə'shēn }

**blasting mat** [ENG] A heavy, flexible, tear-resistant covering that is spread over the surface during blasting to contain earth fragments. { 'blast·iŋ ˌmat }

**blast lamp** *See* blast burner; blowtorch. { 'blast ˌlamp }

**blast wall** [ENG] A heavy wall used to isolate buildings or areas which contain highly combustible or explosive materials or to protect a building or area from blast damage when exposed to explosions. { 'blast ˌwȯl }

**Blears effect** [ENG] The dependence of the signal from an ionization gage on the geometry of the system being measured when an organic vapor is present in the vacuum; the effect can falsify measurement results by up to an order of magnitude. { 'blirz iˌfekt }

**bleed** [ENG] To let a fluid, such as air or liquid oxygen, escape under controlled conditions from a pipe, tank, or the like through a valve or outlet. { blēd }

**bleeder** [ELECTR] A high resistance connected across the dc output of a high-voltage power supply which serves to discharge the filter capacitors after the power supply has been turned off, and to provide a stabilizing load. [ENG] A connection located at a low place in an air line or a gasoline container so that, by means of a small valve, the condensed water or other liquid can be drained or bled off from the line or container without discharging the air or gas. { 'blēd·ər }

**bleeder turbine** [MECH ENG] A multistage turbine where steam is extracted (bled) at pressures intermediate between throttle and exhaust, for process or feedwater heating purposes. { 'blēd·ər ˌtər·bən }

**bleeding** [CHEM ENG] The undesirable movement of certain components of a plastic material to the surface of a finished article. Also known as migration. [ENG] Natural separation of a liquid from a liquid-solid or semisolid mixture; for example, separation of oil from a stored lubricating grease, or water from freshly poured concrete. Also known as bleedout. { 'blēd·iŋ }

**bleeding cycle** [MECH ENG] A steam cycle in which steam is drawn from the turbine at one or more stages and used to heat the feedwater. Also known as regenerative cycle. { 'blēd·iŋ ˌsī·kəl }

**bleedout** *See* bleeding. { 'blēdˌaůt }

**bleed valve** [ENG] A small-flow valve connected to a fluid process vessel or line for the purpose of bleeding off small quantities of contained fluid. { 'blēd ˌvalv }

**blended data** [ENG] Q point that is the combination of scan data and track data to form a vector. { ¦blen·dəd 'dad·ə }

**blending problem** [IND ENG] A linear programming problem in which it is required to find the least costly mix of ingredients which yields the desired product characteristics. { 'blen·diŋ ˌpräb·ləm }

**blending stock** [CHEM ENG] Any substance used for compounding gasoline, including natural gasoline, catalytically reformed products, and additives. Also known as blendstock. { 'blen·diŋ ˌstäk }

**blending value** [ENG] Measure of the ability of an added component (for example, tetraethyllead, isooctane, and aromatics) to affect the octane rating of a base gasoline stock. { 'blen·diŋ ˌval·yü }

**blendstock** *See* blending stock. { 'blendˌstäk }

**blend stop** [BUILD] A thin wood strip fastened to the exterior vertical edge of the pulley stile or jamb to hold the sash in position. { 'blend ˌstäp }

**blind** [ENG] A solid disk inserted at a pipe joint or union to prevent the flow of fluids through the pipe; used during maintenance and repair work as a safety precaution. Also known as blank. { blīnd }

**blind controller system** [CONT SYS] A process control arrangement that separates the in-plant measuring points (for example, pressure, temperature, and flow rate) and control points (for example, a valve actuator) from the recorder or indicator at the central control panel. { ¦blīnd kən'trōl·ər ˌsis·təm }

**blind drilling** [ENG] Drilling in which the drilling fluid is not returned to the surface. { 'blīnd 'dril·iŋ }

**blind flange** [DES ENG] A flange used to close the end of a pipe. { ¦blīnd 'flanj }

**blind floor** *See* subfloor. { ¦blīnd 'flȯr }

**blind hole** [DES ENG] A hole which does not pass completely through a workpiece. [ENG] A type of borehole that does not have the drilling mud or other circulating medium carry the cuttings to the surface. { ¦blīnd 'hōl }

**blinding** [ENG] **1.** A thin layer of lean concrete, fine gravel, or sand that is applied to a surface to smooth over voids in order to provide a cleaner, drier, or more durable finish. **2.** A layer of small rock chips applied over the surface of a freshly tarred road. **3.** *See* blanking. { 'blīn·diŋ }

**blind joint** [ENG] A joint which is not visible from any angle. { ¦blīnd 'joint }

**blind nipple** [MECH ENG] A short piece of piping or tubing having one end closed off; commonly used in boiler construction. { ¦blīnd 'nip·əl }

**blind spot** [ENG] An area on a filter screen where no filtering occurs. Also known as dead area. { 'blīnd ˌspät }

**blink** [MECH] A unit of time equal to $10^{-5}$ day or to 0.864 second. { bliŋk }

**blister** [ENG] A raised area on the surface of a metallic or plastic object caused by the pressure of gases developed while the surface was in a partly molten state, or by diffusion of high-pressure gases from an inner surface. { 'blis·tər }

**blistering** [ENG] The appearance of enclosed or broken macroscopic cavities in a body or in a glaze or other coating during firing. { 'blis·tə·riŋ }

**block** [DES ENG] **1.** A metal or wood case enclosing one or more pulleys; has a hook with which it can be attached to an object. **2.** *See* cylinder block. { bläk }

**block and fall** *See* block and tackle. { ¦bläk ən 'fȯl }

**block and tackle** [MECH ENG] Combination of

a rope or other flexible material and independently rotating frictionless pulleys. Also known as block and fall. { ˌbläk ən ˈtak·əl }

**block brake** [MECH ENG] A brake which consists of a block or shoe of wood bearing upon an iron or steel wheel. { ˈbläk ˌbrāk }

**block diagram** [ENG] A diagram in which the essential units of any system are drawn in the form of rectangles or blocks and their relation to each other is indicated by appropriate connecting lines. { ˈbläk ˌdī·əˌgram }

**blocked operation** [CHEM ENG] The use of a single chemical or refinery process unit alternately in more than one operation; for example, a catalytic reactor will first produce a chemical product and then will be blocked from the main process stream during catalyst regeneration. { ˈbläkt äp·əˈrā·shən }

**blocked resistance** [ENG ACOUS] Resistance of an audio-frequency transducer when its moving elements are blocked so they cannot move; represents the resistance due only to electrical losses. { ˈbläkt riˈzis·təns }

**blocker-type forging** [ENG] A type of forging for designs involving the use of large radii and draft angles, smooth contours, and generous allowances. { ˈbläk·ər ˌtīp ˈfȯr·jiŋ }

**block hole** [ENG] A small hole drilled into a rock or boulder into which an anchor bolt or a small charge or explosive may be placed; used in quarries for breaking large blocks of stone or boulders. { ˈbläk ˌhōl }

**blockhouse** [ENG] **1.** A reinforced concrete structure, often built underground or half-underground, and sometimes dome-shaped, to provide protection against blast, heat, or explosion during rocket launchings or related activities, and usually housing electronic equipment used in launching the rocket. **2.** The activity that goes on in such a structure. { ˈbläkˌhaůs }

**blocking** [ELECTR] **1.** Applying a high negative bias to the grid of an electron tube to reduce its anode current to zero. **2.** Overloading a receiver by an unwanted signal so that the automatic gain control reduces the response to a desired signal. **3.** Distortion occurring in a resistance-capacitance-coupled electron tube amplifier stage when grid current flows in the following tube. [ENG] Undesired adhesion between layers of plastic materials in contact during storage or use. { ˈbläk·iŋ }

**blocking capacitor** *See* coupling capacitor. { ˈbläk·iŋ kəˈpas·əd·ər }

**blocking layer** *See* depletion layer. { ˈbläk·iŋ ˌlā·ər }

**block plane** [DES ENG] A small type of hand plane, designed for cutting across the grain of the wood and for planing end grains. { ˈbläk ˌplān }

**block section** [CIV ENG] In a railroad system, a specific length of track that is controlled by stop signals. { ˈbläk ˌsek·shən }

**block signal system** [CONT SYS] An automatic railroad traffic control system in which the track is sectionalized into electrical circuits to detect the presence of trains, engines, or cars. { ˈbläk ˈsig·nəl ˌsis·təm }

**block system** [CIV ENG] A railroad system for controlling train movements by using signals between block posts, that is, the structures that contain the instruments indicating the positions of trains, conditions within block sections, and control levers for signals and other functions. { ˈbläk ˌsis·təm }

**blood bank** [ENG] A place for storing whole blood or plasma under refrigeration. { ˈbləd ˌbaŋk }

**bloom** [ENG] **1.** Fluorescence in lubricating oils or a cloudy surface on varnished or enameled surfaces. **2.** To apply an antireflection coating to glass. { blüm }

**blotter** [ENG] A disk of compressible material used between a grinding wheel and its flanges to avoid concentrated stress. { ˈbläd·ər }

**blotter press** [CHEM ENG] A plate-and-frame filter in which the filter medium is blotting paper. { ˈbläd·ər ˌpres }

**blowback** [CHEM ENG] **1.** A continuous stream of liquid or gas bled through air lines from instruments and to the process line being monitored; prevents process fluid from backing up and contacting the instrument. **2.** Reverse flow of fluid through a filter medium to remove caked solids. Also known as backwash. [MECH ENG] *See* blowdown. { ˈblōˌbak }

**blowby** [MECH ENG] Leaking of fluid between a cylinder and its piston during operation. { ˈblōˌbī }

**blowcase** [CHEM ENG] A cylindrical or spherical corrosion- and pressure-resistant container from which acid is forced by compressed air to the agitator; used in manufacture of acids but largely superseded by centrifugal pumps. Also known as acid blowcase; acid egg. { ˈblōˌkās }

**blowdown** [CHEM ENG] Removal of liquids or solids from a process vessel or storage vessel or a line by the use of pressure. [MECH ENG] The difference between the pressure at which the safety valve opens and the closing pressure. Also known as blowback. { ˈblōˌdaůn }

**blowdown line** [CHEM ENG] A large conduit to receive and confine fluids forced by pressure from process vessels. { ˈblōˌdaůn ˌlīn }

**blowdown stack** [CHEM ENG] A vertical stack or chimney into which the contents of a chemical or petroleum process unit are emptied in case of an operational emergency. { ˈblōˌdaůn ˌstak }

**blower** [MECH ENG] A fan which operates where the resistance to gas flow is predominantly downstream of the fan. { ˈblō·ər }

**blowing** [CHEM ENG] The introduction of compressed air near the bottom of a tank or other container in order to agitate the liquid therein. [ENG] *See* blow molding. { ˈblō·iŋ }

**blowing pressure** [ENG] Pressure of the air or other gases used to inflate the parison in blow molding. { ˈblō·iŋ ˌpresh·ər }

**blowing still** [CHEM ENG] A still or process column in which blown or oxidized asphalt is made. { ˈblō·iŋ ˌstil }

**blow-lifting gripper** [CONT SYS] A robot component that uses compressed air to lift objects. { 'blō ˌlift·iŋ ˌgrip·ər }

**blow molding** [ENG] A method of fabricating hollow plastic objects, such as bottles, by forcing a parison into a mold cavity and shaping by internal air pressure. Also known as blowing. { 'blō ˌmōl·diŋ }

**blown glass** [ENG] Glassware formed by blowing air into a ball of liquefied glass until it reaches the desired shape. { ˌblōn 'glas }

**blown tubing** [ENG] A flexible thermoplastic film tube made by applying pressure inside a molten extruded plastic tube to expand it prior to cooling and winding flat onto rolls. { ˌblōn 'tü·biŋ }

**blowoff valves** [MECH ENG] Valves in boiler piping which facilitate removal of solid matter present in the boiler water. { 'blōˌȯf ˌvalvz }

**blowout** [ELEC] The melting of an electric fuse because of excessive current. [ENG] **1.** The bursting of a container (such as a tube pipe, pneumatic tire, or dam) by the pressure of the contained fluid. **2.** The rupture left by such bursting. **3.** The abrupt escape of air from the working chamber of a pneumatic caisson. { 'blōˌaůt }

**blowpipe** [ENG] **1.** A long, straight tube, used in glass blowing, on which molten glass is gathered and worked. **2.** A small, tapered, and frequently curved tube that leads a jet, usually of air, into a flame to concentrate and direct it; used in flame tests in analytical chemistry and in brazing and soldering of fine work. **3.** *See* blowtorch. { 'blōˌpīp }

**blowpit** *See* blowtank. { 'blōˌpit }

**blow pressure** [ENG] Air pressure required for plastics blow molding. { 'blō ˌpresh·ər }

**blow rate** [ENG] The speed of the cycle at which air or an inert gas is applied intermittently during the forming procedure of blow molding. { 'blō ˌrāt }

**blowtank** [CHEM ENG] A tank or pit, used in papermaking, into which the contents of a digester are blown upon completion of a cook. Also known as blowpit. { 'blōˌtaŋk }

**blowtorch** [ENG] A small, portable blast burner which operates either by having air or oxygen and gaseous fuel delivered through tubes or by having a fuel tank which is pressured by a hand pump. Also known as blast lamp; blowpipe. { 'blōˌtȯrch }

**blowup** [CIV ENG] The localized buckling or breaking of a rigid pavement caused by excess pressure along its length. { 'blōˌəp }

**blowup ratio** [ENG] **1.** In blow molding of plastics, the ratio of the diameter of the mold cavity to the diameter of the parison. **2.** In blown tubing, the ratio of the diameter of the finished product to the diameter of the die. { 'blōˌəp ˌrā·shō }

**blunger** [ENG] **1.** A large spatula-shaped wooden implement used to mix clay with water. **2.** A vat, containing a rotating shaft with fixed knives, for mixing clay and water into slip. { 'blən·jər }

**blunging** [ENG] The mixing or suspending of ceramic material in liquid by agitation, to form slip. { 'blən·jiŋ }

**blunt file** [DES ENG] A file whose edges are parallel. { ˌbləntˈfīl }

**blunting** [DES ENG] Slightly rounding a cutting edge to reduce the probability of edge chipping. { 'blən·tiŋ }

**BM** *See* barrels per month; benchmark.

**BMT** *See* basic motion-time study.

**BMX bicycle** [MECH ENG] A small, extremely strong, type of bicycle, having generally 20-inch (500-millimeter) wheels, large-cleat (knobbly) tires, upright but not high-rise handlebars, and a seat positioned more towards the rear wheel than on a conventional bicycle, and used for stunt riding and tricks. { ˌbēˌemˌeks 'bīˌsik·əl }

**board drop hammer** [MECH ENG] A type of drop hammer in which the ram is attached to wooden boards which slide between two rollers; after the ram falls freely on the forging, it is raised by friction between the rotating rollers. Also known as board hammer. { 'bȯrd 'dräp ˌham·ər }

**board-foot** [ENG] Unit of volume in measuring lumber; equals 144 cubic inches (2360 cubic centimeters), or the volume of a board 1 foot square and 1 inch thick. Abbreviated bd-ft. { ˌbȯrd'fůt }

**board hammer** *See* board drop hammer. { 'bȯrd ˌham·ər }

**boarding** [ENG] **1.** A batch of boards. **2.** Covering with boards. { 'bor·diŋ }

**board measure** [ENG] Measurement of lumber in board-feet. Abbreviated bm. { 'bȯrd ˌmezh·ər }

**boast** [ENG] **1.** To shape stone or curve furniture roughly in preparation for finer work later on. **2.** To finish the face of a building stone by cutting a series of parallel grooves. { bōst }

**boaster** *See* boasting chisel. { 'bō·stər }

**boasting chisel** [DES ENG] A broad chisel used in boasting stone. Also known as boaster. { 'bōs·tiŋ ˌchiz·əl }

**boat spike** [DES ENG] A long, square spike used in construction with heavy timbers. Also known as barge spike. { 'bōt ˌspīk }

**Bobillier's law** [MECH] The law that, in general plane rigid motion, when $a$ and $b$ are the respective centers of curvature of points A and B, the angle between A$a$ and the tangent to the centrode of rotation (pole tangent) and the angle between B$b$ and a line from the centrode to the intersection of AB and $ab$ (collineation axis) are equal and opposite. { bō'bil·yāz ˌlò }

**body** [MECH ENG] The part of a drill which runs from the outer corners of the cutting lips to the shank or neck. { 'bäd·ē }

**body centrode** [MECH] The path traced by the instantaneous center of a rotating body relative to the body. { ˌbäd·ē 'senˌtrōd }

**body cone** [MECH] The cone in a rigid body that is swept out by the body's instantaneous axis

during Poinsot motion. Also known as polhode cone. { 'bäd·ē ˌkōn }

**body force** [MECH] An external force, such as gravity, which acts on all parts of a body. { 'bäd·ē ˌfȯrs }

**body-load aggregate** [IND ENG] A biomechanical unit that comprises the combined weight of the load being manipulated and the body segments involved in the task. { ¦bäd·ē ¦lōd 'a·grə·gət }

**body motion** [IND ENG] Motion of parts of a human body requiring a change of posture or weight distribution. { 'bäd·ē ˌmō·shən }

**body rotation** [CONT SYS] An axis of motion of a pick-and-place robot. { 'bäd·e rōˌtā·shən }

**bogie** Also spelled bogey; bogy. [ENG] **1.** A supporting and aligning wheel or roller on the inside of an endless track. **2.** A low truck or cart of solid build. **3.** A truck or axle to which wheels are fixed, which supports a railroad car, the leading end of a locomotive, or the end of a vehicle (such as a gun carriage) and which is allowed to swivel under it. **4.** A railroad car or locomotive supported by a bogie. [MECH ENG] The drive-wheel assembly and supporting frame comprising the four rear wheels of a six-wheel truck, mounted so that they can self-adjust to sharp curves and irregularities in the road. { 'bō·gē }

**boiler** [MECH ENG] A water heater for generating steam. { 'bȯil·ər }

**boiler air heater** [MECH ENG] A component of a steam-generating unit that transfers heat from the products of combustion after they have passed through the steam-generating and superheating sections to combustion air, which recycles heat to the furnace. { 'bȯil·ər 'er ˌhēd·ər }

**boiler casing** [MECH ENG] The gas-tight structure surrounding the component parts of a steam generator. { 'bȯil·ər ˌkās·iŋ }

**boiler circulation** [MECH ENG] Circulation of water and steam in a boiler, which is required to prevent overheating of the heat-absorbing surfaces; may be provided naturally by gravitational forces, mechanically by pumps, or by a combination of both methods. { 'bȯil·ər sər·kyə'lā·shən }

**boiler cleaning** [ENG] A mechanical or chemical process for removal of grease, scale, and other deposits from steam boiler surfaces. { 'bȯil·ər ˌklēn·iŋ }

**boiler code** [MECH ENG] A code, established by professional societies and administrative units, which contains the basic rules for the safe design, construction, and materials for steam-generating units, such as the American Society of Mechanical Engineers code. { 'bȯil·ər ˌkōd }

**boiler controls** [MECH ENG] Either manual or automatic devices which maintain desired boiler operating conditions with respect to variables such as feedwater flow, firing rate, and steam temperature. { 'bȯil·ər kən'trōlz }

**boiler draft** [MECH ENG] The difference between atmospheric pressure and some lower pressure existing in the furnace or gas passages of a steam-generating unit. { 'bȯil·ər ˌdraft }

**boiler economizer** [MECH ENG] A component of a steam-generating unit that transfers heat from the products of combustion after they have passed through the steam-generating and superheating sections to the feedwater, which it receives from the boiler feed pump and delivers to the steam-generating section of the boiler. { 'bȯil·ər i'kän·əˌmiz·ər }

**boiler efficiency** [MECH ENG] The ratio of heat absorbed in steam to the heat supplied in fuel, usually measured in percent. { 'bȯil·ər i'fish·ən·sē }

**boiler feedwater** [MECH ENG] Water supplied to a steam-generating unit. { 'bȯil·ər 'fēd ˌwȯd·ər }

**boiler feedwater regulation** [MECH ENG] Addition of water to the steam-generating unit at a rate commensurate with the removal of steam from the unit. { 'bȯil·ər 'fēdˌwȯd·ər reg·yə'lā·shən }

**boiler furnace** [MECH ENG] An enclosed space provided for the combustion of fuel to generate steam in a boiler. Also known as steam-generating furnace. { 'bȯil·ər ˌfər·nəs }

**boiler heat balance** [MECH ENG] A means of accounting for the thermal energy entering a steam-generating system in terms of its ultimate useful heat absorption or thermal loss. { 'bȯil·ər 'hēt ˌbal·ənsˌ }

**boiler horsepower** [MECH ENG] A measurement of water evaporation rate; 1 boiler horsepower equals the evaporation per hour of $34\frac{1}{2}$ pounds (15.7 kilograms) of water at 212°F (100°C) into steam at 212°F. Abbreviated bhp. { 'bȯil·ər 'hȯrsˌpau̇·ər }

**boiler hydrostatic test** [MECH ENG] A procedure that employs water under pressure, in a new boiler before use or in old equipment after major alterations and repairs, to test the boiler's ability to withstand about $1\frac{1}{2}$ times the design pressure. { 'bȯil·ər hī·drə'stad·ik 'test }

**boiler layup** [MECH ENG] A significant length of time during which a boiler is inoperative in order to allow for repairs or preventive maintenance. { 'bȯil·ər 'lā·əp }

**boiler setting** [MECH ENG] The supporting steel and gastight enclosure for a steam generator. { 'bȯil·ər ˌsed·iŋ }

**boiler storage** [MECH ENG] A steam-generating unit that, when out of service, may be stored wet (filled with water) or dry (filled with protective gas). { 'bȯil·ər ˌstȯr·ij }

**boiler superheater** [MECH ENG] A boiler component, consisting of tubular elements, in which heat is added to high-pressure steam to increase its temperature and enthalpy. { 'bȯil·ər ¦sü·pərˌhēd·ər }

**boiler trim** [MECH ENG] Piping or tubing close to or attached to a boiler for connecting controls, gages, or other instrumentation. { 'bȯil·ər ˌtrim }

**boiler tube** [MECH ENG] One of the tubes in a boiler that carry water (water-tube boiler) to be heated by the high-temperature gaseous products of combustion or that carry combustion

products (fire-tube boiler) to heat the boiler water that surrounds them. { 'bȯil·ər ˌtüb }

**boiler walls** [MECH ENG] The refractory walls of the boiler furnace, usually cooled by circulating water and capable of withstanding high temperatures and pressures. { 'bȯil·ər ˌwȯlz }

**boiler water** [MECH ENG] Water in the steam-generating section of a boiler unit. { 'bȯil·ər ˌwȯd·ər }

**boil-off** [THERMO] The vaporization of a liquid, such as liquid oxygen or liquid hydrogen, as its temperature reaches its boiling point under conditions of exposure, as in the tank of a rocket being readied for launch. { 'bȯilˌȯf }

**bollard** [CIV ENG] A heavy post on a dock or ship used in mooring ships. { 'bäl·ərd }

**bolograph** [ENG] Any graphical record made by a bolometer; in particular, a graph formed by directing a pencil of light reflected from the galvanometer of the bolometer at a moving photographic film. { 'bōl·əˌgraf }

**bolometer** [ENG] An instrument that measures the energy of electromagnetic radiation in certain wavelength regions by utilizing the change in resistance of a thin conductor caused by the heating effect of the radiation. Also known as thermal detector. { bə'läm·əd·ər }

**bolster** [ENG] A plate for maintaining a fixed space between stacked heat exchangers or heat-exchanger shells. { 'bōl·stər }

**bolster plate** [MECH ENG] A plate fixed on the bed of a power press to locate and support the die assembly. { 'bōl·stər ˌplāt }

**bolt** [DES ENG] A rod, usually of metal, with a square, round, or hexagonal head at one end and a screw thread on the other, used to fasten objects together. { bōlt }

**bolt blank** [DES ENG] A threadless bolt with a head that can be threaded for specific applications. Also known as screw blank. { 'bōlt ˌblaŋk }

**bolted joint** [ENG] The assembly of two or more parts by a threaded bolt and nut or by a screw that passes through one member and threads into another. { ¦bōl·təd 'jȯint }

**bolted rail crossing** [CIV ENG] A crossing whose running surfaces are made of rolled rail and whose parts are joined with bolts. { ¦bōl·təd ˌrāl 'krȯs·iŋ }

**bolting** [ENG] A fastening system using screw-threaded devices such as nuts, bolts, or studs. { 'bōl·tiŋ }

**bolt sleeve** [DES ENG] A tube designed to surround a bolt in a concrete wall to prevent the concrete from adhering to the bolt. { 'bōlt ˌslēv }

**Boltzmann engine** [THERMO] An ideal thermodynamic engine that utilizes blackbody radiation; used to derive the Stefan-Boltzmann law. { 'bōlts·mən ˌen·jən }

**bomb ballistics** [MECH] The special branch of ballistics concerned with bombs dropped from aircraft. { 'bäm bə'lis·tiks }

**bomb calorimeter** [ENG] A calorimeter designed with a strong-walled container constructed of a corrosion-resistant alloy, called the bomb, immersed in about 2.5 liters of water in a metal container; the sample, usually an organic compound, is ignited by electricity, and the heat generated is measured. { 'bäm kal·ə'rim·əd·ər }

**bombproof** [ENG] Referring to shelter, building, or other installation resistant or impervious to the effects of bomb explosions. { 'bäm,prüf }

**bomb shelter** [CIV ENG] A bomb-proof structure for protection of people. { 'bäm ˌshel·tər }

**bomb test** [ENG] A leak-testing technique in which the vessel to be tested is immersed in a pressurized fluid which will be driven through any leaks present. { 'bäm ˌtest }

**bond** [CIV ENG] A piece of building material that serves to unite or bond, such as an arrangement of masonry units. [ELEC] The connection made by bonding electrically. [ENG] **1.** A wire rope that fixes loads to a crane hook. **2.** Adhesion between cement or concrete and masonry or reinforcement. { bänd }

**Bond and Wang theory** [MECH ENG] A theory of crushing and grinding from which the energy, in horsepower-hours, required to crush a short ton of material is derived. { ¦bänd ən 'waŋ ˌthē·ə·rē }

**bond course** [BUILD] A course of headers to bond the facing masonry to the backing masonry. { 'bänd ˌkȯrs }

**bonded strain gage** [ENG] A strain gage in which the resistance element is a fine wire, usually in zigzag form, embedded in an insulating backing material, such as impregnated paper or plastic, which is cemented to the pressure-sensing element. { ¦bän·dəd 'strān ˌgāj }

**bonded transducer** [ENG] A transducer which employs a bonded strain gage for sensing pressure. { ¦bän·dəd tranz'dü·sər }

**bonder** *See* bondstone. { 'bän·dər }

**bond header** [BUILD] In masonry, a stone that extends the full thickness of the wall. Also known as throughstone. { 'bänd ˌhed·ər }

**bonding** [ELEC] The use of low-resistance material to connect electrically a chassis, metal shield cans, cable shielding braid, and other supposedly equipotential points to eliminate undesirable electrical interaction resulting from high-impedance paths between them. [ENG] **1.** The fastening together of two components of a device by means of adhesives, as in anchoring the copper foil of printed wiring to an insulating baseboard. **2.** *See* cladding. { 'bän·diŋ }

**bonding strength** [MECH] Structural effectiveness of adhesives, welds, solders, glues, or of the chemical bond formed between the metallic and ceramic components of a cermet, when subjected to stress loading, for example, shear, tension, or compression. { 'bän·diŋ ˌstreŋkth }

**Bond's law** [MECH ENG] A statement that relates the work required for the crushing of solid materials (for example, rocks and ore) to the product size and surface area and the lengths

of cracks formed. Also known as Bond's third theory. { 'bänz 'lō }

**Bond's third theory** *See* Bond's law. { 'bänz ˌthərd 'thē·ə·rē }

**bondstone** [BUILD] A stone joining the coping above a gable to the wall. [CIV ENG] A masonry stone set with its longest dimension perpendicular to the wall face to bind the wall together. Also known as bonder. { 'bändˌstōn }

**bond strength** [ENG] The amount of adhesion between bonded surfaces measured in terms of the stress required to separate a layer of material from the base to which it is bonded. { 'bänd ˌstreŋkth }

**bond timber** [BUILD] A section of wood built horizontally into a brick or stone wall in order to strengthen it or to hold it together during construction. { 'bänd ˌtim·bər }

**boom** [ENG] **1.** A row of joined floating timbers that extend across a river or enclose an area of water for the purpose of keeping saw logs together. **2.** A temporary floating barrier launched on a body of water to contain material, for example, an oil spill. **3.** A structure consisting of joined floating logs placed in a stream to retard the flow. [MECH ENG] A movable steel arm installed on certain types of cranes or derricks to support hoisting lines that must carry loads. { büm }

**boom cat** [MECH ENG] A tractor supporting a boom and used in laying pipe. { büm ˌkat }

**boom dog** [MECH ENG] A ratchet device installed on a crane to prevent the boom of the crane from being lowered but permitting it to be raised. Also known as boom ratchet. { 'büm ˌdȯg }

**boomer** [ENG] A device used to tighten chains on pipe or other equipment loaded on a truck to make the cargo secure. { 'büm·ər }

**boomerang sediment corer** [ENG] A device, designed for nighttime recovery of a sediment core, which automatically returns to the surface after taking the sample. { 'bü·məˌraŋ 'sed·ə·mənt ˌkȯr·ər }

**boom ratchet** *See* boom dog. { 'büm ˌrach·ət }

**boom stop** [MECH ENG] A steel projection on a crane that will be struck by the boom if it is raised or lowered too great a distance. { 'büm ˌstäp }

**Boord synthesis** [CHEM ENG] A method of producing alpha olefins by the reduction of alpha bromo ethers with zinc. { 'bȯrd ˌsin·thə·səs }

**boost** [ELECTR] To augment in relative intensity, as to boost the bass response in an audio system. [ENG] To bring about a more potent explosion of the main charge of an explosive by using an additional charge to set it off. { büst }

**booster** [ELEC] A small generator inserted in series or parallel with a larger generator to maintain normal voltage output under heavy loads. [ELECTR] **1.** A separate radio-frequency amplifier connected between an antenna and a television receiver to amplify weak signals. **2.** A radio-frequency amplifier that amplifies and rebroadcasts a received television or communication radio carrier frequency for reception by the general public. [MECH ENG] A compressor that is used as the first stage in a cascade refrigerating system. { 'büs·tər }

**booster brake** [MECH ENG] An auxiliary air chamber, operated from the intake manifold vacuum, and connected to the regular brake pedal, so that less pedal pressure is required for braking. { 'büs·tər ˌbrāk }

**booster ejector** [MECH ENG] A nozzle-shaped apparatus from which a high-velocity jet of steam is discharged to produce a continuous-flow vacuum for process equipment. { 'büs·tər ē'jek·tər }

**booster fan** [MECH ENG] A fan used to increase either the total pressure or the volume of flow. { 'büs·tər ˌfan }

**booster pump** [MECH ENG] A machine used to increase pressure in a water or compressed-air pipe. { 'büs·tər ˌpəmp }

**booster stations** [ENG] Booster pumps or compressors located at intervals along a liquid-products or gas pipeline to boost the pressure of the flowing fluid to keep it moving toward its destination. { 'büs·tər ˌstā·shənz }

**bootjack** [ENG] A fishing tool used in drilling wells. { 'büt ˌjak }

**bootstrap** [ENG] A technique or device designed to bring itself into a desired state by means of its own action. { 'büt ˌstrap }

**bootstrap circuit** [ELECTR] A single-stage amplifier in which the output load is connected between the negative end of the anode supply and the cathode, while signal voltage is applied between grid and cathode; a change in grid voltage changes the input signal voltage with respect to ground by an amount equal to the output signal voltage. { 'büt ˌstrap ˌsər·kət }

**bootstrap driver** [ELECTR] Electronic circuit used to produce a square pulse to drive the modulator tube; the duration of the square pulse is determined by a pulse-forming line. { 'büt ˌstrap ˌdrīv·ər }

**bootstrap integrator** [ELECTR] A bootstrap sawtooth generator in which an integrating amplifier is used in the circuit. Also known as Miller generator. { 'büt ˌstrap 'in·təˌgrād·ər }

**bootstrapping** [ELECTR] A technique for lifting a generator circuit above ground by a voltage value derived from its own output signal. { 'büt ˌstrap·iŋ }

**bootstrap sawtooth generator** [ELECTR] A circuit capable of generating a highly linear positive sawtooth waveform through the use of bootstrapping. { ¦büt ˌstrap ¦sȯˌtüth 'jen·əˌrād·ər }

**bore** [DES ENG] Inside diameter of a pipe or tube. [MECH ENG] **1.** The diameter of a piston-cylinder mechanism as found in reciprocating engines, pumps, and compressors. **2.** To penetrate or pierce with a rotary tool. **3.** To machine a workpiece to increase the size of an existing hole in it. { bȯr }

**borehole** *See* drill hole. { 'bȯrˌhōl }

**borehole bit** *See* noncoring bit. { 'bȯr,hōl ,bit }

**borehole logging** [ENG] The technique of investigating and recording the character of the formation penetrated by a drill hole in mineral exploration and exploitation work. Also known as drill-hole logging. { 'bȯr,hōl ,läg·iŋ }

**borehole survey** [ENG] Also known as drill-hole survey. **1.** Determining the course of and the target point reached by a borehole, using an azimuth-and-dip recording apparatus small enough to be lowered into a borehole. **2.** The record of the information thereby obtained. { 'bȯr,hōl ,sər·vā }

**borer** [MECH ENG] An apparatus used to bore openings into the earth up to about 8 feet (2.4 meters) in diameter. { 'bȯr·ər }

**borescope** [ENG] A straight-tube telescope using a mirror or prism, used to visually inspect a cylindrical cavity, such as the cannon bore of artillery weapons for defects of manufacture and erosion caused by firing. { 'bȯr,skōp }

**boresighting** [ENG] Initial alignment of a directional microwave or radar antenna system by using an optical procedure or a fixed target at a known location. { 'bȯr,sīd·iŋ }

**boring bar** [MECH ENG] A rigid tool holder used to machine internal surfaces. { 'bȯr·iŋ ,bär }

**boring log** *See* drill log. { 'bȯr·iŋ ,läg }

**boring machine** [MECH ENG] A machine tool designed to machine internal work such as cylinders, holes in castings, and dies; types are horizontal, vertical, jig, and single. { 'bȯr·iŋ mə 'shēn }

**boring mill** [MECH ENG] A boring machine tool used particularly for large workpieces; types are horizontal and vertical. { 'bȯr·iŋ ,mil }

**borrow** [CIV ENG] Earth material such as sand and gravel that is taken from one location to be used as fill at another. { 'bä·rō }

**borrow pit** [CIV ENG] An excavation dug to provide material (borrow) for fill elsewhere. { 'bä·rō ,pit }

**bort bit** *See* diamond bit. { 'bȯrt ,pit }

**Bosch fuel injection pump** [MECH ENG] A pump in the fuel injection system of an internal combustion engine, whose pump plunger and barrel are a very close lapped fit to minimize leakage. { ¦bȯsh 'fyül in'jek·shən ,pəmp }

**Bosch metering system** [MECH ENG] A system having a helical groove in the plunger which covers or uncovers openings in the barrel of the pump; most usually applied in diesel engine fuel-injection systems. { ¦bȯsh 'mēd·ə·riŋ ,sis·təm }

**boss** [DES ENG] Protuberance on a cast metal or plastic part to add strength, facilitate assembly, provide for fastenings, or so forth. { bȯs }

**Boston ridge** [BUILD] A method of applying shingles to the ridge of a house by which the shingles alternate in overlap from one side of the ridge to the other. { 'bȯs·tən ,rij }

**bottle** [ENG] A container made from pipe or plate with drawn, forged, or spun end closures, and used for storing or transporting gas. { 'bäd·əl }

**bottle centrifuge** [ENG] A centrifuge in which the mixture to be separated is poured into small bottles or test tubes; they are then placed in a rotor assembly which is spun rapidly. { 'bäd·əl 'sen·trə,fyüj }

**bottleneck assignment problem** [IND ENG] A linear programming problem in which it is required to assign machines to jobs (or vice versa) so that the efficiency of the least efficient operation is maximized. { 'bäd·əl,nek ə'sīn·mənt ,präb·ləm }

**bottle thermometer** [ENG] A thermoelectric thermometer used for measuring air temperature; the name is derived from the fact that the reference thermocouple is placed in an insulated bottle. { 'bäd·əl thər'mäm·əd·ər }

**bottom blow** [ENG] A type of plastics blow molding machine in which air is injected into the parison from the bottom of the mold. { 'bäd·əm ,blō }

**bottom chord** [CIV ENG] Any of the bottom series of truss members parallel to the roadway of a bridge. { 'bäd·əm ,kȯrd }

**bottom dead center** [MECH ENG] The position of the crank of a vertical reciprocating engine, compressor, or pump when the piston is at the end of its downstroke. Abbreviated BDC. { 'bäd·əm ,ded 'sen·tər }

**bottom dump** [ENG] A construction wagon with movable gates in the bottom to allow vertical discharge of its contents. { 'bäd·əm ,dəmp }

**bottomed hole** [ENG] A completed borehole, or a borehole in which drilling operations have been discontinued. { ¦bäd·əmd 'hōl }

**bottom flow** [ENG] A molding apparatus that forms hollow plastic articles by injecting the blowing air at the bottom of the mold. { 'bäd·əm ,flō }

**bottoming drill** [DES ENG] A flat-ended twist drill designed to convert a cone at the bottom of a drilled hole into a cylinder. { 'bäd·əm·iŋ ,dril }

**bottoms** [CHEM ENG] Residual fractions that remain at the bottom of a fractionating tower following distillation of the lighter components. { 'bäd·əmz }

**bottom sampler** [ENG] Any instrument used to obtain a sample from the bottom of a body of water. { 'bäd·əm ,sam·plər }

**bottom tap** [DES ENG] A tap with a chamfer 1 to $1\frac{1}{2}$ threads in length. { 'bäd·əm ,tap }

**boulder buster** [ENG] A heavy, pyramidal- or conical-point steel tool which may be attached to the bottom end of a string of drill rods and used to break, by impact, a boulder encountered in a borehole. Also known as boulder cracker. { 'bōl·dər ,bəs·tər }

**boulder cracker** *See* boulder buster. { 'bōl·dər ,krak·ər }

**bounce table** [MECH ENG] A testing device which subjects devices and components to impacts such as might be encountered in accidental dropping. { 'baůns ,tā·bəl }

**boundary** [ELECTR] An interface between *p*- and *n*-type semiconductor materials, at which

donor and acceptor concentrations are equal. { 'baůn·drē }

**boundary friction** [MECH] Friction between surfaces that are neither completely dry nor completely separated by a lubricant. { 'baůn·drē ˌfrik·shən }

**boundary lubrication** [ENG] A lubricating condition that is a combination of solid-to-solid surface contact and liquid-film shear. { 'baůn·drē ˌlü·brəˈkā·shən }

**boundary monument** [ENG] A material object placed on or near a boundary line to preserve and identify the location of the boundary line on the ground. { 'baůn·drē ˌmän·yə·mənt }

**boundary survey** [ENG] A survey made to establish or to reestablish a boundary line on the ground or to obtain data for constructing a map or plat showing a boundary line. { 'baůn·drē ˌsər·vā }

**bound vector** [MECH] A vector whose line of application and point of application are both prescribed, in addition to its direction. { ¦baůnd 'vek·tər }

**Bourdon pressure gage** [ENG] A mechanical pressure-measuring instrument employing as its sensing element a curved or twisted metal tube, flattened in cross section and closed. Also known as Bourdon tube. { ¦bůr·dən 'presh·ər ˌgāj }

**Bourdon tube** *See* Bourdon pressure gage. { 'bůr·dən 'tüb }

**Boussinesq equation** [ENG] A relation used to calculate the influence of a concentrated load on the backfill behind a retaining wall. { 'bü·siˈnesk iˈkwā·shən }

**Boussinesq's problem** [MECH] The problem of determining the stresses and strains in an infinite elastic body, initially occupying all the space on one side of an infinite plane, and indented by a rigid punch having the form of a surface of revolution with axis of revolution perpendicular to the plane. Also known as Cerruti's problem. { 'bü·siˈnesks ˌpräb·ləm }

**Bowden cable** [MECH ENG] A wire made of spring steel which is enclosed in a helical casing and used to transmit longitudinal motions over distances, particularly around corners. { 'bōd·ən ˌkā·bəl }

**bowl classifier** [CHEM ENG] A shallow bowl with a concave bottom so that a liquid-solid suspension can be fed to the center; coarse particles fall to the bottom, where they are raked to a central discharge point, and liquid and fine particles overflow the edges and are collected. { ¦bōl ¦klas·əˌfī·ər }

**bowl mill** *See* bowl-mill pulverizer. { 'bōl ˌmil }

**bowl-mill pulverizer** [MECH ENG] A type of pulverizer which directly feeds a coal-fired furnace, in which springs press pivoted stationary rolls against a rotating bowl grinding ring, crushing the coal between them. Also known as a bowl mill. { 'bōl ˌmil 'pəl·vəˌrīz·ər }

**bowl scraper** [MECH ENG] A towed steel bowl hung within a fabricated steel frame, running on four or two wheels; transports soil, in addition to spreading and leveling it. { 'bōl ˌskrāp·ər }

**Bow's notation** [MECH] A graphical method of representing coplanar forces and stresses, using alphabetical letters, in the solution of stresses or in determining the resultant of a system of concurrent forces. { 'bōz nōˈtā·shən }

**bowstring beam** [CIV ENG] A steel, concrete, or timber beam or girder shaped in the form of a bow and string; the string resists the horizontal forces caused by loads on the arch. { 'bō ˌstriŋ ˌbēm }

**box** [DES ENG] *See* boxing. [ENG] A protective covering or housing. { bäks }

**box beam** *See* box girder. { 'bäks ˌbēm }

**box caisson** [CIV ENG] A floating steel or concrete box with an open top which will be filled and sunk at a foundation site in a river or seaway. Also known as American caisson; stranded caisson. { 'bäks 'kāˌsän }

**boxcar** [ENG] A railroad car with a flat roof and vertical sides, usually with sliding doors, which carries freight that needs to be protected from weather and theft. { 'bäksˌkär }

**box-coking test** [ENG] A laboratory test which forecasts the quality of coke producible in commercial practice; uses a specially designed sheet-steel box containing about 60 pounds (27 kilograms) of coal in a commercial coke oven. { ¦bäks ¦kōk·iŋ ˌtest }

**box girder** [CIV ENG] A hollow girder or beam with a square or rectangular cross section. Also known as box beam. { 'bäks ˌgər·dər }

**box-girder bridge** [CIV ENG] A fixed bridge consisting of steel girders fabricated by welding four plates into a box section. { 'bäks ˌgər·dər ˌbrij }

**box header boiler** [MECH ENG] A horizontal boiler with a front header and rear inclined rectangular header connected by tubes. { 'bäks ˌhed·ər ˌbȯil·ər }

**boxing** [DES ENG] The threaded nut for the screw of a mounted auger drill. Also known as box. [ENG] A method of securing shafts solely by slabs and wooden pegs. { 'bäks·iŋ }

**boxing shutter** [BUILD] A window shutter which can be folded into a boxlike enclosure or recess at the side of the window frame. { 'bäks·iŋ ˌshəd·ər }

**box piles** [CIV ENG] Pile foundations made by welding together two sections of steel sheet piling or combinations of beams, channels, and plates. { 'bäks ˌpīlz }

**boxplot** [IND ENG] In quality control, a graph summarizing the distribution, central value, and variability of a set of data values; used to identify problems (or potential problems) that affect the quality of processes and products. { 'bäksˌplät }

**box wrench** [ENG] A closed-end wrench designed to fit a variety of sizes and shapes of bolt heads and nuts. { 'bäks ˌrench }

**Boyle's temperature** [THERMO] For a given gas, the temperature at which the virial coefficient B in the equation of state $Pv = RT[1 + (B/v) + (C/v^2) + \cdots]$ vanishes. { 'bȯilz 'tem·prə·chər }

**bpd** *See* barrels per day.
**bpm** *See* barrels per month.
**brace** [DES ENG] A cranklike device used for turning a bit. [ENG] A diagonally placed structural member that withstands tension and compression, and often stiffens a structure against wind. { brās }
**brace and bit** [DES ENG] A small hand tool to which is attached a metal- or wood-boring bit. { ¦brās ən 'bit }
**braced framing** [CIV ENG] Framing a building with post and braces for stiffness. { ¦brāst 'frām·iŋ }
**braced-rib arch** [CIV ENG] A type of steel arch, usually used in bridge construction, which has a system of diagonal bracing. { ¦brāst ¦rib 'ärch }
**brace head** [ENG] A cross handle attached at the top of a column of drill rods by means of which the rods and attached bit are turned after each drop in chop-and-wash operations while sinking a borehole through overburden. Also known as brace key. { 'brās ˌhed }
**brace key** *See* brace head. { 'brās ˌkē }
**brace pile** *See* batter pile. { 'brās ˌpīl }
**brachiating motion** [CONT SYS] A type of robotic motion that employs legs or other equipment to help the manipulator move in its working environment. { ¦brā·kē'ād·iŋ 'mō·shən }
**brachiating robot** [CONT SYS] A robot that is capable of moving over the surface of an object. { ¦brā·kē'ād·iŋ 'rōˌbät }
**brachistochrone** [MECH] The curve along which a smooth-sliding particle, under the influence of gravity alone, will fall from one point to another in the minimum time. { brə'kis·təˌkrōn }
**bracing** [ENG] The act or process of strengthening or making rigid. { 'brās·iŋ }
**bracket** [BUILD] A vertical board to support the tread of a stair. [CIV ENG] A projecting support. { 'brak·ət }
**brad** [DES ENG] A small finishing nail whose body either is of uniform thickness or is tapered. { brad }
**bradding** [ENG] A distortion of a bit tooth caused by the application of excessive weight, causing the tooth to become dull so that its softer inner portion caves over the harder case area. { 'brad·iŋ }
**Bragg spectrometer** [ENG] An instrument for x-ray analysis of crystal structure and measuring wavelengths of x-rays and gamma rays, in which a homogeneous beam of x-rays is directed on the known face of a crystal and the reflected beam is detected in a suitably placed ionization chamber. Also known as crystal spectrometer; crystal-diffraction spectrometer; ionization spectrometer. { 'brag spek'träm·əd·ər }
**braiding** [ENG] Weaving fibers into a hollow cylindrical shape. { 'brād·iŋ }
**brainstorming** [IND ENG] A procedure used to find a solution for a problem by collecting all the ideas, without regard for feasibility, which occur from a group of people meeting together. { 'brānˌstȯrm·iŋ }
**brake** [MECH ENG] A machine element for applying friction to a moving surface to slow it (and often, the containing vehicle or device) down or bring it to rest. { brāk }
**brake band** [MECH ENG] The contracting element of the band brake. { 'brāk ˌband }
**brake block** [MECH ENG] A portion of the band brake lining, shaped to conform to the curvature of the band and attached to it with countersunk screws. { 'brāk ˌbläk }
**brake drum** [MECH ENG] A rotating cylinder attached to a rotating part of machinery, which the brake band or brake shoe presses against. { 'brāk ˌdrəm }
**brake horsepower** [MECH ENG] The power developed by an engine as measured by the force applied to a friction brake or by an absorption dynamometer applied to the shaft or flywheel. Abbreviated bhp. { ¦brāk 'hȯrsˌpaù·ər }
**brake line** [MECH ENG] One of the pipes or hoses that connect the master cylinder and the wheel cylinders in a hydraulic brake system. { 'brāk ˌlīn }
**brake lining** [MECH ENG] A covering, riveted or molded to the brake shoe or brake band, which presses against the rotating brake drum; made of either fabric or molded asbestos material. { 'brāk ˌlin·iŋ }
**brake mean-effective pressure** [MECH ENG] Applied to reciprocating piston machinery, the average pressure on the piston during the power stroke, derived from the measurement of brake power output. { 'brāk ¦mēn i'fek·tiv 'presh·ər }
**brake shoe** [MECH ENG] The renewable friction element of a shoe brake. Also known as shoe. { 'brāk ˌshü }
**brake thermal efficiency** [MECH ENG] The ratio of brake power output to power input. { 'brāk 'thər·məl ə'fish·ən·sē }
**branch** [ELEC] A portion of a network consisting of one or more two-terminal elements in series. Also known as arm. [ENG] In a piping system, a pipe that originates in or discharges into another pipe. Also known as branch line. { branch }
**branch-and-bound technique** [IND ENG] A technique in nonlinear programming in which all sets of feasible solutions are divided into subsets, and those having bounds inferior to others are rejected. { ¦branch ən ¦baůnd tek'nēk }
**branch gain** *See* branch transmittance. { 'branch ˌgān }
**branch line** [CIV ENG] A secondary line in a railroad system that connects to the main line. [ENG] *See* branch. { 'branch ˌlīn }
**branch sewer** [CIV ENG] A part of a sewer system that is larger in diameter than the lateral sewer system; receives sewage from both house connections and lateral sewers. { ¦branch ¦sü·ər }
**branch transmittance** [CONT SYS] The amplification of current or voltage in a branch of an electrical network; used in the representation of

such a network by a signal-flow graph. Also known as branch gain. { ¦branch trans'mit·əns }

**brandy** [CHEM ENG] A potable alcoholic beverage distilled from wine or fermented fruit juice, usually after the aging of the wine in wooden casks; cognac is a brandy distilled from wines made from grapes from the Cognac region of France. { 'bran·dē }

**Brayton cycle** [THERMO] A thermodynamic cycle consisting of two constant-pressure processes interspersed with two constant-entropy processes. Also known as complete-expansion diesel cycle; Joule cycle. { 'brāt·ən ˌsī·kəl }

**brazed shank tool** [MECH ENG] A metal cutting tool made of a material different from the shank to which it is brazed. { ¦brāzd 'shaŋk ˌtül }

**breaching** [MECH ENG] The space between the end of the tubing and the jacket of a hot-water or steam boiler. { 'brēch·iŋ }

**breadboard model** [ENG] Uncased assembly of an instrument or other piece of equipment, such as a radio set, having its parts laid out on a flat surface and connected together to permit a check or demonstration of its operation. { 'bredˌbȯrd ˌmäd·əl }

**breakaway wrist** [CONT SYS] A robotic wrist that has a safety feature that guarantees its protection from damage if too much force is exerted on the wrist or end effector. { 'brāk·əˌwā ˌrist }

**break-bulk cargo** [IND ENG] Miscellaneous goods packed in boxes, bales, crates, cases, bags, cartons, barrels, or drums; may also include lumber, motor vehicles, pipe, steel, and machinery. { ¦brāk ¦bəlk 'kär·gō }

**breakdown** [ELEC] A large, usually abrupt rise in electric current in the presence of a small increase in voltage; can occur in a confined gas between two electrodes, a gas tube, the atmosphere (as lightning), an electrical insulator, and a reverse-biased semiconductor diode. Also known as electrical breakdown. { 'brākˌdaůn }

**breakdown diode** [ELEC] A semiconductor diode in which the reverse-voltage breakdown mechanism is based either on the Zener effect or the avalanche effect. { 'brākˌdaůn ¦dīˌōd }

**breakdown impedance** [ELECTR] Of a semiconductor, the small-signal impedance at a specified direct current in the breakdown region. { 'brāk ˌdaůn im'pēd·əns }

**breakdown potential** *See* breakdown voltage. { 'brākˌdaůn pə'ten·shəl }

**breakdown region** [ELECTR] Of a semiconductor diode, the entire region of the volt-ampere characteristic beyond the initiation of breakdown for increasing magnitude of bias. { 'brāk ˌdaůn ˌrē·jən }

**breakdown voltage** [ELEC] **1.** The voltage measured at a specified current in the electrical breakdown region of a semiconductor diode. Also known as Zener voltage. **2.** The voltage at which an electrical breakdown occurs in a dielectric. **3.** The voltage at which an electrical breakdown occurs in a gas. Also known as breakdown potential; sparking potential; sparking voltage. { 'brākˌdaůn ˌvȯl·tij }

**breaker cam** [MECH ENG] A rotating, engine-driven device in the ignition system of an internal combustion engine which causes the breaker points to open, leading to a rapid fall in the primary current. { 'brā·kər ˌkam }

**breaker plate** [ENG] In plastics die forming, a perforated plate at the end of an extruder head; often used to support a screen to keep foreign particles out of the die. { 'brā·kər ˌplāt }

**break-even analysis** [IND ENG] Determination of the break-even point. { brā'kē·vən ə'nal·ə·səs }

**break-even point** [IND ENG] The point at which a company neither makes a profit nor suffers a loss from the operations of the business, and at which total costs are equal to total sales volume. { brā'kē·vən ˌpȯint }

**break frequency** [CONT SYS] The frequency at which a graph of the logarithm of the amplitude of the frequency response versus the logarithm of the frequency has an abrupt change in slope. Also known as corner frequency; knee frequency. { 'brāk ˌfrē·kwən·sē }

**breaking load** [MECH] The stress which, when steadily applied to a structural member, is just sufficient to break or rupture it. Also known as ultimate load. { 'brāk·iŋ ˌlōd }

**breaking pin device** [ENG] A device designed to relieve pressure resulting from inlet static pressure by the fracture of a loaded part of a pin. { 'brāk·iŋ ˌpin di'vīs }

**breaking strength** [MECH] The ability of a material to resist breaking or rupture from a tension force. { 'brāk·iŋ ˌstreŋkth }

**breaking stress** [MECH] The stress required to fracture a material whether by compression, tension, or shear. { 'brāk·iŋ ˌstres }

**breakout** [ELEC] A joint at which one or more conductors are brought out from a multiconductor cable. [ENG] Failure or collapse of a borehole wall due to stress anisotropy. { 'brāˌkaůt }

**breakout schedule** [IND ENG] A schedule for a construction job site, generally in the form of a bar chart, that communicates detailed day-to-day activities to all working levels on the project. { 'brākˌaůt ˌskej·əl }

**breakover** [ELECTR] In a silicon controlled rectifier or related device, a transition into forward conduction caused by the application of an excessively high anode voltage. { 'brāˌkō·vər }

**breakover voltage** [ELECTR] The positive anode voltage at which a silicon controlled rectifier switches into the conductive state with gate circuit open. { 'brāˌkō·vər ˌvȯl·tij }

**breakpoint** [CHEM ENG] *See* breakthrough. [IND ENG] In a time study, the end of an element in a work cycle and the point at which a reading is made. Also known as end point; reading point. { 'brākˌpȯint }

**breakthrough** [CHEM ENG] **1.** A localized break in a filter cake or precoat that permits fluid to pass through without being filtered. Also known as breakpoint. **2.** In an ion-exchange system, the first appearance of unadsorbed ions of the type which deplete the activity of the resin

bed; this indicates that the bed must be regenerated. { 'brāk,thrü }

**breakwater** [CIV ENG] A wall built into the sea to protect a shore area, harbor, anchorage, or basin from the action of waves. { 'brāk,wȯd·ər }

**breast boards** [CIV ENG] Timber planks used to support the tunnel face when excavation is in loose soil. { 'brest ˌbȯrdz }

**breast drill** [DES ENG] A small, portable hand drill customarily used by handsetters to drill the holes in bit blanks in which diamonds are to be set; it includes a plate that is pressed against the worker's breast. { 'brest ˌdril }

**breasting dolphin** [CIV ENG] A pile or other structure against which a moored ship rests. { ¦brest·iŋ ¦däl·fən }

**breast wall** [CIV ENG] A low wall built to retain the face of a natural bank of earth. { 'brest ˌwȯl }

**breather pipe** [MECH ENG] A pipe that opens into a container for ventilation, as in a crankcase or oil tank. Also known as crankcase breather. { 'brē·thər ˌpīp }

**breath-hold diving** [ENG] A form of diving without the use of any artificial breathing mixtures. { 'breth ˌhōld ˌdiv·iŋ }

**breathing** [ENG] **1.** Opening and closing of a plastics mold in orderto let gases escape during molding. Also known as degassing. **2.** Movement of gas, vapors, or air in and out of a storage-tank vent line as a result of liquid expansions and contractions induced by temperature changes. { 'brēth·iŋ }

**breathing apparatus** [ENG] An appliance that enables a person to function in irrespirable or poisonous gases or fluids; contains a supply of oxygen and a regenerator which removes the carbon dioxide exhaled. { 'brēth·iŋ ap·ə'rad·əs }

**breathing bag** [ENG] A component of a semiclosed-circuit breathing apparatus that mixes the gases to provide low breathing resistance. { 'brēth·iŋ ˌbag }

**breathing line** [CIV ENG] A level of 5 feet (1.5 meters) above the floor; suggested temperatures for various occupancies of rooms and other chambers are usually given at this level. { 'brēth·iŋ ˌlīn }

**breeching** [MECH ENG] A duct through which the products of combustion are transported from the furnace to the stack; usually applied in steam boilers. { 'brē·chiŋ }

**Brennan monorail car** [MECH ENG] A type of car balanced on a single rail so that when the car starts to tip, a force automatically applied at the axle end is converted gyroscopically into a strong righting moment which forces the car back into a position of lateral equilibrium. { ¦bren·ən 'män·əˌrāl ˌkär }

**Brewster process** [CHEM ENG] Concentration of dilute acetic acid by use of an extraction solvent (for example, isopropyl ether), followed by distillation. { 'brü·stər ˌpräs·əs }

**brick molding** [BUILD] A wooden molding applied to the gap between the frame of a door or window and the masonry into which the frame has been set. { ¦brik ¦mōld·iŋ }

**brick seat** [BUILD] A ledge on a footing or a wall for supporting a course of masonry. { 'brik ˌsēt }

**bridge** [CIV ENG] A structure erected to span natural or artificial obstacles, such as rivers, highways, or railroads, and supporting a footpath or roadway for pedestrian, highway, or railroad traffic. [ELEC] **1.** An electrical instrument having four or more branches, by means of which one or more of the electrical constants of an unknown component may be measured. **2.** An electrical shunt path. { brij }

**bridge abutment** [CIV ENG] The end foundation upon which the bridge superstructure rests. { 'brij əˌbət·mənt }

**bridge bearing** [CIV ENG] The support at a bridge pier carrying the weight of the bridge; may be fixed or seated on expansion rollers. { 'brij ˌber·iŋ }

**bridge cable** [CIV ENG] Cable from which a roadway or truss is suspended in a suspension bridge; may be of pencil-thick wires laid parallel or strands of wire wound spirally. { 'brij ˌkə·bəl }

**bridge crane** [MECH ENG] A hoisting machine in which the hoisting apparatus is carried by a bridgelike structure spanning the area over which the crane operates. { 'brij ˌkrān }

**bridge foundation** [CIV ENG] The piers and abutments of a bridge, on which the superstructure rests. { 'brij faůn'dā·shən }

**bridge hybrid** *See* hybrid junction. { 'brij 'hī·brəd }

**bridge limiter** [ELECTR] A device employed in analog computers to keep the value of a variable within specified limits. { ¦brij ¦lim·əd·ər }

**bridge magnetic amplifier** [ELECTR] A magnetic amplifier in which each of the gate windings is connected in series with an arm of a bridge rectifier; the rectifiers provide self-saturation and direct-current output. { ¦brij mag'ned·ik 'am·pləˌfī·ər }

**bridge oscillator** [ELECTR] An oscillator using a balanced bridge circuit as the feedback network. { 'brij äs·ə'lād·ər }

**bridge pier** [CIV ENG] The main support for a bridge, upon which the bridge superstructure rests; constructed of masonry, steel, timber, or concrete founded on firm ground below river mud. { 'brij ˌpir }

**bridge rectifier** [ELECTR] A full-wave rectifier with four elements connected as a bridge circuit with direct voltage obtained from one pair of opposite junctions when alternating voltage is applied to the other pair. { ¦brij ˌrek·təˌfī·ər }

**bridge trolley** [MECH ENG] Either of the wheeled attachments at the ends of the bridge of an overhead traveling crane, permitting the bridge to move backward and forward on elevated tracks. { 'brij ˌträl·ē }

**bridge vibration** [MECH] Mechanical vibration of a bridge superstructure due to natural and human-produced excitations. { 'brij vī'brā·shən }

**bridgewall** [MECH ENG] A wall in a furnace over which the products of combustion flow. { 'brij,wȯl }

**bridging amplifier** [ELECTR] Amplifier with an input impedance sufficiently high so that its input may be bridged across a circuit without substantially affecting the signal level of the circuit across which it is bridged. { 'brij·iŋ ˌam·plə,fī·ər }

**bridging connection** [ELECTR] Parallel connection by means of which some of the signal energy in a circuit may be withdrawn frequently, with imperceptible effect on the normal operation of the circuit. { 'brij·iŋ kəˌnek·shən }

**bridging loss** [ELECTR] Loss resulting from bridging an impedance across a transmission system; quantitatively, the ratio of the signal power delivered to that part of the system following the bridging point, and measured before the bridging, to the signal power delivered to the same part after the bridging. { 'brij·iŋ ˌlȯs }

**bridle** [ENG] A pumping unit cable that is looped over the horse head and then connected to the carrier bar; supports the polished-rod clamp. { 'brīd·əl }

**bridled-cup anemometer** [ENG] A combination cup anemometer and pressure-plate anemometer, consisting of an array of cups about a vertical axis of rotation, the free rotation of which is restricted by a spring arrangement; by adjustment of the force constant of the spring, an angular displacement can be obtained which is proportional to wind velocity. { ¦brīd·əld ¦kap an·ə'mäm·əd·ər }

**Briggs equalizer** [ENG] A breathing device consisting of head harness, mouthpiece, nose clip, corrugated breathing tube, an equalizing device, 120 feet (37 meters) of reinforced air tubes, and a strainer and spike. { ¦brigz 'ē·kwəˌlīz·ər }

**Briggs pipe thread** *See* American standard pipe thread. { ¦brigz 'pīp ˌthred }

**brightness temperature** *See* blackbody temperature. { 'brīt·nəs ˌtem·prə·chər }

**brine cooler** [MECH ENG] The unit for cooling brine in a refrigeration system; the brine usually flows through tubes or pipes surrounded by evaporating refrigerant. { 'brīn ˌkül·ər }

**Brinell number** [ENG] A hardness rating obtained from the Brinell test; expressed in kilograms per square millimeter. { brə'nel ˌnəm·bər }

**Brinell test** [ENG] A test to determine the hardness of a material, in which a steel ball 1 centimeter in diameter is pressed into the material with a standard force (usually 3000 kilograms); the spherical surface area of indentation is measured and divided into the load; the results are expressed as Brinell number. { brə'nel ˌtest }

**briquetting** [ENG] **1.** The process of binding together pulverized minerals, such as coal dust, into briquets under pressure, often with the aid of a binder, such as asphalt. **2.** A process or method of mounting mineral ore, rock, or metal fragments in an embedding or casting material, such as natural or artificial resins, waxes, metals, or alloys, to facilitate handling during grinding, polishing, and microscopic examination. { bri 'ked·iŋ }

**brisance index** [ENG] The ratio of an explosive's power to shatter a weight of graded sand as compared to the weight of sand shattered by TNT. { brə'zänz ¦inˌdeks }

**British imperial pound** [MECH] The British standard of mass, of which a standard is preserved by the government. { 'brid·ish im'pir·ē·əl 'paünd }

**British thermal unit** [THERMO] Abbreviated Btu. **1.** A unit of heat energy equal to the heat needed to raise the temperature of 1 pound of air-free water from 60° to 61°F at a constant pressure of 1 standard atmosphere; it is found experimentally to be equal to 1054.5 joules. Also known as sixty degrees Fahrenheit British thermal unit ($Btu_{60/61}$). **2.** A unit of heat energy that is equal to 1/180 of the heat needed to raise 1 pound of air-free water from 32°F (0°C) to 212°F (100°C) at a constant pressure of 1 standard atmosphere; it is found experimentally to be equal to 1055.79 joules. Also known as mean British thermal unit ($Btu_{mean}$). **3.** A unit of heat energy whose magnitude is such that 1 British thermal unit per pound equals 2326 joules per kilogram; it is equal to exactly 1055.05585262 joules. Also known as international table British thermal unit ($Btu_{IT}$). { 'brid·ish 'thər·məl ˌyü·nət }

**brittleness** [MECH] That property of a material manifested by fracture without appreciable prior plastic deformation. { 'brid·əl·nəs }

**brittle temperature** [THERMO] The temperature point below which a material, especially metal, is brittle; that is, the critical normal stress for fracture is reached before the critical shear stress for plastic deformation. { 'brid·əl ˌtem·prə·chər }

**Brix degree** [CHEM ENG] A unit of the Brix scale. { 'briks dəˌgrē }

**Brix scale** [CHEM ENG] A hydrometer scale for sugar solutions indicating the percentage by weight of sugar in the solution at a specified temperature. { 'briks ˌskāl }

**broach** [MECH ENG] A multiple-tooth, barlike cutting tool; the teeth are shaped to give a desired surface or contour, and cutting results from each tooth projecting farther than the preceding one. { brōch }

**broaching** [ENG] **1.** The restoration of the diameter of a borehole by reaming. **2.** The breaking down of the walls between two contiguous drill holes. [MECH ENG] The machine-shaping of metal or plastic by pushing or pulling a broach across a surface or through an existing hole in a workpiece. { 'brōch·iŋ }

**broaching bit** *See* reaming bit. { 'brōch·iŋ bit }

**broken-color work** *See* antiquing. { ¦brō·kən ¦kəl·ər ˌwərk }

**bromine test** [CHEM ENG] A laboratory test in which the unsaturated hydrocarbons present in a crude oil are determined by mixing a sample

with bromine; the lower the rate of bromine absorption, the more paraffinic the test sample. { 'brō,mēn ˌtest }

**bromine value** [CHEM ENG] An expression representing the number of centigrams of bromine absorbed by 1 gram of oil under test conditions; an indication of the degree of unsaturation of a given oil. { 'brō,mēn ˌval·yü }

**brooming** [CIV ENG] A method of finishing uniform concrete surfaces, such as the tops of pavement slabs or floor slabs, by dragging a broom over the surface to produce a grooved texture. { 'brü·miŋ }

**brown acid** [CHEM ENG] Oil-soluble petroleum sulfonate found in sludge following sulfuric acid treatment of petroleum products. { ¦braun ¦as·əd }

**brown smoke** [ENG] Smoke with less particulates than black smoke; comes from burning fossil fuel, usually fuel oil. { ¦braun ¦smōk }

**Brunton** *See* Brunton compass. { 'brənt·ən }

**Brunton compass** [ENG] A compact field compass, with sights and reflector attached, used for geological mapping and surveying. Also known as Brunton; Brunton pocket transit. { 'brənt·ən ˌkäm·pəs }

**Brunton pocket transit** *See* Brunton compass. { 'brənt·ən ˌpäk·ət 'tran·zət }

**brush** [ELEC] A conductive metal or carbon block used to make sliding electrical contact with a moving part. { brəsh }

**brush hopper** [IND ENG] A rotating brush that wipes quantities of eyelets, rivets, and other small special parts past shaped openings in a chute. { 'brəsh ˌhäp·ər }

**brush rake** [MECH ENG] A device with heavy-duty tines that is fixed to the front of a tractor or other prime mover for use in land clearing. { 'brəsh ˌrāk }

**brush-shifting motor** [ENG] A category of alternating-current motor in which the brush contacts shift to modify operating speed and power factor. { 'brəsh ˌshif·tiŋ ˌmōd·ər }

**BSD** *See* barrels per stream day.

**B size** [ENG] **1.** One of a series of sizes to which trimmed paper and board are manufactured; for size BN, with N equal to any integer from 0 to 10, the length of the shorter side is $2^{-N/2}$ meters, and the length of the longer side is $2^{(1-N)/2}$ meters, with both lengths rounded off to the nearest millimeter. **2.** Of a sheet of paper, the dimensions 11 inches by 17 inches (279 millimeters by 432 millimeters). { 'bē ˌsīz }

**BT** *See* bathythermograph.

**Btu** *See* British thermal unit.

**bu** *See* bushel.

**bubble cap** [CHEM ENG] A metal cap covering a hole in the plate within a distillation tower; designed to permit vapors to rise from below the plate, pass through the cap, and make contact with liquid on the plate. { 'bəb·əl ˌkap }

**bubble-cap plate** [CHEM ENG] One of the devices in large-diameter fractional distillation columns that are designed to produce a bubbling action to exchange the vapor bubbles flowing up the column. { 'bəb·əl ˌkap ˌplāt }

**bubble-cap tray** *See* bubble tray. { 'bəb·əl ¦kap ˌtrā }

**bubble mold cooling** [ENG] In plastics injection molding, cooling by means of a continuous liquid stream flowing into a cavity equipped with an outlet at the end opposite the inlet. { 'bəb·əl ˌmōld ˌkü·liŋ }

**bubble test** [ENG] Measurement of the largest opening in the mesh of a filter screen; determined by the pressure needed to force air or gas through the screen while it is submerged in a liquid. { 'bəb·əl ˌtest }

**bubble tower** [CHEM ENG] A plate tower used in distillation, with plates containing bubble caps. { 'bəb·əl ˌtaú·ər }

**bubble tray** [CHEM ENG] A perforated, circular plate placed within a distillation tower at specific places to collect the fractions of petroleum produced in fractional distillation. Also known as bubble-cap tray. { 'bəb·əl ˌtrā }

**bubble-tray column** [CHEM ENG] A fractionating column whose plates are formed from bubble caps. { 'bəb·əl ˌtrā ˌkäl·əm }

**bubble tube** [ENG] The glass tube in a spirit level containing the liquid and bubble. { 'bəb·əl ˌtüb }

**buck** [BUILD] The frame into which the finished door fits. { bək }

**bucket** [ENG] **1.** A cup on the rim of a Pelton wheel against which water impinges. **2.** A reversed curve at the toe of a spillway to deflect the water horizontally and reduce erosiveness. **3.** A container on a lift pump or chain pump. **4.** A container on some bulk-handling equipment, such as a bucket elevator, bucket dredge, or bucket conveyor. **5.** A water outlet in a turbine. **6.** *See* calyx. { 'bək·ət }

**bucket carrier** *See* bucket conveyor. { 'bək·ət ˌkar·ē·ər }

**bucket conveyor** [MECH ENG] A continuous bulk conveyor constructed of a series of buckets attached to one or two strands of chain or in some instances to a belt. Also called bucket carrier. { 'bək·ət kən'vā·ər }

**bucket dredge** [MECH ENG] A floating mechanical excavator equipped with a bucket elevator. { 'bək·ət ˌdrej }

**bucket elevator** [MECH ENG] A bucket conveyor operating on a steep incline or vertical path. Also known as elevating conveyor. { 'bək·ət ¦el·əˌvād·ər }

**bucket excavator** [MECH ENG] An elevating scraper, that is, one that does the work of a conventional scraper but has a bucket elevator mounted in front of the bowl. { 'bək·ət ¦ek·skəˌvād·ər }

**bucket ladder** *See* bucket-ladder dredge. { 'bək·ət ˌlad·ər }

**bucket-ladder dredge** [MECH ENG] A dredge whose digging mechanism consists of a ladderlike truss on the periphery of which is attached an endless chain riding on sprocket wheels and carrying attached buckets. Also

known as bucket ladder; bucket-line dredge; ladder-bucket dredge; ladder dredge. { 'bək·ət ˌlad·ər ˌdrej }

**bucket-ladder excavator** *See* trench excavator. { 'bək·ət ˌlad·ər 'ek·skə·vād·ər }

**bucket-line dredge** *See* bucket-ladder dredge. { 'bək·ət ˌlīn ˌdrej }

**bucket loader** [MECH ENG] A form of portable, self-feeding, inclined bucket elevator for loading bulk materials into cars, trucks, or other conveyors. { 'bək·ət ˌlōd·ər }

**bucket temperature** [ENG] The surface temperature of ocean water as measured by a bucket thermometer. { 'bək·ət ˈtem·prə·chər }

**bucket thermometer** [ENG] A thermometer mounted in a bucket and used to measure the temperature of water drawn into the bucket from the surface of the ocean. { 'bək·ət thər'mäm·əd·ər }

**bucket-wheel excavator** [MECH ENG] A continuous digging machine used extensively in large-scale stripping and mining. Abbreviated BWE. Also known as rotary excavator. { 'bək·ət ˌwēl 'ek·skəˌvād·ər }

**Buckingham's equations** [MECH ENG] Equations which give the durability of gears and the dynamic loads to which they are subjected in terms of their dimensions, hardness, surface endurance, and composition. { 'bək·iŋ·əmz i'kwā·zhənz }

**buckle plate** [CIV ENG] A steel floor plate which is slightly arched to increase rigidity. { 'bək·əl ˌplāt }

**Buckley gage** [ENG] A device that measures very low gas pressures by sensing the amount of ionization produced in the gas by a predetermined electric current. { 'bək·lē ˌgāj }

**buckling** [ENG] Wrinkling or warping of fibers in a composite material. [MECH] Bending of a sheet, plate, or column supporting a compressive load. { 'bək·liŋ }

**buckling stress** [MECH] Force exerted by the crippling load. { 'bək·liŋ ˌstres }

**buckstay** [MECH ENG] A structural support for a furnace wall. { 'bəkˌstā }

**buffer** [ELEC] An electric circuit or component that prevents undesirable electrical interaction between two circuits or components. [ELECTR] **1.** An isolating circuit in an electronic computer used to prevent the action of a driven circuit from affecting the corresponding driving circuit. **2.** *See* buffer amplifier. [ENG] A device, apparatus, or piece of material designed to reduce mechanical shock due to impact. { 'bəf·ər }

**buffered FET logic** [ELECTR] A logic gate configuration used with gallium-arsenide field-effect transistors operating in the depletion mode, in which the level shifting required to make the input and output voltage levels compatible is achieved with Schottky barrier diodes. Abbreviated BFL. { 'bəf·ərd ˌefˌēˌtē 'läj·ik }

**buffing** [ENG] The smoothing and brightening of a surface by an abrasive compound pressed against it by a soft wheel or belt. { 'bəf·iŋ }

**buffing wheel** [DES ENG] A flexible wheel with a surface of fine abrasive particles for buffing operations. { 'bəf·iŋ ˌwēl }

**bug** [ELECTR] **1.** A semiautomatic code-sending telegraph key in which movement of a lever to one side produces a series of correctly spaced dots and movement to the other side produces a single dash. **2.** An electronic listening device, generally concealed, used for commercial or military espionage. [ENG] **1.** A defect or imperfection present in a piece of equipment. **2.** *See* bullet. { bəg }

**buggy** *See* concrete buggy. { 'bəg·ē }

**buhrstone mill** [MECH ENG] A mill for grinding or pulverizing grain in which a flat siliceous rock (buhrstone), generally of cellular quartz, rotates against a stationary stone of the same material. { 'bərˌstōn ˌmil }

**build** [ELECTR] To increase in received signal strength. { bild }

**building** [CIV ENG] A fixed structure for human occupancy and use. { 'bil·diŋ }

**building-block approach** [IND ENG] A technique for development of a set of standard data by creating fixed groups or modules of work elements that may be added together to obtain time values for elements and entire operations. { 'bild·iŋ ˌbläk əˌprōch }

**building code** [CIV ENG] Local building laws to promote safe practices in the design and construction of a building. { 'bil·diŋ ˌkōd }

**building dock** [CIV ENG] A type of graving dock or basin, usually built of concrete, in which ships are constructed and then floated out through a caisson gate after flooding the dock. { 'bil·diŋ ˌdäk }

**building envelope** [CIV ENG] The interior, enclosed space of a building. { 'bil·diŋ 'en·vəˌlōp }

**building footprint** *See* footprint. { 'bil·diŋ ˌfůtˌprint }

**building line** [CIV ENG] A designated line beyond which a building cannot extend. { 'bil·diŋ ˌlīn }

**buildup index** *See* fire-danger meter. { 'bilˌdəp ˌinˌdeks }

**built-in beam** *See* fixed-end beam. { ˈbiltˌin 'bēm }

**built-up beam** [ENG] A structural steel member that is fabricated by welding or riveting rather than being rolled. { 'biltˌəp 'bēm }

**built-up edge** [ENG] Chip material adhering to the tool face adjacent to a cutting edge during cutting. { 'biltˌəp 'ej }

**built-up roof** [BUILD] A roof constructed of several layers of felt and asphalt. { 'biltˌəp 'rüf }

**bulb angle** [DES ENG] A steel angle iron enlarged to a bulbous thickening at one end. { 'bəlb ˌaŋ·gəl }

**bulge forming** [ENG] A process by which contours are formed on the sides of tubular workpieces by exerting pressure inside the tube to force expansion into a die clamped around the exterior. { 'bəlj ˌfôrm·iŋ }

**bulk cargo** [IND ENG] Cargo which is loaded into a ship's hold without being boxed, bagged,

or hand stowed, or is transported in large tank spaces. { ¦bəlk ˈkärˌgō }

**bulk density** [ENG] The mass of powdered or granulated solid material per unit of volume. { ¦bəlk ˈden·səd·ē }

**bulk diode** [ELECTR] A semiconductor microwave diode that uses the bulk effect, such as Gunn diodes and diodes operating in limited space-charge-accumulation modes. { ¦bəlk ˈdīˌōd }

**bulk effect** [ELECTR] An effect that occurs within the entire bulk of a semiconductor material rather than in a localized region or junction. { ˈbəlk iˈfekt }

**bulk-effect device** [ELECTR] A semiconductor device that depends on a bulk effect, as in Gunn and avalanche devices. { ˈbəlk iˈfekt diˈvīs }

**bulk factor** [ENG] The ratio of the volume of loose powdered or granulated solids to the volume of an equal weight of the material after consolidation into a voidless solid. { ˈbəlk ˌfak·tər }

**bulk-handling machine** [MECH ENG] Any of a diversified group of materials-handling machines designed for handling unpackaged, divided materials. { ˈbəlk ˌhand·liŋ məˈshēn }

**bulkhead line** [CIV ENG] The farthest offshore line to which a structure may be constructed without interfering with navigation. { ˈbəlk ˌhed ˌlīn }

**bulkhead wharf** [CIV ENG] A bulkhead that may be used as a wharf by addition of mooring appurtenances, paving, and cargo-handling facilities. { ˈbəlkˌhed ˌwȯrf }

**bulking value** [CHEM ENG] The relative ability of a pigment or other substance to increase the volume of paint. { ˈbəl·kiŋ ˌval·yü }

**bulk insulation** [ENG] A type of insulation that retards the flow of heat by the interposition of many air spaces and, in most cases, by opacity to radiant heat. { ¦bəlk inˌsəˈlā·shən }

**bulk material** [IND ENG] Material purchased in uniform lots and in quantity for distribution as required for a project. { ¦bəlk məˈtir·ē·əl }

**bulk micromachining** [ENG] A set of processes that enable the three-dimensional sculpting of single-crystal silicon to make small structures that serve as components of microsensors. { ¦bəlk ˌmī·krō·məˈshēn·iŋ }

**bulk modulus** *See* bulk modulus of elasticity. { ¦bəlk ˈmäj·ə·ləs }

**bulk modulus of elasticity** [MECH] The ratio of the compressive or tensile force applied to a substance per unit surface area to the change in volume of the substance per unit volume. Also known as bulk modulus; compression modulus; hydrostatic modulus; modulus of compression; modulus of volume elasticity. { ¦bəlk ˈmäj·ˌ·ləs əv iˌlasˈtis·əd·ē }

**bulk rheology** [MECH] The branch of rheology wherein study of the behavior of matter neglects effects due to the surface of a system. { ¦bəlk rēˈäl·ə·jē }

**bulk photoconductor** [ELECTR] A photoconductor having high power-handling capability and other unique properties that depend on the semiconductor and doping materials used. { ¦bəlk ¦fō·dō·kənˌdək·tər }

**bulk resistor** [ELECTR] An integrated-circuit resistor in which the *n*-type epitaxial layer of a semiconducting substrate is used as a noncritical high-value resistor; the spacing between the attached terminals and the sheet resistivity of the material together determine the resistance value. { ˈbəlk riˈzis·tər }

**bulk strain** [MECH] The ratio of the change in the volume of a body that occurs when the body is placed under pressure, to the original volume of the body. { ˈbalk ˌstrān }

**bulk strength** [MECH] The strength per unit volume of a solid. { ¦bəlk ˈstreŋkth }

**bulk transport** [MECH ENG] Conveying, hoisting, or elevating systems for movement of solids such as grain, sand, gravel, coal, or wood chips. { ¦bəlk ˈtranzˌpȯrt }

**bulldozer** [MECH ENG] A wheeled or crawler tractor equipped with a reinforced, curved steel plate mounted in front, perpendicular to the ground, for pushing excavated materials. { ˈbu̇lˌdōz·ər }

**bullet** [ENG] **1.** A conical-nosed cylindrical weight, attached to a wire rope or line, either notched or seated to engage and attach itself to the upper end of a wire line core barrel or other retrievable or retractable device that has been placed in a borehole. Also known as bug; go-devil; overshot. **2.** A scraper with self-adjusting spring blades, inserted in a pipeline and carried forward by the fluid pressure, clearing away accumulations or debris from the walls of a pipe. Also known as go-devil. **3.** A bullet-shaped weight or small explosive charge dropped to explode a charge of nitroglycerin placed in a borehole. Also known as go-devil. **4.** An electric lamp covered by a conical metal case, usually at the end of a flexible metal shaft. **5.** *See* torpedo. { ˈbu̇l·ət }

**bullet drop** [MECH] The vertical drop of a bullet. { ˈbu̇l·ət ˌdräp }

**bull gear** [DES ENG] A bull wheel with gear teeth. { ˈbu̇lˌgir }

**bulling bar** [ENG] A bar for ramming clay into cracks containing blasting charges which are about to be exploded. { ˈbu̇l·iŋ ˌbär }

**bull nose** [BUILD] A rounded external angle, as one used at window returns and doorframes. { ˈbu̇lˌnōz }

**bull-nose bit** *See* wedge bit. { ˈbu̇lˌnōz ˌbit }

**bull-nose plane** [DES ENG] A small rabbet plane used to smooth or shape joints or other places that cannot be reached by larger planes. { ¦bu̇lˌnōz ˈplān }

**bull wheel** [MECH ENG] **1.** The main wheel or gear of a machine, which is usually the largest and strongest. **2.** A cylinder which has a rope wound about it for lifting or hauling. **3.** A wheel attached to the base of a derrick boom which swings the derrick in a vertical plane. { ˈbu̇lˌwēl }

**Bulygen number** [THERMO] A dimensionless

number used in the study of heat transfer during evaporation. { 'bül·ə·jən ˌnəm·bər }

**bump contact** [ELECTR] A large-area contact used for alloying directly to the substrate of a transistor for mounting or interconnecting purposes. { 'bəmp ˌkänˌtakt }

**bumper** [ENG] **1.** A metal bar attached to one or both ends of a powered transportation vehicle, especially an automobile, to prevent damage to the body. **2.** In a drilling operation, the supporting stay between the main foundation sill and the engine block. **3.** In drilling, a fishing tool for loosening jammed cable tools. { 'bəm·pər }

**bumping** *See* chugging. { 'bəm·piŋ }

**bund** [CIV ENG] An embankment or embanked thoroughfare along a body of water; the term is used particularly for such structures in the Far East. { bənd }

**bundling machine** [MECH ENG] A device that automatically accumulates cans, cartons, or glass containers for semiautomatic or automatic loading or for shipping cartons by assembling the packages into units of predetermined count and pattern which are then machine-wrapped in paper, film paperboard, or corrugated board. { 'bənd·liŋ məˈshēn }

**bund wall** [ENG] A retaining wall designed to contain the contents of a tank or a storage vessel in the event of a rupture or other emergency. { 'bənd ˌwȯl }

**bunker** [CIV ENG] A bin, often elevated, that is divided into compartments for storing material such as coal or sand. [MECH ENG] A space in a refrigerator designed to hold a cooling element. { 'bəŋ·kər }

**bunkering** [ENG] Storage of solid or liquid fuel in containers from which the fuel can be continuously or intermittently withdrawn to feed a furnace, internal combustion engine, or fuel tank, for example, coal bunkering and fuel-oil bunkering. { 'bəŋ·kər·iŋ }

**bunny suit** [ENG] Protective clothing worn by an individual who works in a clean room to prevent contamination of equipment and materials. { 'bən·ē ˌsüt }

**Bunsen burner** [ENG] A type of gas burner with an adjustable air supply. { 'bən·sən 'bər·nər }

**Bunsen ice calorimeter** [ENG] Apparatus to gage heat released during the melting of a compound by measuring the increase in volume of the surrounding ice-water solution caused by the melting of the ice. Also known as ice calorimeter. { 'bən·sən ˈīs kal·əˈrim·əd·ər }

**buoy** [ENG] An anchored or moored floating object, other than a lightship, intended as an aid to navigation, to attach or suspend measuring instruments, or to mark the position of something beneath the water. { bȯi }

**buoyancy-type density transmitter** [ENG] An instrument which records the specific gravity of a flowing stream of a liquid or gas, using the principle of hydrostatic weighing. { 'bȯi·ən·sē ˌtīp 'den·səd·ē tranzˈmid·ər }

**buoy sensor** [ENG ACOUS] A hydrophone used as a sensor in buoy projects; some hydrophone arrays are designed for telemetering. { 'bȯi ˌsen·sər }

**burden** [ELEC] The amount of power drawn from the circuit connecting the secondary terminals of an instrument transformer, usually expressed in volt-amperes. [ENG] **1.** The distance from a drill hole to the more or less vertical surface of rock that has already been exposed by blasting or excavating. **2.** The volume of the rock to be removed by blasting in a drill hole. { 'bərd·ən }

**burglar alarm** [ENG] An alarm in which interruption of electric current to a relay, caused, for example, by the breaking of a metallic tape placed at an entrance to a building, deenergizes the relay and causes the relay contacts to operate the alarm indicator. Also known as intrusion alarm. { 'bər·glər əˌlärm }

**buried set-point method** [CONT SYS] A procedure for guiding a robot manipulator along a template, in which low-gain servomechanisms apply a force along the edge of the template, while the manipulator's tool is parallel to, and buried below, the template surface. { 'ber·ēd 'setˌpȯint ˌmeth·əd }

**burn** [ENG] To consume fuel. { bərn }

**burn cut** *See* parallel cut. { 'bərn ˌkət }

**burner** [CHEM ENG] A furnace where sulfur or sulfide ore are burned to produce sulfur dioxide and other gases. [ENG] **1.** The part of a fluid-burning device at which the flame is produced. **2.** Any burning device used to soften old paint to aid in its removal. **3.** A worker who operates a kiln which burns brick or tile. **4.** A worker who alters the properties of a mineral substance by burning. **5.** A worker who uses a flame-cutting torch to cut metals. [MECH ENG] A unit of a steam boiler which mixes and directs the flow of fuel and air so as to ensure rapid ignition and complete combustion. { 'bər·nər }

**burner windbox** [ENG] A chamber surrounding a burner, under positive air pressure, for proper distribution and discharge of secondary air. { 'bər·nər 'windˌbäks }

**burnettize** [ENG] To saturate fabric or wood with a solution of zinc chloride under pressure to keep it from decaying. { bərˈnedˌīz }

**burn-in** [ELECTR] Operation of electronic components before they are applied in order to stabilize their characteristics and reveal defects. [ENG] *See* freeze. { 'bərn ˌin }

**burning** [ENG] The firing of clay products placed in a kiln. { 'bər·niŋ }

**burning index** *See* fire-danger meter. { 'bər·niŋ ˈinˌdeks }

**burning point** [ENG] The lowest temperature at which a volatile oil in an open vessel will continue to burn when ignited by a flame held close to its surface; used to test safety of kerosine and other illuminating oils. { 'bər·niŋ ˌpȯint }

**burning quality** [ENG] Rated performance for a burning oil as determined by specified ASTM (American Society for Testing and Materials) tests. { 'bər·niŋ ˌkwal· əd·ē }

**burning-quality index** [ENG] Prediction of burning performance of furnace and heater oils; derived from ASTM (American Society for Testing and Materials) distillation, API (American Petroleum Institute) gravity, paraffinicity, and volatility. { 'bər·niŋ ¦kwäl·əd·ē ˌinˌdeks }

**burnish** [ENG] To polish or make shiny. { 'bər·nish }

**burnisher** [ENG] A tool with a hard, smooth rounded edge or surface; used for finishing the edges of scraper blades, for smoothing or polishing plastic or metal surfaces, or for other applications requiring manipulation by rubbing. { 'bər·nə·shər }

**burnout** [ELEC] Failure of a device due to excessive heat produced by excessive current. [ENG] An instance of a device or a part overheating so as to result in destruction or damage. { 'bərnˌaůt }

**Burnside boring machine** [MECH ENG] A machine for boring in all types of ground with the feature of controlling water immediately if it is tapped. { 'bərnˌsīd 'bȯr·iŋ məˈshən }

**bursting strength** [MECH] A measure of the ability of a material to withstand pressure without rupture; it is the hydraulic pressure required to burst a vessel of given thickness. { 'bər·stiŋ ˌstreŋkth }

**burst pressure** [MECH] The maximum inside pressure that a process vessel can safely withstand. { 'bərst ˌpresh·ər }

**burton** [MECH ENG] A small hoisting tackle with two blocks, usually a single block and a double block, with a hook block in the running part of the rope. { 'bərt·ən }

**bus** [ELEC] **1.** A set of two or more electric conductors that serve as common connections between load circuits and each of the polarities (in direct-current systems) or phases (in alternating-current systems) of the source of electric power. **2.** *See* busbar. [ELECTR] One or more conductors in a computer along which information is transmitted from any of several sources to any of several destinations. [ENG] A motor vehicle for carrying a large number of passengers. { bəs }

**bus cable** [ELECTR] An electrical conductor that can be attached to a bus to extend it outside the computer housing or join it to another bus within the same computer. { 'bəs ˌkā·bəl }

**bushel** [MECH] Abbreviated bu. **1.** A unit of volume (dry measure) used in the United States, equal to 2150.42 cubic inches or approximately 35.239 liters. **2.** A unit of volume (liquid and dry measure) used in Britain, equal to 2219.36 cubic inches or 8 imperial gallons (approximately 36.369 liters). { 'bůsh·əl }

**bush hammer** [MECH ENG] A hand-held or power-driven hammer that has a serrated face containing pyramid-shaped points and is used to dress a concrete or stone surface. { 'bůsh ˌham·ər }

**bushing** [DES ENG] *See* nipple. [ELEC] *See* sleeve. [MECH ENG] A removable piece of soft metal or graphite-filled sintered metal, usually in the form of a bearing, that lines a support for a shaft. { 'bůsh·iŋ }

**Butamer process** [CHEM ENG] A method of isomerizing normal butane into isobutane in the presence of hydrogen and a solid, noble-metal catalyst; used to prepare raw material in a gasoline alkylation process. { 'byüd·ə·mər ˌpräs·əs }

**butane dehydrogenation** [CHEM ENG] A process to remove hydrogen from butane to produce butene or butadiene. { 'byüˌtān dēˌhī·drə·jəˈnā·shən }

**butane vapor-phase isomerization** [CHEM ENG] A process to isomerize normal butane into isobutane in the presence of aluminum chloride catalyst and hydrogen chloride promoter. { 'byüˌtān 'vā·pər ˌfāz īˌsäm·ə·rəˈzā·shən }

**butt** [BUILD] The bottom or cover edge of a shingle. [DES ENG] The enlarged and squared-off end of a connecting rod or similar link in a machine. { bət }

**butterfly damper** *See* butterfly valve. { 'bəd·ərˌflī ˌdam·pər }

**butterfly nut** *See* wing nut. { 'bəd·ərˌflī ˌnət }

**butterfly valve** [ENG] A valve that utilizes a turnable disk element to regulate flow in a pipe or duct system, such as a hydraulic turbine or a ventilating system. Also known as butterfly damper. { 'bəd·ərˌflī ˌvalv }

**Butterworth filter** [ELECTR] An electric filter whose pass band (graph of transmission versus frequency) has a maximally flat shape. { 'bəd·ərˌwərth 'fil·tər }

**Butterworth head** [MECH ENG] A mechanical hose head with revolving nozzles; used to wash down shipboard storage tanks. { 'bəd·ər ˌwərth ˌhed }

**butt fusion** [ENG] The joining of two pieces of plastic or metal pipes or sheets by heating the ends until they are molten and then pressing them together to form a homogeneous bond. { 'bət ˌfyü·zhən }

**butt gage** [ENG] A tool used to mark the outline for the hinges on a door. { 'bət ˌgāj }

**butt joint** [ELEC] A connection formed by placing the ends of two conductors together and joining them by welding, brazing, or soldering. [ENG] A joint in which the parts to be joined are fastened end to end or edge to edge with one or more cover plates (or other strengthening) generally used to accomplish the joining. { 'bət ˌjȯint }

**buttock lines** [ENG] The lines of intersection of the surface of an aircraft or its float, or of the hull of a ship, with its longitudinal vertical planes. Also known as buttocks. { 'bəd·ək ˌlīnz }

**buttocks** *See* buttock lines. { 'bəd·əks }

**button** [ELECTR] **1.** A small, round piece of metal alloyed to the base wafer of an alloy-junction transistor. Also known as dot. **2.** The container that holds the carbon granules of a carbon microphone. Also known as carbon button. { 'bət·ən }

**button bit** [DES ENG] A drilling bit made with button-shaped tungsten carbide inserts. { 'bət·ən ˌbit }

**button die** [DES ENG] A mating member, usually replaceable, for a piercing punch. Also known as die bushing. { 'bət·ən ˌdī }

**buttonhead** [DES ENG] A screw, bolt, or rivet with a hemispherical head. { 'bət·ənˌhed }

**buttress** [CIV ENG] A pier constructed at right angles to a restraining wall on the side opposite to the restrained material; increases the strength and thrust resistance of the wall. { 'bə·trəs }

**buttress dam** [CIV ENG] A concrete dam constructed as a series of buttresses. { 'bə·trəs ˌdam }

**buttress thread** [DES ENG] A screw thread whose forward face is perpendicular to the screw axis and whose back face is at an angle to the axis, so that the thread is both efficient in transmitting power and strong. { 'bə·trəs ˌthred }

**buzz** [CONT SYS] *See* dither. [ELECTR] The condition of a combinatorial circuit with feedback that has undergone a transition, caused by the inputs, from an unstable state to a new state that is also unstable. { bəz }

**BWE** *See* bucket-wheel excavator.

**BWG** *See* Birmingham wire gage.

**BX cable** [ELEC] Insulated wires in flexible metal tubing used for bringing electric power to electronic equipment. { ˌbēˌeks ˈkā·bəl }

**bypass** [CIV ENG] A road which carries traffic around a congested district or temporary obstruction. [ELEC] A shunt path around some element or elements of a circuit. [ENG] An alternating, usually smaller, diversionary flow path in a fluid dynamic system to avoid some device, fixture, or obstruction. { 'bīˌpas }

**bypass channel** [CIV ENG] **1.** A channel built to carry excess water from a stream. Also known as flood relief channel; floodway. **2.** A channel constructed to divert water from a main channel. { 'bīˌpas ˌchan·əl }

**bypass filter** [ELECTR] Filter which provides a low-attenuation path around some other equipment, such as a carrier frequency filter used to bypass a physical telephone repeater station. { 'bīˌpas ˌfil·tər }

**bypass valve** [ENG] A valve that opens to direct fluid elsewhere when a pressure limit is exceeded. { 'bīˌpas ˌvalv }

**by-product** [ENG] A product from a manufacturing process that is not considered the principal material. { 'bīˌpräd·əkt }

# C

**c** *See* calorie.
**C** *See* capacitance; capacitor; coulomb.
**C²** *See* command and control. { 'sē 'tü }
**C³** *See* command, control, and communications. { 'sē 'thrē }
**cab** [ENG] In a locomotive, truck, tractor, or hoisting apparatus, a compartment for the operator. { kab }
**cabinet file** [DES ENG] A coarse-toothed file with flat and convex faces used for woodworking. { 'kab·ə·nət ˌfīl }
**cabinet hardware** [DES ENG] Parts for the final trim of a cabinet, such as fastening hinges, drawer pulls, and knobs. { 'kab·ə·nət ˌhärd ˌwer }
**cabinet saw** [DES ENG] A short saw, one edge used for ripping, the other for crosscutting. { 'kab·ə·nət ˌsó }
**cabinet scraper** [DES ENG] A steel tool with a contoured edge used to remove irregularities on a wood surface. { 'kab·ə·nət ˌskrāp·ər }
**cable** [DES ENG] A stranded, ropelike assembly of wire or fiber. [ELEC] Strands of insulated electrical conductors laid together, usually around a central core, and surrounded by a heavy insulation. { 'kā·bəl }
**cable buoy** [ENG] A buoy used to mark one end of a submarine underwater cable during time of installation or repair. { 'kā·bəl ˌbȯi }
**cable conveyor** [MECH ENG] A powered conveyor in which a trolley runs on a flexible, torque-transmitting cable that has helical threads. { 'kā·bəl kən'vā·ər }
**cable drilling** [ENG] Rock drilling in which the rock is penetrated by percussion, at the bottom of the hole, of a bit suspended from a wire line and given motion by a beam pivoted at the center. { 'kā·bəl ˌdril·iŋ }
**cable duct** [ENG] A pipe, either earthenware or concrete, through which prestressing wires or electric cable are pulled. { 'kā·bəl ˌdəkt }
**cable-laid** [DES ENG] Consisting of three ropes with a left-hand twist, each rope having three twisted strands. { 'kā·bəl ˌlād }
**cableman** [ENG] A person who installs, repairs, or otherwise works with cables. { 'kā·bəl·mən }
**cable railway** [MECH ENG] An inclined track on which rail cars travel, with the cars fixed to an endless steel-wire rope at equal spaces; the rope is driven by a stationary engine. { 'kā·bəl ˌrāl,wā }
**cable release** [ENG] A wire plunger to actuate the shutter of a camera, thus avoiding undesirable camera movement. { 'kā·bəl ri'lēs }
**cable-stayed bridge** [CIV ENG] A modification of the cantilever bridge consisting of girders or trusses cantilevered both ways from a central tower and supported by inclined cables attached to the tower at top or sometimes at several levels. { 'kā·bəl ˌstād ˌbrij }
**cable-system drill** *See* churn drill. { 'kā·bəl ˌsis·təm ˌdril }
**cable-tool drilling** [ENG] A drilling procedure in which a sharply pointed bit attached to a cable is repeatedly picked up and dropped on the bottom of the hole. { 'kā·bəl ˌtül ˌdril·iŋ }
**cable vault** [CIV ENG] A manhole containing electrical cables. [ELEC] Vault in which the outside plant cables are spliced to the tipping cables. { 'kā·bəl ˌvólt }
**cableway** [MECH ENG] A transporting system consisting of a cable extended between two or more points on which cars are propelled to transport bulk materials for construction operations. { 'kā·bəl,wā }
**cableway carriage** [MECH ENG] A trolley that runs on main load cables stretched between two or more towers. { 'kā·bəl,wā 'kar·ij }
**caboose** [ENG] A car on a freight train, often the last car, usually for use by the train crew. { kə'büs }
**cab signal** [ENG] A signal in a locomotive that informs the engine operator about conditions affecting train movement. { 'kab ˌsig·nəl }
**cadastral survey** [CIV ENG] A survey made to establish property lines. { kə'das·trəl }
**cage** [MECH ENG] A frame for maintaining uniform separation between the balls or rollers in a bearing. Also known as separator. { kāj }
**cage mill** [MECH ENG] Pulverizer used to disintegrate clay, press cake, asbestos, packing-house by-products, and various tough, gummy, high-moisture-content or low-melting-point materials. { 'kāj ˌmil }
**cairn** [ENG] An artificial mound of rocks, stones, or masonry, usually conical or pyramidal, whose purpose is to designate or to aid in identifying a point of surveying or of cadastral importance. { kern }

**caisson** [CIV ENG] **1.** A watertight, cylindrical or rectangular chamber used in underwater construction to protect workers from water pressure and soil collapse. **2.** A float used to raise a sunken vessel. **3.** *See* dry-dock caisson. { 'kā ˌsän }

**caisson foundation** [CIV ENG] A shaft of concrete placed under a building column or wall and extending down to hardpan or rock. Also known as pier foundation. { 'kāˌsän foun'dā·shən }

**caking** [ENG] Changing of a powder into a solid mass by heat, pressure, or water. { 'kāk·iŋ }

**cal** *See* calorie.

**Cal** *See* kilocalorie.

**calandria** [CHEM ENG] One of the tubes through which the heating fluid circulates in an evaporator. { kə'lan·drē·ə }

**calandria evaporator** *See* short-tubevertical evaporator. { kə'lan·drē·ə i'vap·əˌrād·ər }

**calcimeter** [ENG] An instrument for estimating the amount of lime in soils. { kal'sim·əd·ər }

**calcination** [CHEM ENG] A process in which a material is heated to a temperature below its melting point to effect a thermal decomposition or a phase transition other than melting. { ˌkal·sə'nā·shən }

**calcine** [ENG] **1.** To heat to a high temperature without fusing, as to heat unformed ceramic materials in a kiln, or to heat ores, precipitates, concentrates, or residues so that hydrates, carbonates, or other compounds are decomposed and the volatile material is expelled. **2.** To heat under oxidizing conditions. { 'kalˌsīn }

**calcining furnace** [ENG] A heating device, such as a vertical-shaft kiln, that raises the temperature (but not to the melting point) of a substance such as limestone to make lime. Also known as calciner. { 'kalˌsin·iŋ ˌfər·nəs }

**calefaction** [ENG] **1.** Warming. **2.** The condition of being warmed. { ˌkal·əˈfak·shən }

**calender** [ENG] **1.** To pass a material between rollers or plates to thin it into sheets or to make it smooth and glossy. **2.** The machine which performs this operation. { 'kal·ən·dər }

**calibrating tank** [ENG] A tank having known capacity used to check the volumetric accuracy of liquid delivery by positive-displacement meters. Also known as meter-proving tank. { 'kal·əˌbrād·iŋ ˌtaŋk }

**calibration curve** [ENG] A plot of calibration data, giving the correct value for each indicated reading of a meter or control dial. { 'kal·əˌbrā·shən ˌkərv }

**calibration markers** [ENG] On a radar display, electronically generated marks which provide numerical values for the navigational parameters such as bearing, distance, height, or time. { 'kal·əˌbrā·shən ˌmär·kərz }

**California polymerization** [CHEM ENG] A polymerization process for converting $C_3$–$C_4$ olefins to motor fuel by utilizing a catalyst of phosphoric acid on quartz chips. { ˌkal·əˈfôr·nyə pəˌlim·ə·rə'zā·shən }

**caliper** [DES ENG] An instrument with two legs or jaws that can be adjusted for measuring linear dimensions, thickness, or diameter. { 'kal·ə·pər }

**caliper gage** [DES ENG] An instrument, such as a micrometer, of fixed size for calipering. { 'kal·ə·pər ˌgāj }

**calk** *See* caulk. { kȯk }

**Callendar and Barnes' continuous-flow calorimeter** [ENG] A calorimeter in which the heat to be measured is absorbed by water flowing through a tube at a constant rate, and the quantity of heat is determined by the rate of flow and the temperature difference between water at ends of the tube. { ˌkal·ən·dər ən 'bärnz kən'tin·yə·wəs ˌflō kal·ə'rim·əd·ər }

**Callendar's compensated air thermometer** [ENG] A type of constant-pressure gas thermometer in which errors resulting from temperature differences between the thermometer bulb and the connecting tubes and manometer used to maintain constant pressure are eliminated by the configuration of the connecting tubes. { ˌkal·ən·dərz ˌkäm·pənˌsād·əd 'er thərˌmäm·əd·ər }

**Callendar's equation** [THERMO] **1.** An equation of state for steam whose temperature is well above the boiling point at the existing pressure, but is less than the critical temperature: $(V - b) = (RT/p) - (a/T^n)$, where V is the volume, R is the gas constant, T is the temperature, $p$ is the pressure, $n$ equals 10/3, and $a$ and $b$ are constants. **2.** A very accurate equation relating temperature and resistance of platinum, according to which the temperature is the sum of a linear function of the resistance of platinum and a small correction term, which is a quadratic function of temperature. { 'kal·ən·dərz i'kwā·zhən }

**Callendar's thermometer** *See* platinum resistance thermometer. { 'kal·ən·dərz thər'mäm·əd·ər }

**calorie** [THERMO] Abbreviated cal; often designated c. **1.** A unit of heat energy, equal to 4.1868 joules. Also known as International Table calorie (IT calorie). **2.** A unit of energy, equal to the heat required to raise the temperature of 1 gram of water from 14.5° to 15.5°C at a constant pressure of 1 standard atmosphere; equal to 4.1855 ± 0.0005 joules. Also known as fifteen-degrees calorie; gram-calorie (g-cal); small calorie. **3.** A unit of heat energy equal to 4.184 joules; used in thermochemistry. Also known as thermochemical calorie. { 'kal·ə·rē }

**calorific value** [ENG] Quantity of heat liberated on the complete combustion of a unit weight or unit volume of fuel. { ˌkal·əˈrif·ik 'val·yü }

**calorifier** [ENG] A device that heats fluids by circulating them over heating coils. { kə'lȯr·əˌfī·ər }

**calorimeter** [ENG] An apparatus for measuring heat quantities generated in or emitted by materials in processes such as chemical reactions, changes of state, or formation of solutions. { ˌkal·ə'rim·əd·ər }

**calorimetric test** [ENG] The use of a calorimeter to determine the thermochemical characteristics

of propellants and explosives; properties normally determined are heat of combustion, heat of explosion, heat of formation, and heat of reaction. { kə¦lȯr·ə¦me·trik 'test }

**calorimetry** [ENG] The measurement of the quantity of heat involved in various processes, such as chemical reactions, changes of state, and formations of solutions, or in the determination of the heat capacities of substances; fundamental unit of measurement is the joule or the calorie (4.184 joules). { kal·ə'rim·ə·trē }

**calyx** [ENG] A steel tube that is a guide rod and is also used to catch cuttings from a drill rod. Also known as bucket; sludge barrel; sludge bucket. { 'kā,liks }

**calyx drill** [ENG] A rotary core drill with hardened steel shot for cutting rock. Also known as shot drill. { 'kā,liks ,dril }

**cam** [MECH ENG] A plate or cylinder which communicates motion to a follower by means of its edge or a groove cut in its surface. { kam }

**cam acceleration** [MECH ENG] The acceleration of the cam follower. { 'kam ak·sel·ə'rā·shən }

**camber** [DES ENG] Deviation from a straight line; the term is applied to a convex, edgewise sweep or curve, or to the increase in diameter at the center of rolled materials. { 'kam·bər }

**camber angle** [MECH ENG] The inclination from the vertical of the steerable wheels of an automobile. { 'kam·bər ,aŋ·gəl }

**cam cutter** [MECH ENG] A semiautomatic or automatic machine that produces the cam contour by swinging the work as it revolves; uses a master cam in contact with a roller. { 'kam ,kəd·ər }

**cam dwell** [DES ENG] That part of a cam surface between the opening and closing acceleration sections. { 'kam ,dwel }

**cam engine** [MECH ENG] A piston engine in which a cam-and-roller mechanism seems to convert reciprocating motion into rotary motion. { 'kam ,en·jən }

**camera study** *See* memomotion study. { 'kam·rə ,stəd·ē }

**cam follower** [MECH ENG] The output link of a cam mechanism. { 'kam ,fäl·ə·wər }

**cam mechanism** [MECH ENG] A mechanical linkage whose purpose is to produce, by means of a contoured cam surface, a prescribed motion of the output link. { 'kam ,mek·ə,niz·əm }

**cam nose** [MECH ENG] The high point of a cam, which in a reciprocating engine holds valves open or closed. { 'kam ,nōz }

**cam pawl** [MECH ENG] A pawl which prevents a wheel from turning in one direction by a wedging action, while permitting it to rotate in the other direction. { 'kam ,pól }

**Campbell-Stokes recorder** [ENG] A sunshine recorder in which the time scale is supplied by the motion of the sun and which has a spherical lens that burns an image of the sun upon a specially prepared card. { ¦kam·əl ¦stōks ri 'kȯrd·ər }

**camp ceiling** [BUILD] A ceiling that is flat in the center portion and sloping at the sides. { 'kamp ,sē·liŋ }

**cam profile** [DES ENG] The shape of the contoured cam surface by means of which motion is communicated to the follower. Also known as pitch line. { 'kam ,prō,fīl }

**camshaft** [MECH ENG] A rotating shaft to which a cam is attached. { 'kam,shaft }

**can** [DES ENG] A cylindrical metal vessel or container, usually with an open top or a removable cover. { kan }

**canal** [CIV ENG] An artificial open waterway used for transportation, waterpower, or irrigation. [DES ENG] A groove on the underside of a corona. { kə'nal }

**canalization** [ENG] Any system of distribution canals or conduits for water, gas, electricity, or steam. { ,kan·əl·ə'zā·shən }

**cancellation circuit** [ELECTR] A circuit used in providing moving-target indication on a plan position indicator scope; cancels constant-amplitude fixed-target pulses by subtraction of successive pulse trains. { kan·sə'lā·shən ,sər·kət }

**canister** *See* charcoal canister. { 'kan·ə'stər }

**canned motor** [MECH ENG] A motor enclosed within a casing along with the driven element (that is, a pump) so that the motor bearings are lubricated by the same liquid that is being pumped. { ¦kand 'mōd·ər }

**canned pump** [MECH ENG] A watertight pump that can operate under water. { ¦kand 'pəmp }

**cannibalize** [ENG] To remove parts from one piece of equipment and use them to replace like, defective parts in a similar piece of equipment in order to keep the latter operational. { 'kan·ə·bə,līz }

**canonical equations of motion** *See* Hamilton's equations of motion. { kə'nän·ə·kəl i'kwā·zhənz əv 'mō·shən }

**canonical form** [CONT SYS] A specific type of dynamical system representation in which the associated matrices possess specific row-column structures. { kə'nän·ə·kəl ,fȯrm }

**canonically conjugate variables** [MECH] A generalized coordinate and its conjugate momentum. { kə'nän·ə·klē ¦kan·jə·gət 'ver·ē·ə·bəlz }

**canonical momentum** *See* conjugate momentum. { kə'nän·ə·kəl mə'ment·əm }

**canonical transformation** [MECH] A transformation which occurs among the coordinates and momenta describing the state of a classical dynamical system and which leaves the form of Hamilton's equations of motion unchanged. Also known as contact transformation. { kə'nän·ə·kəl ,tranz·fər'mā·shən }

**cant file** [DES ENG] A fine-tapered file with a triangular cross section, used for sharpening saw teeth. { 'kant ,fīl }

**cant hook** [DES ENG] A lever with a hooklike attachment at one end, used in lumbering. { 'kant ,hůk }

**cantilever** [ENG] **1.** A beam or member securely fixed at one end and hanging free at the other end. **2.** In particular, in an atomic force microscope a very small beam that has a tip attached to its free end; the deflection of the beam is used

to measure the force acting on the tip. { 'kant·əl,ē·vər }

**cantilever bridge** [CIV ENG] A fixed bridge consisting of two spans projecting toward each other and joined at their ends by a suspended simple span. { 'kant·əl,ē·vər ¦brij }

**cantilever footing** [CIV ENG] A footing used to carry a load from two columns, with one column and one end of the footing placed against a building line or exterior wall. { 'kant·əl,ē·vər 'fūd·iŋ }

**cantilever retaining wall** [CIV ENG] A type of wall formed of three cantilever beams: stem, toe projection, and heel projection. { 'kant·əl,ē·vər ri'tān·iŋ wȯl }

**cantilever spring** [MECH ENG] A flat spring supported at one end and holding a load at or near the other end. { 'kant·əl,ē·vər ˌspriŋ }

**cantilever vibration** [MECH] Transverse oscillatory motion of a body fixed at one end. { 'kant·əl,ē·vər vī'brā·shən }

**canting** [MECH] Displacing the free end of a beam which is fixed at one end by subjecting it to a sideways force which is just short of that required to cause fracture. { 'kant·iŋ }

**canting strip** *See* water table. { 'kant·iŋ ˌstrip }

**cant strip** [BUILD] **1.** A strip placed along the angle between a wall and a roof so that the roofing will not bend sharply. **2.** A strip placed under the edge of the lowest row of tiles on a roof to give them the same slope as the other tiles. { 'kant ˌstrip }

**cap** [ENG] A detonating or blasting cap. { kap }

**capacitance** [ELEC] The ratio of the charge on one of the conductors of a capacitor (there being an equal and opposite charge on the other conductor) to the potential difference between the conductors. Symbolized C. Formerly known as capacity. [ENG] In a closed feedwater heater, the volume of water required for proper operation of the drain control valve. { kə'pas·ə·təns }

**capacitance altimeter** [ENG] An absolute altimeter which determines height of an aircraft aboveground by measuring the variations in capacitance between two conductors on the aircraft when the ground is near enough to act as a third conductor. { kə'pas·ə·təns al'tim·əd·ər }

**capacitance bridge** [ELEC] A bridge for comparing two capacitances, such as a Schering bridge. { kə'pas·ə·təns ˌbrij }

**capacitance level indicator** [ENG] A level indicator in which the material being monitored serves as the dielectric of a capacitor formed by a metal tank and an insulated electrode mounted vertically in the tank. { kə'pas·ə·təns ¦lev·əl 'in·dəˌkād·ər }

**capacitance meter** [ENG] An instrument used to measure capacitance values of capacitors or of circuits containing capacitance. { kə'pas·ə·təns ˌmēd·ər }

**capacitance-operated intrusion detector** [ENG] A boundary alarm system in which the approach of an intruder to an antenna wire encircling the protected area a few feet above ground changes the antenna-ground capacitance and sets off the alarm. { kə'pas·ə·təns ¦p·əˌrād·əd in'trü·zhən di'tek·tər }

**capacitance standard** *See* standard capacitor. { kə'pas·ə·təns ˌstan·dərd }

**capacitive coupling** [ELEC] Use of a capacitor to transfer energy from one circuit to another. { kə'pas·ə·təns ˌkəp·liŋ }

**capacitive electrometer** [ENG] An instrument for measuring small voltages; the voltage is applied to the plates of a capacitor when they are close together, then the voltage source is removed and the plates are separated, increasing the potential difference between them to a measurable value. Also known as condensing electrometer. { kə¦pas·əd·iv ˌi,lek'träm·əd·ər }

**capacitive pressure transducer** [ENG] A measurement device in which variations in pressure upon a capacitive element proportionately change the element's capacitive rating and thus the strength of the measured electric signal from the device. { kə¦pas·əd·iv 'presh·ər tranzˌdü·sər }

**capacitor** [ELEC] A device which consists essentially of two conductors (such as parallel metal plates) insulated from each other by a dielectric and which introduces capacitance into a circuit, stores electrical energy, blocks the flow of direct current, and permits the flow of alternating current to a degree dependent on the capacitor's capacitance and the current frequency. Symbolized C. Also known as condenser; electric condenser. { kə'pas·əd·ər }

**capacitor bank** [ELEC] A number of capacitors connected in series or in parallel. { kə'pas·əd·ər ˌbaŋk }

**capacitor color code** [ELEC] A method of marking the value on a capacitor by means of dots or bands of colors as specified in the Electronic Industry Association color code. { kə'pas·əd·ər 'kəl·ər ˌkōd }

**capacitor hydrophone** [ENG ACOUS] A capacitor microphone that responds to waterborne sound waves. { kə'pas·əd·ər 'hī·drəˌfōn }

**capacitor loudspeaker** *See* electrostatic loudspeaker. { kə'pas·əd·ər 'laüdˌspēk·ər }

**capacitor microphone** [ENG ACOUS] A microphone consisting essentially of a flexible metal diaphragm and a rigid metal plate that together form a two-plate air capacitor; sound waves set the diaphragm in vibration, producing capacitance variations that are converted into audio-frequency signals by a suitable amplifier circuit. Also known as condenser microphone; electrostatic microphone. { kə'pas·əd·ər 'mī·krəˌfōn }

**capacitor pickup** [ENG ACOUS] A phonograph pickup in which movements of the stylus in a record groove cause variations in the capacitance of the pickup. { kə'pas·əd·ər 'pik·əp }

**capacity** *See* capacitance. { kə'pas·əd·ē }

**capacity correction** [ENG] The correction applied to a mercury barometer with a nonadjustable cistern in order to compensate for the

change in the level of the cistern as the atmospheric pressure changes. { kə'pas·əd·ē kə'rek·shən }

**capacity factor** [IND ENG] The ratio of average actual use to the available capacity of an apparatus or industrial plant to store, process, treat, manufacture, or produce. { kə'pas·əd·ē ˌfak·tər }

**cap crimper** [ENG] A tool resembling a pliers that is used to press the open end of a blasting cap onto the safety fuse before placing the cap in the primer. { 'kap ˌkrim·pər }

**cape chisel** [DES ENG] A chisel that tapers to a flat, narrow cutting end; used to cut flat grooves. { 'kāp ˌchiz·əl }

**cape foot** [MECH] A unit of length equal to 1.033 feet or to 0.3148584 meter. { 'kāp ˌfůt }

**capillarity correction** [ENG] As applied to a mercury barometer, that part of the instrument correction which is required by the shape of the meniscus of the mercury. { ˌkap·ə'lar·əd·ē kəˌrek·shən }

**capillary collector** [ENG] An instrument for collecting liquid water from the atmosphere; the collecting head is fabricated of a porous material having a pore size of the order of 30 micrometers; the pressure difference across the water-air interface prevents air from entering the capillary system while allowing free flow of water. { 'kap·əˌler·ē kə'lek·tər }

**capillary drying** [ENG] Progressive removal of moisture from a porous solid mass by surface evaporation followed by capillary movement of more moisture to the drying surface from the moist inner region, until the surface and core stabilize at the same moisture concentration. { 'kap·əˌler·ē 'drī·iŋ }

**capillary electrometer** [ENG] An electrometer designed to measure a small potential difference between mercury and an electrolytic solution in a capillary tube by measuring the effect of this potential difference on the surface tension between the liquids. Also known as Lippmann electrometer. { 'kap·əˌ ler·ē iˌlek'träm·əd·ər }

**capillary fitting** [ENG] A pipe fitting having a socket-type end so that when the fitting is soldered to a pipe end, the solder flows by capillarity along the annular space between the pipe exterior and the socket within it, forming a tight fit. { 'kap·əˌler·ē ˌfid·iŋ }

**capillary tube** [ENG] A tube sufficiently fine so that capillary attraction of a liquid into the tube is significant. { 'kap·əˌler·ē ˌtüb }

**capillary viscometer** [ENG] A long, narrow tube that is used to measure the laminar flow of fluids. { 'kap·əˌler·ē vis'käm·əd·ər }

**capital amount factor** [IND ENG] Any of 20 common compound interest formulas used to calculate the equivalent uniform annual cost of all cash flows. { 'kap·ət·əl ə'maůnt ˌfak·tər }

**capital budgeting** [IND ENG] Planning the most effective use of resources to obtain the highest possible level of sustained profits. { 'kap·ət·əl 'bəj·əd·iŋ }

**capital expenditure** [IND ENG] Money spent for long-term additions or improvements and charged to a capital assets account. { 'kap·ət·əl ik'spen·di·chər }

**capped fuse** [ENG] A length of safety fuse with the cap or detonator crimped on before it is taken to the place of use. { 'kapt 'fyüz }

**capping** [ENG] Preparation of a capped fuse. { 'kap·iŋ }

**cap screw** [DES ENG] A screw which passes through a clear hole in the part to be joined, screws into a threaded hole in the other part, and has a head which holds the parts together. { 'kap ˌskrü }

**capstan** [ENG] A shaft which pulls magnetic tape through a machine at constant speed. { 'kap·stən }

**capstan nut** [DES ENG] A nut whose edge has several holes, in one of which a bar can be inserted for turning it. { 'kap·stən ˌnət }

**capstan screw** [DES ENG] A screw whose head has several radial holes, in one of which a bar can be inserted for turning it. { 'kap·stən ˌskrü }

**capsule** [ENG] A boxlike component or unit, often sealed. { 'kap·səl }

**captive fastener** [DES ENG] A screw-type fastener that does not drop out after it has been unscrewed. { 'kap·tiv 'fas·ən·ər }

**captive test** [ENG] A hold-down test of a propulsion subsystem, rocket engine, or motor. { 'kap·tiv 'test }

**capture area** [ENG ACOUS] The effective area of the receiving surface of a hydrophone, or the available power of the acoustic energy divided by its equivalent plane-wave intensity. { 'kap·chər ˌer·ē·ə }

**capturing** [ENG] The use of a torquer to restrain the spin axis of a gyro to a specified position relative to the spin reference axis. { 'kap·chə·riŋ }

**car** *See* automobile. { kär }

**Carathéodory's principle** [THERMO] An expression of the second law of thermodynamics which says that in the neighborhood of any equilibrium state of a system, there are states which are not accessible by a reversible or irreversible adiabatic process. Also known as principle of inaccessibility. { ˌkär·əˌtā·ə'dȯr·ēz 'prin·sə·pəl }

**carbide tool** [DES ENG] A cutting tool made of tungsten, titanium, or tantalum carbides, having high heat and wear resistance. { 'kärˌbīd ˌtül }

**carbometer** [ENG] An instrument for measuring the carbon content of steel by measuring magnetic properties of the steel in a known magnetic field. { kär'bäm·əd·ər }

**carbonation** [CHEM ENG] The process by which a fluid, especially a beverage, is impregnated with carbon dioxide. { ˌkär·bə'nā·shən }

**carbon bit** [DES ENG] A diamond bit in which the cutting medium is inset carbon. { ¦kär·bən ¦bit }

**carbon burning rate** [CHEM ENG] The weight of carbon burned per unit time from the catalytic-cracking catalyst in the regenerator. { ¦kär·bən 'bərn·iŋ ˌrāt }

**carbon canister** *See* charcoal canister. { ˈkär·bən ˈkan·ə·stər }

**carbon dioxide fire extinguisher** [CHEM ENG] A type of chemical fire extinguisher in which the extinguishing agent is liquid carbon dioxide, stored under 800–900 pounds per square inch (5.5–6.2 megapascals) at normal room temperature. { ˈkär·bən dīˈäkˌsīd ˈfīr ikˈstiŋ·gwish·ər }

**carbon hydrophone** [ENG ACOUS] A carbon microphone that responds to waterborne sound waves. { ˈkär·bən ˈhī·drəˌfōn }

**carbon knock** [MECH ENG] Premature ignition resulting in knocking or pinging in an internal combustion engine caused when the accumulation of carbon produces overheating in the cylinder. { ˈkär·bən ˌnäk }

**carbon microphone** [ENG ACOUS] A microphone in which a flexible diaphragm moves in response to sound waves and applies a varying pressure to a container filled with carbon granules, causing the resistance of the microphone to vary correspondingly. { ˈkär·bən ˈmī·krəˌfōn }

**carbon-pile pressure transducer** [ENG] A measurement device in which variations in pressure upon a conductive carbon core proportionately change the core's electrical resistance, and thus the strength of the measured electric signal from the device. { ˈkär·bən ˌpīl ˈpresh·ər tranz ˌdü·sər }

**carbon residue** [CHEM ENG] The quantity of carbon produced from a lubricating oil heated in a closed container under standard conditions. { ˈkär·bən ˈrez·əˌdü }

**carbon-residue test** [CHEM ENG] A destructive-distillation method for estimation of carbon residues in fuels and lubricating oils. Also known as Conradson carbon test. { ˈkär·bən ˈrez·əˌdü ˌtest }

**carbon resistance thermometer** [ENG] A highly sensitive resistance thermometer for measuring temperatures in the range 0.05–20 K; capable of measuring temperature changes of the order $10^{-5}$ degree. { ˈkär·bən riˈzis·təns thərˌmäm·əd·ər }

**carbon transducer** [ENG] A transducer consisting of carbon granules in contact with a fixed electrode and a movable electrode, so that motion of the movable electrode varies the resistance of the granules. { ˈkär·bən tranzˈdü·sər }

**carburetion** [CHEM ENG] The process of enriching a gas by adding volatile carbon compounds, such as hydrocarbons, to it, as in the manufacture of carbureted water gas. [MECH ENG] The process of mixing fuel with air in a carburetor. { ˌkär·bəˈrā·shən }

**carburetor** [CHEM ENG] An apparatus for vaporizing, cracking, and enriching oils in the manufacture of carbureted water gas. [MECH ENG] A device that makes and controls the proportions and quantity of fuel-air mixture fed to a spark-ignition internal combustion engine. { ˈkär·bəˌred·ər }

**carburetor icing** [MECH ENG] The formation of ice in an engine carburetor as a consequence of expansive cooling and evaporation of gasoline. { ˈkär·bəˌred·ər ˌī·siŋ }

**card** [ELECTR] A printed circuit board or other arrangement of miniaturized components that can be plugged into a computer or peripheral device. { kärd }

**Cardan joint** *See* Hooke's joint. { ˈkärˌdan ˌjȯint }

**Cardan motion** [MECH ENG] The straight-line path followed by a moving centrode in a four-bar centrode linkage. { ˈkärˌdan ˈmō·shən }

**Cardan shaft** [MECH ENG] A shaft with a universal joint at its end to accommodate a varying shaft angle. { ˈkärˌdan ˌshaft }

**Cardan's suspension** [DES ENG] An arrangement of rings in which a heavy body is mounted so that the body is fixed at one point; generally used in a gyroscope. { ˈkärˌdanz səsˈpen·shən }

**card-edge connector** [ELEC] A connector that mates with printed-wiring leads running to the edge of a printed circuit board on one or both sides. Also known as edgeboard connector. { ˈkärd ˌej kəˈnek·tər }

**cardioid microphone** [ENG ACOUS] A microphone having a heart-shaped, or cardioid, response pattern, so it has nearly uniform response for a range of about 180° in one direction and minimum response in the opposite direction. { ˈkärd·ēˌȯid ˈmī·krəˌfōn }

**cardioid pattern** [ENG] Heart-shaped pattern obtained as the response or radiation characteristic of certain directional antennas, or as the response characteristic of certain types of microphones. { ˈkärd·ēˌȯid ˌpad·ərn }

**card key access** [ENG] A physical security system in which doors are unlocked by placing a badge that contains magnetically coded information in proximity to a reading device; some systems also require the typing of this information on a keyboard. { ˈkärd ˌkē ˈakˌses }

**car dump** [MECH ENG] Any one of several devices for unloading industrial or railroad cars by rotating or tilting the car. { ˈkär ˌdəmp }

**car-following theory** [ENG] A mathematical model of the interactions between motor vehicles in terms of relative speed, absolute speed, and separation. { ˈkärˌfäl·ə·wiŋ ˌthē·ə·rē }

**cargo boom** [MECH ENG] A long spar extending from the mast of a derrick to support or guide objects lifted or suspended. { ˈkär·gō ˌbüm }

**cargo mill** [IND ENG] A sawmill equipped with docks so the product can be loaded directly onto ships. { ˈkär·gō ˌmil }

**cargo winch** [MECH ENG] A motor-driven hoisting machine for cargo having a drum around which a chain or rope winds as the load is lifted. { ˈkär·gō ˌwinch }

**carillon** [ENG] A musical instrument played from a keyboard with two or more full chromatic octaves of fine bells shaped for homogeneity of timbre. { ˈkär·əˌlän }

**Carnot-Clausius equation** [THERMO] For any system executing a closed cycle of reversible changes, the integral over the cycle of the infinitesimal amount of heat transferred to the system divided by its temperature equals 0. Also

known as Clausius theorem. { kär'nōt 'klȯz·ē·əs i,kwā·zhən }

**Carnot cycle** [THERMO] A hypothetical cycle consisting of four reversible processes in succession: an isothermal expansion and heat addition, an isentropic expansion, an isothermal compression and heat rejection process, and an isentropic compression. { kär'nō ,si·kəl }

**Carnot efficiency** [THERMO] The efficiency of a Carnot engine receiving heat at a temperature absolute $T_1$ and giving it up at a lower temperature absolute $T_2$; equal to $(T_1 - T_2)/T_1$. { kär'nō i'fish·ən·sē }

**Carnot engine** [MECH ENG] An ideal, frictionless engine which operates in a Carnot cycle. { kär'nō 'en·jən }

**Carnot number** [THERMO] A property of two heat sinks, equal to the Carnot efficiency of an engine operating between them. { kär'nō ,nəm·bər }

**Carnot's theorem** [THERMO] **1.** The theorem that all Carnot engines operating between two given temperatures have the same efficiency, and no cyclic heat engine operating between two given temperatures is more efficient than a Carnot engine. **2.** The theorem that any system has two properties, the thermodynamic temperature T and the entropy S, such that the amount of heat exchanged in an infinitesimal reversible process is given by $đQ = T dS$; the thermodynamic temperature is a strictly increasing function of the empirical temperature measured on an arbitrary scale. { kär'noz 'thir·əm }

**carousel** [MECH ENG] A rotating transport system that transfers and presents workpieces for loading and unloading by a robot or other machine. { ,kar·ə'sel }

**carpenter's level** [DES ENG] A bar, usually of aluminum or wood, containing a spirit level. { 'kär·pən·tərz ,lev·əl }

**car retarder** [ENG] A device located along the track to reduce or control the velocity of railroad or mine cars. { 'kär ri'tärd·ər }

**carriage** [ENG] **1.** A device that moves in a predetermined path in a machine and carries some other part, such as a recorder head. **2.** A mechanism designed to hold a paper in the active portion of a printing or typing device, for example, a typewriter carriage. [MECH ENG] A structure on an industrial truck or stacker that supports forks or other attached equipment and travels vertically within the mast. { 'kar·ij }

**carriage bolt** [DES ENG] A round-head type of bolt with a square neck, used with a nut as a through bolt. { 'kar·ij ,bōlt }

**carriage stop** [MECH ENG] A device added to the outer way of a lathe bed for accurately spacing grooves, turning multiple diameters and lengths, and cutting off pieces of specified thickness. { 'kar·ij ,stäp }

**carrier** [MECH ENG] Any machine for transporting materials or people. { 'kar·ē·ər }

**carrier line** [ELEC] Any transmission line used for multiple-channel carrier communication. { 'kar·ē·ər ,līn }

**carrier pipe** [ENG] Pipe used to carry or conduct fluids, as contrasted with an exterior protective or casing pipe. { 'kar·ē·ər ,pīp }

**carrousel** [IND ENG] In an assembly-line operation, a conveyor that moves objects in a complete circuit on a horizontal plane. { ka·rə'sel }

**carrying capacity** [ELEC] The maximum amount of current or power that can be safely handled by a wire or other component. { 'kar·ē·iŋ kə'pas·əd·ē }

**carry-over** [CHEM ENG] Unwanted liquid or solid material carried by the overhead effluent from a fractionating column, absorber, or reaction vessel. { 'kar·ē ,ō·vər }

**car shaker** [MECH ENG] A device consisting of a heavy yoke on an open-top car's sides that actively vibrates and rapidly discharges a load, such as coal, gravel, or sand, when an unbalanced pulley attached to the yoke is rotated fast. { 'kär ,shāk·ər }

**car stop** [ENG] An appliance used to arrest the movement of a mine or railroad car. { 'kär ,stäp }

**Cartesian-coordinate robot** [CONT SYS] A robot having orthogonal, sliding joints and supported by a nonrotary base as the axis. { kär'tē·zhən kō'ȯrd·ən·ət 'rō,bät }

**Cartesian diver manostat** [ENG] Preset, on-off-control manometer arrangement by which a specified low pressure (high vacuum) is maintained via the rise or submergence of a marginally buoyant float within a liquid mercury reservoir. { kär'tē·zhan 'dīv·ər 'man·ə,stat }

**cartridge** [ENG] A cylindrical, waterproof, paper shell filled with high explosive and closed at both ends; used in blasting. [ENG ACOUS] *See* phonograph pickup; tape cartridge. { 'kär·trij }

**cartridge filter** [ENG] A filter for the clarification of process liquids containing small amounts of solids; turgid liquid flows between thin metal disks, assembled in a vertical stack, to openings in a central shaft supporting the disks, and solids are trapped between the disks. { 'kär·trij ,fil·tər }

**cartridge starter** [MECH ENG] An explosive device which, when placed in an engine and detonated, moves a piston, thereby starting the engine. { 'kär·trij ,stärd·ər }

**car tunnel kiln** [ENG] A long kiln with the fire located near the midpoint; ceramic ware is fired by loading it onto cars which are pushed through the kiln. { 'kär 'tən·əl ,kil }

**Casale process** [CHEM ENG] A process that employs promoted iron oxide catalyst for synthesis of ammonia from nitrogen and hydrogen. { kə,säl·ē ,präs·əs }

**cascade** [ELEC] An electric-power circuit arrangement in which circuit breakers of reduced interrupting ratings are used in the branches, the circuit breakers being assisted in their protection function by other circuit breakers which operate almost instantaneously. Also known as backup arrangement. [ELECTR] *See* avalanche. [ENG] An arrangement of separation devices, such as isotope separators, connected in series

so that they multiply the effect of each individual device. { ka'skād }

**cascade compensation** [CONT SYS] Compensation in which the compensator is placed in series with the forward transfer function. Also known as series compensation; tandem compensation. { ka'skād käm·pən'sā·shən }

**cascade control** [CONT SYS] An automatic control system in which various control units are linked in sequence, each control unit regulating the operation of the next control unit in line. { ka'skād kən,trōl }

**cascade cooler** [CHEM ENG] Fluid-cooling device through which the fluid flows in a series of horizontal tubes, one above the other; cooling water from a trough drips over each tube, then to a drain. Also known as serpentine cooler; trickle cooler. { ka'skād ,kü·lər }

**cascaded** [ENG] Of a series of elements or devices, arranged so that the output of one feeds directly into the input of another, as a series of dynodes or a series of airfoils. { ka'skād·əd }

**cascade impactor** [ENG] A low-speed impaction device for use in sampling both solid and liquid atmospheric suspensoids; consists of four pairs of jets (each of progressively smaller size) and sampling plates working in series and designed so that each plate collects particles of one size range. { ka'skād im'pak·tər }

**cascade limiter** [ELECTR] A limiter circuit that uses two vacuum tubes in series to give improved limiter operation for both weak and strong signals in a frequency-modulation receiver. Also known as double limiter. { ka 'skād 'lim·əd·ər }

**cascade mixer-settler** [CHEM ENG] Series of liquid-holding vessels with stirrers, each connected to an unstirred vessel in which solids or heavy immiscible liquids settle out of suspension; light liquid moves through the mixer-settler units, counterflowing to heavy material, in such a manner that fresh liquid contacts treated heavy material, and spent (used) liquid contacts fresh (untreated) heavy material. { ka'skād ¦mik·sər ¦set·lər }

**cascade pulverizer** [MECH ENG] A form of tumbling pulverizer that uses large lumps to do the pulverizing. { ka'skād 'pəl·və,rīz·ər }

**cascade system** [MECH ENG] A combination of two or more refrigeration systems connected in series to produce extremely low temperatures, with the evaporator of one machine used to cool the condenser of another. { ka'skād ,sis·təm }

**cascade tray** [CHEM ENG] A fractionating apparatus that consists of a series of parallel troughs arranged in stairstep fashion. { ka'skād ,trā }

**cascading** [ELEC] An effect in which a failure of an electrical power system causes this system to draw excessive amounts of power from power systems which are interconnected with it, causing them to fail, and these systems cause adjacent systems to fail in a similar manner, and so forth. [MECH ENG] An effect in ball-mill rotating devices when the upper level of crushing bodies breaks clear and falls to the top of the crop load. { ka'skād·iŋ }

**cascading drain** [MECH ENG] A flow of water into the closed shell of a feedwater heater from a water source maintained at a higher pressure. { ka'skād·iŋ 'drān }

**case** [ENG] An item designed to hold a specific item in a fixed position by virtue of conforming dimensions or attachments; the item which it contains is complete in itself for removal and use outside the container. { kās }

**case bay** [BUILD] A division of a roof or floor, consisting of two principal rafters and the joists between them. { 'kās ,bā }

**casement window** [BUILD] A window hinged on the side that opens to the outside. { 'kās·mənt 'win·dō }

**casing** [BUILD] A finishing member around the opening of a door or window. [DES ENG] The outer portion of a tire assembly consisting of fabric or cord to which rubber is vulcanized. [MECH ENG] A fire-resistant covering used to protect part or all of a steam generating unit. { 'kā,siŋ }

**casing nail** [DES ENG] A nail about half a gage thinner than a common wire nail of the same length. { 'kā,siŋ ,nāl }

**casing shoe** [ENG] A ring with a cutting edge on the bottom of a well casing. { 'kā,siŋ ,shü }

**cassette** [ENG] A light-tight container designed to hold photographic film or plates. [ENG ACOUS] A small, compact container that holds a magnetic tape and can be readily inserted into a matching tape recorder for recording or playback; the tape passes from one hub within the container to the other hub. { kə'set }

**cast** [ENG] **1.** To form a liquid or plastic substance into a fixed shape by letting it cool in the mold. **2.** Any object which is formed by placing a castable substance in a mold or form and allowing it to solidify. Also known as casting. { kast }

**Castaing-Slodzian mass analyzer** *See* direct-imaging mass analyzer. { ¦kas·taŋ ¦slō·zhən ,mas 'an·ə,līz·ər }

**castellated bit** [DES ENG] **1.** A long-tooth, saw-tooth bit. **2.** A diamond-set coring bit with a few large diamonds or hard metal cutting points set in the face of each of several upstanding prongs separated from each other by deep waterways. Also known as padded bit. { 'kas·tə,lād·əd 'bit }

**castellated nut** [DES ENG] A type of hexagonal nut with a cylindrical portion above through which slots are cut so that a cotter pin or safety wire can hold it in place. { 'kas·tə,lād·əd 'nət }

**caster** [ENG] **1.** The inclination of the kingpin or its equivalent in automotive steering, which is positive if the kingpin inclines forward, negative if it inclines backward, and zero if it is vertical as viewed along the axis of the front wheels. **2.** A wheel which is free to swivel about an axis at right angles to the axis of the wheel, used to support trucks, machinery, or furniture. { 'kas·tər }

**cast-film extrusion** *See* chill-roll extrusion. { ¦kast ¦film ik'strü·zhən }

**Castigliano's principle** *See* Castigliano's theorem. { ˌkas·til'yä·nōz ˌprin·sə·pəl }

**Castigliano's theorem** [MECH] The theorem that the component in a given direction of the deflection of the point of application of an external force on an elastic body is equal to the partial derivative of the work of deformation with respect to the component of the force in that direction. Also known as Castigliano's principle. { ˌkas·til'yä·nōz ˌthir·əm }

**casting** *See* cast. { 'kast·iŋ }

**casting area** [ENG] In plastics injection molding, the moldable area of a thermoplastic material for a given thickness and under given conditions of molding. { 'kast·iŋ ˌer·ē·ə }

**casting strain** [MECH] Any strain that results from the cooling of a casting, causing casting stress. { 'kast·iŋ ˌstrān }

**casting stress** [MECH] Any stress that develops in a casting due to geometry and casting shrinkage. { 'kast·iŋ ˌstres }

**Castner cell** [CHEM ENG] A type of mercury cell used in the commercial production of chlorine and sodium. { 'kast·nər ˌsel }

**Castner process** [CHEM ENG] A process used industrially to make high-test sodium cyanide by reacting sodium, glowed charcoal, and dry ammonia gas to form sodamide, which is converted to cyanamide immediately; the cyanamide is converted to cyanide with charcoal. { 'kast·nər ˌpräs·əs }

**cast setting** *See* mechanical setting. { 'kast ˌsed·iŋ }

**catalyst stripping** [CHEM ENG] Introduction of steam to remove hydrocarbons retained on the catalyst; the steam is introduced where the spent catalyst leaves the reactor. { 'kad·əl·əst ˌstrip·iŋ }

**catalytic activity** [CHEM ENG] The ratio of the space velocity of a catalyst being tested, to the space velocity required for a standard catalyst to give the same conversion as the catalyst under test. { ¦kad·əl¦id·ik ak'tiv·əd·ē }

**catalytic converter** [CHEM ENG] A device that is fitted to the exhaust system of an automotive vehicle and contains a catalyst capable of converting potentially polluting exhaust gases into harmless or less harmful products. { ¦kad·əl¦id·ik kən'vərd·ər }

**catalytic cracker** *See* catalytic cracking unit. { ¦kad·əl¦id·ik 'krak·ər }

**catalytic cracking** [CHEM ENG] Conversion of high-boiling hydrocarbons into lower-boiling types by a catalyst. { ¦kad·əl¦id·ik 'krak·iŋ }

**catalytic cracking unit** [CHEM ENG] A unit in a petroleum refinery in which a catalyst is used to carry out cracking of hydrocarbons. Also known as catalytic cracker. { ¦kad·əl¦id·ik 'krak·iŋ ˌyü·nət }

**catalytic hydrogenation** [CHEM ENG] Hydrogenating by means of catalysts such as nickel or palladium. { ¦kad·əl¦id·ik ˌhī·drə·jə'nā·shən }

**catalytic polymerization** [CHEM ENG] Polymerization of monomers to form high-molecular-weight molecules in the presence of catalysts. { ¦kad·əl¦id·ik pəˌlim·ə·rə'zā·shən }

**catalytic reforming** [CHEM ENG] Rearranging of hydrocarbon molecules in a gasoline boiling-range feedstock to form hydrocarbons having a higher antiknock quality. Abbreviated CR. { ¦kad·əl¦id·ik rē'fȯr·miŋ }

**cat-and-mouse engine** [MECH ENG] A type of rotary engine, typified by the Tschudi engine, which is an analog of the reciprocating piston engine, except that the pistons travel in a circular motion. Also known as scissor engine. { ¦kat ən 'maus ˌen·jən }

**cataracting** [MECH ENG] A motion of the crushed bodies in a ball mill in which some, leaving the top of the crop load, fall with impact to the toe of the load. { 'kad·əˌrak·tiŋ }

**catastrophic failure** [ENG] **1.** A sudden failure without warning, as opposed to degradation failure. **2.** A failure whose occurrence can prevent the satisfactory performance of an entire assembly or system. { ˌkad·ə'sträf·ik 'fāl·yər }

**catch** [DES ENG] A device used for fastening a door or gate and usually operated manually from only one side, for example, a latch. { kach }

**catch basin** [CIV ENG] **1.** A basin at the point where a street gutter empties into a sewer, built to catch matter that would not easily pass through the sewer. **2.** A well or reservoir into which surface water may drain off. { 'kach ˌbā·sən }

**catching diode** [ELECTR] Diode connected to act as a short circuit when its anode becomes positive; the diode then prevents the voltage of a circuit terminal from rising above the diode cathode voltage. { 'kach·iŋ ˌdīˌōd }

**catchwater** [CIV ENG] A ditch for catching water on sloping land. { 'kachˌwȯd·ər }

**cat cracker** [CHEM ENG] A refinery unit where catalytic cracking is done. { 'kat ˌkrak·ər }

**catenary suspension** [ENG] Holding a flexible wire or chain aloft by its end points; the wire or chain takes the shape of a catenary. { 'kat·əˌner·ē səs'pen·shən }

**caterpillar** [MECH ENG] A vehicle, such as a tractor or army tank, which runs on two endless belts, one on each side, consisting of flat treads and kept in motion by toothed driving wheels. { 'kad·ərˌpil·ər }

**caterpillar chain** [DES ENG] A short, endless chain on which dogs (grippers) or teeth are arranged to mesh with a conveyor. { 'kad·ərˌpil·ər ˌchān }

**caterpillar gate** [CIV ENG] A steel gate carried on crawler tracks that is used to control water flow through a spillway. { 'kad·ərˌpil·ər ˌgāt }

**catforming** [CHEM ENG] A naphtha-reforming process with a catalyst of platinum-silica-alumina which results in very high hydrogen purity. { 'katˌfȯr·miŋ }

**cathetometer** [ENG] An instrument for measuring small differences in height, for example, between two columns of mercury. { ˌkath·əˈtäm·əd·ər }

**cathode** [ELEC] The terminal at which current leaves a primary cell or storage battery; it is negative with respect to the device, and positive with respect to the external circuit. [ELECTR] **1.** The primary source of electrons in an electron tube; in directly heated tubes the filament is the cathode, and in indirectly heated tubes a coated metal cathode surrounds a heater. Designated K. Also known as negative electrode. **2.** The terminal of a semiconductor diode that is negative with respect to the other terminal when the diode is biased in the forward direction. { ˈkathˌōd }

**cathode efficiency** [CHEM ENG] The proportion of current used for completion of a given process at the cathode. { ˈkathˌōd iˌfish·ən·sē }

**cathode-ray tube** [ELECTR] An electron tube in which a beam of electrons can be focused to a small area and varied in position and intensity on a surface. Abbreviated CRT. Originally known as Braun tube; also known as electron-ray tube. { ˈkathˌōd ˈrā ˌtüb }

**cathodic inhibitor** [CHEM ENG] A compound, such as calcium bicarbonate or sodium phosphate, which is deposited on a metal surface in a thin film that operates at the cathodes to provide physical protection over the entire surface against corrosive attack in a conducting medium. { kəˈthäd·ik inˈhib·əd·ər }

**catwalk** [ENG] A narrow, raised platform or pathway used for passage to otherwise inaccessible areas, such as a raised walkway on a ship permitting fore and aft passage when the main deck is awash, a walkway on the roof of a freight car, or a walkway along a vehicular bridge. { ˈkatˌwȯk }

**caul** [ENG] A sheet of metal or other material that is heated and used to equalize pressure during fabricating plywood, shaping surface veneer, and hot-pressing composite materials. { kȯl }

**caulk** [ENG] To make a seam or point airtight, watertight, or steamtight by driving in caulking compound, dry pack, lead wool, or other material. Also spelled calk. { kȯk }

**caulking iron** [DES ENG] A tool for applying caulking to a seam. { ˈkȯk·iŋ ˌī·ərn }

**causality** [MECH] In classical mechanics, the principle that the specification of the dynamical variables of a system at a given time, and of the external forces acting on the system, completely determines the values of dynamical variables at later times. Also known as determinism. { kȯˈzal·əd·ē }

**causal system** [CONT SYS] A system whose response to an input does not depend on values of the input at later times. Also known as nonanticipatory system; physical system. { ˈkȯ·zəl ˌsis·təm }

**causticization** [CHEM ENG] A process for converting an alkaline carbonate into lime. { ˈkȯs·tə·səˈzā·shən }

**caustic treater** [CHEM ENG] A vessel containing a strong alkali through which solutions are passed for removal of undesirable substances, for example, sulfides, mercaptans, or acids. { ˈkȯ·stik ˌtrēd·ər }

**cautious control** [CONT SYS] A control law for a stochastic adaptive control system which hedges and uses lower gain when the estimates are uncertain. { ˈkȯ·shəs kənˈtrōl }

**cave** [ENG] A pit or tunnel under a glass furnace for collecting ashes or raking the fire. { kāv }

**Cavendish balance** [ENG] An instrument for determining the constant of gravitation, in which one measures the displacement of two small spheres of mass $m$, which are connected by a light rod suspended in the middle by a thin wire, caused by bringing two large spheres of mass M near them. { ˈkav·ən·dish ˈbal·əns }

**cavings** *See* slough. { ˈkāv·iŋz }

**cavitation** [ENG] Pitting of a solid surface such as metal or concrete. { ˌkav·əˈtā·shən }

**cavitation resistance inducer** [MECH ENG] In liquid flows through rotating machinery, an axial flow pump with high-solidity blades that is used in front of a main pump in order to increase the inlet head and thereby prevent cavitation in the downstream impeller. { ˌkav·əˌtā·shən riˈsis·təns inˌdü·sər }

**cavity frequency meter** [ENG] A device that employs a cavity resonator to measure microwave frequencies. { ˈkav·əd·ē ˈfrē·kwən·sē ˌmēd·ər }

**cavity impedance** [ELECTR] The impedance of the cavity of a microwave tube which appears across the gap between the cathode and the anode. { ˈkav·əd·ē imˈpēd·əns }

**cavity magnetron** [ELECTR] A magnetron having a number of resonant cavities forming the anode; used as a microwave oscillator. { ˈkav·əd·ē ˈmag·nəˌträn }

**cavity radiator** [THERMO] A heated enclosure with a small opening which allows some radiation to escape or enter; the escaping radiation approximates that of a blackbody. { ˈkav·əd·ē ˈrād·ēˌād·ər }

**cavity resonance** [ENG ACOUS] The natural resonant vibration of a loudspeaker baffle; if in the audio range, it is evident as unpleasant emphasis of sounds at that frequency. { ˈkav·əd·ē ˈrez·ən·əns }

**cavity wall** [BUILD] A wall constructed in two separate thicknesses with an air space between; provides thermal insulation. Also known as hollow wall. { ˈkav·əd·ē ˌwȯl }

**c axis** [MECH ENG] The angle that specifies the rotation of a machine tool about the $z$ axis. { ˈsē ˌak·səs }

**CCD** *See* charge-coupled device.

**C chart** [IND ENG] A quality-control chart showing number of defects in subgroups of constant size; gives information concerning quality level, its variability, and evidence of assignable causes of variation. { ˈsē ˌchärt }

**CCR process** *See* cyclic catalytic reforming process. { ˌsēˌsē'är ˌpräs·əs }

**CD-4 sound** *See* compatible discrete four-channel sound. { ¦sē¦dē 'fôr ˌsaünd }

**ceiling** [BUILD] The covering made of plaster, boards, or other material that constitutes the overhead surface in a room. { 'sē·liŋ }

**ceiling light** [ENG] A type of cloud-height indicator which uses a searchlight to project vertically a narrow beam of light onto a cloud base. Also known as ceiling projector. { 'sē·liŋ ˌlīt }

**ceiling projector** *See* ceiling light. { 'sē·liŋ prə'jek·tər }

**ceilometer** [ENG] An automatic-recording cloud-height indicator. { sē'läm·əd·ər }

**cell** [ELEC] A single unit of a battery. [IND ENG] A manufacturing unit consisting of a group of work stations and their interconnecting materials-transport mechanisms and storage buffers. { sel }

**cellular cofferdam** [CIV ENG] A cofferdam consisting of interlocking steel-sheet piling driven as a series of interconnecting cells; cells may be of circular type or of straight-wall diaphragm type; space between lines of pilings is filled with sand. { 'sel·yə·lər 'kȯf·ərˌdam }

**cellular horn** *See* multicellular horn. { 'sel·yə·lər 'hȯrn }

**cellular manufacturing** [IND ENG] A type of manufacturing in which equipment is organized into groups or cells according to function and intermachine relationships. { ¦sel·yə·lər ˌman·ə'fak·chər·iŋ }

**cellular striation** [ENG] Stratum of cells inside a cellular-plastic object that differs noticeably from the cell structure of the remainder of the material. { 'sel·yə·lər strī'ā·shən }

**celo** [MECH] A unit of acceleration equal to the acceleration of a body whose velocity changes uniformly by 1 foot (0.3048 meter) per second in 1 second. { 'se·lō }

**Celsius degree** [THERMO] Unit of temperature interval or difference equal to the kelvin. { 'sel·sē·əs di'grē }

**Celsius temperature scale** [THERMO] Temperature scale in which the temperature $\Theta_c$ in degrees Celsius (°C) is related to the temperature $T_k$ in kelvins by the formula $\Theta_c = T_k - 273.15$; the freezing point of water at standard atmospheric pressure is very nearly 0°C and the corresponding boiling point is very nearly 100°C. Formerly known as centigrade temperature scale. { 'sel·sē·əs 'tem·prə·chər ˌskāl }

**cementation** [ENG] **1.** Plugging a cavity or drill hole with cement. Also known as dental work. **2.** Consolidation of loose sediments or sand by injection of a chemical agent or binder. { ˌsē ˌmen'tā·shən }

**cement gun** [MECH ENG] **1.** A machine for mixing, wetting, and applying refractory mortars to hot furnace walls. Also known as cement injector. **2.** A mechanical device for the application of cement or mortar to the walls or roofs of mine openings or building walls. { si'ment ˌgən }

**cement injector** *See* cement gun. { si'ment in 'jek·tər }

**cement kiln** [ENG] A kiln used to fire cement to less than complete melting. { si'ment ˌkil }

**cement mill** [MECH ENG] A mill for grinding rock to a powder for cement. { si'ment ˌmil }

**cement pump** [MECH ENG] A piston device used to move concrete through pipes. { si 'ment ˌpəmp }

**cement silo** [ENG] A silo used to store dry, bulk cement. { si'ment 'sīˌlō }

**cement valve** [MECH ENG] A ball-, flapper-, or clack-type valve placed at the bottom of a string of casing, through which cement is pumped, so that when pumping ceases, the valve closes and prevents return of cement into the casing. { si 'ment ˌvalv }

**centare** *See* centiare. { 'senˌtär }

**center** [IND ENG] A manufacturing unit containing a number of interconnected cells. { 'sen·tər }

**center-bearing swing bridge** [CIV ENG] A type of swing bridge that has a single large bearing on a pier, called the pivot pier, in the waterway. { sen·tər ˌber·iŋ 'swiŋ ˌbrij }

**center drill** [ENG] A two-fluted tool consisting of a twist drill with a 60° countersink; used to drill countersink center holes in a workpiece to be mounted between centers for turning or grinding. { 'sen·tər ˌdril }

**center gage** [DES ENG] A gage used to check angles; for example, the angles of cutting tool points or screw threads, or the angular position of cutting tools. { 'sen·tər ˌgāj }

**center-gated mold** [ENG] A plastics injection mold with the filling orifice interconnected to the nozzle and the center of the cavity area. { 'sen·tər ˌgād·əd 'mōld }

**centering** [CIV ENG] A curved, temporary support for an arch or dome during a casting or laying operations. { 'sen·tə·riŋ }

**centering machine** [MECH ENG] A machine for drilling and countersinking work to be turned on a lathe. { 'sen·tə·riŋ ma'shēn }

**centerless grinder** [MECH ENG] A cylindrical metal-grinding machine that carries the work on a support or blade between two abrasive wheels. { 'sen·tər·ləs 'grin·dər }

**center line** [ENG] A line that represents an axis of symmetry on a plane figure such as a plan for a structure or a machine. { 'sen·tər ˌlīn }

**center of attraction** [MECH] A point toward which a force on a body or particle (such as gravitational or electrostatic force) is always directed; the magnitude of the force depends only on the distance of the body or particle from this point. { 'sen·tər əv ə'trak·shən }

**center of buoyancy** [MECH] The point through which acts the resultant force exerted on a body by a static fluid in which it is submerged or floating; located at the centroid of displaced volume. { 'sen·tər əv 'bȯi·ən·sē }

**center of force** [MECH] The point toward or from which a central force acts. { 'sen·tər əv 'fȯrs }

**center of gravity** [MECH] A fixed point in a material body through which the resultant force of gravitational attraction acts. { 'sen·tər əv 'grav·əd·ē }

**center of inertia** *See* center of mass. { 'sen·tər əv i'nər·shə }

**center of mass** [MECH] That point of a material body or system of bodies which moves as though the system's total mass existed at the point and all external forces were applied at the point. Also known as center of inertia; centroid. { 'sen·tər əv 'mas }

**center-of-mass coordinate system** [MECH] A reference frame which moves with the velocity of the center of mass, so that the center of mass is at rest in this system, and the total momentum of the system is zero. Also known as center of momentum coordinate system. { 'sen·tər əv 'mas kō'ord·nət ˌsis·təm }

**center-of-momentum coordinate system** *See* center-of-mass coordinate system. { 'sen·tər əv mə'men·təm kō'ord·nət ˌsis·təm }

**center of oscillation** [MECH] Point in a physical pendulum, on the line through the point of suspension and the center of mass, which moves as if all the mass of the pendulum were concentrated there. { 'sen·tər əv ˌäs·ə'lā·shən }

**center of percussion** [MECH] If a rigid body, free to move in a plane, is struck a blow at a point O, and the line of force is perpendicular to the line from O to the center of mass, then the initial motion of the body is a rotation about the center of percussion relative to O; it can be shown to coincide with the center of oscillation relative to O. { 'sen·tər əv pər'kəsh·ən }

**center of suspension** [MECH] The intersection of the axis of rotation of a pendulum with a plane perpendicular to the axis that passes through the center of mass. { 'sen·tər əv sə'spen·shən }

**center of twist** [MECH] A point on a line parallel to the axis of a beam through which any transverse force must be applied to avoid twisting of the section. Also known as shear center. { 'sen·tər əv 'twist }

**center plug** [DES ENG] A small diamond-set circular plug, designed to be inserted into the annular opening in a core bit, thus converting it to a noncoring bit. { 'sen·tər ˌpləg }

**center punch** [DES ENG] A tool similar to a prick punch but having the point ground to an angle of about 90°; used to enlarge prick-punch marks or holes. { 'sen·tər ˌpənch }

**center square** [DES ENG] A straight edge with a sliding square; used to locate the center of a circle. { 'sen·tər ˌskwer }

**centiare** [MECH] Unit of area equal to 1 square meter. Also spelled centare. { 'sen·tē,ër }

**centibar** [MECH] A unit of pressure equal to 0.01 bar or to 1000 pascals. { 'sent·əˌbär }

**centigrade heat unit** [THERMO] A unit of heat energy, equal to 0.01 of the quantity of heat needed to raise 1 pound of air-free water from 0 to 100°C at a constant pressure of 1 standard atmosphere; equal to 1900.44 joules. Symbolized CHU; (more correctly) $CHU_{mean}$. { 'sent·əˌgrād 'hēt ˌyü·nət }

**centigrade temperature scale** *See* Celsius temperature scale. { 'sent·əˌgrād 'tem·prə·chər ˌskāl }

**centigram** [MECH] Unit of mass equal to 0.01 gram or $10^{-5}$ kilogram. Abbreviated cg. { 'sent·əˌgram }

**centihg** *See* centimeter of mercury. { 'senˌtig *or* ¦sent·ēˌāch'jē }

**centiliter** [MECH] A unit of volume equal to 0.01 liter or to $10^{-5}$ cubic meter. { 'sent·əˌlēd·ər }

**centimeter** [MECH] A unit of length equal to 0.01 meter. Abbreviated cm. { 'sent·əˌmēd·ər }

**centimeter of mercury** [MECH] A unit of pressure equal to the pressure that would support a column of mercury 1 centimeter high, having a density of 13.5951 grams per cubic centimeter, when the acceleration of gravity is equal to its standard value (980.665 centimeters per second per second); it is equal to 1333.22387415 pascals; it differs from the dekatorr by less than 1 part in 7,000,000. Abbreviated cmHg. Also known as centihg. { 'sent·əˌmēd·ər əv 'mər·kyə·rē }

**central control** [SYS ENG] Control exercised over an extensive and complicated system from a single center. { 'sen·trəl kən'trōl }

**central force** [MECH] A force whose line of action is always directed toward a fixed point; the force may attract or repel. { 'sen·trəl 'fôrs }

**central gear** [MECH ENG] The gear on the central axis of a planetary gear train, about which a pinion rotates. Also known as sun gear. { 'sen·trəl 'gir }

**central heating** [CIV ENG] The use of a single steam or hot-water heating plant to serve a group of buildings, facilities, or even a complete community through a system of distribution pipes. { 'sen·trəl 'hēd·iŋ }

**centralized traffic control** [CIV ENG] Control of train movements by signal indications given by a train director at a central control point. Abbreviated CTC. { 'sen·trəˌlīzd 'traf·ik kən'trōl }

**central orbit** [MECH] The path followed by a body moving under the action of a central force. { 'sen·trəl 'ȯr·bət }

**centrifugal** [MECH] Acting or moving in a direction away from the axis of rotation or the center of a circle along which a body is moving. { ˌsen 'trif·i·gəl }

**centrifugal atomizer** [MECH ENG] Device that atomizes liquids with a spinning disk; liquid is fed onto the center of the disk, and the whirling motion (3000 to 50,000 revolutions per minute) forces the liquid outward in thin sheets to cause atomization. { ˌsen'trif·i·gəl 'ad·əˌmīz·ər }

**centrifugal barrier** [MECH] A steep rise, located around the center of force, in the effective potential governing the radial motion of a particle of nonvanishing angular momentum in a central force field, which results from the centrifugal force and prevents the particle from reaching the center of force, or causes its Schrödinger wave function to vanish there in a quantum-mechanical system. { ˌsen'trif·i·gəl 'bar·ē·ər }

**centrifugal brake** [MECH ENG] A safety device on a hoist drum that applies the brake if the drum speed is greater than a set limit. { ˌsen'trif·i·gəl 'brāk }

**centrifugal casting** [ENG] A method for casting metals or forming thermoplastic resins in which the molten material solidifies in and conforms to the shape of the inner surface of a heated, rapidly rotating container. { ˌsen'trif·i·gəl 'kast·iŋ }

**centrifugal clarification** [MECH ENG] The removal of solids from a liquid by centrifugal action which decreases the settling time of the particles from hours to minutes. { ˌsen'trif·i·gəl ˌklar·i·fə'kā·shən }

**centrifugal classification** [MECH ENG] A type of centrifugal clarification purposely designed to settle out only the large particles (rather than all particles) in a liquid by reducing the centrifuging time. { ˌsen'trif·i·gəl ˌklas·ə·fə'kā·shən }

**centrifugal classifier** [MECH ENG] A machine that separates particles into size groups by centrifugal force. { ˌsen'trif·i·gəl 'klas·əˌfī·ər }

**centrifugal clutch** [MECH ENG] A clutch operated by centrifugal force from the speed of rotation of a shaft, as when heavy expanding friction shoes act on the internal surface of a rim clutch, or a flyball-type mechanism is used to activate clutching surfaces on cones and disks. { ˌsen 'trif·i·gəl 'kləch }

**centrifugal collector** [MECH ENG] Device used to separate particulate matter of 0.1–1000 micrometers from an airstream; some types are simple cyclones, high-efficiency cyclones, and impellers. { ˌsen'trif·i·gəl ka'lek·tər }

**centrifugal compressor** [MECH ENG] A machine in which a gas or vapor is compressed by radial acceleration in an impeller with a surrounding casing, and can be arranged multistage for high ratios of compression. { ˌsen'trif·i·gəl kəm'pres·ər }

**centrifugal discharge elevator** [MECH ENG] A high-speed bucket elevator from which free-flowing materials are discharged by centrifugal force at the top of the loop. { ˌsen'trif·i·gəl 'disˌcharj ˌel·əˌvād·ər }

**centrifugal extractor** [CHEM ENG] A device for separating components of a liquid solution, consisting of a series of perforated concentric rings in a cylindrical drum that rotates at 2000–5000 revolutions per minute around a cylindrical shaft; liquids enter and leave through the shaft; they flow radially and concurrently in the rotating drum. { ˌsen'trif·i·gəl ik'strak·tər }

**centrifugal fan** [MECH ENG] A machine for moving a gas, such as air, by accelerating it radially outward in an impeller to a surrounding casing, generally of scroll shape. { ˌsen'trif·i·gəl 'fan }

**centrifugal filter** [ENG] An adaptation of the centrifugal settler; centrifugal action of a spinning container segregates heavy and light materials but heavy materials escape through nozzles as a thick slurry. { ˌsen'trif·i·gəl 'fil·tər }

**centrifugal filtration** [MECH ENG] The removal of a liquid from a slurry by introducing the slurry into a rapidly rotating basket, where the solids are retained on a porous screen and the liquid is forced out of the cake by the centrifugal action. { ˌsen'trif·i·gəl fil'trā·shən }

**centrifugal force** [MECH] **1.** An outward pseudo-force, in a reference frame that is rotating with respect to an inertial reference frame, which is equal and opposite to the centripetal force that must act on a particle stationary in the rotating frame. **2.** The reaction force to a centripetal force. { ˌsen'trif·i·gəl 'fȯrs }

**centrifugal governor** [MECH ENG] A governor whose flyweights respond to centrifugal force to sense speed. { ˌsen'trif·i·gəl 'gəv·ə·nər }

**centrifugal molecular still** [CHEM ENG] A device used for molecular distillation; material is fed to the center of a hot, rapidly rotating cone housed in a chamber at a high vacuum; centrifugal force spreads the material rapidly over the hot surface, where the evaporable material goes off as a vapor to the condenser. { ˌsen'trif·i·gəl mə'lek·yə·lər 'stil }

**centrifugal moment** [MECH] The product of the magnitude of centrifugal force acting on a body and the distance to the center of rotation. { ˌsen'trif·i·gəl 'mō·mənt }

**centrifugal pump** [MECH ENG] A machine for moving a liquid, such as water, by accelerating it radially outward in an impeller to a surrounding volute casing. { ˌsen'trif·i·gəl 'pəmp }

**centrifugal sedimentation** [CHEM ENG] Removing solids from liquids by causing particles to settle through the liquid radially toward or away from the center of rotation (depending on the solid-liquid relative densities) by use of a centrifuge. { ˌsen'trif·i·gəl ˌsed·ə·mən'tā·shən }

**centrifugal separation** [MECH ENG] The separation of two immiscible liquids in a centrifuge within a much shorter period of time than could be accomplished solely by gravity. { ˌsen'trif·i·gəl ˌsep·ə'rā·shən }

**centrifugal settler** [CHEM ENG] Spinning container that separates solid particles from liquids; centrifugal force causes suspended solids to move toward or away from the center of rotation, thus concentrating them in one area for removal. { ˌsen'trif·i·gəl 'set·lər }

**centrifugal switch** [MECH ENG] A switch opened or closed by centrifugal force; used on some induction motors to open the starting winding when the motor has almost reached synchronous speed. { ˌsen'trif·i·gəl 'swich }

**centrifugal tachometer** [MECH ENG] An instrument which measures the instantaneous angular speed of a shaft by measuring the centrifugal force on a mass rotating with it. { ˌsen'trif·i·gəl tə'käm·əd·ər }

**centrifuge** [MECH ENG] **1.** A rotating device for separating liquids of different specific gravities or for separating suspended colloidal particles, such as clay particles in an aqueous suspension, according to particle-size fractions by centrifugal force. **2.** A large motor-driven apparatus with a long arm, at the end of which human and animal subjects or equipment can be revolved

and rotated at various speeds to simulate the prolonged accelerations encountered in rockets and spacecraft. { 'sen·trə,fyüj }

**centrifuge refining** [CHEM ENG] The use of centrifuges for liquids processing, such as separation of solids or immiscible droplets from liquid carriers, or for liquid-liquid solvent extraction. { 'sen·trə,fyüj ri'fīn·iŋ }

**centripetal** [MECH] Acting or moving in a direction toward the axis of rotation or the center of a circle along which a body is moving. { ,sen'trip·əd·əl }

**centripetal acceleration** [MECH] The radial component of the acceleration of a particle or object moving around a circle, which can be shown to be directed toward the center of the circle. Also known as radial acceleration. { ,sen'trip·əd·əl ik,sel·ə'rā·shən }

**centripetal force** [MECH] The radial force required to keep a particle or object moving in a circular path, which can be shown to be directed toward the center of the circle. { ,sen'trip·əd·əl 'fȯrs }

**centrobaric** [MECH] **1.** Pertaining to the center of gravity, or to some method of locating it. **2.** Possessing a center of gravity. { ¦sen·trō ¦bar·ik }

**centrode** [MECH] The path traced by the instantaneous center of a plane figure when it undergoes plane motion. { 'sen,trōd }

**centroid** *See* center of mass. { 'sen,trȯid }

**centroid of asymptotes** [CONT SYS] The intersection of asymptotes in a root-locus diagram. { 'sen,trȯid əv 'as·əm,tōd·ēz }

**cepstrum vocoder** [ENG ACOUS] A digital device for reproducing speech in which samples of the cepstrum of speech, together with pitch information, are transmitted to the receiver, and are then converted into an impulse response that is convolved with an impulse train generated from the pitch information. { 'sep·trəm 'vō¦kōd·ər }

**ceramic capacitor** [ELEC] A capacitor whose dielectric is a ceramic material such as steatite or barium titanate, the composition of which can be varied to give a wide range of temperature coefficients. { sə'ram·ik kə'pas·əd·ər }

**ceramic cartridge** [ENG ACOUS] A device containing a piezoelectric ceramic element, used in phonograph pickups and microphones. { sə'ram·ik 'kär·trij }

**ceramic earphones** *See* crystal headphones. { sə'ram·ik 'ir,fōnz }

**ceramic glaze** [ENG] A glossy finish on a clay body obtained by spraying with metallic oxides, chemicals, and clays and firing at high temperature. { sə'ram·ik 'glāz }

**ceramic microphone** [ENG ACOUS] A microphone using a ceramic cartridge. { sə'ram·ik 'mī·krə,fōn }

**ceramic pickup** [ENG ACOUS] A phonograph pickup using a ceramic cartridge. { sə'ram·ik 'pik·əp }

**ceramic radiant** [ENG] A baked-clay component of a gas heating unit which radiates heat when incandescent from the gas flame. { sə'ram·ik 'rād·ē·ənt }

**ceramics** [ENG] The art and science of making ceramic products. { sə'ram·iks }

**ceramic tool** [DES ENG] A cutting tool made from metallic oxides. { sə'ram·ik ,tül }

**ceramic transducer** *See* electrostriction transducer. { sə'ram·ik tranz'dü·sər }

**ceraunograph** [ENG] An instrument that detects radio waves generated by lightning discharges and records their occurrence. { sə'rȯn·ə,graf }

**Cermak-Sirek furnace** [ENG] An automatic reverberatory furnace of rectangular form divided into two sections by a wall; used for roasting zinc and quicksilver ores. { ¦sər,mak ¦spir·ek ,fər·nəs }

**cermet resistor** [ELEC] A metal-glaze resistor, consisting of a mixture of finely powdered precious metals and insulating materials fired onto a ceramic substrate. { 'sər,met ri'zis·tər }

**Cerruti's problem** *See* Boussinesq's problem. { se'rü·dēz ,präb·ləm }

**certainty equivalence control** [CONT SYS] An optimal control law for a stochastic adaptive control system which is obtained by solving the control problem in the case of known parameters and substituting the known parameters with their estimates. { 'sərt·ən·tē i'kwiv·ə·ləns kən'trōl }

**cesium magnetometer** [ENG] A magnetometer that uses a cesium atomic-beam resonator as a frequency standard in a circuit that detects very small variations in magnetic fields. { 'sē·zē·əm ,mag·nə'täm·əd·ər }

**cesspit** *See* cesspool. { 'ses,pit }

**cesspool** [CIV ENG] An underground tank for raw sewage collection; used where there is no sewage system. Also known as cesspit. { 'ses,pül }

**cetane index** [CHEM ENG] An empirical method for finding the cetane number of a fuel based on API gravity and the mid boiling point. { 'sē,tān ,in,deks }

**cetane number** [CHEM ENG] The percentage by volume of cetane (cetane number 100) in a blend with α-methylnaphthalene (cetane number 0); indicates the ability of a fuel to ignite quickly after being injected into the cylinder of an engine. { 'sē,tān ,nəm·bər }

**CFIA** *See* component-failure-impact analysis.

**cfs** *See* cusec.

**cg** *See* centigram.

**chain** [CIV ENG] *See* engineer's chain; Gunter's chain. [DES ENG] **1.** A flexible series of metal links or rings fitted into one another; used for supporting, restraining, dragging, or lifting objects or transmitting power. **2.** A mesh of rods or plates connected together, used to convey objects or transmit power. { chān }

**chain belt** [DES ENG] Belt of flat links to transmit power. { 'chān ,belt }

**chain block** [MECH ENG] A tackle which uses an endless chain rather than a rope, often operated

from an overhead track to lift heavy weights especially in workshops. Also known as chain fall; chain hoist. { 'chān ˌblāk }

**chain bond** [CIV ENG] A masonry bond formed with a chain or bar. { 'chān ˌbänd }

**chain conveyor** [MECH ENG] A machine for moving materials that carries the product on one or two endless linked chains with crossbars; allows smaller parts to be added as the work passes. { 'chān kən'vā·ər }

**chain course** [CIV ENG] A course of stone held together by iron cramps. { 'chān ˌkȯrs }

**chain drive** [MECH ENG] A flexible device for power transmission, hoisting, or conveying, consisting of an endless chain whose links mesh with toothed wheels fastened to the driving and driven shafts. { 'chān ˌdrīv }

**chain fall** *See* chain block. { 'chān ˌfȯl }

**chain-float liquid-level gage** [ENG] Float device to measure the level of liquid in a vessel; the float, suspended from a counterweighted chain draped over a toothed sprocket, rises or falls with the liquid level, and the chain movement turns the sprocket to position a calibrated depth-indicator. { 'chān ˈflōt 'lik·wəd ˈlev·əl ˌgāj }

**chain gear** [MECH ENG] A gear that transmits motion from one wheel to another by means of a chain. { 'chān ˌgir }

**chain grate stoker** [MECH ENG] A wide, endless chain used to feed, carry, and burn a noncoking coal in a furnace, control the air for combustion, and discharge the ash. { 'chān ˌgrāt ˌstōk·ər }

**chain hoist** *See* chain block. { 'chān ˌhȯist }

**chaining** [CIV ENG] In land surveying, measuring distance by means of a chain or tape. { 'chān·iŋ }

**chain pump** [MECH ENG] A pump containing an endless chain that is fitted at intervals with disks and moves through a pipe and raises sludge. { 'chān ˌpəmp }

**chain radar system** [ENG] A number of radar stations located at various sites on a missile range to enable complete radar coverage during a missile flight; the stations are linked by data and communication lines for target acquisition, target positioning, or data-recording purposes. { ˈchān 'rāˌdär ˌsis·təm }

**chain riveting** [ENG] Riveting consisting of rivets one behind the other in rows along the seam. { 'chān ˌriv·əd·iŋ }

**chain saw** [MECH ENG] A gasoline-powered saw for felling and bucking timber, operated by one person; has cutting teeth inserted in a sprocket chain that moves rapidly around the edge of an oval-shaped blade. { 'chān ˌsȯ }

**chain tongs** [DES ENG] A tool for turning pipe, using a chain to encircle and grasp the pipe. { 'chān ˌtäŋz }

**chain vise** [DES ENG] A vise in which the work is encircled and held tightly by a chain. { 'chān ˌvīs }

**chaldron** [MECH] **1.** A unit of volume in common use in the United Kingdom, equal to 36 bushels, or 288 gallons, or approximately 1.30927 cubic meters. **2.** A unit of volume, formerly used for measuring solid substances in the United States, equal to 36 bushels, or approximately 1.26861 cubic meters. { 'chȯl·drən }

**chamber** [CIV ENG] The space in a canal lock between the upper and lower gates. { 'chām·bər }

**chamber kiln** [ENG] A kiln consisting of a series of adjacent chambers in a ring or oval through which the fire moves, taking several days to make a circuit; waste gas from the fire preheats ware in chambers toward which the fire is moving, while combustion air is preheated by ware in chambers already fired. { 'chām·bər ˌkil }

**chamber process** [CHEM ENG] An obsolete method of manufacturing sulfuric acid in which sulfur dioxide, air, and steam are reacted in a lead chamber with oxides of nitrogen as the catalyst. { 'chām·bər ˌpräs·əs }

**chamber test** [ENG] A fire test developed specifically for floor coverings that measures the speed and distance of the spread of flames under specified conditions. { 'chām·bər ˌtest }

**chamfer** [ENG] To bevel a sharp edge on a machined part. { 'cham·fər }

**chamfer angle** [DES ENG] The angle that a beveled surface makes with one of the original surfaces. { 'cham·fər ˌaŋ·gəl }

**chamfering** [MECH ENG] Machining operations to produce a beveled edge. Also known as beveling. { 'cham·fə·riŋ }

**chamfer plane** [DES ENG] A plane for chamfering edges of woodwork. { 'cham·fər ˌplān }

**change gear** [MECH ENG] A gear used to change the speed of a driven shaft while the speed of the driving remains constant. { 'chānj ˌgir }

**changing bag** [ENG] An enclosure of lightproof material used for operations such as loading of film holders in daylight. { 'chānj·iŋ ˌbag }

**channel** [CHEM ENG] In percolation filtration, a portion of the clay bed where there is a preponderance of flow. [CIV ENG] A natural or artificial waterway connecting two bodies of water or containing moving water. [ELECTR] **1.** A path for a signal, as an audio amplifier may have several input channels. **2.** The main current path between the source and drain electrodes in a field-effect transistor or other semiconductor device. [ENG] The forming of cavities in a gear lubricant at low temperatures because of congealing. { 'chan·əl }

**channeler** *See* channeling machine. { 'chan·əl·ər }

**channel FET microphone** [ENG ACOUS] A microphone in which a membrane is used as the gate to a field-effect transistor (FET) located just below it, and motion of the membrane modulates the current between the source and drain of the transistor. { ˈchan·əl ˈfet 'mī·krəˌfōn *or* ˈefˈēˈtē }

**channeling machine** [MECH ENG] An electrically powered machine that operates by a chipping action of three to five chisels while traveling

back and forth on a track; used for primary separation from the rock ledge in marble, limestone, and soft sandstone quarries. Also known as channeler. { 'chan·əl·iŋ mə'shēn }

**channel iron** [DES ENG] A metal strip or beam with a U-shape. { 'chan·əl ˌī·ərn }

**channel process** [CHEM ENG] A carbon-black process in which iron channel beams are used as depositing surfaces for carbon black. { 'chan·əl ˌpräs·əs }

**chaos** *See* chaotic behavior. { 'kāˌäs }

**chaotic behavior** [MECH] The behavior of a system whose final state depends so sensitively on the system's precise initial state that the behavior is in effect unpredictable and cannot be distinguished from a random process, even though it is strictly determinate in a mathematical sense. Also known as chaos. { kā'ädˌik bi'hā·vyər }

**Chapman-Jouguet plane** [MECH] A hypothetical, infinite plane, behind the initial shock front, in which it is variously assumed that reaction (and energy release) has effectively been completed, that reaction product gases have reached thermodynamic equilibrium, and that reaction gases, streaming backward out of the detonation, have reached such a condition that a forward-moving sound wave located at this precise plane would remain a fixed distance behind the initial shock. { ¦chap·mən zhü¦gwā ˌplān }

**characteristic** [ELECTR] A graph showing how the voltage or current between two terminals of an electronic device varies with the voltage or current between two other terminals. { ˌkar·ik·tə'ris·tik }

**characteristic length** [MECH] A convenient reference length (usually constant) of a given configuration, such as overall length of an aircraft, the maximum diameter or radius of a body of revolution, or a chord or span of a lifting surface. { ˌkar·ik·tə'ris·tik 'leŋkth }

**characterization factor** [CHEM ENG] A number which expresses the variations in physical properties with change in character of the paraffinic stock; ranges from 12.5 for paraffinic stocks to 10.0 for the highly aromatic stocks. Also known as Watson factor. { ˌkar·ik·tə·rə'zā·shən 'fak·tər }

**charcoal canister** [MECH ENG] In an evaporative control system, a container filled with activated charcoal that traps gasoline vapors emitted by the fuel system. Also known as canister; carbon canister. { 'chärˌkōl 'kan·ə'stər }

**charcoal test** [CHEM ENG] A determination of the natural gasoline content of natural gas by adsorbing the gasoline on activated charcoal and then recovering it by distillation. { 'chärˌkōl ˌtest }

**charge** [ELEC] **1.** A basic property of elementary particles of matter; the charge of an object may be a positive or negative number or zero; only integral multiples of the proton charge occur, and the charge of a body is the algebraic sum of the charges of its constituents; the value of the charge may be inferred from the Coulomb force between charged objects. Also known as electric charge, quantity of electricity. **2.** To convert electrical energy to chemical energy in a secondary battery. **3.** To feed electrical energy to a capacitor or other device that can store it. [ENG] **1.** A unit of an explosive, either by itself or contained in a bomb, projectile, mine, or the like, or used as the propellant for a bullet or projectile. **2.** To load a borehole with an explosive. **3.** The material or part to be heated by induction or dielectric heating. **4.** The measurement or weight of material, either liquid, preformed, or powder, used to load a mold at one time during one cycle in the manufacture of plastics or metal. [MECH ENG] **1.** In refrigeration, the quantity of refrigerant contained in a system. **2.** To introduce the refrigerant into a refrigeration system. { chärj }

**charge collector** [ELEC] The structure within a battery electrode that provides a path for the electric current to or from the active material. Also known as current collector. { 'chärj kəˌlek·tər }

**charge conservation** *See* conservation of charge. { 'chärj ˌkän·sər'vā·shən }

**charge-coupled device** [ELECTR] A semiconductor device wherein minority charge is stored in a spatially defined depletion region (potential well) at the surface of a semiconductor and is moved about the surface by transferring this charge to similar adjacent wells. Abbreviated CCD. { 'chärj ¦kəp·əld di'vīs }

**charge-coupled image sensor** [ELECTR] A device in which charges are introduced when light from a scene is focused on the surface of the device; image points are accessed sequentially to produce a television-type output signal. Also known as solid-state image sensor. { 'chärj ¦kəp·əld 'im·ij ˌsen·sər }

**charge density** [ELEC] The charge per unit area on a surface or per unit volume in space. { 'chärj ˌden·səd·ē }

**charge-mass ratio** [ELEC] The ratio of the electric charge of a particle to its mass. { ˌchärj ˌmas 'rā·shō }

**charge quantization** [ELEC] The principle that the electric charge of an object must equal an integral multiple of a universal basic charge. { 'chärj ˌkwan·tə'zā·shən }

**charge-transfer device** [ELECTR] A semiconductor device that depends upon movements of stored charges between predetermined locations, as in charge-coupled and charge-injection devices. { 'chärj ˌtranz·fər di'vīs }

**charging current** [ELEC] The current that flows into a capacitor when a voltage is first applied. { 'chär·jiŋ ˌkər·ənt }

**charging pump** [CHEM ENG] Pump that provides pressurized fluid flow for the input of another unit, such as to a triplex pump that requires positive pressure. { 'chär·jiŋ ˌpəmp }

**chart comparison unit** [ENG] A device that permits simultaneous viewing of a radar plan position indicator display and a navigation chart so that one appears superimposed on the other.

Also known as autoradar plot. { 'chart kəm'par·ə·sən ˌyü·nət }

**chart datum** *See* datum plane. { 'chärt ˌdad·əm }

**chart desk** [ENG] A flat surface on which charts are spread out, usually with storage space for charts and other navigating equipment below the plotting surface. { 'chärt ˌdesk }

**chart recorder** [ENG] A recorder in which a dependent variable is plotted against an independent variable by an ink-filled pen moving on plain paper, a heated stylus on heat-sensitive paper, a light beam or electron beam on photosensitive paper, or an electrode on electrosensitive paper. The plot may be linear or curvilinear on a strip chart recorder, or polar on a circular chart recorder. { 'chärt ri'kȯrd·ər }

**chart table** [ENG] A flat surface on which charts are spread out, particularly one without storage space below the plotting surface, as in aircraft and VPR (virtual PPI reflectoscope) equipment. { 'chärt ˌtā·bəl }

**chase** [BUILD] A vertical passage for ducts, pipes, or wires in a building. [DES ENG] A series of cuts, each having a path that follows the path of the cut before it; an example is a screw thread. [ENG] **1.** The main body of the mold which contains the molding cavity or cavities. **2.** The enclosure used to shrink-fit parts of a mold cavity in place to prevent spreading or distortion, or to enclose an assembly of two or more parts of a split-cavity block. **3.** To straighten and clean threads on screws or pipes. { chās }

**chase mortise** [DES ENG] A mortise with a sloping edge from bottom to surface so that a tenon can be inserted when the outside clearance is small. { 'chās ˌmȯrd·əs }

**chaser** [ENG] A thread-cutting tool with many teeth. { 'chās·ər }

**chase ring** [MECH ENG] In hobbing, the ring which restrains the blank from spreading during hob sinking. { 'chās ˌriŋ }

**chasing tool** [DES ENG] A hammer or chisel used to decorate metal surfaces. { 'chās·iŋ ˌtül }

**chassis** [ENG] **1.** A frame on which the body of an automobile or airplane is mounted. **2.** A frame for mounting the working parts of a radio or other electronic device. { 'chas·ē }

**chassis ground** [ELEC] A connection made to the metal chassis on which the components of a circuit are mounted, to serve as a common return path to the power source. { 'chas·ē ˌgraůnd }

**chassis punch** [DES ENG] A hand tool used to make round or square holes in sheet metal. { 'chas·ē ˌpənch }

**chatter** [ELEC] Prolonged undesirable opening and closing of electric contacts, as on a relay. Also known as contact chatter. [ENG] An irregular alternating motion of the parts of a relief valve due to the application of pressure where contact is made between the valve disk and the seat. [ENG ACOUS] Vibration of a disk-recorder cutting stylus in a direction other than that in which it is driven. { 'chad·ər }

**chattering** [CONT SYS] A mode of operation of a relay-type control system in which the relay switches back and forth infinitely fast. { 'chad·ə·riŋ }

**Chattock gage** [ENG] A form of micromanometer in which observation of the interface between two immiscible liquids is used to determine when the pressure to be measured has been balanced by the pressure head resulting from tilting of the entire apparatus. { 'chad·ək ˌgāj }

**check** [ENG] A device attached to something in order to limit the movement, such as a door check. { chek }

**check dam** [CIV ENG] A low, fixed structure, constructed of timber, loose rock, masonry, or concrete, to control water flow in an erodable channel or irrigation canal. { 'chek ˌdam }

**checkerboard regenerator** [ENG] An open-checkerwork arrangement of firebrick in a high-temperature chamber that absorbs heat during a batch processing cycle, then releases it to preheat fresh combustion air during the down cycle; used, for example, in the steel industry with open-hearth and heat-treating furnaces. { 'chek·ərˌbȯrd ri'jen·əˌrād·ər }

**checker plate** [ENG] A type of slip-resistant floor plate with a distinctive raised pattern that is used for walkways and platforms. { 'chek·ər ˌplāt }

**checkers** [ENG] Open brickwork in a checkerboard regenerator allowing for the passage of hot, spent gases. { 'chek·ərz }

**check fillet** [BUILD] A curb set into a roof to divert or control the flow of rainwater. { 'chek ˌfil·ət }

**checkout** [ENG] A sequence of actions to test or examine a thing as to its readiness for incorporation into a new phase of use or as to the performance of its intended function. { 'chekˌaůt }

**check rail** [BUILD] A rail, thicker than the window, that spans the opening between the top and bottom sash; usually beveled and rabbeted. *See* guardrail. { 'chek ˌrāl }

**check stop** [BUILD] A narrow length of wood or metal that is installed to hold a sliding element in place, such as the lower part of a sash of a double-hung window. { 'chek ˌstäp }

**check study** [IND ENG] A review of a job or operation in part or in its entirety to evaluate the validity of a standard time. { 'chek ˌstəd·ē }

**check valve** [MECH ENG] A device for automatically limiting flow in a piping system to a single direction. Also known as nonreturn valve. { 'chek ˌvalv }

**cheesebox still** [CHEM ENG] One of the first types of vertical cylindrical stills designed with a vapor dome. { 'chēzˌbäks ˌstil }

**cheese head** [DES ENG] A raised cylindrical head on a screw or bolt. { 'chēz ˌhed }

**chemical engineering** [ENG] That branch of engineering serving those industries that chemically convert basic raw materials into a variety of products, and dealing with the design and operation of plants and equipment to perform

such work; all products are formed in chemical processes involving chemical reactions carried out under a wide range of conditions and frequently accompanied by changes in physical state or form. { 'kem·i·kəl ˌen·jə'nir·iŋ }

**chemical film dielectric** [ELEC] An extremely thin layer of material on one or both electrodes of an electrolytic capacitor, which conducts electricity in only one direction and thereby constitutes the insulating element of the capacitor. { 'kem·i·kəl ˌfilm ˌdī·ə'lek·trik }

**chemical fire extinguisher** [CHEM ENG] Any of three types of fire extinguishers (vaporizing liquid, carbon dioxide, and dry chemical) which expel chemicals in solid, liquid, or gaseous form to blanket or smother a fire. { 'kem·i·kəl 'fīr ik'stiŋ·gwish·ər }

**chemical force microscope** [ENG] A modification of the atomic force microscope in which an organic monolayer on the probe tip that terminates with specific chemical functional groups is sensitive to specific molecular interactions between these groups and those on the sample surface. { ¦kem·ə·kəl ˌfȯrs 'mī·krəˌskōp }

**chemical hygrometer** *See* absorption hygrometer. { 'kem·i·kəl hī'gräm·əd·ər }

**chemical ion pump** [CHEM ENG] A vacuum pump whose pumping action is based on evaporation of a metal whose vapor then reacts with the chemically active molecules in the gas to be evacuated. { 'kem·i·kəl 'ī·ən ˌpəmp }

**chemically sensitive field-effect transistor** [ELECTR] A field-effect transistor in which the ordinary gate electrode is replaced by a chemically sensitive membrane so that the gain of the transistor depends on the concentration of chemical substances. { 'kem·ik·lē ¦sen·səd·iv 'fēld i¦fekt tranˌzis·tər }

**chemical process industry** [CHEM ENG] An industry in which the raw materials undergo chemical conversion during their processing into finished products, as well as (or instead of) the physical conversions common to industry in general; includes the traditional chemical, petroleum, and petrochemical industries. { ¦kem·i·kəl 'prä·səs ˌin·də·strē }

**chemical pulping** [CHEM ENG] Separation of wood fiber for paper pulp by chemical treatment of wood chips to dissolve the lignin that cements the fibers together. { 'kem·i·kəl 'pəlp·iŋ }

**chemical reactor** [CHEM ENG] Vessel, tube, pipe, or other container within which a chemical reaction is made to take place; may be batch or continuous, open or packed, and can use thermal, catalytic, or irradiation actuation. { 'kem·i·kəl rē'ak·tər }

**chemical similitude** [CHEM ENG] A procedure used to ensure satisfactory operation of a full-scale chemical process by comparison with pilot plant data. { 'kem·i·kəl sə'mil·əˌtüd }

**chemical sterilization** [ENG] The use of bactericidal chemicals to sterilize solutions, air, or solid surfaces. { 'kem·i·kəl ˌster·ə·lə'zā·shən }

**chemical thermometer** [ENG] A filled-system temperature-measurement device in which gas or liquid enclosed within the device responds to heat by a volume change (rising or falling of mercury column) or by a pressure change (opening or closing of spiral coil). { 'kem·i·kəl thər'mäm·əd·ər }

**chemurgy** [CHEM ENG] A branch of chemistry concerned with the profitable utilization of organic raw materials, especially agricultural products, for nonfood purposes such as for paints and varnishes. { 'ke·mər·jē }

**cherry picker** [MECH ENG] Any of several small traveling cranes, especially one used to hoist a passenger on the end of a boom. { 'cher·ē ˌpik·ər }

**Chicago boom** [MECH ENG] A hoisting device that is supported on the structure being erected. { shə'kä·gō ˌbüm }

**Chicago caisson** [CIV ENG] A cofferdam about 4 feet (1.2 meters) in diameter lined with planks and sunk in medium-stiff clays to hard ground for pier foundations. Also known as open-well caisson. { shə'kä·gō 'kāˌsän }

**Child-Langmuir equation** *See* Child's law.

**Child-Langmuir-Schottky equation** *See* Child's law. { ¦chīld ¦laŋ·myür 'shätˌkē i'kwā·zhən }

**Child's law** [ELECTR] A law stating that the current in a thermionic diode varies directly with the three-halves power of anode voltage and inversely with the square of the distance between the electrodes, provided the operating conditions are such that the current is limited only by the space charge. Also known as Child-Langmuir equation; Child-Langmuir-Schottky equation; Langmuir-Child equation. { 'chīldz ˌlȯ }

**Chile mill** [MECH ENG] A crushing mill having vertical rollers running in a circular enclosure with a stone or iron base or die. Also known as edge runner. { 'chil·ē ˌmil }

**chiller** [CHEM ENG] Oil-refining apparatus in which the temperature of paraffin distillates is lowered preparatory to filtering out the solid wax components. { 'chil·ər }

**chill roll** [ENG] A cored roll used in chill-roll extrusion of plastics. { 'chil ˌrōl }

**chill-roll extrusion** [ENG] Method of extruding plastic film in which the film is cooled while being drawn around two or more highly polished chill rolls, inside of which there is cooling water. Also known as cast-film extrusion. { 'chil ˌrōl ek'strü·zhən }

**chimney** [BUILD] A vertical, hollow structure of masonry, steel, or concrete, built to convey gaseous products of combustion from a building. [ELECTR] A pipelike enclosure that is placed over a heat sink to improve natural upward convection of heat and thereby increase the dissipating ability of the sink. { 'chimˌnē }

**chimney apron** [BUILD] A flashing made of a nonferrous metal, such as copper, that is built into the masonry of the chimney and the roofing material at the place where the roof is penetrated by the chimney. { 'chim·nē ˌā·prən }

**chimney bar** [BUILD] A wrought-iron or steel lintel which is supported by the sidewalls and

carries the masonry above the fireplace opening. Also known as turning bar. { 'chim,nē ,bär }

**chimney cap** [CIV ENG] A rotary device fitted to a chimney and moved by the wind so that the chimney is turned away from the wind to permit the escape of smoke while rain or snow is prevented from entering the chimney. { 'chim·nē ,kap }

**chimney core** [MECH ENG] The inner section of a double-walled chimney which is separated from the outer section by an air space. { 'chim,nē ,kȯr }

**chip** [ELECTR] **1.** The shaped and processed semiconductor die that is mounted on a substrate to form a transistor, diode, or other semiconductor device. **2.** An integrated microcircuit performing a significant number of functions and constituting a subsystem. Also known as microchip. { chip }

**chip breaker** [DES ENG] An irregularity or channel cut into the face of a lathe tool behind the cutting edge to cause removed stock to break into small chips or curls. { 'chip ,brāk·ər }

**chip cap** [DES ENG] A plate or cap on the upper part of the cutting iron of a carpenter's plane designed to give the tool rigidity and also to break up the wood shavings. { 'chip ,kap }

**chip capacitor** [ELECTR] A single-layer or multilayer monolithic capacitor constructed in chip form, with metallized terminations to facilitate direct bonding on hybrid integrated circuits. { 'chip kə'pas·əd·ər }

**chip log** [ENG] A line, marked at intervals (commonly 50 feet or 15 meters), that is paid out over the stern of a moving ship and is pulled out by a drag (the chip), to determine the ship's speed. { 'chip ,läg }

**chipper** [ENG] A tool such as a chipping hammer used for chipping. [MECH ENG] A machine with revolving knives for reducing large pieces of wood to chips. { 'chip·ər }

**chipping hammer** [ENG] A hand or pneumatic hammer with chisel-shaped or pointed faces used to remove rust and scale from metal surfaces. { 'chip·iŋ ,ham·ər }

**chip resistor** [ELECTR] A thick-film resistor constructed in chip form, with metallized terminations to facilitate direct bonding on hybrid integrated circuits. { 'chip ri'zis·tər }

**chirp radar** [ENG] Radar in which a swept-frequency signal is transmitted, received from a target, then compressed in time to give a narrow pulse called the chirp signal. { 'chərp ,rā,där }

**chisel** [DES ENG] A tool for working the surface of various materials, consisting of a metal bar with a sharp edge at one end and often driven by a mallet. { 'chiz·əl }

**chisel bit** *See* chopping bit. { 'chiz·əl ,bit }

**chisel bond** [ENG] A thermocompression bond in which a contact wire is attached to a contact pad on a semiconductor chip by applying pressure with a chisel-shaped tool. { 'chiz·əl ,bänd }

**chisel-edge angle** [DES ENG] The angle included between the chisel edge and the cutting edge, as seen from the end of the drill. Also known as web angle. { 'chiz·əl ,ej 'aŋ·gəl }

**chisel-tooth saw** [DES ENG] A circular saw with chisel-shaped cutting edges. { 'chiz·əl 'tüth 'sȯ }

**Chladni's figures** [MECH] Figures produced by sprinkling sand or similar material on a horizontal plate and then vibrating the plate while holding it rigid at its center or along its periphery; indicate the nodal lines of vibration. { 'klad,nēz ,fig·yərz }

**chloralkali** [CHEM ENG] Either of the products of the industrial electrolysis of sodium chloride, that is, sodium hydroxide or chlorine. { klȯr'al·kə,lī }

**chloralkali process** [CHEM ENG] An industrial chemical process based on the electrolysis of sodium chloride for the production of sodium hydroxide and chlorine. { ,klȯr'al·kə,lī ,prä·səs }

**chlorinator** [CHEM ENG] The apparatus used in chlorinating. { 'klȯr·ə,nād·ər }

**choke** [ELEC] An inductance used in a circuit to present a high impedance to frequencies above a specified frequency range without appreciably limiting the flow of direct current. Also known as choke coil. [MECH ENG] To increase the fuel feed to an internal combustion engine through the action of a choke valve. *See* choke valve. { chōk }

**choke coil** *See* choke. { 'chōk ,kȯil }

**choked neck** [DES ENG] Container neck which has a narrowed or constricted opening. { ¦chōkt 'nek }

**choke valve** [MECH ENG] A valve which supplies the higher suction necessary to give the excess fuel feed required for starting a cold internal combustion engine. Also known as choke. { 'chōk ,valv }

**chopper** [ENG] Any knife, axe, or mechanical device for chopping or cutting an object into segments. { 'chäp·ər }

**chopper amplifier** [ELECTR] A carrier amplifier in which the direct-current input is filtered by a low-pass filter, then converted into a square-wave alternating-current signal by either one or two choppers. { 'chäp·ər 'am·plə,fī·ər }

**chopper-stabilized amplifier** [ELECTR] A direct-current amplifier in which a direct-coupled amplifier is in parallel with a chopper amplifier. { ¦chäp·ər ¦stā·bə,līzd 'am·plə,fī·ər }

**chopper transistor** [ELECTR] A bipolar or field-effect transistor operated as a repetitive "on/off" switch to produce square-wave modulation of an input signal. { 'chäp·ər tran'zis·tər }

**chopping** [ELECTR] The removal, by electronic means, of one or both extremities of a wave at a predetermined level. { 'chäp·iŋ }

**chopping bit** [MECH ENG] A steel bit with a chisel-shaped cutting edge, attached to a string of drill rods to break up, by impact, boulders, hardpan, and a lost core in a drill hole. Also known as chisel bit. { 'chäp·iŋ ,bit }

**chop-type feeder** [MECH ENG] Device for semicontinuous feed of solid materials to a process

unit, with intermittent opening and closing of a hopper gate (bottom closure) by a control arm actuated by an eccentric cam. { 'chäp,ītp ,fēd·ər }

**chord** [CIV ENG] The top or bottom, generally horizontal member of a truss. { kȯrd }

**chordal thickness** [DES ENG] The tangential thickness of a tooth on a circular gear, as measured along a chord of the pitch circle. { 'kȯrd·əl 'thik·nəs }

**chrome tanning** [CHEM ENG] Tanning treatment of animal skin with chromium salts. { ¦krōm 'tan·iŋ }

**chromoradiometer** [ENG] A radiation meter that uses a substance whose color changes with x-ray dosage. { ¦krō·mō·,rād·ē'äm·əd·ər }

**chronocyclegraph** [IND ENG] A device used in micromotion studies to record a complete work cycle by taking still pictures with long exposures, the motion paths being traced by small electric lamps fastened to the worker's hands or fingers; time is obtained by interrupting the light circuits with a controlled frequency which produces dots on the film. { ,krän·ō'sī·klə,graf }

**chronograph** [ENG] An instrument used to register the time of an event or graphically record time intervals such as the duration of an event. { 'krän·ə,graf }

**chronometric data** [ENG] Data in which the desired quantity is the time of occurrence of an event or the time interval between two or more events. { 'krän·ə,me·trik 'dad·ə }

**chronometric radiosonde** [ENG] A radiosonde whose carrier wave is switched on and off in such a manner that the interval of time between the transmission of signals is a function of the magnitude of the meteorological elements being measured. { ¦krän·ə¦me·trik 'rād·ē·ō,sänd }

**chronometric tachometer** [ENG] A tachometer which repeatedly counts the revolutions during a fixed interval of time and presents the average speed during the last timed interval. { ¦krän·ə¦me·trik tə'käm·əd·ər }

**chronothermometer** [ENG] A thermometer consisting of a clock mechanism whose speed is a function of temperature; automatically calculates the mean temperature. { ¦krän·ō·thər'mäm·əd·ər }

**CHU** *See* centigrade heat unit.

**$CHU_{mean}$** *See* centigrade heat unit.

**chuck** [DES ENG] A device for holding a component of an instrument rigid, usually by means of adjustable jaws or set screws, such as the workpiece in a metalworking or woodworking machine, or the stylus or needle of a phonograph pickup. { chək }

**chucking** [MECH ENG] The grasping of an outsize workpiece in a chuck or jawed device in a lathe. { 'chək·iŋ }

**chucking machine** [MECH ENG] A lathe or grinder in which the outsize workpiece is grasped in a chuck or jawed device. { 'chək·iŋ mə'shēn }

**churn drill** [MECH ENG] Portable drilling equipment, with drilling performed by a heavy string of tools tipped with a blunt-edge chisel bit suspended from a flexible cable, to which a reciprocating motion is imparted by its suspension from an oscillating beam or sheave, causing the bit to be raised and dropped. Also known as American system drill; cable-system drill. { 'chərn ,dril }

**churn shot drill** [MECH ENG] A boring rig with both churn and shot drillings. { 'chərn ,shät ,dril }

**chute** [ENG] A conduit for conveying free-flowing materials at high velocity to lower levels. { shüt }

**chute spillway** [CIV ENG] A spillway in which the water flow passes over a crest into a sloping, lined, open channel; used for earth and rock-fill dams. { ¦shüt 'spil,wā }

**$C^3I$** *See* command, control, communications, and intelligence. { 'sē 'thrē 'ī }

**cinetheodolite** [ENG] A surveying theodolite in which 35-millimeter motion picture cameras with lenses of 60- to 240-inch (1.5- to 6.1-meter) focal length are substituted for the surveyor's eye and telescope; used for precise time-correlated observation of distant airplanes, missiles, and artificial satellites. { ¦sin·ə·thē'äd·ə,līt }

**Cipolletti weir** [CIV ENG] Trapezoidal weir in which the sides of the notch slope are one horizontal to four vertical; used to measure water flow in open channels, especially streams and rivers. { chip·ə'led·ē 'wer }

**circle shear** [MECH ENG] A shearing machine that cuts circular disks from a metal sheet rolling between the cutting wheels. { 'sər·kəl ,shēr }

**circuit** *See* electric circuit. { 'sər·kət }

**circuit analyzer** *See* volt-ohm-milliammeter. { 'sər·kət ,an·ə,līz·ər }

**circuit board** *See* printed circuit board. { 'sər·kət ,bȯrd }

**circuit breaker** [ELEC] An electromagnetic device that opens a circuit automatically when the current exceeds a predetermined value. { 'sər·kət ,brāk·ər }

**circuit conditioning** [ELECTR] Test, analysis, engineering, and installation actions to upgrade a communications circuit to meet an operational requirement; includes the reduction of noise, the equalization of phase and level stability and frequency response, and the correction of impedance discontinuities, but does not include normal maintenance and repair activities. { 'sər·kət kən'dish·ə·niŋ }

**circuit diagram** [ELEC] A drawing, using standardized symbols, of the arrangement and interconnections of the conductors and components of an electrical or electronic device or installation. Also known as schematic circuit diagram; wiring diagram. { 'sər·kət ,dī·ə,gram }

**circuit element** *See* component. { 'sər·kət ¦el·ə·mənt }

**circuit interrupter** [ELEC] A device in a circuit breaker to remove energy from an arc in order to extinguish it. { 'sər·kət ,in·tə,rəp·tər }

**circuit loading** [ELEC] Power drawn from a circuit by an electric measuring instrument, which

may alter appreciably the quantity being measured. { 'sər·kət ˌlōd·iŋ }

**circuit protection** [ELECTR] Provision for automatically preventing excess or dangerous temperatures in a conductor and limiting the amount of energy liberated when an electrical failure occurs. { 'sər·kət prə'tek·shən }

**circuitry** [ELEC] The complete combination of circuits used in an electrical or electronic system or piece of equipment. { 'sər·kə·trē }

**circuit testing** [ELEC] The testing of electric circuits to determine and locate an open circuit, or a short circuit or leakage. { 'sər·kət ˌtes·tiŋ }

**circuit theory** [ELEC] The mathematical analysis of conditions and relationships in an electric circuit. Also known as electric circuit theory. { 'sər·kət ˌthē·ə·rē }

**circular burner** [ENG] A fuel burner having a round opening. { 'sər·kyə·lər 'bərn·ər }

**circular channel** [ENG] Continuous-length opening with circular cross section through which liquid or gas can be made to flow. { 'sər·kyə·lər 'chan·əl }

**circular-chart recorder** [ENG] Graphic pen-and-ink recorder where measured values are drawn onto a rotating circular chart by the backward and forward movement of a pivoted pen actuated by the input signal (such as temperature, pressure, flow, or force) from an instrument transmitter. { 'sər·kyə·lər ˌchärt ri'kȯrd·ər }

**circular cutter** [MECH ENG] A rotating blade with a square or knife edge used to slit or shear metal. { 'sər·kyə·lər 'kəd·ər }

**circular form tool** [DES ENG] A round or disk-shaped tool with the cutting edge on the periphery. { 'sər·kyə·lər ˌfȯrm ˌtül }

**circular inch** [MECH] The area of a circle 1 inch (25.4 millimeters) in diameter. { 'sər·kyə·lər 'inch }

**circular mil** [MECH] A unit equal to the area of a circle whose diameter is 1 mil (0.001 inch); used chiefly in specifying cross-sectional areas of round conductors. Abbreviated cir mil. { 'sər·kyə·lər 'mil }

**circular motion** [MECH] **1.** Motion of a particle in a circular path. **2.** Motion of a rigid body in which all its particles move in circles about a common axis, fixed with respect to the body, with a common angular velocity. { 'sər·kyə·lər 'mō·shən }

**circular pitch** [DES ENG] The linear measure in inches along the pitch circle of a gear between corresponding points of adjacent teeth. { 'sər·kyə·lər 'pich }

**circular plane** [DES ENG] A plane that can be adjusted for convex or concave surfaces. { 'sər·kyə·lər 'plān }

**circular saw** [MECH ENG] Any of several power tools for cutting wood or metal, having a thin steel disk with a toothed edge that rotates on a spindle. { 'sər·kyə·lər 'sȯ }

**circular scanning** [ENG] Radar scanning in which the direction of maximum radiation describes a right circular cone. { 'sər·kyə·lər 'skan·iŋ }

**circular spike** [ENG] A metal timber connector fitted with a circular series of sharp teeth that dig into the wood, preventing lateral motion, as a bolt is tightened through the wood and the spike. { 'sər·kyə·lər 'spīk }

**circular velocity** [MECH] At any specific distance from the primary, the orbital velocity required to maintain a constant-radius orbit. { 'sər·kyə·lər və'läs·əd·ē }

**circulating fluid** [ENG] A fluid pumped into a borehole through the drill stem, the flow of which cools the bit and transports the cuttings out of the borehole. { 'sər·kyəˌlād·iŋ 'flü·əd }

**circulating pump** [CHEM ENG] Pump used to circulate process liquid out of and back into a process system, as in the circulation of distillation column bottoms through an external heater, or the circulation of storage tank bottoms to mix tank contents. { 'sər·kyəˌlād·iŋ 'pəmp }

**circulating system** [CHEM ENG] Fluid system in which the process fluid is taken from and pumped back into the system, as in the circulation of distillation column bottoms through an external heater. { 'sər·kyəˌlād·iŋ 'sis·təm }

**circulation area** [BUILD] The area required for human traffic in a building, including permanent corridors, stairways, elevators, escalators, and lobbies. { ˌsər·kyə·'lā·shən ˌer·ē·ə }

**circumferentor** [ENG] A horizontal compass used in surveying that has arms diametrically placed with vertical slit sights in them. { sər'kəm·fəˌren·tər }

**cir mil** *See* circular mil.

**cistern** [CIV ENG] A tank for storing water or other liquid. { 'sis·tərn }

**cistern barometer** [ENG] A pressure-measuring device in which pressure is read by the liquid rise in a vertical, closed-top tube as a result of system pressure on a liquid reservoir (cistern) into which the bottom, open end of the tube is immersed. { 'sis·tərn bə'ram·əd·ər }

**civil engineering** [ENG] The planning, design, construction, and maintenance of fixed structures and ground facilities for industry, transportation, use and control of water, or occupancy. { 'siv·əl enˌjə'nir·iŋ }

**cladding** [ENG] Process of covering one material with another and bonding them together under high pressure and temperature. Also known as bonding. { 'klad·iŋ }

**clamp** [DES ENG] A tool for binding or pressing two or more parts together, by holding them firmly in their relative positions. *See* clamping circuit. { klamp }

**clamping coupling** [MECH ENG] A coupling with a split cylindrical element which clamps the shaft ends together by direct compression, through bolts or rings, and by the wedge action of conical sections; not considered a permanent part of the shaft. { 'klamp·iŋ ˌkəp·liŋ }

**clamping gripper** [CONT SYS] A robot element that uses two-link movements, parallel-jaw movements, and combination movements to grasp and handle objects. { 'klamp·iŋ 'grip·ər }

**clamping plate** [ENG] A plate on a mold which

attaches the mold to a machine. { 'klamp·iŋ ˌplāt }

**clamping pressure** [ENG] In injection and transfer-molding of plastics, the pressure applied to keep the mold closed in opposition to the fluid pressure of the molding material. { 'klamp·iŋ ˌpresh·ər }

**clamp screw** [DES ENG] A screw that holds a part by forcing it against another part. { 'klamp ˌskrü }

**clamp-screw sextant** [ENG] A marine sextant having a clamp screw for controlling the position of the tangent screw. { 'klamp ˌskrü ˌseks·tənt }

**clamshell bucket** [MECH ENG] A two-sided bucket used in a type of excavator to dig in a vertical direction; the bucket is dropped while its leaves are open and digs as they close. Also known as clamshell grab. { 'klamˌshel ˌbək·ət }

**clamshell grab** *See* clamshell bucket. { 'klam ˌshel ˌgrab }

**clamshell snapper** [MECH ENG] A marine sediment sampler consisting of snapper jaws and a footlike projection which, upon striking the bottom, causes a spring mechanism to close the jaws, thus trapping a sediment sample. { 'klamˌshel ˌsnap·ər }

**Clapeyron-Clausius equation** *See* Clausius-Clapeyron equation. { kla·pā·rōn ¦klōz·ē·əs iˌkwā·zhən }

**Clapeyron equation** *See* Clausius-Clapeyron equation. { kla·pā·rōn i'kwā·zhən }

**Clapeyron's theorem** [MECH] The theorem that the strain energy of a deformed body is equal to one-half the sum over three perpendicular directions of the displacement component times the corresponding force component, including deforming loads and body forces, but not the six constraining forces required to hold the body in equilibrium. { kla·pā·rōnz ˌthir·əm }

**clapper box** [MECH ENG] A hinged device that permits a reciprocating cutting tool (as in a planer or shaper) to clear the work on the return stroke. { 'klap·ər ˌbäks }

**clarification** [CHEM ENG] The removal of small amounts (usually less than 0.2%) of fine particulate solids from liquids (such as drinking water) by methods such as gravity sedimentation, centrifugal sedimentation, filtration, and magnetic separation. { ˌklar·ə·fə'kā·shən }

**clarifier** [ENG] A device for filtering a liquid. { 'klar·əˌfī·ər }

**clarifying agent** *See* fining. { 'klar·əˌfī·iŋ ˌā·jənt }

**clarifying centrifuge** [MECH ENG] A device that clears liquid of foreign matter by centrifugation. { 'klar·əˌfī·iŋ 'sen·trəˌfyüj }

**clarifying filter** [ENG] Any filter, such as a sand filter or a cartridge filter, used to purify liquids with a low solid-liquid ratio; in some instances color may be removed as well. { 'klar·əˌfī·iŋ ˌfil·tər }

**clarity** [CHEM ENG] Measure of the amount of opaque suspended solids in a liquid, determined by visual or optical methods. { 'klar·əd·ē }

**Clark process** [CHEM ENG] Softening of water by adding alkaline solutions of calcium hydroxide so that the acid carbonates are converted to normal carbonates. { 'klärk ˌpräs·əs }

**clasp** [DES ENG] A releasable catch which holds two or more objects together. { klasp }

**clasp lock** [DES ENG] A spring lock with a self-locking feature. { 'klasp ˌläk }

**clasp nut** [DES ENG] A split nut that clasps a screw when closed around it. { 'klasp ˌnət }

**class A push-pull sound track** [ENG ACOUS] Two single photographic sound tracks side by side, the transmission of one being 180° out of phase with the transmission of the other; both positive and negative halves of the sound wave are linearly recorded on each of the two tracks. { ˌklas 'ā ¦půsh ¦půl 'saůn ˌtrak }

**class B push-pull sound track** [ENG ACOUS] Two photographic sound tracks side by side, one of which carries the positive half of the signal only, and the other the negative half; during the inoperative half-cycle, each track transmits little or no light. { ˌklas 'bē ¦půsh ¦půl 'saůn ˌtrak }

**classical mechanics** [MECH] Mechanics based on Newton's laws of motion. { 'klas·ə·kəl mə'kan·iks }

**classification** [ENG] **1.** Sorting out or categorizing of particles or objects by established criteria, such as size, function, or color. **2.** Stratification of a mixture of various-sized particles (that is, sand and gravel), with the larger particles migrating to the bottom. *See* grading. { ˌklas·ə·fə'kā·shən }

**classification track** [CIV ENG] A railroad track used to separate cars from a train according to destination. { ˌklas·ə·fə'kā·shən ˌtrak }

**classification yard** [CIV ENG] A railroad yard for separating trains according to car destination. { ˌklas·ə·fə'kā·shən ˌyärd }

**classifier** [MECH ENG] Any apparatus for separating mixtures of materials into their constituents according to size and density. { 'klas·əˌfī·ər }

**Claude process** [CHEM ENG] A process of ammonia synthesis which uses high operating pressures and a train of converters. { 'klȯd ˌpräs·əs }

**clausius** [THERMO] A unit of entropy equal to the increase in entropy associated with the absorption of 1000 international table calories of heat at a temperature of 1 K, or to 4186.8 joules per kelvin. { 'klȯz·ē·əs }

**Clausius-Clapeyron equation** [THERMO] An equation governing phase transitions of a substance, $dp/dT = \Delta H/(T\Delta V)$, in which $p$ is the pressure, T is the temperature at which the phase transition occurs, $\Delta H$ is the change in heat content (enthalpy), and $\Delta V$ is the change in volume during the transition. Also known as Clapeyron-Clausius equation; Clapeyron equation. { klȯz·ē·əs kla·pāˌrōn iˌkwā·zhən }

**Clausius-Dickel column** *See* thermogravitational column. { ¦klȯz·ē·əs ¦dik·əl 'käl·əm }

**Clausius equation** [THERMO] An equation of state in reference to gases which applies a correction to the van der Waals equation:

$$\{P + (n^2a/[T(V + c)^2])\}(V - nb) = nRT,$$

where P is the pressure, T the temperature, V the volume of the gas, $n$ the number of moles in the gas, R the gas constant, $a$ depends only on temperature, $b$ is a constant, and $c$ is a function of $a$ and $b$. { 'klȯz·ē·əs i'kwā·zhən }

**Clausius inequality** [THERMO] The principle that for any system executing a cyclical process, the integral over the cycle of the infinitesimal amount of heat transferred to the system divided by its temperature is equal to or less than zero. Also known as Clausius theorem; inequality of Clausius. { 'klȯz·ē·əs in·i'kwäl·əd·ē }

**Clausius law** [THERMO] The law that an ideal gas's specific heat at constant volume does not depend on the temperature. { 'klȯz·ē·əs ˌlȯ }

**Clausius number** [THERMO] A dimensionless number used in the study of heat conduction in forced fluid flow, equal to $V^3L\rho/k\Delta T$, where V is the fluid velocity, $\rho$ is its density, L is a characteristic dimension, $k$ is the thermal conductivity, and $\Delta T$ is the temperature difference. { 'klȯz·ē·əs ˌnəm·bər }

**Clausius' statement** [THERMO] A formulation of the second law of thermodynamics, stating it is not possible that, at the end of a cycle of changes, heat has been transferred from a colder to a hotter body without producing some other effect. { 'klȯz·ē·əs 'stāt·mənt }

**Clausius theorem** *See* Clausius inequality. { 'klȯz·ē·əs 'thir·əm }

**Claus method** [CHEM ENG] Industrial method of obtaining sulfur by a partial oxidation of gaseous hydrogen sulfide in the air to give water and sulfur. { 'klaůs ˌmeth·əd }

**claw** [DES ENG] A fork for removing nails or spikes. { klȯ }

**claw bar** *See* ripping bar. { 'klȯ ˌbär }

**claw clutch** [MECH ENG] A clutch consisting of claws that interlock when pushed together. { 'klȯ ˌkləch }

**claw coupling** [MECH ENG] A loose coupling having projections or claws cast on each face which engage in corresponding notches in the opposite faces; used in situations in which shafts require instant connection. { 'klȯ ˌkəp·liŋ }

**claw hammer** [DES ENG] A woodworking hammer with a flat working surface and a claw to pull nails. { 'klȯ ˌham·ər }

**clay atmometer** [ENG] An atmometer consisting of a porous porcelain container connected to a calibrated reservoir filled with distilled water; evaporation is determined by the depletion of water. { 'klā at'mäm·əd·ər }

**clay bit** A bit designed for use on a clay barrel. *See* mud auger. { 'klā ˌbit }

**clay digger** [MECH ENG] A power-driven, handheld spade for digging hard soil or soft rock. { 'klā ˌdig·ər }

**clay press** [ENG] A press used to remove excess water from a pottery-clay slurry. { 'klā ˌpres }

**clay refining** [CHEM ENG] A treating process for vaporized gasoline or other light petroleum product; the material is passed through a bed of granular clay, and certain olefins are polymerized to gums and absorbed by the clay. { 'klā rə'fin·iŋ }

**clay regeneration** [CHEM ENG] Cleaning coarse-grained absorbent clays for reuse in percolation processes by deoiling them with naphtha, steaming out excess naphtha, and roasting in a stream of air to remove carbonaceous matter. { 'klā ri·jen·ə'rā·shən }

**cleaning eye** *See* cleanout. { 'klēn·iŋ ˌī }

**cleaning lane** [ENG] A space that is located between adjacent rows of tubes in a heat exchanger and allows passage of a cleaning device. { 'klēn·iŋ ˌlān }

**cleaning turbine** [MECH ENG] A tool for cleaning the interior surfaces of heat exchangers and boiler tubes; consists of a drive motor, a flexible drive cable or hose, and a head that is an arrangement of blades, modified drill bits, or brushes. { 'klēn·iŋ ˌtər·bən }

**cleanout** [ENG] A pipe fitting containing a removable plug that provides access for inspection or cleaning of the pipe run. Also known as access eye; cleaning eye. { 'klēnˌaůt }

**cleanout auger** *See* cleanout jet auger. { 'klēnˌaůt ˌȯg·ər }

**cleanout door** [ENG] An opening in the side of a tank usually at ground level and covered by a plate to provide access for removal of sediments from the bottom of the tank. { 'klēnˌaůt ˌdȯr }

**cleanout jet auger** [ENG] An auger equipped with water-jet orifices designed to clean out collected material inside a driven pipe or casing before taking soil samples from strata below the bottom of the casing. Also known as cleanout auger. { 'klēnˌaůt 'jet ˌȯg·ər }

**clean room** [ENG] A room in which elaborate precautions are employed to reduce dust particles and other contaminants in the air, as required for assembly of delicate equipment. { 'klēn ˌrüm }

**clean track** [ENG ACOUS] A sound track having no leakage from other tracks. { 'klēn ˌtrak }

**cleanup** [ELECTR] Gradual disappearance of gases from an electron tube during operation, due to absorption by getter material or the tube structure. [ENG] The time required for a leak-testing system to reduce its signal output to 37% of the signal transmitted at the instant when tracer gases enter the system. { 'klēˌnəp }

**clearance** [ENG] Unobstructed space required for occasional removal of parts of equipment. [MECH ENG] **1.** In a piston-and-cylinder mechanism, the space at the end of the cylinder when the piston is at dead-center position toward the end of the cylinder. **2.** The ratio of the volume of this space to the piston displacement during a stroke. { 'klir·ənts }

**clearance angle** [MECH ENG] The angle between a plane containing the end surface of a cutting tool and a plane passing through the cutting edge in the direction of cutting motion. { 'klir·ənts ˌaŋ·gəl }

**clearance volume** [MECH ENG] The volume remaining between piston and cylinder when the

piston is at top dead center. { 'klir·ənz ˌväl·yəm }

**clear octane** [ENG] The octane number of a particular gasoline before it has been blended with antiknock additives. { 'klir 'äkˌtān }

**cleat** [CIV ENG] A strip of wood, metal, or other material fastened across something to serve as a batten or to provide strength or support. [DES ENG] A fitting having two horizontally projecting horns around which a rope may be made fast. { klēt }

**cleet** *See* cleat. { klēt }

**clevis** [DES ENG] A U-shaped metal fitting with holes in the open ends to receive a bolt or pin; used for attaching or suspending parts. { 'klev·əs }

**clevis pin** [DES ENG] A fastener with a head at one end, used to join the ends of a clevis. { 'klev·əs ˌpin }

**click** [ENG ACOUS] A perforation in a sound track which produces a clicking sound when passed over the projector sound head. { klik }

**click filter** [ELECTR] A capacitor connected across a switch, relay, or key to lengthen the decay time from the closed to the open condition when the device is opened or closed. { 'klik ˌfil·tər }

**click track** [ENG ACOUS] A sound track containing a series of clicks, which may be spaced regularly (uniform click track) or irregularly (variable click track). { 'klik ˌtrak }

**climate control** *See* air conditioning. { 'klī·mət kən'trōl }

**climbing crane** [MECH ENG] A crane used on top of a high-rise construction that ascends with the building as work progresses. { 'klīm·iŋ 'krān }

**climbing irons** [DES ENG] Spikes attached to a steel framework worn on shoes to climb wooden utility poles and trees. { 'klīm·iŋ ˌī·ərnz }

**clinical thermometer** [ENG] A thermometer used to accurately determine the temperature of the human body; the most common type is a mercury-in-glass thermometer, in which the mercury expands from a bulb into a capillary tube past a constriction that prevents the mercury from receding back into the bulb, so that the thermometer registers the maximum temperature attained. { 'klin·ə·kəl thər'mäm·əd·ər }

**clinker building** [DES ENG] A method of building ships and boilers in which the edge of the wooden planks or steel plates used for the outside covering overlap the edge of the plank or plate next to it; clinched nails fasten the planks together, and rivets fasten the steel plates. { 'kliŋ·kər ˌbil·diŋ }

**clinograph** [ENG] A type of directional surveying instrument that records photographically the direction and magnitude of deviations from the vertical of a borehole, well, or shaft; the information is obtained by the instrument in one trip into and out of the well. { 'klī·nəˌgraf }

**clinometer** [ENG] **1.** A hand-held surveying device for measuring vertical angles; consists of a sighting tube surmounted by a graduated vertical arc with an attached level bubble; used in meteorology to measure cloud height at night, in conjunction with a ceiling light, and in ordnance for boresighting. Also known as Abney level. **2.** A device for measuring the amount of roll aboard ship. { klə'näm·əd·ər }

**clip** [DES ENG] A device that fastens by gripping, clasping, or hooking one part to another. { klip }

**clip bond** [CIV ENG] A bond in which the inner edge of face brick is cut off so that bricks laid diagonal to a wall can be joined to those laid parallel to it. { 'klip ˌbänd }

**clip lead** [ELEC] A short piece of flexible wire with an alligator clip or similar temporary connector at one or both ends. { 'klip ˌlēd }

**clipper** *See* limiter. { 'klip·ər }

**clipper diode** [ELECTR] A bidirectional breakdown diode that clips signal voltage peaks of either polarity when they exceed a predetermined amplitude. { 'klip·ər ˌdīˌōd }

**clipper-limiter** [ELECTR] A device whose output is a function of the instantaneous input amplitude for a range of values lying between two predetermined limits but is approximately constant, at another level, for input values above the range. { ¦klip·ər ¦lim·əd·ər }

**clivvy** *See* clevis. { 'kliv·ē }

**clo** [ENG] The amount of insulation which will maintain normal skin temperature of the human body when heat production is 50 kilogram-calories per meter squared per hour, air temperature is 70°F (21°C), and the air is still. { klō }

**clock** [ELECTR] A source of accurately timed pulses, used for synchronization in a digital computer or as a time base in a transmission system. { kläk }

**clock control system** [CONT SYS] A system in which a timing device is used to generate the control function. Also known as time-controlled system. { 'kläk kən'trōl ˌsis·təm }

**clock drive** [ENG] The mechanism that causes an equatorial telescope to revolve about its polar axis so that it keeps the same star in its field of view. { 'kläk ˌdrīv }

**clocked flip-flop** [ELECTR] A flip-flop circuit that is set and reset at specific times by adding clock pulses to the input so that the circuit is triggered only if both trigger and clock pulses are present simultaneously. { 'kläkt 'flipˌfläp }

**clocked logic** [ELECTR] A logic circuit in which the switching action is controlled by repetitive pulses from a clock. { ¦kläkt ¦läj·ik }

**clock frequency** [ELECTR] The master frequency of the periodic pulses that schedule the operation of a digital computer. Also known as clock rate; clock speed. { 'kläk ˌfrē·kwən·sē }

**clock motor** *See* timing motor. { 'kläk ˌmōd·ər }

**clock oscillator** [ELECTR] An oscillator that controls an electronic clock. { 'kläk 'äs·ə ˌlād·ər }

**clock rate** *See* clock frequency. { 'kläk ˌrāt }

**clock speed** *See* clock frequency. { 'kläk ˌspēd }

**close-control radar** [ENG] Ground radar used

with radio to position an aircraft over a target that is normally difficult to locate or is invisible to the pilot. { ¦klōs kən'trōl 'rā,där }

**close-coupled pump** [MECH ENG] Pump with built-in electric motor (sometimes a steam turbine), with the motor drive and pump impeller on the same shaft. { ¦klōs ¦kəp·əld 'pəmp }

**closed-belt conveyor** [MECH ENG] Solids-conveying device with zipperlike teeth that mesh to form a closed tube wrapped snugly around the conveyed material; used with fragile materials. { 'klōzd ¦belt kən'vā·ər }

**closed cycle** [THERMO] A thermodynamic cycle in which the thermodynamic fluid does not enter or leave the system, but is used over and over again. { ˌklōzd 'sī·kəl }

**closed-cycle turbine** [MECH ENG] A gas turbine in which essentially all the working medium is continuously recycled, and heat is transferred through the walls of a closed heater to the cycle. { ¦klōzd ¦sī·kəl 'tərˌbīn }

**closed fireroom system** [MECH ENG] A fireroom system in which combustion air is supplied via forced draft resulting from positive air pressure in the fireroom. { ¦klōzd 'fīrˌrüm ˌsis·təm }

**closed loop** [CONT SYS] A family of automatic control units linked together with a process to form an endless chain; the effects of control action are constantly measured so that if the controlled quantity departs from the norm, the control units act to bring it back. { ¦klōzd 'lüp }

**closed-loop control system** *See* feedback control system. { ¦klōzd ¦lüp kən'trōl ˌsis·təm }

**closed-loop telemetry system** [ENG] **1.** A telemetry system which is also used as the display portion of a remote-control system. **2.** A system used to check out test vehicle or telemetry performance without radiation of radio-frequency energy. { ¦klōzd ¦lüp tə'lem·ə·trē ˌsis·təm }

**closed nozzle** [MECH ENG] A fuel nozzle having a built-in valve interposed between the fuel supply and combustion chamber. { ¦klōzd 'näz·əl }

**closed pair** [MECH] A pair of bodies that are subject to constraints which prevent any relative motion between them. { ¦klōzd 'per }

**closed respiratory gas system** [ENG] A self-contained system within a sealed cabin, capsule, or spacecraft that will provide adequate oxygen for breathing, maintain adequate cabin pressure, and absorb the exhaled carbon dioxide and water vapor. { ¦klōzd 'res·prəˌtȯr·ē 'gas ˌsis·təm }

**closed shop** [IND ENG] An establishment permitting only union members to be employed. { ¦klōzd 'shäp }

**closed steam** [ENG] Steam that flows through a heating coil or annulus so that there is no direct contact between the steam and the material being heated. { ¦klōzd 'stēm }

**closed system** [ENG] A system for water handling that does not permit air to enter. [THERMO] A system which is isolated so that it cannot exchange matter or energy with its surroundings and can therefore attain a state of thermodynamic equilibrium. Also known as isolated system. { ¦klōzd 'sis·təm }

**close nipple** [ENG] A short length of pipe that is completely threaded. { 'klōs 'nip·əl }

**close-off rating** [MECH ENG] **1.** The maximum allowable pressure drop to which a valve can be subjected at commercial shutoff. **2.** The maximum allowable pressure drop between the outlet of a three-way valve and either of the two inlets, or between the inlet and either of the two outlets. { 'klōz ˌȯf ˌrād·iŋ }

**closer** [CIV ENG] **1.** In masonry work, the last brick or other masonry component that is laid in a horizontal course. Also known as closure. **2.** A stone course that extends from one window-sill to another. { 'klō·zər }

**close-talking microphone** [ENG ACOUS] A microphone designed for use close to the mouth, so noise from more distant points is suppressed. Also known as noise-canceling microphone. { 'klōs ˌtȯk·iŋ 'mī·krəˌfōn }

**closing line** [MECH] The vector required to complete a polygon consisting of a set of vectors whose sum is zero (such as the forces acting on a body in equilibrium). { 'klōz·iŋ ˌlīn }

**closing machine** [ENG] A machine for manufacturing wire rope by braiding wire into strands, and strands into rope. Also known as stranding machine. { 'klōz·iŋ məˌshēn }

**closing pressure** [MECH ENG] The amount of static inlet pressure in a safety relief valve when the valve disk has a zero lift above the seat. { 'klōz·iŋ ˌpresh·ər }

**closure** *See* closer. { 'klō·zhər }

**cloth wheel** [DES ENG] A polishing wheel made of sections of cloth glued or sewn together. { 'klȯth ˌwēl }

**cloud-detection radar** [ENG] A type of weather radar designed specifically for the detection of clouds (rather than precipitation). { 'klaůd di'tek·shən ˌrāˌdär }

**cloud-drop sampler** [ENG] An instrument for collecting cloud particles, consisting of a sampling plate or cylinder and a shutter, which is so arranged that the sampling surface is exposed to the cloud for a predetermined length of time; the sampling surface is covered with a material which either captures the cloud particles or leaves an impression characteristic of the impinging elements. { 'klaůd ˌdräp 'sam·plər }

**cloud-height indicator** [ENG] General term for an instrument which measures the height of cloud bases. { 'klaůd ˌhīt ˌin·dəˌkād·ər }

**cloud mirror** *See* mirror nephoscope. { 'klaůd ˌmir·ər }

**cloud point** [CHEM ENG] The temperature at which paraffin wax or other solid substance begins to separate from a solution of petroleum oil; a cloudy appearance is seen in the oil at this point. { 'klaůd ˌpȯint }

**cloud test** [CHEM ENG] An American Society for Testing and Materials method for determining the cloud point of petroleum oil. { 'klaůd ˌtest }

**clout nail** [DES ENG] A nail with a large, thin, flat head used in building. { 'klaůt ˌnāl }

**cloverleaf** [CIV ENG] A highway intersection resembling a clover leaf and designed to allow movement and interchange of traffic without direct crossings and left turns. { 'klō·vərˌlēf }

**clusec** [MECH ENG] A unit of power used to measure the power of evacuation of a vacuum pump, equal to the power associated with a leak rate of 1 centiliter per second at a pressure of 1 millitorr, or to approximately $1.33322 \times 10^{-6}$ watt. { ¦klü¦sek }

**cluster** [ENG] **1.** A pyrotechnic signal consisting of a group of stars or fireballs. **2.** A grouping of rocket motors fastened together. { 'kləs·tər }

**clutch** [MECH ENG] A machine element for the connection and disconnection of shafts in equipment drives, especially while running. { kləch }

**cm** *See* centimeter.

**cmHg** *See* centimeter of mercury.

**CMOS device** [ELECTR] A device formed by the combination of a PMOS (*p*-type-channel metal oxide semiconductor device) with an NMOS (*n*-type-channel metal oxide semiconductor device). Derived from complementary metal oxide semiconductor device. { ˈsēˌmós diˈvīs }

**CNC** *See* computer numerical control.

**coach screw** [DES ENG] A large, square-headed, wooden screw used to join heavy timbers. Also known as lag bolt; lag screw. { 'kōch ˌskrü }

**coak** [DES ENG] **1.** A projection from the end of a piece of wood or timber that is designed to fit into a hole in another piece so that they can be joined to form a continuous unit. **2.** A dowel or hardwood pin that joins overlapping timbers. { kōk }

**coalescent pack** [CHEM ENG] High-surface-area packing to consolidate liquid droplets for gravity separation from a second phase (for example, gas or immiscible liquid); packing must be wettable by the droplet phase; Berl saddles, Raschig rings, knitted wire mesh, excelsior, and similar materials are used. { ˌkō·əˈles·ənt ˈpak }

**coalescer** [CHEM ENG] Mechanical process vessel with wettable, high-surface area packing on which liquid droplets consolidate for gravity separation from a second phase (for example, gas or immiscible liquid). { ˌkō·əˈles·ər }

**coal gasification** [CHEM ENG] The conversion of coal, char, or coke to a gaseous product by reaction with air, oxygen, steam, carbon dioxide, or mixtures of these. { 'kōl ˌgas·ə·fəˈkā·shən }

**coal hydrogenation** *See* Bergius process. { 'kōl ˌhī·drə·jəˈnā·shən }

**coal liquefaction** [CHEM ENG] The conversion of coal (with the exception of anthracite) to petroleum-like hydrocarbon liquids, which are used as refinery feedstocks for the manufacture of gasoline, heating oil, diesel fuel, jet fuel, turbine fuel, fuel oil, and petrochemicals. { ¦kōl likˈwəˈfak·shən }

**coast** [ENG] A memory feature on a radar which, when activated, causes the range and angle systems to continue to move in the same direction and at the same speed as that required to track an original target. { kōst }

**coastal berm** *See* berm. { 'kōs·təl 'bərm }

**coastal engineering** [CIV ENG] A branch of civil engineering pertaining to the study of the action of the seas on shorelines and to the design of structures to protect against this action. { 'kōs·təl enˈjəˈnir·iŋ }

**coat hanger die** [ENG] A plastics-sheet slot die shaped like a coat hanger on the inside. { 'kōt ˌhaŋˈər ˌdī }

**coaxial** [MECH] Sharing the same axes. [MECH ENG] Mounted on independent concentric shafts. { kōˈak·sē·əl }

**coaxial speaker** [ENG ACOUS] A loudspeaker system comprising two, or less commonly three, speaker units mounted on substantially the same axis in an integrated mechanical assembly, with an acoustic-radiation-controlling structure. { kōˈak·sē·əl 'spēk·ər }

**coaxial wavemeter** [ENG] A device for measuring frequencies above about 100 megahertz, consisting of a rigid metal cylinder that has an inner conductor along its central axis, and a sliding disk that shorts the inner conductor and the cylinder. { kōˈak·sē·əl 'wāvˌmēd·ər }

**cobalt glance** *See* cobaltite. { 'kōˌbólt 'glans }

**cobalt-molybdate desulfurization** [CHEM ENG] A process for desulfurization of petroleum by using cobalt molybdate as a catalyst. { ¦kōˌbólt məˌlibˌdāt dēˌsəl·fə·riˈzā·shən }

**cock** [ENG] Any mechanism which starts, stops, or regulates the flow of liquid, such as a valve, faucet, or tap. { käk }

**Coddington shape factor** *See* shape factor. { 'käd·iŋ·tən 'shāp ˌfak·tər }

**coded mask** [ENG] A pattern of tungsten blocks that absorb gamma-ray photons in a gamma-ray telescope, and are arranged so that an astronomical gamma-ray source projects on a position-sensitive detector a pattern that is characteristic of the direction of arrival of the photons. { 'kōd·əd ˌmask }

**code-sending radiosonde** [ENG] A radiosonde which transmits the indications of the meteorological sensing elements in the form of a code consisting of combinations of dots and dashes. Also known as code-type radiosonde; contracted code sonde. { 'kōd ˌsend·iŋ 'rād·ē·ōˌsänd }

**code-type radiosonde** *See* code-sending radiosonde. { 'kōd ˌtīp 'rād·ē·ōˌsänd }

**codistor** [ELECTR] A multijunction semiconductor device which provides noise rejection and voltage regulation functions. { kōˈdis·tər }

**coefficient of capacitance** [ELEC] One of the coefficients which appears in the linear equations giving the charges on a set of conductors in terms of the potentials of the conductors; a coefficient is equal to the ratio of the charge on a given conductor to the potential of the same conductor when the potentials of all the other conductors are 0. { ¦kō·əˈfish·ənt əv kəˈpas·ə·təns }

**coefficient of compressibility** [MECH] The decrease in volume per unit volume of a substance

resulting from a unit increase in pressure; it is the reciprocal of the bulk modulus. { ¦kō·ə'fish·ənt əv kəm¸pres·ə'bil·əd·ē }

**coefficient of conductivity** *See* thermal conductivity. { ¦kō·ə'fish·ənt əv ¸kän·dək'tiv·əd·ē }

**coefficient of cubical expansion** [THERMO] The increment in volume of a unit volume of solid, liquid, or gas for a rise of temperature of 1° at constant pressure. Also known as coefficient of expansion; coefficient of thermal expansion; coefficient of volumetric expansion; expansion coefficient; expansivity. { ¦kō·ə'fish·ənt əv 'kyüb·ə·kəl ik'span·shən }

**coefficient of elasticity** *See* modulus of elasticity. { ¦kō·ə'fish·ənt əv i¸las'tis·əd·ē }

**coefficient of expansion** *See* coefficient of cubical expansion. { ¦kō·ə'fish·ənt əv ik'span·shən }

**coefficient of friction** [MECH] The ratio of the frictional force between two bodies in contact, parallel to the surface of contact, to the force, normal to the surface of contact, with which the bodies press against each other. Also known as friction coefficient. { ¦kō·ə'fish·ənt əv 'frik·shən }

**coefficient of friction of rest** *See* coefficient of static friction. { ¦kō·ə'fish·ənt əv 'frik·shən əv 'rest }

**coefficient of induction** [ELEC] One of the coefficients which appears in the linear equations giving the charges on a set of conductors in terms of the potentials of the conductors; a coefficient is equal to the ratio of the charge on a given conductor to the potential on another conductor, when the potentials of all the other conductors equal 0. { ¦kō·ə'fish·ənt əv in'dək·shən }

**coefficient of kinetic friction** [MECH] The ratio of the frictional force, parallel to the surface of contact, that opposes the motion of a body which is sliding or rolling over another, to the force, normal to the surface of contact, with which the bodies press against each other. { ¦kō·ə'fish·ənt əv kə'ned·ik 'frik·shən }

**coefficient of linear expansion** [THERMO] The increment of length of a solid in a unit of length for a rise in temperature of 1° at constant pressure. Also known as linear expansivity. { ¦kō·ə'fish·ənt əv 'lin·ē·ər ik'span·shən }

**coefficient of performance** [THERMO] In a refrigeration cycle, the ratio of the heat energy extracted by the heat engine at the low temperature to the work supplied to operate the cycle; when used as a heating device, it is the ratio of the heat delivered in the high-temperature coils to the work supplied. { ¦kō·ə'fish·ənt əv pər'fȯr·məns }

**coefficient of potential** [ELEC] One of the coefficients which appears in the linear equations giving the potentials of a set of conductors in terms of the charges on the conductors. { ¦kō·ə'fish·ənt əv pə'ten·chəl }

**coefficient of restitution** [MECH] The constant *e*, which is the ratio of the relative velocity of two elastic spheres after direct impact to that before impact; *e* can vary from 0 to 1, with 1 equivalent to an elastic collision and 0 equivalent to a perfectly elastic collision. Also known as restitution coefficient. { ¦kō·ə'fish·ənt əv ¸res·tə'tü·shən }

**coefficient of rigidity** *See* modulus of elasticity in shear. { ¦kō·ə'fish·ənt əv rə'jid·əd·ē }

**coefficient of rolling friction** [MECH] The ratio of the frictional force, parallel to the surface of contact, opposing the motion of a body rolling over another, to the force, normal to the surface of contact, with which the bodies press against each other. { ¦kō·ə'fish·ənt əv 'rōl·iŋ 'frik·shən }

**coefficient of sliding friction** [MECH] The ratio of the frictional force, parallel to the surface of contact, opposing the motion of a body sliding over another, to the force, normal to the surface of contact, with which the bodies press against each other. { ¦kō·ə'fish·ənt əv 'slīd·iŋ 'frik·shən }

**coefficient of static friction** [MECH] The ratio of the maximum possible frictional force, parallel to the surface of contact, which acts to prevent two bodies in contact, and at rest with respect to each other, from sliding or rolling over each other, to the force, normal to the surface of contact, with which the bodies press against each other. Also known as coefficient of friction of rest. { ¦kō·ə'fish·ənt əv 'stad·ik 'frik·shən }

**coefficient of strain** [MECH] For a substance undergoing a one-dimensional strain, the ratio of the distance along the strain axis between two points in the body, to the distance between the same points when the body is undeformed. { ¦kō·ə'fish·ənt əv 'strān }

**coefficient of superficial expansion** [THERMO] The increment in area of a solid surface per unit of area for a rise in temperature of 1° at constant pressure. Also known as superficial expansivity. { ¦kō·ə'fish·ənt əv ¸sü·pər'fish·əl ik'span·chən }

**coefficient of thermal expansion** *See* coefficient of cubical expansion. { ¦kō·ə'fish·ənt əv 'thər·məl ik'span·shən }

**coefficient of volumetric expansion** *See* coefficient of cubical expansion. { ¦kō·ə'fish·ənt əv ¦väl·yə¦me·trik ik'span·chən }

**coelostat** [ENG] A device consisting of a clockwork-driven mirror that enables a fixed telescope to continuously keep the same region of the sky in its field of view. { 'sē·lə¸stat }

**coercimeter** [ENG] An instrument that measures the magnetic intensity of a natural magnet or electromagnet. { ¸kō¸ər'sim·əd·ər }

**coextrusion** [ENG] Extrusion-forming of plastic or metal products in which two or more compatible feed materials are used in physical admixture through the same extrusion die. { ¦kō¸ik'strü·zhən }

**cofferdam** [CIV ENG] A temporary damlike structure constructed around an excavation to exclude water. { 'kȯ·fər¸dam }

**coffered ceiling** [BUILD] An ornamental ceiling constructed of panels that are sunken or recessed. { 'kȯ·fərd 'sēl·iŋ }

**cog** [DES ENG] A tooth on the edge of a wheel. [ELEC] A fluctuation in the torque delivered by

a motor when it runs at low speed, due to electromechanical effects. Also known as torque ripple. { käg }

**cog belt** [MECH ENG] A flexible device used for timing and for slip-free power transmission. { 'käg ˌbelt }

**cogeneration** [MECH ENG] The simultaneous on-site generation of electric energy and process steam or heat from the same plant. { ˌkōˌjen·əˈrā·shən }

**cogged belt** *See* timing belt. { 'kägd ˌbelt }

**cog railway** [CIV ENG] A steep railway that employs a cograil that meshes with a cogwheel on the locomotive to ensure traction. { ¦käg ˈrālˌwā }

**cogwheel** [DES ENG] A wheel with teeth around its edge. { 'käg,wēl }

**coherent moving-target indicator** [ENG] A radar system in which the Doppler frequency of the target echo is compared to a local reference frequency generated by a coherent oscillator. { kōˈhir·ənt ¦müv·iŋ ¦tär·gət ˌin·dəˌkād·ər }

**coherent noise** [ENG] Noise that affects all tracks across a magnetic tape equally and simultaneously. { kōˈhir·ənt ˈnȯiz }

**cohesive strength** [MECH] **1.** Strength corresponding to cohesive forces between atoms. **2.** Hypothetically, the stress causing tensile fracture without plastic deformation. { kōˈhē·siv ˈstreŋkth }

**coil** [CONT SYS] Any discrete and logical result that can be transmitted as output by a programmable controller. { kȯil }

**coil spring** [DES ENG] A helical or spiral spring, such as one of the helical springs used over the front wheels in an automotive suspension. { ˈkȯil ˌspriŋ }

**coil winder** [ENG] A manual or motor-driven mechanism for winding coils individually or in groups. { ˈkȯil ˌwīn·dər }

**coincidence amplifier** [ELECTR] An electronic circuit that amplifies only that portion of a signal present when an enabling or controlling signal is simultaneously applied. { kōˈin·sə·dəns ˌam·pləˌfī·ər }

**coincidence circuit** [ELECTR] A circuit that produces a specified output pulse only when a specified number or combination of two or more input terminals receives pulses within an assigned time interval. Also known as coincidence counter; coincidence gate. { kōˈin·sə·dəns ˌsər·kət }

**coincidence correction** *See* dead-time correction. { kōˈin·sə·dəns kəˈrek·shən }

**coincidence counter** *See* coincidence circuit. { kōˈin·sə·dəns ˌkaůnt·ər }

**coincidence gate** *See* coincidence circuit. { kōˈin·sə·dəns ˌgāt }

**coinjection molding** [ENG] A technique used in polymer processing whereby two or more materials are simultaneously injected into the cavity of a mold. Also known as sandwich molding. { ˌkō·inˈjek·shən ˌmōld·iŋ }

**coke breeze** [MECH ENG] Undersized coke screenings passing through a screen opening of approximately 5/8 inch (16 millimeters). { ˈkōk ˌbrēz }

**coke drum** [CHEM ENG] A vessel in which coke is produced. { ˈkōk ˌdrəm }

**coke knocker** [MECH ENG] A mechanical device used to break loose coke within a drum or tower. { ˈkōk ˌnäk·ər }

**coke number** [CHEM ENG] A number used to report the results of the Ramsbottom carbon residue test. { ˈkōk ˌnəm·bər }

**coke oven** [CHEM ENG] A retort in which coal is converted to coke by carbonization. { ˈkōk ˌəv·ən }

**coke-oven regenerator** [CHEM ENG] Arrangement of refractory blocks in the flue system of a coke oven to recover waste heat from hot, exiting combustion gases; the blocks, in turn, release heat to warm, incoming fuel gas. { ˈkōk ˌəv·ən riˈjen·əˌrād·ər }

**coker** [CHEM ENG] The processing unit in which coking occurs. { ˈkōk·ər }

**coking** [CHEM ENG] **1.** Destructive distillation of coal to make coke **2.** A process for thermally converting the heavy residual bottoms of crude oil entirely to lower-boiling petroleum products and by-product petroleum coke. { ˈkok·iŋ }

**coking still** [CHEM ENG] A still in which coking is done; usually, it is a batch still. { ˈkok·iŋ ˌstil }

**Colburn j factor equation** [THERMO] Dimensionless heat-transfer equation to calculate the natural convection movement of heat from vertical surfaces or horizontal cylinders to fluids (gases or liquids) flowing past these surfaces. { ˈkol·bərn ˈjā ˌfak·tər iˈkwā·zhən }

**Colburn method** [CHEM ENG] Graphical method, and equations to calculate the theoretical number of plates (trays) needed to separate light and heavy liquids in a distillation column. { ˈkōl·bərn ˌmeth·əd }

**cold-air machine** [MECH ENG] A refrigeration system in which air serves as the refrigerant in a cycle of adiabatic compression, cooling to ambient temperature, and adiabatic expansion to refrigeration temperature; the air is customarily reused in a closed superatmospheric pressure system. Also known as dense-air system. { ˈkōld ¦er məˌshēn }

**cold-chamber die casting** [ENG] A die-casting process in which molten metal is ladled either manually or mechanically into a relatively cold cylinder from which it is forced into the die cavity. { ˈkōld ˌchām·bər ˈdī ˌkast·iŋ }

**cold chisel** [DES ENG] A chisel specifically designed to cut or chip cold metal; made of specially tempered tool steel machined into various cutting edges. Also known as cold cutter. { ˈkōld ˌchiz·əl }

**cold cure** [CHEM ENG] Vulcanization of rubber at nonelevated temperatures with a solution of a sulfur compound. { ˈkōld ˌkyůr }

**cold cutter** *See* cold chisel. { ˈkōld ˌkəd·ər }

**cold differential test pressure** [ENG] The inlet pressure of a pressure-relief valve at which the valve is set to open during testing. { ˈkōld ˌdif·əˈren·chəl ˈtest ˌpresh·ər }

**cold flow** [MECH] Creep in polymer plastics. { 'kōld ˌflō }

**cold joint** [ENG] A soldered connection which was inadequately heated, with the result that the wire is held in place by rosin flux, not solder. { 'kōld 'jȯint }

**cold lime-soda process** [CHEM ENG] A water-softening process in which water is treated with hydrated lime (sometimes in combination with soda ash), which reacts with dissolved calcium and magnesium compounds to form precipitates that can be removed as sludge. { 'kōld ¦līm ¦sō·də ˌpräs·əs }

**cold molding** [ENG] Shaping of an unheated compound in a mold under pressure, followed by heating the article to cure it. { 'kōld ˌmōld·iŋ }

**cold plasma** [CHEM ENG] Low-energy ionized gas. { ¦kōld 'plaz·mə }

**cold plate** [MECH ENG] An aluminum or other plate containing internal tubing through which a liquid coolant is forced, to absorb heat transferred to the plate by transistors and other components mounted on it. Also known as liquid-cooled dissipator. { 'kōld ˌplāt }

**cold saw** [MECH ENG] **1.** Any saw for cutting cold metal, as opposed to a hot saw. **2.** A disk made of soft steel or iron which rotates at a speed such that a point on its edge has a tangential velocity of about 15,000 feet per minute (75 meters per second), and which grinds metal by friction. { 'kōld ˌsȯ }

**cold settling** [CHEM ENG] A process that removes wax from high-viscosity stocks. { 'kōld ˌset·liŋ }

**cold slug** [ENG] The first material to enter an injection mold in plastics manufacturing. { 'kōld ˌsləg }

**cold-slug well** [ENG] The area in a plastic injection mold which receives the cold slug from the sprue opening. { 'kōld ˌsləg 'wel }

**cold-spot hygrometer** *See* dew-point hygrometer. { 'kōld ˌspät hī'gräm·əd·ər }

**cold storage** [ENG] The storage of perishables at low temperatures produced by refrigeration, usually above freezing, to increase storage life. { ¦kōld 'stȯr·ij }

**cold-storage locker plant** [ENG] A plant with many rental steel lockers, each with a capacity of about 6 cubic feet (0.17 cubic meter) and generally for food storage by an individual family, placed in refrigerated rooms, at about 0°F (−18°C). { ¦kōld 'stȯr·ij 'läk·ər ˌplant }

**cold stress** [MECH] Forces tending to deform steel, cement, and other materials, resulting from low temperatures. { 'kōld ˌstres }

**cold stretch** [ENG] A pulling operation on extruded plastic filaments in which little or no heat is used; improves tensile properties. { 'kōld ˌstrech }

**cold test** [CHEM ENG] A test to determine the temperature at which clouding or coagulation is first visible in a sample of oil, as the temperature of the sample is reduced. { 'kōld ˌtest }

**cold trap** [MECH ENG] A tube whose walls are cooled with liquid nitrogen or some other liquid to condense vapors passing through it; used with diffusion pumps and to keep vapors from entering a McLeod gage. { 'kōld ˌtrap }

**collapse** [ENG] Contraction of plastic container walls during cooling; produces permanent indentation. { kə'laps }

**collapse properties** [MECH] Strength and dimensional attributes of piping, tubing, or process vessels, related to the ability to resist collapse from exterior pressure or internal vacuum. { kə'laps ˌpräp·ərd·ēz }

**collapsing pressure** [MECH] The minimum external pressure which causes a thin-walled body or structure to collapse. { kə'lap·siŋ ˌpresh·ər }

**collar** [DES ENG] A ring placed around an object to restrict its motion, hold it in place, or cover an opening. { 'käl·ər }

**collar beam** [BUILD] A tie beam in a roof truss connecting the rafters well above the wall plate. { 'käl·ər ˌbēm }

**collar bearing** [MECH ENG] A bearing that resists the axial force of a collar on a rotating shaft. { 'käl·ər ˌber·iŋ }

**collared hole** [ENG] A started hole drilled sufficiently deep to confine the drill bit and prevent slippage of the bit from normal position. { 'käl·ərd ˌhōl }

**collect** [DES ENG] A sleeve or flange that can be tightened about a rotating shaft to halt motion. { kə'lekt }

**collective bargaining** [IND ENG] The negotiation for mutual agreement in the settlement of a labor contract between an employer or his representatives and a labor union or its representatives. { kə'lek·tiv 'bär·gən·iŋ }

**collector** [ELECTR] **1.** A semiconductive region through which a primary flow of charge carriers leaves the base of a transistor; the electrode or terminal connected to this region is also called the collector. **2.** An electrode that collects electrons or ions which have completed their functions within an electron tube; a collector receives electrons after they have done useful work, whereas an anode receives electrons whose useful work is to be done outside the tube. Also known as electron collector. [ENG] A class of instruments employed to determine the electric potential at a point in the atmosphere, and ultimately the atmospheric electric field; all collectors consist of some device for rapidly bringing a conductor to the same potential as the air immediately surrounding it, plus some form of electrometer for measuring the difference in potential between the equilibrated collector and the earth itself; collectors differ widely in their speed of response to atmospheric potential changes. { kə'lek·tər }

**collector capacitance** [ELECTR] The depletion-layer capacitance associated with the collector junction of a transistor. { kə'lek·tər kə'pas·əd·əns }

**collector current** [ELECTR] The direct current that passes through the collector of a transistor. { kə'lek·tər ˌkər·ənt }

**collector cutoff** [ELECTR] The reverse saturation current of the collector-base junction. { kə'lek·tər 'kəd,ȯf }

**collector junction** [ELECTR] A semiconductor junction located between the base and collector electrodes of a transistor. { kə'lek·tər ˌjəŋk·shən }

**collector modulation** [ELECTR] Amplitude modulation in which the modulator varies the collector voltage of a transistor. { kə'lek·tər ˌmäj·ə'lā·shən }

**collector resistance** [ELECTR] The back resistance of the collector-base diode of a transistor. { kə'lek·tər ri'zis·təns }

**collector voltage** [ELECTR] The direct-current voltage, obtained from a power supply, that is applied between the base and collector of a transistor. { kə'lek·tər ˌvōl·tij }

**collet** [DES ENG] A split, coned sleeve to hold small, circular tools or work in the nose of a lathe or other type of machine. [ENG] **1.** The glass neck remaining on a bottle after it is taken off the glass-blowing iron. **2.** Pieces of glass, ordinarily discarded, that are added to a batch of glass. Also spelled cullet. { käl·ət }

**collimation error** [ENG] **1.** Angular error in magnitude and direction between two nominally parallel lines of sight. **2.** Specifically, the angle by which the line of sight of a radar differs from what it should be. { ˌkäl·ə'mā·shən ˌer·ər }

**collimation tower** [ENG] Tower on which a visual and a radio target are mounted to check the electrical axis of an antenna. { ˌkäl·ə'mā·shən ˌtaü·ər }

**collision-avoidance radar** [ENG] Radar equipment utilized in a collision-avoidance system. { kə'lizh·ən ə'vȯid·əns ˌrā,där }

**collision-avoidance system** [ENG] Electronic devices and equipment used by a pilot to perform the functions of conflict detection and avoidance. { kə'lizh·ən ə'vȯid·əns ˌsis·təm }

**collision blasting** [ENG] The blasting out of different sections of rocks against each other. { kə'lizh·ən ˌblast·iŋ }

**colloider** [CIV ENG] A device that removes colloids from sewage. { kə'lȯid·ər }

**colloid mill** [MECH ENG] A grinding mill for the making of very fine dispersions of liquids or solids by breaking down particles in an emulsion or paste. { 'käl,ȯid ˌmil }

**color-bar code** [IND ENG] A code that uses one or more different colors of bars in combination with black bars and white spaces, to increase the density of binary coding of data printed on merchandise tags or directly on products for inventory control and other purposes. { 'kəl·ər ˌbär ˌkōd }

**color code** [ELEC] A system of colors used to indicate the electrical value of a component or to identify terminals and leads. [ENG] **1.** Any system of colors used for purposes of identification, such as to identify dangerous areas of a factory. **2.** A system of colors used to identify the type of material carried by a pipe; for example, dangerous materials, protective materials, extra valuable materials. { 'kəl·ər ˌkōd }

**color coder** *See* matrix. { 'kəl·ər ˌkōd·ər }

**color decoder** *See* matrix. { 'kəl·ər dē'kod·ər }

**color Doppler flow imaging scanner** [ENG] A device that obtains B-mode images and Doppler blood flow data simultaneously, and superimposes a color Doppler image on the gray-scale B-mode image. { ¦kəl·ər ¦däp·lər ˌflō 'im·ij·iŋ ˌskan·ər }

**color emissivity** *See* monochromatic emissivity. { ¦kəl·ər ˌe·mi'siv·əd·ē }

**color encoder** *See* matrix. { 'kəl·ər en'kōd·ər }

**column** *See* tower. [ENG] A vertical shaft designed to bear axial loads in compression. { 'käl·əm }

**column crane** [MECH ENG] A jib crane whose boom pivots about a post attached to a building column. { 'käl·əm ˌkrān }

**column drill** [MECH ENG] A tunnel rock drill supported by a vertical steel column. { 'käl·əm ˌdril }

**column splice** [CIV ENG] A connection between two lengths of a compression member (column); an erection device rather than a stress-carrying element. { 'käl·əm ˌsplīs }

**comb** *See* drag. { kōm }

**combination chuck** [DES ENG] A chuck used in a lathe whose jaws either move independently or simultaneously. { ˌkäm·bə'nā·shən ¦chək }

**combination collar** [DES ENG] A collar that has left-hand threads at one end and right-hand threads at the other. { ˌkäm·bə'nā·shən ¦käl·ər }

**combination cycle** *See* mixed cycle. { ˌkäm·bə'nā·shən ¦sik·əl }

**combination lock** [ENG] A lock that can be opened only when its dial has been set to the proper combination of symbols, in the proper sequence. { ˌkäm·bə'nā·shən ¦läk }

**combination pliers** [DES ENG] Pliers that can be used either for holding objects or for cutting and bending wire. { ˌkäm·bə'nā·shən 'plī·ərz }

**combination saw** [MECH ENG] A saw made in various tooth arrangement combinations suitable for ripping and crosscut mitering. { ˌkäm·bə'nā·shən ¦sȯ }

**combination square** [DES ENG] A square head and steel rule that when used together have both a 45° and 90° face to allow the testing of the accuracy of two surfaces intended to have these angles. { ˌkäm·bə'nā·shən ¦skwer }

**combination unit** [CHEM ENG] A processing unit that combines more than one process, such as straight-run distillation together with selective cracking. { ˌkäm·bə'nā·shən 'yü·nət }

**combination wrench** [DES ENG] A wrench that is an open-end wrench at one end and a socket wrench at the other. { ˌkäm·bə'nā·shən ¦rench }

**combined flexure** [MECH] The flexure of a beam under a combination of transverse and longitudinal loads. { kəm'bīnd 'flek·shər }

**combined footing** [CIV ENG] A footing, either rectangular or trapezoidal, that supports two columns. { kəm'bīnd 'fud·iŋ }

**combined sewers** [CIV ENG] A drainage system that receives both surface runoff and sewage. { kəm'bīnd 'sü·ərz }

**combined stresses** [MECH] Bending or twisting stresses in a structural member combined with direct tension or compression. { kəm'bīnd 'stres·əz }

**combing** [BUILD] In roofing, the topmost row of shingles which project above the ridge line. [ENG] **1.** Using a comb or stiff bristle brush to create a pattern by pulling through freshly applied paint. **2.** Scraping or smoothing a soft stone surface. { 'kōm·iŋ }

**comb nephoscope** [ENG] A direct-vision nephoscope constructed with a comb (a crosspiece containing equispaced vertical rods) attached to the end of a column 8–10 feet (2.4–3 meters) long and supported on a mounting that is free to rotate about its vertical axis; in use, the comb is turned so that the cloud appears to move parallel to the tips of the vertical rods. { ¦kōm ¦nef·ə,skōp }

**combplate** [MECH ENG] The toothed portion of the stationary threshold plate that is set into both ends of an escalator or moving sidewalk and meshes with the grooved surface of the moving steps or treadway. { 'kōm,plāt }

**combustible loss** [ENG] Thermal loss resulting from incomplete combustion of fuel. { kəm 'bəs·tə·bəl ,lȯs }

**combustion chamber** [ENG] Any chamber in which a fuel such as oil, coal, or kerosine is burned to provide heat. [MECH ENG] The space at the head end of an internal combustion engine cylinder where most of the combustion takes place. { kəm'bəs·chən ,chām·bər }

**combustion-chamber volume** [MECH ENG] The volume of the combustion chamber when the piston is at top dead center. { kəm'bəs·chən ,chām·bər ,väl·yəm }

**combustion deposit** [ENG] A layer of ash on the heat-exchange surfaces of a combustion chamber, resulting from the burning of a fuel. { kəm'bəs·chən də'päz·ət }

**combustion engine** [MECH ENG] An engine that operates by the energy of combustion of a fuel. { kəm'bəs·chən ,en·jən }

**combustion engineering** [MECH ENG] The design of combustion furnaces for a given performance and thermal efficiency, involving study of the heat liberated in the combustion process, the amount of heat absorbed by heat elements, and heat-transfer rates. { kəm'bəs·chən en·jə'nir·iŋ }

**combustion furnace** [ENG] A furnace whose source of heat is the energy released in the oxidation of fossil fuel. { kəm'bəs·chən ,fər·nəs }

**combustion knock** *See* engine knock. { kəm'bəs·chən ,näk }

**combustion shock** [ENG] Shock resulting from abnormal burning of fuel in an internal combustion engine, caused by preignition or fuel-air detonation; or in a diesel engine, the uncontrolled burning of fuel accumulated in the combustion chamber. { kəm'bəs·chən ,shäk }

**combustion turbine** *See* gas turbine. { kəm'bəs·chən 'tər,bīn }

**combustor** [MECH ENG] The combustion chamber together with burners, igniters, and injection devices in a gas turbine or jet engine. { kəm 'bəs·tər }

**come-along** [DES ENG] A device for gripping and effectively shortening a length of cable, wire rope, or chain by means of two jaws which close when one pulls on a ring. *See* puller. { 'kəm ə,lȯŋ }

**comfort chart** [ENG] A diagram showing curves of relative humidity and effective temperature superimposed upon rectangular coordinates of wet-bulb temperature and dry-bulb temperature. { 'kəm·fərt ,chärt }

**comfort control** [ENG] Control of temperature, humidity, flow, and composition of air by using heating and air-conditioning systems, ventilators, or other systems to increase the comfort of people in an enclosure. { 'kəm·fərt kən'trōl }

**comfort curve** [ENG] A line drawn on a graph of air temperature versus some function of humidity (usually wet-bulb temperature or relative humidity) to show the varying conditions under which the average sedentary person feels the same degree of comfort; a curve of constant comfort. { 'kəm·fərt ,kərv }

**comfort standard** *See* comfort zone. { 'kəm·fərt ,stan·dərd }

**comfort temperature** [MECH ENG] Any one of the indexes in which air temperatures have been adjusted to represent human comfort or discomfort under prevailing conditions of temperature, humidity, radiation, and wind. { 'kəm·fərt ,tem·prə·chər }

**comfort zone** [ENG] The ranges of indoor temperature, humidity, and air movement, under which most persons enjoy mental and physical well-being. Also known as comfort standard. { 'kəm·fərt ,zōn }

**command** [CONT SYS] An independent signal in a feedback control system, from which the dependent signals are controlled in a predetermined manner. { kə'mand }

**command and control** [SYS ENG] The process of military commanders and civilian managers identifying, prioritizing, and achieving strategic and tactical objectives by exercising authority and direction over human and material resources by utilizing a variety of computer-based and computer-controlled systems, many driven by decision-theoretic methods, tools, and techniques. Abbreviated $C^2$. { kə'mand ən kən 'trōl }

**command, control, and communications** [SYS ENG] A version of command and control in which the role of communications equipment is emphasized. Abbreviated $C^3$. { kə'mand kən'trōl ən kə,myü·ne'kā·shənz }

**command, control, communications, and intelligence** [SYS ENG] A version of command and control in which the roles of communications equipment and intelligence are emphasized.

Abbreviated $C^3I$. { kə'mand kən'trōl kə,myü·nə'kā·shənz ən in'tel·ə·jəns }

**command destruct** [CONT SYS] A command control system that destroys a flightborne test rocket or a guided missile, actuated by the safety officer whenever the vehicle's performance indicates a safety hazard. { kə'mand di'strəkt }

**command guidance** [ENG] A type of electronic guidance of guided missiles or other guided aircraft wherein signals or pulses sent out by an operator cause the guided object to fly a directed path. Also known as command control. { kə'mand ,gīd·əns }

**commercial diesel cycle** *See* mixed cycle. { kə'mər·shəl 'dē·zəl ,sī·kəl }

**commercial harbor** [CIV ENG] A harbor in which docks are provided with cargo-handling facilities. { kə'mər·shəl 'här·bər }

**comminution** [MECH ENG] Breaking up or grinding into small fragments. Also known as pulverization. { ,käm·ə'nü·shən }

**comminutor** [MECH ENG] A machine that breaks up solids. { 'käm·ə,nüd·ər }

**common-base connection** *See* grounded-base connection. { ¦käm·ən 'bās kə'nek·shən }

**common-base feedback oscillator** [ELECTR] A bipolar transistor amplifier with a common-base connection and a positive feedback network between the collector (output) and the emitter (input). { ¦käm·ən 'bās 'fēd,bak ,äs·ə,lād·ər }

**common bond** *See* American bond. { ¦käm·ən ¦bänd }

**common carrier** [IND ENG] A company recognized by an appropriate regulatory agency as having a vested interest in furnishing communications services or in transporting commodities or people. { ¦käm·ən 'kar·ē·ər }

**common-collector connection** *See* grounded-collector connection. { ¦käm·ən kə'lek·tər kə'nek·shən }

**common-drain amplifier** [ELECTR] An amplifier using a field-effect transistor so that the input signal is injected between gate and drain, while the output is taken between the source and drain. Also known as source-follower amplifier. { ¦käm·ən 'drān 'am·plə,fī·ər }

**common-emitter connection** *See* grounded-emitter connection. { ¦käm·ən i'mid·ər kə'nek·shən }

**common-gate amplifier** [ELECTR] An amplifier using a field-effect transistor in which the gate is common to both the input circuit and the output circuit. { ¦käm·ən 'gāt 'am·plə,fī·ər }

**common joist** [BUILD] An ordinary floor beam to which floor boards are attached. { ¦käm·ən ¦jȯist }

**common labor** [IND ENG] Unskilled workers. { ¦käm·ən ¦lā·bər }

**common mode** [ELECTR] Having signals that are identical in amplitude and phase at both inputs, as in a differential operational amplifier. { ¦käm·ən ,mōd }

**common-mode error** [ELECTR] The error voltage that exists at the output terminals of an operational amplifier due to the common-mode voltage at the input. { ¦käm·ən ,mōd 'er·ər }

**common-mode gain** [ELECTR] The ratio of the output voltage of a differential amplifier to the common-mode input voltage. { ¦käm·ən ,mōd 'gān }

**common-mode input capacitance** [ELECTR] The equivalent capacitance of both inverting and noninverting inputs of an operational amplifier with respect to ground. { ¦käm·ən ,mōd 'in,pu̇t kə'pas·əd·əns }

**common-mode input impedance** [ELECTR] The open-loop input impedance of both inverting and noninverting inputs of an operational amplifier with respect to ground. { ¦käm·ən ,mōd 'in ,pu̇t im'ped·əns }

**common-mode input resistance** [ELECTR] The equivalent resistance of both inverting and noninverting inputs of an operational amplifier with respect to ground or reference. { ¦käm·ən ,mōd 'in,pu̇t ri'zis·təns }

**common-mode rejection** [ELECTR] The ability of an amplifier to cancel a common-mode signal while responding to an out-of-phase signal. Also known as in-phase rejection. { ¦käm·ən ,mōd ri'jek·shən }

**common-mode rejection ratio** [ELECTR] The ratio of the gain of an amplifier for difference signals between the input terminals, to the gain for the average or common-mode signal component. Abbreviated CMRR. { 'käm·ən ,mōd ri 'jek·shən 'rā·shō }

**common-mode signal** [ELECTR] A signal applied equally to both ungrounded inputs of a balanced amplifier stage or other differential device. Also known as in-phase signal. { ¦käm·ən ,mōd 'sig·nal }

**common-mode voltage** [ELECTR] A voltage that appears in common at both input terminals of a device with respect to the output reference (usually ground). { ¦käm·ən ,mōd 'vōl·tij }

**common rafter** [BUILD] A rafter which extends from the plate of the roof to the ridge board at right angles to both members, and to which roofing is attached. { ¦käm·ən 'raf·tər }

**common-rail injection** [MECH ENG] A type of diesel engine fuel-injection system in which one rail maintains the fuel at a specified pressure while feed lines run from the rail to each fuel injector. { 'käm·ən ¦rāl in'jek·shən }

**common return** [ELECTR] A return conductor that serves two or more circuits. { ¦käm·ən ri'tərn }

**common wall** [BUILD] A wall that is shared by two dwelling units. { ¦käm·ən ¦wȯl }

**communications** [ENG] The science and technology by which information is collected from an originating source, transformed into electric currents or fields, transmitted over electrical networks or space to another point, and reconverted into a form suitable for interpretation by a receiver. { kə,myü·nə'kā·shənz }

**compaction** [ENG] Increasing the dry density of a granular material, particularly soil, by means such as impact or by rolling the surface layers. { kəm'pak·shən }

**compactor** [MECH ENG] **1.** Machine designed

to consolidate earth and paving materials by kneading, weight, vibration, or impact, to sustain loads greater than those sustained in an uncompacted state. **2.** A machine that compresses solid waste material for convenience in disposal. { kəm'pak·tər }

**companion flange** [DES ENG] A pipe flange that can be bolted to a similar flange on another pipe. { kəm'pan·yən ˌflanj }

**comparative rabal** [ENG] A rabal observation (that is, a radiosonde balloon tracked by theodolite) taken simultaneously with the usual rawin observation (tracking by radar or radio direction-finder), to provide a rough check on the alignment and operating accuracy of the electronic tracking equipment. { kəm'par·əd·iv 'rāˌbal }

**comparator** [CONT SYS] A device which detects the value of the quantity to be controlled by a feedback control system and compares it continuously with the desired value of that quantity. [ENG] A device used to inspect a gaged part for deviation from a specified dimension, by mechanical, electrical, pneumatic, or optical means. { kəm'par·əd·ər }

**comparator circuit** [ELECTR] An electronic circuit that produces an output voltage or current whenever two input levels simultaneously satisfy predetermined amplitude requirements; may be linear (continuous) or digital (discrete). { kəm 'par·əd·ər ˌsər·kət }

**comparator method** [THERMO] A method of determining the coefficient of linear expansion of a substance in which one measures the distance that each of two traveling microscopes must be moved in order to remain centered on scratches on a rod-shaped specimen when the temperature of the specimen is raised by a measured amount. { kəm'par·əd·ər ˌmeth·əd }

**compartment mill** [MECH ENG] A multisection pulverizing device divided by perforated partitions, with preliminary grinding at one end in a short ball-mill operation, and finish grinding at the discharge end in a longer tube-mill operation. { kəm'pärt·mənt ˌmil }

**compass** [ENG] An instrument for indicating a horizontal reference direction relative to the earth. { 'kəm·pəs }

**compass bowl** [ENG] That part of a compass in which the compass card is mounted. { 'kəm·pəs ˌbōl }

**compass card** [DES ENG] The part of a compass on which the direction graduations are placed, it is usually in the form of a thin disk or annulus graduated in degrees, clockwise from 0° at the reference direction to 360°, and sometimes also in compass points. { 'kəm·pəs ˌkärd }

**compass card axis** [DES ENG] The line joining 0° and 180° on a compass card. { 'kəm·pəs ˌkärd ˌak·səs }

**compass declinometer** [ENG] An instrument used for magnetic distribution surveys; employs a thin compass needle 6 inches (15 centimeters) long, supported on a sapphire bearing and steel pivot of high quality; peep sights serve for aligning the compass box on an azimuth mark. { 'käm·pəs ˌdek·lə'näm·əd·ər }

**compass roof** [BUILD] A roof in which each truss is in the form of an arch. { ¦käm·pəs ¦rüf }

**compass saw** [DES ENG] A handsaw which has a handle with several attachable thin, tapering blades of varying widths, making it suitable for a variety of work, such as cutting circles and curves. { 'käm·pəs ˌsȯ }

**compatibility** [SYS ENG] The ability of a new system to serve users of an old system. { kəmˌpad·ə'bil·ə·dē }

**compatibility conditions** [MECH] A set of six differential relations between the strain components of an elastic solid which must be satisfied in order for these components to correspond to a continuous and single-valued displacement of the solid. { kəmˌpad·ə'bil·əd·ē kənˌdish·ənz }

**compatible discrete four-channel sound** [ENG ACOUS] A sound system in which a separate channel is maintained from each of the four sets of microphones at the recording studio or other input location to the four sets of loudspeakers that serve as the output of the system. Abbreviated CD-4 sound. { kəm'pad·ə·bəl dis'krēt ¦fôr ¦chan·əl 'saůnd }

**compatible monolithic integrated circuit** [ELECTR] Device in which passive components are deposited by thin-film techniques on top of a basic silicon-substrate circuit containing the active components and some passive parts. { kəm'pad·ə·bəl ˌmän·ə'lith·ik 'in·təˌgrād·əd 'sər·kət }

**compensated neutron logging** [ENG] Neutron well logging using one source and two detectors; the apparent limestone porosity is calculated by computer from the ratio of the count rate of one detector to that of the other. { 'käm·pənˌsād·əd ¦nüˌträn ˌläg·iŋ }

**compensated pendulum** [DES ENG] A pendulum made of two materials with different coefficients of expansion so that the distance between the point of suspension and center of oscillation remains nearly constant when the temperature changes. { 'käm·pənˌsād·əd 'pen·jə·ləm }

**compensated semiconductor** [ELECTR] Semiconductor in which one type of impurity or imperfection (for example, donor) partially cancels the electrical effects on the other type of impurity or imperfection (for example, acceptor). { 'käm·pənˌsād·əd 'sem·i·kən'dək·tər }

**compensated volume control** *See* loudness control. { 'käm·pənˌsād·əd 'väl·yəm kən'trōl }

**compensating leads** [ENG] A pair of wires, similar to the working leads of a resistance thermometer or thermocouple, which are run alongside the working leads and are connected in such a way that they balance the effects of temperature changes in the working leads. { 'käm·pənˌsād·iŋ 'lēdz }

**compensating network** [CONT SYS] A network used in a low-energy-level method for suppression of excessive oscillations in a control system. { 'käm·pənˌsād·iŋ 'netˌwərk }

**compensation** [CONT SYS] Introduction of additional equipment into a control system in order to reshape its root locus so as to improve system performance. Also known as stabilization. [ELECTR] The modification of the amplitude-frequency response of an amplifier to broaden the bandwidth or to make the response more nearly uniform over the existing bandwidth. Also known as frequency compensation. { ˌkäm·pənˈsā·shən }

**compensation signals** [ENG] In telemetry, signals recorded on a tape, along with the data and in the same track as the data, used during the playback of data to correct electrically the effects of tape-speed errors. { ˌkäm·pənˈsā·shən ˌsig·nəlz }

**compensator** [CONT SYS] A device introduced into a feedback control system to improve performance and achieve stability. Also known as filter. [ELECTR] A component that offsets an error or other undesired effect. { ˈkäm·pən ˌsād·ər }

**complementary** [ELECTR] Having *pnp* and *npn* or *p-* and *n-* channel semiconductor elements on or within the same integrated-circuit substrate or working together in the same functional amplifier state. { ˌkäm·pləˈmen·trē }

**complementary constant-current logic** [ELECTR] A type of large-scale integration used in digital integrated circuits and characterized by high density and very fast switching times. Abbreviated CCCL; $C^3L$. { ˌkäm·pləˈmen·trē ˈkän·stənt ˈkə·rənt ˈläj·ik }

**complementary logic switch** [ELECTR] A complementary transistor pair which has a common input and interconnections such that one transistor is on when the other is off, and vice versa. { ˌkäm·pləˈmen·trē ˈläj·ik ˌswich }

**complementary metal oxide semiconductor device** *See* CMOS device. { ˌkäm·pləˈmen·trē ˈmed·əl ˈäkˌsīd ˈsem·i·kənˌdək·tər diˈvīs }

**complementary symmetry** [ELECTR] A circuit using both *pnp* and *npn* transistors in a symmetrical arrangement that permits push-pull operation without an input transformer or other form of phase inverter. { ˌkäm·pləˈmen·trē ˈsim·ə·trē }

**complementary transistors** [ELECTR] Two transistors of opposite conductivity (*pnp* and *npn*) in the same functional unit. { ˌkäm·pləˈmen·trē tranˈzis·tərs }

**complete-expansion diesel cycle** *See* Brayton cycle. { kəmˈplēt ikˈspan·shən ˈdē·zəl ˌsi·kəl }

**complete lubrication** [ENG] Lubrication taking place when rubbing surfaces are separated by a fluid film, and frictional losses are due solely to the internal fluid friction in the film. Also known as viscous lubrication. { kəmˈplēt ˌlüb·rəˈkā·shən }

**complex frequency** [ENG] A complex number used to characterize exponential and damped sinusoidal motion in the same way that an ordinary frequency characterizes simple harmonic motion; designated by the constant *s* corresponding to a motion whose amplitude is given by $Ae^{st}$, where A is a constant and *t* is time. { ˈkäm ˌpleks ˈfrē·kwən·sē }

**complex impedance** *See* electrical impedance; impedance. { ˈkäm ˌpleks imˈpēd·əns }

**complex permittivity** [ELEC] A property of a dielectric, equal to $\epsilon_0(C/C_0)$, where C is the complex capacitance of a capacitor in which the dielectric is the insulating material when the capacitor is connected to a sinusoidal voltage source, and $C_0$ is the vacuum capacitance of the capacitor. { ˈkäm ˌpleks ˌpər·məˈtiv·əd·ē }

**complex reflector** [ENG] A structure or group of structures having many radar-reflecting surfaces facing in different directions. { ˈkäm ˌpleks riˈflek·tər }

**complex relative attenuation** [ELECTR] The ratio of the peak output voltage, in complex notation, of an electric filter to the output voltage at the frequency being considered. { ˈkäm ˌpleks ˈrel·əd·iv əˌten·yəˈwā·shən }

**complex target** [ENG] A radar target composed of a number of reflecting surfaces that, in the aggregate, are smaller in all dimensions than the resolution capabilities of the radar. { ˈkäm ˌpleks ˈtär·gət }

**compliance** [MECH] The displacement of a linear mechanical system under a unit force. { kəmˈplī·əns }

**compliance constant** [MECH] Any one of the coefficients of the relations in the generalized Hooke's law used to express strain components as linear functions of the stress components. Also known as elastic constant. { kəmˈplī·əns ˌkän·stənt }

**compliant substrate** [ELECTR] A semiconductor substrate into which an artificially formed interface is introduced near the surface which makes the substrate more readily deformable and allows it to support a defect-free semiconductor film of essentially any lattice constant, with dislocations forming in the substrate instead of in the film. Also known as sacrificial compliant substrate. { kəmˈplī·ənt ˈsəbˌstrāt }

**component** [ELEC] Any electric device, such as a coil, resistor, capacitor, generator, line, or electron tube, having distinct electrical characteristics and having terminals at which it may be connected to other components to form a circuit. Also known as circuit element; element. { kəmˈpō·nənt }

**component distillation** [CHEM ENG] A distillation process in which a fraction that cannot normally be separated by distillation is removed by forming an azeotropic mixture. { kəmˈpō·nənt disˌtəˈlā·shən }

**component-failure-impact analysis** [SYS ENG] A study that attempts to predict the consequences of failures of the major components of a system. Abbreviated CFIA. { kəmˈpō·nənt ˈfāl·yər ˈimˌpakt əˌnal·ə·səs }

**composite** [ENG ACOUS] A re-recording consisting of at least two elements. { kəmˈpäz·ət }

**composite beam** [CIV ENG] A structural member composed of two or more dissimilar materials joined together to act as a unit in which the

resulting system is stronger than the sum of its parts. An example in civil structures is the steel-concrete composite beam in which a steel wide-flange shape (I or W shape) is attached to a concrete floor slab. { kəm'päz·ət 'bēm }

**composite column** [CIV ENG] A concrete column having a structural-steel or cast-iron core with a maximum core area of 20. { kəm'päz·ət 'käl·əm }

**composite filter** [ELECTR] A filter constructed by linking filters of different kinds in series. { kəm'päz·ət 'fil·tər }

**composite I-beam bridge** [CIV ENG] A beam bridge in which the concrete roadway is mechanically bonded to the I beams by means of shear connectors. { kəm'päz·ət 'ī ˌbēm ˌbrij }

**composite macromechanics** [ENG] The study of composite material behavior wherein the material is presumed homogeneous and the effects of the constituent materials are detected only as averaged apparent properties of the composite. { kəm'päz·ət ¦mak·rō·mə'kan·iks }

**composite material** *See* composite. { kəm¦päz·ət mə¦tir·ē·əl }

**composite micromechanics** [ENG] The study of composite material behavior wherein the constituent materials are studied on a microscopic scale with specific properties being assigned to each constituent; the interaction of the constituent materials is used to determine the properties of the composite. { kəm'päz·ət ¦mik·rō·mə'kan·iks }

**composite pile** [CIV ENG] A pile in which the upper and lower portions consist of different types of piles. { kəm'päz·ət 'pīl }

**composite sampler** [ENG] A hydrometer cylinder equipped with sample cocks at regular intervals along its vertical height; used to take representative (vertical composite) samples of oil from storage tanks. { kəm'päz·ət 'sam·plər }

**composite truss** [CIV ENG] A truss having compressive members and tension members. { kəm'päz·ət 'trəs }

**composition** [MECH] The determination of a force whose effect is the same as that of two or more given forces acting simultaneously; all forces are considered acting at the same point. { ˌkäm·pə'zish·ən }

**composition diagram** [CHEM ENG] Graphical plots to show the solvent-solute concentration relationships during various stages of extraction operations (leaching, or solid-liquid extraction; and liquid-liquid extraction). { ˌkäm·pə'zish·ən ˌdī·əˌgram }

**composition-of-velocities law** [MECH] A law relating the velocities of an object in two references frames which are moving relative to each other with a specified velocity. { ˌkäm·pə'zish·ən əv və'läs·əd·ēz ˌlò }

**compound angle** [ENG] The angle formed by two mitered angles. { 'käm,paůnd 'aŋ·gəl }

**compound engine** [MECH ENG] A multicylinder-type displacement engine, using steam, air, or hot gas, where expansion proceeds successively (sequentially). { 'käm,paůnd 'en·jən }

**compounding** [MECH ENG] The series placing of cylinders in an engine (such as steam) for greater ratios of expansion and consequent improved engine economy. { 'käm,paůnd·iŋ }

**compound lever** [MECH ENG] A train of levers in which motion or force is transmitted from the arm of one lever to that of the next. { 'käm ˌpaůnd 'lev·ər }

**compound rest** [MECH ENG] A principal component of a lathe consisting of a base and an upper part dovetailed together; the base is graduated in degrees and can be swiveled to any angle; the upper part includes the tool post and tool holder. { 'käm,paůnd 'rest }

**compound screw** [DES ENG] A screw having different or opposite pitches on opposite ends of the shank. { 'käm,paůnd 'skrü }

**compregnate** [ENG] Compression of materials into a dense, hard substance with the aid of heat. { kəm'preg,nāt }

**compressadensity function** [MECH] A function used in the acoustic levitation technique to determine either the density or the adiabatic compressibility of a submicroliter droplet suspended in another liquid, if the other property is known. { kəmˌpres·ə'den·səd·ē ˌfəŋk·shən }

**compressed air** [MECH] Air whose density is increased by subjecting it to a pressure greater than atmospheric pressure. { kəm'prest 'er }

**compressed-air diving** [ENG] Any form of diving in which air is supplied under high pressure to prevent lung collapse. { kəm¦prest ¦er 'div·iŋ }

**compressed-air loudspeaker** [ENG ACOUS] A loudspeaker having an electrically actuated valve that modulates a stream of compressed air. { kəm¦prest ¦er 'laůdˌspēk·ər }

**compressed-air power** [MECH ENG] The power delivered by the pressure of compressed air as it expands, utilized in tools such as drills, in hoists, grinders, riveters, diggers, pile drivers, motors, locomotives, and in mine ventilating systems. { kəm¦prest ¦er 'paůr·ər }

**compressibility** [MECH] The property of a substance capable of being reduced in volume by application of pressure; quantitively, the reciprocal of the bulk modulus. { kəmˌpres·ə'bil·əd·ē }

**compressibility factor** [THERMO] The product of the pressure and the volume of a gas, divided by the product of the temperature of the gas and the gas constant; this factor may be inserted in the ideal gas law to take into account the departure of true gases from ideal gas behavior. Also known as deviation factor; gas-deviation factor; supercompressibility factor. { kəmˌpres·ə'bil·əd·ē ˌfak·tər }

**compressible fluid flow** [CHEM ENG] Gas flow when the pressure drop due to the flow of a gas through a system is large enough, compared with the inlet pressure, to cause a 10% or greater decrease in gas density. { kəm'pres·ə·bəl 'flü·əd ˌflō }

**compression** [ELECTR] **1.** Reduction of the effective gain of a device at one level of signal with respect to the gain at a lower level of signal, so

that weak signal components will not be lost in background and strong signals will not overload the system. **2.** *See* compression ratio. [MECH] Reduction in the volume of a substance due to pressure; for example in building, the type of stress which causes shortening of the fibers of a wooden member. [MECH ENG] *See* compression ratio. { kəm'presh·ən }

**compression coupling** [MECH ENG] **1.** A means of connecting two perfectly aligned shafts in which a slotted tapered sleeve is placed over the junction and two flanges are drawn over the sleeve so that they automatically center the shafts and provide sufficient contact pressure to transmit medium loads. **2.** A type of tubing fitting. { kəm'presh·ən ˌkəp·liŋ }

**compression cup** [ENG] A cup from which lubricant is forced to a bearing by compression. { kəm'presh·ən ˌkəp }

**compression failure** [ENG] Buckling or collapse caused by compression, as of a steel or concrete column or of wood fibers. { kəm'presh·ən ˌfāl·yər }

**compression fitting** [ENG] A leak-resistant pipe joint designed with a tight-fitting sleeve that exerts a large inward pressure on the exterior of the pipe. { kəm'presh·ən ˌfid·iŋ }

**compression gage** [ENG] An instrument that measures pressures greater than atmospheric pressure. { kəm'presh·ən ˌgāj }

**compression ignition** [MECH ENG] Ignition produced by compression of the air in a cylinder of an internal combustion engine before fuel is admitted. { kəm'presh·ən ig'nish·ən }

**compression-ignition engine** *See* diesel engine. { kəmˌpresh·ən igˌnish·ən 'en·jən }

**compression member** [ENG] A beam or other structural member which is subject to compressive stress. { kəm'presh·ən ˌmem·bər }

**compression modulus** *See* bulk modulus of elasticity. { kəm'presh·ən ˌmäj·ə·ləs }

**compression mold** [ENG] A mold for plastics which is open when the material is introduced and which shapes the material by heat and by the pressure of closing. { kəm'presh·ən ˌmōld }

**compression pressure** [MECH ENG] That pressure developed in a reciprocating piston engine at the end of the compression stroke without combustion of fuel. { kəm'presh·ən ˌpresh·ər }

**compression process** [CHEM ENG] The recovery of natural gasoline from gas containing a high proportion of hydrocarbons. { kəm'presh·ən ˌprä·səs }

**compression ratio** [ELECTR] The ratio of the gain of a device at a low power level to the gain at some higher level, usually expressed in decibels. Also known as compression. [MECH ENG] The ratio in internal combustion engines between the volume displaced by the piston plus the clearance space, to the volume of the clearance space. Also known as compression. { kəm'presh·ən ˌrā·shō }

**compression refrigeration** [MECH ENG] The cooling of a gaseous refrigerant by first compressing it to liquid form (with resultant heat buildup), cooling the liquid by heat exchange, then releasing pressure to allow the liquid to vaporize (with resultant absorption of latent heat of vaporization and a refrigerative effect). { kəm'presh·ən riˌfrij·ə'rā·shən }

**compression release** [MECH ENG] Release of compressed gas resulting from incomplete closure of intake or exhaust valves. { kəm'presh·ən ri'lēs }

**compression ring** [MECH ENG] A ring located at the upper part of a piston to hold the burning fuel charge above the piston in the combustion chamber, thus preventing blowby. { kəm'presh·ən ˌriŋ }

**compression spring** [ENG] A spring, usually a coil spring, which resists a force tending to compress it. { kəm'presh·ən ˌspriŋ }

**compression strength** [MECH] Property of a material to resist rupture under compression. { kəm'presh·ən ˌstreŋkth }

**compression stroke** [MECH ENG] The phase of a positive displacement engine or compressor in which the motion of the piston compresses the fluid trapped in the cylinder. { kəm'presh·ən ˌstrōk }

**compression test** [ENG] A test to determine compression strength, usually applied to materials of high compression but low tensile strength, in which the specimen is subjected to increasing compressive forces until failure occurs. { kəm'presh·ən ˌtest }

**compressive member** [CIV ENG] A structural member subject to tension. { kəm'pres·iv 'mem·bər }

**compressive strength** [MECH] The maximum compressive stress a material can withstand without failure. { kəm'pres·iv 'streŋkth }

**compressive stress** [MECH] A stress which causes an elastic body to shorten in the direction of the applied force. { kəm'pres·iv 'stres }

**compressor** [ELECTR] The part of a compandor that is used to compress the intensity range of signals at the transmitting or recording end of a circuit. [MECH ENG] A machine used for increasing the pressure of a gas or vapor. Also known as compression machine. { kəm'pres·ər }

**compressor blade** [MECH ENG] The vane components of a centrifugal or axial-flow, air or gas compressor. { kəm'pres·ər ˌblād }

**compressor station** [MECH ENG] A permanent facility which increases the pressure on gas to move it in transmission lines or into storage. { kəm'pres·ər ˌstā·shən }

**compressor valve** [MECH ENG] A valve in a compressor, usually automatic, which operates by pressure difference (less than 5 pounds per square inch or 35 kilopascals) on the two sides of a movable, single-loaded member and which has no mechanical linkage with the moving parts of the compressor mechanism. { kəm'pres·ər ˌvalv }

**compromise joint** [CIV ENG] **1.** A joint bar used for joining rails of different height or section.

**2.** A rail that has different joint drillings from that of the same section. { 'käm·prə,mīz ,jȯint }

**compromise rail** [CIV ENG] A short rail having different sections at the ends to correspond with the rail ends to be joined, thus providing a transition between rails of different sections. { 'käm·prə,mīz ,rāl }

**computational numerical control** *See* computer numerical control. { ,käm·pyə'tā·shən·əl nü'mer·ə·kəl kən'trōl }

**computed path control** [CONT SYS] A control system designed to follow a path calculated to be the optimal one to achieve a desired result. { kəm'pyüd·əd ¦path kən'trōl }

**computer-aided design** [CONT SYS] The use of computers in converting the initial idea for a product into a detailed engineering design. Computer models and graphics replace the sketches and engineering drawings traditionally used to visualize products and communicate design information. Abbreviated CAD. { kəm'pyüd·ər ,ād·əd də'zīn }

**computer-aided engineering** [ENG] The use of computer-based tools to assist in solution of engineering problems. { kəm'pyüd·ər ,ād·əd ,en·jə'nir·iŋ }

**computer-aided manufacturing** [CONT SYS] The use of computers in converting engineering designs into finished products. Computers assist managers, manufacturing engineers, and production workers by automating many production tasks, such as developing process plans, ordering and tracking materials, and monitoring production schedules, as well as controlling the machines, industrial robots, test equipment, and systems that move and store materials in the factory. Abbreviated CAM. { kəm'pyüd·ər ,ād·əd ,man·ə'fak·chə·riŋ }

**computer control** [CONT SYS] Process control in which the process variables are fed into a computer and the output of the computer is used to control the process. { kəm'pyüd·ər kən'trōl }

**computer-controlled system** [CONT SYS] A feedback control system in which a computer operates on both the input signal and the feedback signal to effect control. { kəm'pyüd·ər kən'trōld ,sis·təm }

**computer-integrated manufacturing** [IND ENG] A computer-automated system in which individual engineering, production, marketing, and support functions of a manufacturing enterprise are organized; functional areas such as design, analysis, planning, purchasing, cost accounting, inventory control, and distribution are linked through the computer with factory floor functions such as materials handling and management, providing direct control and monitoring of all process operations. Abbreviated CIM. { kəm'pyüd·ər ¦int·ə,grād·əd ,man·ə'fak·chər·iŋ }

**computer numerical control** [CONT SYS] A control system in which numerical values corresponding to desired tool or control positions are generated by a computer. Abbreviated CNC. Also known as computational numerical control; soft-wired numerical control; stored-program numerical control. { kəm'pyüd·ər nü'mer·i·kəl kən'trōl }

**computer part programming** [CONT SYS] The use of computers to program numerical control systems. { kəm'pyüd·ər 'pärt 'prō,gram·iŋ }

**concatenation** [ELEC] A method of speed control of induction motors in which the rotors of two wound-rotor motors are mechanically coupled together and the stator of the second motor is supplied with power from the rotor slip rings of the first motor. [ENG ACOUS] The linking together of phonemes to produce meaningful sounds. { kən,kat·ən'ā·shən }

**concave bit** [DES ENG] A type of tungsten carbide drill bit having a concave cutting edge; used for percussive boring. { 'kän,kāv ,bit }

**concentrated load** [MECH] A force that is negligible because of a small contact area; a beam supported on a girder represents a concentrated load on the girder. { 'kän·sən,trād·əd 'lōd }

**concentrator** [ELECTR] Buffer switch (analog or digital) which reduces the number of trunks required. [ENG] **1.** An apparatus used to concentrate materials. **2.** A plant where materials are concentrated. { 'kän·sən,trād·ər }

**concentric groove** *See* locked groove. { kən'sen·trik 'grüv }

**concentric locating** [DES ENG] The process of making the axis of a tooling device coincide with the axis of the workpiece. { kən'sen·trik 'lō ,kād·iŋ }

**concentric orifice plate** [DES ENG] A fluid-meter orifice plate whose edges have a circular shape and whose center coincides with the center of the pipe. { kən'sen·trik 'ȯr·ə·fəs ,plāt }

**concentric reducer** [ENG] A threaded or butt-welded pipe fitting whose ends are of different sizes but are concentric about a common axis. { kən'sen·trik ri'dü·sər }

**concentric tube column** [CHEM ENG] A carefully insulated distillation apparatus which is capable of very high separating power, and in which the outer vapor-rising annulus of the column is concentric around an inner, bottom-discharging reflux return. { kən'sen·trik ¦tüb ¦käl·əm }

**concrete beam** [CIV ENG] A structural member of reinforced concrete, placed horizontally over openings to carry loads. { 'käŋ,krēt 'bēm }

**concrete bridge** [CIV ENG] A bridge constructed of prestressed or reinforced concrete. { 'käŋ ,krēt 'brij }

**concrete bucket** [ENG] A container with movable gates at the bottom that is attached to power cranes or cables to transport concrete. { 'käŋ,krēt ,bək·ət }

**concrete buggy** [ENG] A cart which carries up to 6 cubic feet (0.17 cubic meter) of concrete from the mixer or hopper to the forms. Also known as buggy; concrete cart. { 'käŋ,krēt ,bəg·ē }

**concrete caisson sinking** [CIV ENG] A shaft-sinking method similar to caisson sinking except that reinforced concrete rings are used and an airtight working chamber is not adopted. { 'käŋ ,krēt 'kā,sän ,siŋk·iŋ }

**concrete cart** *See* concrete buggy. { 'käŋ,krēt ,kärt }

**concrete chute** [ENG] A long metal trough with rounded bottom and open ends used for conveying concrete to a lower elevation. { 'käŋ ,krēt ,shüt }

**concrete column** [CIV ENG] A vertical structural member made of reinforced or unreinforced concrete. { 'käŋ,krēt 'käl·əm }

**concrete dam** [CIV ENG] A dam that is built of concrete. { 'käŋ,krēt 'dam }

**concrete mixer** [MECH ENG] A machine with a rotating drum in which the components of concrete are mixed. { 'käŋ,krēt ,mik·sər }

**concrete nail** [DES ENG] A hardened-steel nail that has a flat countersunk head and a tapered point and is used for nailing various materials to concrete or masonry. { 'käŋ,krēt 'nāl }

**concrete pile** [CIV ENG] A reinforced pile made of concrete, either precast and driven into the ground, or cast in place in a hole bored into the ground. { 'käŋ,krēt 'pīl }

**concrete pipe** [CIV ENG] A porous pipe made of concrete and used principally for subsoil drainage; diameters over 15 inches (38 centimeters) are usually reinforced. { 'käŋ,krēt 'pīp }

**concrete pump** [MECH ENG] A device which drives concrete to the placing position through a pipeline of 6-inch (15-centimeter) diameter or more, using a special type of reciprocating pump. { 'käŋ,krēt ,pəmp }

**concrete slab** [CIV ENG] A flat, reinforced-concrete structural member, relatively sizable in length and width, but shallow in depth; used for floors, roofs, and bridge decks. { 'käŋ,krēt 'slab }

**concrete vibrator** [MECH ENG] Vibrating device used to achieve proper consolidation of concrete; the three types are internal, surface, and form vibrators. { 'käŋ,krēt ,vī,brād·ər }

**concurrent engineering** [ENG] The simultaneous design of products and related processes, including all product life-cycle aspects such as manufacturing, assembly, test, support, disposal, and recycling. { kən¦kər·ənt ,en·jə'nir·iŋ }

**concussion** [ENG] Shock waves in the air caused by an explosion underground or at the surface or by a heavy blow directly to the ground surface during excavation, quarrying, or blasting operations. { kən'kəsh·ən }

**condensate flash** [CHEM ENG] Partial evaporation (flash) of hot condensed liquid by a stepwise reduction in system pressure, the hot vapor supplying heat to a cooler evaporator step (stage). { 'kän·dən,sāt ,flash }

**condensate strainer** [MECH ENG] A screen used to remove solid particles from the condensate prior to its being pumped back to the boiler. { 'kän·dən,sāt ,strān·ər }

**condensate well** [MECH ENG] A chamber into which condensed vapor falls for convenient accumulation prior to removal. { 'kän·dən,sāt ,wel }

**condensation** [ELEC] An increase of electric charge on a capacitor conductor. [MECH] An increase in density. { ,kän·dən'sā·shən }

**condenser** [ELEC] *See* capacitor. [MECH ENG] A heat-transfer device that reduces a thermodynamic fluid from its vapor phase to its liquid phase, such as in a vapor-compression refrigeration plant or in a condensing steam power plant. { kən'den·sər }

**condenser-discharge anemometer** [ENG] A contact anemometer connected to an electrical circuit which is so arranged that the average wind speed is indicated. { kən¦den·sər'dis,chärj an·ə'mäm·əd·ər }

**condenser microphone** *See* capacitor microphone. { kən'den·sər 'mī·krə,fōn }

**condenser transducer** *See* electrostatic transducer. { kən'den·sər ,tranz'dü·sər }

**condenser tubes** [MECH ENG] Metal tubes used in a heat-transfer device, with condenser vapor as the heat source and flowing liquid such as water as the receiver. { kən'den·sər ,tübs }

**condensing electrometer** *See* capacitive electrometer. { kən¦dens·iŋ ə,lek'träm·əd·ər }

**condensing engine** [MECH ENG] A steam engine in which the steam exhausts from the cylinder to a vacuum space, where the steam is liquefied. { kən¦dens·iŋ ¦en·jən }

**conditionally periodic motion** [MECH] Motion of a system in which each of the coordinates undergoes simple periodic motion, but the associated frequencies are not all rational fractions of each other so that the complete motion is not simply periodic. { kən'dish·ən·əl·ē ,pir·ē¦ad·ik ,mō·shən }

**conditionally stable circuit** [ELECTR] A circuit which is stable for certain values of input signal and gain, and unstable for other values. { kən'dish·ən·əl·ē ¦stā·bəl ,sər·kət }

**conductance** [ELEC] The real part of the admittance of a circuit; when the impedance contains no reactance, as in a direct-current circuit, it is the reciprocal of resistance, and is thus a measure of the ability of the circuit to conduct electricity. Also known as electrical conductance. Designated G. [THERMO] *See* thermal conductance. { kən'dək·təns }

**conduction** [ELEC] The passage of electric charge, which can occur by a variety of processes, such as the passage of electrons or ionized atoms. Also known as electrical conduction. { kən'dək·shən }

**conduction cooling** [ELECTR] Cooling of electronic components by carrying heat from the device through a thermally conducting material to a large piece of metal with cooling fins. { kən'dək·shən ,kül·iŋ }

**conduction pump** [ENG] A pump in which liquid metal or some other conductive liquid is moved through a pipe by sending a current across the liquid and applying a magnetic field at right angles to current flow. { kən'dək·shən ,pəmp }

**conductive coupling** [ELEC] Electric connection of two electric circuits by their sharing the same resistor. { kən'dək·tiv 'kəp·liŋ }

**conductive interference** [ELECTR] Interference to electronic equipment that orginates in power lines supplying the equipment, and is conducted to the equipment and coupled through the power supply transformer. { kən'dək·tiv ˌin·tər'fir·əns }

**conductivity** [ELEC] The ratio of the electric current density to the electric field in a material. Also known as electrical conductivity; specific conductance. { ˌkänˌdək'tiv·əd·ē }

**conductivity bridge** [ELEC] A modified Kelvin bridge for measuring very low resistances. { ˌkänˌdək'tiv·əd·ē ˌbrij }

**conductivity cell** [ELEC] A glass vessel with two electrodes at a definite distance apart and filled with a solution whose conductivity is to be measured. { ˌkänˌdək'tiv·əd·ē ˌsel }

**conductivity modulation** [ELECTR] Of a semiconductor, the variation of the conductivity of a semiconductor through variation of the charge carrier density. { ˌkänˌdək'tiv·əd·ē ˌmäj·ə'lā·shən }

**conductivity modulation transistor** [ELECTR] Transistor in which the active properties are derived from minority carrier modulation of the bulk resistivity of the semiconductor. { ˌkänˌdək 'tiv·əd·ē ˌmäj·ə'lā·shən tran'zis·tər }

**conductometer** [ENG] An instrument designed to measure thermal conductivity; in particular, one that compares the rates at which different rods transmit heat. { ˌkänˌdək'täm·əd·ər }

**conductor** [ELEC] A wire, cable, or other body or medium that is suitable for carrying electric current. Also known as electric conductor. { kən'dək·tər }

**conductor pipe** [BUILD] A metal pipe through which water is drained from the roof. { kən'dək·tər ˌpīp }

**conduit** [ELEC] Solid or flexible metal or other tubing through which insulated electric wires are run. [ENG] Any channel or pipe for conducting the flow of water or other fluid. { 'kän·də·wət }

**cone** [ENG ACOUS] The cone-shaped paper or fiber diaphragm of a loudspeaker. { kōn }

**cone bearing** [MECH ENG] A cone-shaped journal bearing running in a correspondingly tapered sleeve. { 'kōn ˌber·iŋ }

**cone-bottom tank** [ENG] Liquids-storage tank with downward-pointing conical bottom to facilitate drainage of bottom, as of water or sludge. { 'kōn ˌbäd·əm ˌtaŋk }

**cone brake** [MECH ENG] A type of friction brake whose rubbing parts are cone-shaped. { 'kōn ˌbrāk }

**cone classifier** [MECH ENG] Inverted-cone device for the separation of heavy particulates (such as sand, ore, or other mineral matter) from a liquid stream; feed enters the top of the cone, heavy particles settle to the bottom where they can be withdrawn, and liquid overflows the top edge, carrying the smaller particles or those of lower gravity over the rim; used in the mining and chemical industries. { 'kōn 'klas·əˌfī·ər }

**cone clutch** [MECH ENG] A clutch which uses the wedging action of mating conical surfaces to transmit friction torque. { 'kōn ˌkləch }

**cone crusher** [MECH ENG] A machine that reduces the size of materials such as rock by crushing in the tapered space between a truncated revolving cone and an outer chamber. { 'kōn ˌkrəsh·ər }

**conehead rivet** [DES ENG] A rivet with a head shaped like a truncated cone. { 'kōnˌhed 'riv·ət }

**cone key** [DES ENG] A taper saddle key placed on a shaft to adapt it to a pulley with a too-large hole. { 'kōn ˌkē }

**cone loudspeaker** [ENG ACOUS] A loudspeaker employing a magnetic driving unit that is mechanically coupled to a paper or fiber cone. Also known as cone speaker. { 'kōn 'laud ˌspēk·ər }

**cone mandrel** [DES ENG] A mandrel in which the diameter can be changed by moving conical sleeves. { 'kōn ˌman·drəl }

**cone nozzle** [DES ENG] A cone-shaped nozzle that disperses fluid in an atomized mist. { 'kōn ˌnäz·əl }

**cone of friction** [MECH] A cone in which the resultant force exerted by one flat horizontal surface on another must be located when both surfaces are at rest, as determined by the coefficient of static friction. { ˌkōn əv 'frik·shən }

**cone pulley** *See* step pulley. { 'kōn ˌpůl·ē }

**cone rock bit** [MECH ENG] A rotary drill with two hardened knurled cones which cut the rock as they roll. Also known as roller bit. { 'kōn 'räk ˌbit }

**cone-roof tank** [ENG] Liquids-storage tank with flattened conical roof to allow a vapor reservoir at the top for filling operations. { 'kōn ˌrüf ˌtaŋk }

**cone speaker** *See* cone loudspeaker. { 'kōn ˌspēk·ər }

**cone valve** [CIV ENG] A divergent valve whose cone-shaped head in a fixed cylinder spreads water around the wide, downstream end of the cone in spillways of dams or hydroelectric facilities. Also known as Howell-Bunger valve. { 'kōn ˌvalv }

**confidence level** [IND ENG] The probability in acceptance sampling that the quality of accepted lots manufactured will be better than the rejectable quality level (RQL); 90% level indicates that accepted lots will be better than the RQL 90 times in 100. { 'kän·fə·dəns ˌlev·əl }

**configuration** [ELEC] A group of components interconnected to perform a desired circuit function. [MECH] The positions of all the particles in a system. [SYS ENG] A group of machines interconnected and programmed to operate as a system. { kənˌfig·yə'rā·shən }

**confined flow** [ENG] The flow of any fluid (liquid or gas) through a continuous container (process vessel) or conduit (piping or tubing). { kən'fīnd 'flō }

**confinement** [ENG] Physical restriction, or degree of such restriction, to passage of detonation wave or reaction zone, for example, that of a

resistant container which holds an explosive charge. { kən'fīn·mənt }

**confining liquid** [CHEM ENG] A liquid seal (most often mercury or sodium sulfate brine) that is displaced during the no-loss transfer of a gas sample from one container to another. { kən'fīn·iŋ ˌlik·wəd }

**congruent melting point** [THERMO] A point on a temperature composition plot of a nonstoichiometric compound at which the one solid phase and one liquid phase are adjacent. { kən'grü·ənt 'melt·iŋ ˌpȯint }

**conical ball mill** [MECH ENG] A cone-shaped tumbling pulverizer in which the steel balls are classified, with the larger balls at the feed end where larger lumps are crushed, and the smaller balls at the discharge end where the material is finer. { 'kän·ə·kəl 'bȯl ˌmil }

**conical bearing** [MECH ENG] An antifriction bearing employing tapered rollers. { 'kän·ə·kəl 'ber·iŋ }

**conical pendulum** [MECH] A weight suspended from a cord or light rod and made to rotate in a horizontal circle about a vertical axis with a constant angular velocity. { 'kän·ə·kəl 'pen·jə·ləm }

**conical refiner** [MECH ENG] In paper manufacture, a cone-shaped continuous refiner having two sets of bars mounted on the rotating plug and fixed shell for beating unmodified cellulose fibers. { 'kän·ə·kəl ri'fīn·ər }

**conical roll** *See* batten roll. { ¦kän·ə·kəl ¦rōl }

**coniscope** *See* koniscope. { 'kän·əˌskōp }

**conjugate momentum** [MECH] If $q_j$ ($j = 1,2, \ldots$) are generalized coordinates of a classical dynamical system, and L is its Lagrangian, the momentum conjugate to $q_j$ is $p_j = \partial L/\partial q_j$. Also known as canonical momentum; generalized momentum. { 'kän·jə·gət mə'men·təm }

**connecting rod** [MECH ENG] Any straight link that transmits motion or power from one linkage to another within a mechanism, especially linear to rotary motion, as in a reciprocating engine or compressor. { kə'nekt·iŋ ˌräd }

**connector** [ELECTR] A switch, or relay group system, which finds the telephone line being called as a result of digits being dialed; it also causes interrupted ringing voltage to be placed on the called line or of returning a busy tone to the calling party if the line is busy. [ENG] **1.** A detachable device for connecting electrical conductors. **2.** A metal part for joining timbers. **3.** A symbol on a flowchart indicating that the flow jumps to a different location on the chart. { kə'nek·tər }

**Conradson carbon test** *See* carbon-residue test. { 'kän·rəd·sən 'kär·bən ˌtest }

**conservation of angular momentum** [MECH] The principle that, when a physical system is subject only to internal forces that bodies in the system exert on each other, the total angular momentum of the system remains constant, provided that both spin and orbital angular momentum are taken into account. { ˌkän·sər'vā·shən əv 'aŋ·gyə·lər mə'men·təm }

**conservation of areas** [MECH] A principle governing the motion of a body moving under the action of a central force, according to which a line joining the body with the center of force sweeps out equal areas in equal times. { ˌkän·sər'vā·shən əv 'er·ē·əz }

**conservation of charge** [ELEC] A law which states that the total charge of an isolated system is constant; no violation of this law has been discovered. Also known as charge conservation. { ˌkän·sər'vā·shən əv 'chärj }

**conservation of momentum** [MECH] The principle that, when a system of masses is subject only to internal forces that masses of the system exert on one another, the total vector momentum of the system is constant; no violation of this principle has been found. Also known as momentum conservation. { ˌkän·sər'vā·shən əv mə'mən·təm }

**conservative force field** [MECH] A field of force in which the work done on a particle in moving it from one point to another depends only on the particle's initial and final positions. { kən'sər·və·tiv 'fȯrs ˌfēld }

**conservative property** [THERMO] A property of a system whose value remains constant during a series of events. { kən'sər·və·tiv 'präp·ərd·ē }

**console** [ENG] **1.** A main control desk for electronic equipment, as at a radar station, radio or television station, or airport control tower. Also known as control desk. **2.** A large cabinet for a radio or television receiver, standing on the floor rather than on a table. **3.** A grouping of controls, indicators, and similar items contained in a specially designed model cabinet for floor mounting; constitutes an operator's permanent working position. { 'känˌsōl }

**consolute temperature** [THERMO] The upper temperature of immiscibility for a two-component liquid system. Also known as upper consolute temperature; upper critical solution temperature. { 'kanˌsäˌlüt 'tem·prə·chər }

**constant-amplitude recording** [ENG ACOUS] A sound-recording method in which all frequencies having the same intensity are recorded at the same amplitude. { ¦kän·stənt 'am·pləˌtüd riˌkȯrd·iŋ }

**constant-distance sphere** [ENG ACOUS] The relative response of a sonar projector to variations in acoustic intensity, or intensity per unit band, over the surface of a sphere concentric with its center. { ¦kän·stənt 'dis·təns ˌsfir }

**constant element** [IND ENG] Under a specified set of conditions, an element for which the standard time allowance should always be the same. { 'kän·stənt 'el·ə·mənt }

**constant-force spring** [MECH ENG] A spring which has a constant restoring force, regardless of displacement. { ¦kän·stənt ¦fȯrs ˌspriŋ }

**constant-head meter** [ENG] A flow meter which maintains a constant pressure differential but varies the orifice area with flow, such as a rotameter or piston meter. { 'kän·stənt ˌhed ˌmēd·ər }

**constant-load balance** [ENG] An instrument for measuring weight or mass which consists of a

single pan (together with a set of weights that can be suspended from a counterpoised beam) that has a constant load (200 grams for the microbalance). { ˈkän·stənt ˈlōd ˈbal·ənz }

**constant-load support** [ENG] A spring-loaded support designed to maintain a constant and balanced load on a pipe in the event of vertical movement. { ˈkän·stənt ˈlōd səˈpȯrt }

**constant of gravitation** *See* gravitational constant. { ˈkän·stənt əv grav·əˈtā·shən }

**constant of motion** [MECH] A dynamical variable of a system which remains constant in time. { ˈkän·stənt əv ˈmō·shən }

**constant-pressure combustion** [MECH ENG] Combustion occurring without a pressure change. { ˈkän·stənt ˈpresh·ər kəmˈbəs·chən }

**constant-pressure gas thermometer** [ENG] A thermometer in which the volume occupied by a given mass of gas at a constant pressure is used to determine the temperature. { ˈkän·stənt ˈpresh·ər ˈgas thərˌmäm·əd·ər }

**constant-speed drive** [MECH ENG] A mechanism transmitting motion from one shaft to another that does not allow the velocity ratio of the shafts to be varied, or allows it to be varied only in steps. { ˈkän·stənt ˈspēd ˈdrīv }

**constant-velocity recording** [ENG ACOUS] A sound-recording method in which, for input signals of a given amplitude, the resulting recorded amplitude is inversely proportional to the frequency; the velocity of the cutting stylus is then constant for all input frequencies having that given amplitude. { ˈkän·stənt vəˈläs·əd·ē riˌkȯrd·iŋ }

**constant-velocity universal joint** [MECH ENG] A universal joint that transmits constant angular velocity from the driving to the driven shaft, such as the Bendix-Weiss universal joint. { ˈkän·stənt vəˈläs·əd·ē ˌyü·nəˌvər·səl ˈjȯint }

**constant-volume gas thermometer** *See* gas thermometer. { ˈkän·stənt ˈväl·yəm ˈgas thərˌmäm·əd·ər }

**constrained mechanism** [MECH ENG] A mechanism in which all members move only in prescribed paths. { kənˈstrānd ˈmek·əˌniz·əm }

**constraint** [ENG] Anything that restricts the transverse contraction which normally occurs in a solid under longitudinal tension. [MECH] A restriction on the natural degrees of freedom of a system; the number of constraints is the difference between the number of natural degrees of freedom and the number of actual degrees of freedom. { kənˈstrānt }

**construction** [DES ENG] The number of strands in a wire rope and the number of wires in a strand; expressed as two numbers separated by a multiplication sign. [ENG] **1.** Putting parts together to form an integrated object. **2.** The manner in which something is put together. { kənˈstrək·shən }

**construction area** [BUILD] The area of exterior walls and permanent interior walls and partitions. { kənˈstrək·shən ˌerˈē·ə }

**construction cost** [IND ENG] The total costs, direct and indirect, associated with transforming a design plan for material and equipment into a project ready for operation. { kənˈstrək·shən ˌkȯst }

**construction engineering** [CIV ENG] A specialized branch of civil engineering concerned with the planning, execution, and control of construction operations for projects such as highways, dams, utility lines, and buildings. { kənˈstrək·shən ˌen·jəˈnir·iŋ }

**construction equipment** [MECH ENG] Heavy power machines which perform specific construction or demolition functions. { kənˈstrək·shən iˈkwip·mənt }

**construction joint** [CIV ENG] A vertical or horizontal surface in reinforced concrete where concreting was stopped and continued later. { kənˈstrək·shən ˌjȯint }

**construction survey** [CIV ENG] A survey that gives locations for construction work. { kənˈstrək·shən ˌsərˌvā }

**construction wrench** [DES ENG] An open-end wrench with a long handle; the handle is used to align matching rivet or bolt holes. { kənˈstrək·shən ˌrench }

**consumer's risk** [IND ENG] The probability that a lot whose quality equals the poorest quality that a consumer is willing to tolerate in an individual lot will be accepted by a sampling plan. { kənˈsüm·ərz ˈrisk }

**contact** [ELEC] *See* electric contact. [ENG] Initial detection of an aircraft, ship, submarine, or other object on a radarscope or other detecting equipment. { ˈkänˌtakt }

**contact adsorption** [CHEM ENG] Process for removal of minor constituents from fluids by stirring in direct contact with powdered or granulated adsorbents, or by passing the fluid through fixed-position adsorbent beds (activated carbon or ion-exchange resin); used to decolorize petroleum lubricating oils and to remove solvent vapors from air. { ˈkänˌtakt adˈsȯrp·shən }

**contact aerator** [CIV ENG] A tank in which sewage that is settled on a bed of stone, cement-asbestos, or other surfaces is treated by aeration with compressed air. { ˈkänˌtakt ˈerˌād·ər }

**contact anemometer** [ENG] An anemometer which actuates an electrical contact at a rate dependent upon the wind speed. Also known as contact-cup anemometer. { ˈkänˌtakt anˈäməˈmäm·əd·ər }

**contact bed** [CIV ENG] A bed of coarse material such as coke, used to purify sewage. { ˈkänˌtakt ˌbed }

**contact catalysis** [CHEM ENG] Process of change in the structure of gas molecules adsorbed onto solid surfaces; the basis of many industrial processes. { ˈkänˌtakt kəˈtal·ə·səs }

**contact ceiling** [BUILD] A ceiling in which the lath and construction are in direct contact, without use of furring or runner channels. { ˈkänˌtakt ˌsēl·iŋ }

**contact condenser** [MECH ENG] A device in which a vapor, such as steam, is brought into direct contact with a cooling liquid, such as water, and is condensed by giving up its latent

heat to the liquid. Also known as direct-contact condenser. { 'kän,takt kən'den·sər }

**contact-cup anemometer** *See* contact anemometer. { 'kän,takt ,kəp an·ə'mäm·əd·ər }

**contact electricity** [ELEC] An electric charge at the surface of contact of two different materials. { 'kän,takt i,lek'tris·əd·ē }

**contact electromotive force** *See* contact potential difference. { 'kän,takt i¦lek·trə'mōd·iv 'fōrs }

**contact filtration** [CHEM ENG] A process in which finely divided adsorbent clay is mixed with oil to remove color bodies and to improve the oil's stability. { 'kän,takt fil'trā·shən }

**contact gear ratio** *See* contact ratio. { 'kän,takt ,gir ,rā·shō }

**contact grasp** [IND ENG] A basic grasp that is used to push an object over a surface, such as using the index finger to push a coin over a flat surface. { 'kän,takt ,grasp }

**contact-initiated discharge machining** [MECH ENG] An electromachining process in which the discharge is initiated by allowing the tool and workpiece to come into contact, after which the tool is withdrawn and an arc forms. { 'kän,takt ə¦nish·ē,ād·əd ¦dis,chärj mə,shēn·iŋ }

**contact inspection** [ENG] A method by which an ultrasonic search unit scans a test piece in direct contact with a thin layer of couplant for transmission between the search unit and entry surface. { 'kän,takt in'spek·shən }

**contact microphone** [ENG ACOUS] A microphone designed to pick up mechanical vibrations directly and convert them into corresponding electric currents or voltages. { 'kän,takt 'mī·krə,fōn }

**contactor** [CHEM ENG] A vessel designed to bring two or more substances into contact. [ELEC] A heavy-duty relay used to control electric power circuits. Also known as electric contactor. { 'kän,tak·tər }

**contactor control system** [CONT SYS] A feedback control system in which the control signal is a discontinuous function of the sensed error and may therefore assume one of a limited number of discrete values. { 'kän,tak·tər kən'trōl ,sis·təm }

**contact potential** *See* contact potential difference. { 'kän,takt pə'ten·chəl }

**contact potential difference** [ELEC] The potential difference that exists across the space between two electrically connected materials. Also known as contact electromotive force; contact potential; Volta effect. { 'kän,takt pə'ten·chəl 'dif·rəns }

**contact process** [CHEM ENG] Catalytic manufacture of sulfuric acid from sulfur dioxide and oxygen. { 'kän,takt ,präs·əs }

**contact ratio** [DES ENG] The ratio of the length of the path of contact of two gears to the base pitch, equal to approximately the average number of pairs of teeth in contact. Also known as contact gear ratio. { 'kän,takt ,rā·shō }

**contact rectifier** *See* metallic rectifier. { 'kän,takt 'rek·tə ,fī·ər }

**contact resistance** [ELEC] The resistance in ohms between the contacts of a relay, switch, or other device when the contacts are touching each other. { 'kän,takt ri'zis·təns }

**contact sensor** [ENG] A device that senses mechanical contact and gives out signals when it does so. { 'kän,takt 'sen·sər }

**contact thermography** [ENG] A method of measuring surface temperature in which a thin layer of luminescent material is spread on the surface of an object and is excited by ultraviolet radiation in a darkened room; the brightness of the coating indicates the surface temperature. { 'kän,takt thər'mäg·rə·fē }

**contact time** [ENG] The length of time a substance is held in direct contact with a treating agent. { 'kän,takt ,tīm }

**container** [IND ENG] A portable compartment of standard, uniform size, used to hold cargo for air, sea, or ground transport. { kən'tā·nər }

**container car** [ENG] A railroad car designed specifically to hold containers. { kən'tā·nər ,kär }

**containerization** [IND ENG] The practice of placing cargo in large containers such as truck trailers to facilitate loading on and off ships and railroad flat cars. { kən,tā·nə·rə'zā·shən }

**containment** [ENG] An enclosed space or facility to contain and prevent the escape of hazardous material. { kən'tān·mənt }

**continous-type furnace** [MECH ENG] A furnace used for heat treatment of materials, with or without direct firing; pieces are loaded through one door, progress continuously through the furnace, and are discharged from another door. { kən¦tin·yə·wəs ,tīp 'fər·nəs }

**continuity** [CIV ENG] Joining of structural members to each other, such as floors to beams, and beams to beams and to columns, so they bend together and strengthen each other when loaded. Also known as fixity. [ELEC] Continuous effective contact of all components of an electric circuit to give it high conductance by providing low resistance. { ,känt·ən'ü·əd·ē }

**continuity of state** [THERMO] Property of a transition between two states of matter, as between gas and liquid, during which there are no abrupt changes in physical properties. { ,känt·ən'ü·əd·ē əv 'stāt }

**continuity test** [ELEC] An electrical test used to determine the presence and location of a broken connection. { ,känt·ən'ü·əd·ē ,test }

**continuous beam** [CIV ENG] **1.** A beam resting upon several supports, which may be in the same horizontal plane. **2.** A beam having several spans in one straight line; generally has at least three supports. { kən¦tin·yə·wəs 'bēm }

**continuous brake** [MECH ENG] A train brake that operates on all cars but is controlled from a single point. { kən¦tin·yə·wəs 'brāk }

**continuous bridge** [CIV ENG] A fixed bridge supported at three or more points and capable of resisting bending and shearing forces at all sections throughout its length. { kən¦tin·yə·wəs 'brij }

**continuous bucket elevator** [MECH ENG] A

bucket elevator on an endless chain or belt. { kən¦tin·yə·wəs ¦bək·ət 'el·ə‚vād·ər }

**continuous bucket excavator** [MECH ENG] A bucket excavator with a continuous bucket elevator mounted in front of the bowl. { kən¦tin·yə·wəs ¦bək·ət 'ek·skə‚vād·ər }

**continuous contact coking** [CHEM ENG] A thermal conversion process using the mass-flow lift principle to give continuous coke circulation; oil-wetted particles of coke move downward into the reactor in which cracking, coking, and drying take place; pelleted coke, gas, gasoline, and gas oil are products of the process. { kən¦tin·yə·wəs ¦kän‚takt 'kōk·iŋ }

**continuous control** [CONT SYS] Automatic control in which the controlled quantity is measured continuously and corrections are a continuous function of the deviation. { kən¦tin·yə·wəs kən'trōl }

**continuous countercurrent leaching** [CHEM ENG] Process of leaching by the use of continuous equipment in which the solid and liquid are both moved mechanically, and by the use of a series of leach tanks and the countercurrent flow of solvent through the tanks in reverse order to the flow of solid. { kən¦tin·yə·wəs ¦kaůnt·ər¦kər·ənt 'lēch·iŋ }

**continuous distillation** [CHEM ENG] Separation by boiling of a liquid mixture with different component boiling points; feed is introduced continuously, with continuous removal of overhead vapors and high-boiling bottoms liquids. { kən¦tin·yə·wəs ‚dis·tə'lā·shən }

**continuous dryer** [ENG] An apparatus in which drying is accomplished by passing wet material through without interruption. { kən¦tin·yə·wəs 'drī·ər }

**continuous equilibrium vaporization** *See* equilibrium flash vaporization. { kən¦tin·yə·wəs ‚ē·kwə¦lib·rē·əm vā·pə·rə'zā·shən }

**continuous-flow conveyor** [MECH ENG] A totally enclosed, continuous-belt conveyor pulled transversely through a mass of granular, powdered or small-lump material fed from an overhead hopper. { kən¦tin·yə·wəs ¦flō kən'vā·ər }

**continuous footing** [CIV ENG] A footing that supports a wall. { kən¦tin·yə·wəs 'fůd·iŋ }

**continuous industry** [IND ENG] An industry in which raw material is subjected to successive operations, turning it into a finished product. { kən¦tin·yə·wəs 'in·dəs·trē }

**continuous kiln** [ENG] **1.** A long kiln through which ware travels on a moving device, such as a conveyor. **2.** A kiln through which the fire travels progressively. { kən¦tin·yə·wəs 'kiln }

**continuous mixer** [MECH ENG] A mixer in which materials are introduced, mixed, and discharged in a continuous flow. { kən¦tin·yə·wəs 'mik·sər }

**continuous operation** [ENG] A process that operates on a continuous flow (materials or time) basis, in contrast to batch, intermittent, or sequenced operations. { kən¦tin·yə·wəs äp·ə'rā·shən }

**continuous production** [IND ENG] Manufacture of products, such as chemicals or paper, involving a sequence of processes performed by a series of machines receiving the materials through a closed channel of flow. { kən¦tin·yə·wəs prə'dək·shən }

**continuous-rail frog** [ENG] A metal fitting that holds continuous welded rail sections to railroad ties. { kən¦tin·yə·wəs ¦rāl 'fräg }

**continuous rating** [ENG] The rating of a component or equipment which defines the substantially constant conditions which can be tolerated for an indefinite time without significant reduction of service life. { kən¦tin·yə·wəs 'rād·iŋ }

**continuous recorder** [ENG] A recorder whose record sheet is a continuous strip or web rather than individual sheets. { kən¦tin·yə·wəs ri 'kȯrd·ər }

**continuous system** [CONT SYS] A system whose inputs and outputs are capable of changing at any instant of time. Also known as continuous-time signal system. { kən¦tin·yə·wəs 'sis·təm }

**continuous task** [IND ENG] A task that requires a continuously changing response by a worker to a continuously changing stimulus. { kən¦tin·yə·wəs 'task }

**continuous-time signal system** *See* continuous system. { kən¦tin·yə·wəs ¦tīm 'sig·nəl ‚sis·təm }

**continuous tube process** [ENG] Plastics blow-molding process that uses a continuous extrusion of plastic tubing as feed to a series of blow molds as they clamp in sequence. { kən¦tin·yə·wəs ¦tüb ‚präs·əs }

**continuous-wave Doppler radar** *See* continuous-wave radar. { kən¦tin·yə·wəs ¦wāv 'däp·lər ‚rā‚där }

**continuous-wave radar** [ENG] A radar system in which a transmitter sends out a continuous flow of radio energy; the target reradiates a small fraction of this energy to a separate receiving antenna. Also known as continuous-wave Doppler radar. { kən¦tin·yə·wəs ¦wāv 'rā‚där }

**continuous work** [IND ENG] A sustained and uninterrupted work activity, for example, exertion of a muscular force. { kən¦tin·yə·wəs 'wərk }

**contouring temperature recorder** [ENG] A device that records data from temperature sensors towed behind a ship and then plots the vertical distribution of isotherms on a continuous basis. { 'kän‚tůr·iŋ 'tem·prə·chər ri‚kȯrd·ər }

**contour machining** [MECH ENG] Machining of an irregular surface. { 'kän‚tůr mə'shēn·iŋ }

**contour turning** [MECH ENG] Making a three-dimensional reproduction of the shape of a template by controlling the cutting tool with a follower that moves over the surface of a template. { 'kän‚tůr ‚tərn·iŋ }

**contracted code sonde** *See* code-sending radiosonde. { kən'trak·təd ¦kōd ‚sänd }

**contraction** [MECH] The action or process of becoming smaller or pressed together, as a gas on cooling. { kən'trak·shən }

**contraction crack** [ENG] A crack resulting from restriction of metal in a mold while contracting. { kən'trak·shən ‚krak }

**contraction joint** [CIV ENG] A break designed in a structure to allow for drying and temperature shrinkage of concrete, brickwork, or masonry, thereby preventing the formation of cracks. { kən'trak·shən ˌjȯint }

**contraflexure point** [CIV ENG] The point in a structure where bending occurs in opposite directions. { ¦kän·trə'flek·shər ˌpȯint }

**contrapropagating ultrasonic flowmeter** [ENG] An instrument for determining the velocity of a fluid flow from the difference between the times required for high-frequency sound to travel between two transducers in opposite directions along a path having a component parallel to the flow. { ¦kän·trə'prä·pəˌgād·iŋ 'əl·trəˌsän·ik 'flōˌmēd·ər }

**contrarotating propellers** [MECH ENG] A pair of propellers on concentric shafts, turning in opposite directions. { ¦kän·trə'rōˌtād·iŋ prə'pel·ərz }

**contrarotation** [ENG] Rotation in the direction opposite to another rotation. { ¦kän·trə·rō'tā·shən }

**control** [CONT SYS] A means or device to direct and regulate a process or sequence of events. [ELECTR] An input element of a cryotron. { kən'trōl }

**control accuracy** [CONT SYS] The degree of correspondence between the ultimately controlled variable and the ideal value in a feedback control system. { kən'trōl ˌak·yə·rə·sē }

**control agent** [CHEM ENG] In process automatic-control work, material or energy within a process system of which the manipulated (controlled) variable is a condition or characteristic. { kən'trōl ˌā·jənt }

**control board** [ELEC] A panel at which one can make circuit changes, as in lighting a theater. [ENG] A panel in which meters and other indicating instruments display the condition of a system, and dials, switches, and other devices are used to modify circuits to control the system. Also known as control panel; panel board. { kən'trōl ˌbȯrd }

**control chart** [IND ENG] A statistical tool used to detect excessive process variability due to specific assignable causes that can be corrected. It serves to determine whether a process is in a state of statistical control, that is, the extent of variation of the output of the process does not exceed that which is expected based on the natural statistical variability of the process. { kən'trōl ˌchärt }

**control circuit** [ELEC] A circuit that controls some function of a machine, device, or piece of equipment. [ELECTR] The circuit that feeds the control winding of a magnetic amplifier. { kən'trōl ˌsər·kət }

**control diagram** *See* flow chart. { kən'trōl ˌdī·əˌgram }

**control echo** [ENG] In an ultrasonic inspection system, consistent reflection from a surface, such as a back reflection, which provides a reference signal. { kən'trōl ˌek·ō }

**control element** [CONT SYS] The portion of a feedback control system that acts on the process or machine being controlled. { kən'trōl ˌel·ə·mənt }

**control hierarchy** *See* hierarchical control. { kən'trōl 'hī·ərˌär·kē }

**control joint** [CIV ENG] An expansion joint in masonry to allow movement due to expansion and contraction. { kən'trōl ˌjȯint }

**controllability** [CONT SYS] Property of a system for which, given any initial state and any desired state, there exists a time interval and an input signal which brings the system from the initial state to the desired state during the time interval. { kənˌtrōl·ə'bil· əd·ē }

**controllable-pitch propeller** [MECH ENG] An aircraft or ship propeller in which the pitch of the blades can be changed while the propeller is in motion; five types used for aircraft are two-position, variable-pitch, constant-speed, feathering, and reversible-pitch. Abbreviated CP propeller. { kən¦trōl·ə·bəl 'pich prə'pel·ər }

**controlled avalanche device** [ELECTR] A semiconductor device that has rigidly specified maximum and minimum avalanche voltage characteristics and is able to operate and absorb momentary power surges in this avalanche region indefinitely without damage. { kən¦trōld 'av·əˌlanch di'vīs }

**controlled avalanche rectifier** [ELECTR] A silicon rectifier in which carefully controlled, nondestructive internal avalanche breakdown across the entire junction area protects the junction surface, thereby eliminating local heating that would impair or destroy the reverse blocking ability of the rectifier. { kən¦trōld 'av·əˌlanch 'rek·təˌfī·ər }

**controlled avalanche transit-time triode** [ELECTR] A solid-state microwave device that uses a combination of IMPATT diode and *npn* bipolar transistor technologies; avalanche and drift zones are located between the base and collector regions. Abbreviated CATT. { kən¦trōld 'av·əˌlanch ¦tranz·ət ˌtīm 'trīˌōd }

**controlled medium** [CHEM ENG] In process automatic-control work, material within a process system in which a variable (for example, concentration) is controlled. { kən¦trōld 'mēd·ē·əm }

**controlled parameter** [ENG] In the formulation of an optimization problem, one of the parameters whose values determine the value of the criterion parameter. { kən¦trōld pə'ram·əd·ər }

**controlled variable** [CONT SYS] In process automatic-control work, that quantity or condition of a controlled system that is directly measured or controlled. { kən¦trōld 'ver·ē·ə·bəl }

**controller** *See* automatic controller. { kən'trōl·ər }

**controller-structure interaction** [CONT SYS] Feedback of an active control algorithm in the process of model reduction; this occurs through observation spillover and control spillover. { kən'trōl·ər ˌstrək·chər in·tər'ak·shən }

**control limits** [ELECTR] In radar evaluation, upper and lower control limits are established at those performance figures within which it is expected that 95% of quality-control samples will fall when the radar is performing normally.

[IND ENG] In statistical quality control, the limits of acceptability placed on control charts; parts outside the limits are defective. { kən'trōl ˌlim·əts }

**controlling magnet** [ENG] An auxiliary magnet used with a galvanometer to cancel the effect of the earth's magnetic field. { kən'trōl· iŋ ˌmag·nət }

**control panel** [ENG] *See* control board; panel. { kən'trōl ˌpan·əl }

**control room** [ENG] A room from which space flights are directed. { kən'trōl ˌrüm }

**control signal** [CONT SYS] The signal applied to the device that makes corrective changes in a controlled process or machine. { kən'trōl ˌsig·nəl }

**control spillover** [CONT SYS] The excitation by an active control system of modes of motion that have been omitted from the control algorithm in the process of model reduction. { kən'trōl 'spilˌō·vər }

**control spring** [DES ENG] A spring designed so that its torque cancels that of the instrument of which it is a part, for all deflections of the pointer. { kən'trōl ˌspriŋ }

**control system** [ENG] A system in which one or more outputs are forced to change in a desired manner as time progresses. { kən'trōl ˌsis·təm }

**control-system feedback** [CONT SYS] A signal obtained by comparing the output of a control system with the input, which is used to diminish the difference between them. { kən'trōl ˌsis·təm 'fēdˌbak }

**control track** [ENG ACOUS] A supplementary sound track, usually containing tone signals that control the reproduction of the sound track, such as by changing feed levels to loudspeakers in a theater to achieve stereophonic effects. { kən'trōl ˌtrak }

**control valve** [ENG] A valve which controls pressure, volume, or flow direction in a fluid transmission system. { kən'trōl ˌvalv }

**control variable** [CONT SYS] One of the input variables of a control system, such as motor torque or the opening of a valve, which can be varied directly by the operator to maximize some measure of performance of the system. { kən'trōl ˌver·ē·ə·bəl }

**convection coefficient** *See* film coefficient. { kən'vek·shən ˌkō·i'fish·ənt }

**convection cooling** [ENG] Heat transfer by natural, upward flow of hot air from the device being cooled. { kən'vek·shən ˌkül·iŋ }

**convection current** [ELECTR] The time rate at which the electric charges of an electron stream are transported through a given surface. { kən'vek·shən ˌkər·ənt }

**convection oven** [ENG] An oven containing a fan that continuously circulates hot air around the food being prepared. { kən'vek·shən ˌəv·ən }

**convection section** [ENG] That portion of the furnace in which tubes receive heat from the flue gases by convection. { kən'vek·shən ˌsek·shən }

**convective current** *See* convection current. { kən'vek·div ˌkər·ənt }

**convector** [ENG] A heat-emitting unit for the heating of room air; it has a heating element surrounded by a cabinet-type enclosure with openings below and above for entrance and egress of air. { kən'vek·tər }

**convectron** [ENG] An instrument for indicating deviation from the vertical which is based on the principle that the convection from a heated wire depends strongly on its inclination; it consists of a Y-shaped tube, each of whose arms contains a wire forming part of a bridge circuit. { kən'vekˌträn }

**conventional current** [ELEC] The concept of current as the transfer of positive charge, so that its direction of flow is opposite to that of electrons which are negatively charged. { kən'ven·chən·əl 'kər·ənt }

**convergent die** [ENG] A die having internal channels which converge. { kən'vər·jənt ˌdī }

**convergent-divergent nozzle** [DES ENG] A nozzle in which supersonic velocities are attained; has a divergent portion downstream of the contracting section. Also known as supersonic nozzle. { kənˌvər·jənt dəˌvər·jənt 'näz·əl }

**conversion** [CHEM ENG] The chemical change from reactants to products in an industrial chemical process. Also known as chemical conversion. { kən'vər·zhən }

**converted water** *See* product water. { kən'vərd·əd 'wȯd·ər }

**conveyor** [MECH ENG] Any materials-handling machine designed to move individual articles such as solids or free-flowing bulk materials over a horizontal, inclined, declined, or vertical path of travel with continuous motion. { kən'vā·ər }

**conveyor belt balance** [ENG] A balance used for weighing unpackaged, loose, continuously transported material on a conveyor belt by weighing the load being moved and measuring the belt speed. { kən'vā·ər ˌbelt ˌbal·ənS }

**cooled-tube pyrometer** [ENG] A thermometer for high-temperature flowing gases that uses a liquid-cooled tube inserted in the flowing gas; gas temperature is deduced from the law of convective heat transfer to the outside of the tube and from measurement of the mass flow rate and temperature rise of the cooling liquid. { 'küld ˌtüb pī'räm·əd·ər }

**cooler nail** [DES ENG] A thin, cement-coated wire nail. { 'kül·ər ˌnāl }

**cooling channel** [ENG] A channel in the body of mold through which a cooling liquid is circulated. { 'kül·iŋ ˌchan·əl }

**cooling coil** [MECH ENG] A coiled arrangement of pipe or tubing for the transfer of heat between two fluids. { 'kül·iŋ ˌkȯil }

**cooling correction** [THERMO] A correction that must be employed in calorimetry to allow for heat transfer between a body and its surroundings. Also known as radiation correction. { 'kül·iŋ kəˈrek·shən }

**cooling curve** [THERMO] A curve obtained by plotting time against temperature for a solid-liquid mixture cooling under constant conditions. { 'kül·iŋ ˌkərv }

**cooling degree day** [MECH ENG] A unit for estimating the energy needed for cooling a building; one unit is given for each degree Fahrenheit that the daily mean temperature exceeds 75°F (24°C). { 'kül·iŋ di'grē ˌdā }

**cooling fin** [MECH ENG] The extended element of a heat-transfer device that effectively increases the surface area. { 'kül·iŋ ˌfin }

**cooling fixture** [ENG] A wooden or metal block used to hold the shape or dimensional accuracy of a molding until it cools enough to retain its shape. { 'kül·iŋ ˌfiks·chər }

**cooling load** [MECH ENG] The total amount of heat energy that must be removed from a system by a cooling mechanism in a unit time, equal to the rate at which heat is generated by people, machinery, and processes, plus the net flow of heat into the system not associated with the cooling machinery. { 'kül·iŋ ˌlōd }

**cooling method** [THERMO] A method of determining the specific heat of a liquid in which the times taken by the liquid and an equal volume of water in an identical vessel to cool through the same range of temperature are compared. { 'kül·iŋ ˌmeth·əd }

**cooling pond** [CHEM ENG] Outdoor depression into which hot process water is pumped for purposes of cooling by evaporation, convection, and radiation. { 'kül·iŋ ˌpänd }

**cooling power** [MECH ENG] A parameter devised to measure the air's cooling effect upon a human body; it is determined by the amount of heat required by a device to maintain the device at a constant temperature (usually 34°C); the entire system should be made to correspond, as closely as possible, to the external heat exchange mechanism of the human body. { 'kül·iŋ ˌpaù·ər }

**cooling-power anemometer** [ENG] Any anemometer operating on the principle that the heat transfer to air from an object at an elevated temperature is a function of airspeed. { 'kül·iŋ ˌpaùr an·ə'mäm·əd·ər }

**cooling process** [ENG] Physical operation in which heat is removed from process fluids or solids; may be by evaporation of liquids, expansion of gases, radiation or heat exchange to a cooler fluid stream, and so on. { 'kül·iŋ ˌpräs·əs }

**cooling range** [MECH ENG] The difference in temperature between the hot water entering and the cold water leaving a cooling tower. { 'kül·iŋ ˌrānj }

**cooling stress** [MECH] Stress resulting from uneven contraction during cooling of metals and ceramics due to uneven temperature distribution. { 'kül·iŋ ˌstres }

**cooling tower** [ENG] A towerlike device in which atmospheric air circulates and cools warm water, generally by direct contact (evaporation). { 'kül·iŋ ˌtaù·ər }

**coolometer** [ENG] An instrument which measures the cooling power of the air, consisting of a metal cylinder electrically heated to maintain a constant temperature; the electrical heating power required is taken as a measure of the air's cooling power. { kü'läm·əd·ər }

**cooperative system** [ENG] A missile guidance system that requires transmission of information from a remote ground station to a missile in flight, processing of the information by the missile-borne equipment, and retransmission of the processed data to the originating or other remote ground stations, as in azusa and dovap. { kō'äp·rəd·iv ˌsis·təm }

**coordinated-axis control** [CONT SYS] Robotic control in which the robot axes reach their end points simultaneously, thus giving the robot's motion a smooth appearance. { kō'ord·ən,ād·əd ¦ak·səs kən,trōl }

**coordinating holes** [DES ENG] Holes in two parts of an assembly which form a single continuous hole when the parts are joined. { kō'ord·ən,ād·iŋ ˌhōlz }

**cope chisel** [DES ENG] A chisel used to cut grooves in metal. { 'kōp ˌchiz·əl }

**coping** [BUILD] A covering course on a wall. [MECH ENG] Shaping stone or other nonmetallic substance with a grinding wheel. { 'kōp·iŋ }

**coping saw** [DES ENG] A type of handsaw that has a narrow blade, usually about 1/8 inch (3 millimeters) wide, held taut by a U-shaped frame equipped with a handle; used for shaping and cutout work. { 'kōp·iŋ ˌsȯ }

**coplanar forces** [MECH] Forces that act in a single plane; thus the forces are parallel to the plane and their points of application are in the plane. { kō'plān·ər ˌfȯrs·əz }

**copper dish gum** [CHEM ENG] The milligrams of gum found in 100 milliliters of gasoline when evaporated under controlled conditions in a polished copper dish. { 'käp·ər ˌdish 'gəm }

**copper loss** [ELEC] Power loss in a winding due to current flow through the resistance of the copper conductors. Also known as $I^2R$ loss. { 'käp·ər ˌlȯs }

**copper-strip corrosion** [ENG] A qualitative method of determining the corrosivity of a petroleum product by observing its effect on a strip of polished copper suspended or placed in the product. Also known as copper strip test. { 'käp·ər ˌstrip ki'rō·zhən }

**copper-strip test** *See* copper-strip corrosion. { 'käp·ər 'strip ˌtest }

**copper sweetening** [CHEM ENG] Those refining processes using cupric chloride to oxidize mercaptans in petroleum. { 'käp·ər ˌswēt·ən·iŋ }

**corbinotron** [ENG] The combination of a corbino disk, made of high-mobility semiconductor material, and a coil arranged to produce a magnetic field perpendicular to the disk. { kȯr'bē·nəˌträn }

**cordage** [ENG] Number of cords of lumber per given area. { 'kȯrd·ij }

**cord foot** [ENG] A stack of wood measuring 16

cubic feet (approximately 0.45307 cubic meter). { 'kȯrd ¦füt }

**cord tire** [DES ENG] A pneumatic tire made with cords running parallel to the tread. { 'kȯrd ˌtīr }

**core** [ELECTR] *See* magnetic core. [ENG] The inner material of a wall, column, veneered door, or similar structure. { kȯr }

**core array** [ELECTR] A rectangular grid arrangement of magnetic cores. { 'kȯr ə'rā }

**core bank** [ELECTR] A stack of core arrays and associated electronics, the stack containing a specific number of core arrays. { 'kȯr ˌbaŋk }

**core barrel** [DES ENG] A hollow cylinder attached to a specially designed bit; used to obtain a continuous section of the rocks penetrated in drilling. { 'kȯr ˌbar·əl }

**core bit** [DES ENG] The hollow, cylindrical cutting part of a core drill. { 'kȯr ˌbit }

**core catcher** *See* split-ring core lifter. { 'kȯr ˌkach·ər }

**core cutterhead** [ENG] The cutting element in a core barrel unit. { 'kȯr 'kəd·ərˌhed }

**core drill** [MECH ENG] A mechanism designed to rotate and to cause an annular-shaped rock-cutting bit to penetrate rock formations, produce cylindrical cores of the formations penetrated, and lift such cores to the surface, where they may be collected and examined. { 'kȯr ˌdril }

**core flow** [ENG] A pattern of powder flow occurring in hoppers that is characterized by a central core of flowing powder with the powder near the hopper walls remaining stationary. { 'kȯr ˌflō }

**core gripper** *See* split-ring core lifter. { 'kȯr ˌgrip·ər }

**coreless-type induction heater** [ENG] A device in which a charge is heated directly by induction, with no magnetic core material linking the charge. Also known as coreless-type induction furnace. { 'kȯr·ləs ˌtīp inˈdək·shən ˌhēd·ər }

**core lifter** *See* split-ring core lifter. { 'kȯr ˌlif·tər }

**core logic** [ELECTR] Logic performed in ferrite cores that serve as inputs to diode and transistor circuits. { 'kȯr ˌläj·ik }

**corer** [ENG] An instrument used to obtain cylindrical samples of geological materials or ocean sediments. { 'kȯr·ər }

**core stack** [ELECTR] A number of core arrays, next to one another and treated as a unit. { 'kȯr ˌstak }

**core wall** *See* cutoff wall. { 'kȯr ˌwȯl }

**coring reel** *See* sand reel. { 'kȯr·iŋ ˌrēl }

**Coriolis acceleration** [MECH] **1.** An acceleration which, when added to the acceleration of an object relative to a rotating coordinate system and to its centripetal acceleration, gives the acceleration of the object relative to a fixed coordinate system. **2.** A vector which is equal in magnitude and opposite in direction to that of the first definition. { kȯr·ēˈō·ləs ikˌselˌə'rā·shən }

**Coriolis deflection** *See* Coriolis effect. { kȯr·ēˈō·ləs diˈflek·shən }

**Coriolis effect** [MECH] Also known as Coriolis deflection. **1.** The deflection relative to the earth's surface of any object moving above the earth, caused by the Coriolis force; an object moving horizontally is deflected to the right in the Northern Hemisphere, to the left in the Southern. **2.** The effect of the Coriolis force in any rotating system. { kȯr·ēˈō·ləs iˈfekt }

**Coriolis force** [MECH] A velocity-dependent pseudoforce in a reference frame which is rotating with respect to an inertial reference frame; it is equal and opposite to the product of the mass of the particle on which the force acts and its Coriolis acceleration. { kȯr·ēˈō·ləs ˌfȯrs }

**Coriolis-type mass flowmeter** [ENG] An instrument which determines mass flow rate from the torque on a ribbed disk that is rotated at constant speed when fluid is made to enter at the center of the disk and is accelerated radially. { kȯr·ēˈō·ləs ˌtīp ¦mas ˈflōˌmed·ər }

**Corliss valve** [MECH ENG] An oscillating type of valve gear with a trip mechanism for the admission and exhaust of steam to and from an engine cylinder. { 'kȯr·ləs ˌvalv }

**corner bead** [BUILD] **1.** Any vertical molding used to protect the external angle of the intersecting surfaces. **2.** A strip of formed galvanized iron, sometimes combined with a strip of metal lath, placed on corners to reinforce them before plastering. { 'kȯr·nər ˌbēd }

**corner chisel** [DES ENG] A chisel with two cutting edges at right angles. { 'kȯr·nər ˌchiz·əl }

**corner effect** [ELECTR] The departure of the frequency-response curve of a band-pass filter from a perfect rectangular shape, so that the corners of the rectangle are rounded. [ENG] In ultrasonic testing, reflection of an ultrasonic beam directed perpendicular to the intersection of two surfaces 90° apart. { 'kȯr·nər iˈfekt }

**corner frequency** *See* break frequency. { 'kȯr·nər ˌfrē·kwən·sē }

**corner head** [BUILD] A metal molding that is built into plaster in corners to prevent plaster from accidentally breaking off. { 'kȯr·nər ˌhed }

**cornering tool** [DES ENG] A cutting tool with a curved edge, used to round off sharp corners. { 'kȯr·nər·iŋ ˌtül }

**cornerite** [BUILD] A corner reinforcement for interior plastering. { 'kȯr·nəˌrīt }

**corner joint** [ENG] An L-shaped joint formed by two members positioned perpendicular to each other. { 'kȯr·nər ˌjȯint }

**cornerload test** [ENG] A test to determine whether the display of an analytical balance is affected by the load distribution on the weighing pan. { 'kȯr·nərˌlōd ˌtest }

**cornerstone** [BUILD] An inscribed stone laid at the corner of a building, usually at a ceremony. { 'kȯr·nərˌstōn }

**cornice brake** [MECH ENG] A machine used to bend sheet metal into different forms. { 'kȯr·nəs ˌbrāk }

**corona** *See* corona discharge. { kəˈrō·nə }

**corona current** [ELEC] The current of electricity equivalent to the rate of charge transferred to the air from an object experiencing corona discharge. { kəˈrō·nə ¦kər·ənt }

**corona discharge** [ELEC] A discharge of electricity appearing as a bluish-purple glow on the surface of and adjacent to a conductor when the voltage gradient exceeds a certain critical value; due to ionization of the surrounding air by the high voltage. Also known as aurora; corona; electric corona. { kə'rō·nə 'dis,chärj }

**correction chamber** [ENG] A closable cavity in a weight on an analytical balance; holds material to adjust weight to nominal value. { kə'rek·shən ,chām·bər }

**correction time** [CONT SYS] The time required for the controlled variable to reach and stay within a predetermined band about the control point following any change of the independent variable or operating condition in a control system. Also known as settling time. { kə'rek·shən ,tīm }

**corrective action** [CONT SYS] The act of varying the manipulated process variable by the controlling means in order to modify overall process operating conditions. { kə'rek·tiv 'ak·shən }

**corrective maintenance** [ENG] A procedure of repairing components or equipment as necessary either by on-site repair or by replacing individual elements in order to keep the system in proper operating condition. { kə'rek·tiv mānt·ən·əns }

**corrective operation** *See* remedial operation. { kə'rek·tiv äp·ə'rā·shən }

**corrector** [ENG] A magnet, piece of soft iron, or device used in the adjustment or compensation of a magnetic compass. { kə'rek·tər }

**correlated orientation tracking and range** *See* cotar. { 'kär·ə,lād·əd ,ór·ē·ən'tā·shən 'trak·iŋ ən 'rānj }

**correlation detection** [ENG] A method of detection of aircraft or space vehicles in which a signal is compared, point to point, with an internally generated reference. Also known as cross-correlation detection. { ,kär·ə'lā·shən di'tek·shən }

**correlation direction finder** [ENG] Satellite station separated from a radar to receive jamming signals; by correlating the signals received from several such stations, range and azimuth of many jammers may be obtained. { ,kär·ə'lā·shən də'rek·shən ,fīnd·ər }

**correlation tracking and triangulation** *See* cotat. { ,kär·ə'lā·shən 'trak·iŋ ən trī,aŋ·gyə'lā·shən }

**correlation tracking system** [ENG] A trajectory-measuring system utilizing correlation techniques where signals derived from the same source are correlated to derive the phase difference between the signals. { ,kär·ə'lā·shən 'trak·iŋ ,sis·təm }

**correlation ultrasonic flowmeter** [ENG] An instrument for determining the velocity of a fluid flow from the time required for discontinuities in the fluid stream to pass between two pairs of transducers that generate and detect high-frequency sound. { ,kär·ə'lā·shən əl·trə'sän·ik 'flō,mēd·ər }

**correlative kinesiology** [IND ENG] A field that involves determination of the quantitative relationship between the electrical potential generated by muscular activity and the resultant movement; used in developing a design for a workplace that minimizes fatigue. { kə,rel·əd·iv kə,nēz·ē'äl·ə·jē }

**corrosion coupon** *See* coupon. { kə'rō·zhən ,kü,pän }

**corrosion number** *See* acid number. { kə'rō·zhən ,nəm·bər }

**corrosive product** [CHEM ENG] In petroleum refining, a product that contains a quantity of corrosion-inducing compounds in excess of the limits specified for products classified as sweet. { kə'rō·siv 'präd·əkt }

**corrugated bar** [DES ENG] Steel bar with transverse ridges; used in reinforced concrete. { 'kär·ə,gād·əd 'bär }

**corrugated fastener** [DES ENG] A thin corrugated strip of steel that can be hammered into a wood joint to fasten it. { 'kär·ə,gād·əd 'fas·nər }

**corrugating** [DES ENG] Forming straight, parallel, alternate ridges and grooves in sheet metal, cardboard, or other material. { 'kär·ə,gād·iŋ }

**cosmic-ray telescope** [ENG] Any device for detecting and determining the directions of either cosmic-ray primary protons and heavier-element nuclei, or the products produced when these particles interact with the atmosphere. { 'käz·mik ,rā 'tel·ə,skōp }

**cosolvent** [CHEM ENG] During chemical processing, a second solvent added to the original solvent, generally in small concentrations, to form a mixture that has greatly enhanced solvent powers due to synergism. { kō'säl·vənt }

**cost accounting** [IND ENG] The branch of accounting in which one records, analyzes, and summarizes costs of material, labor, and burden, and compares these actual costs with predetermined budgets and standards. { 'kȯst ə'kaunt·iŋ }

**cost analysis** [IND ENG] Analysis of the factors contributing to the costs of operating a business and of the costs which will result from alternative procedures, and of their effects on profits. { 'kȯst ə'nal·ə·səs }

**cost control** *See* industrial cost control. { 'kȯst kən'trōl }

**cost engineering** [IND ENG] A branch of industrial engineering concerned with cost estimation, cost control, business planning and management, profitability analysis, and project management, planning, and scheduling. { 'kȯst ,en·jə,nir·iŋ }

**cost function** [SYS ENG] In decision theory, a loss function which does not depend upon the decision rule. { 'kȯst ,fəŋk·shən }

**cost-plus contract** [ENG] A contract under which a contractor furnishes all material, construction equipment, and labor at actual cost, plus an agreed-upon fee for his services. { ,kȯst 'pləs ,kän,trakt }

**cotar** [ENG] A passive system used for tracking a vehicle in space by determining the line of

direction between a remote ground-based receiving antenna and a telemetering transmitter in the missile, using phase-comparison techniques. Derived from correlated orientation tracking and range. { 'kō,tär }

**cotat** [ENG] A trajectory-measuring system using several antenna base lines, each separated by large distances, to measure direction cosines to an object; then the object's space position is computed by triangulation. Derived from correlation tracking and triangulation. { 'kō,tat }

**cotter** [DES ENG] A tapered piece that can be driven in a tapered hole to hold together an assembly of machine or structural parts. { 'käd·ər }

**cottered joint** [MECH ENG] A joint in which a cotter, usually a flat bar tapered on one side to ensure a tight fit, transmits power by shear on an area at right angles to its length. { 'käd·ərd ˌjȯint }

**cotter pin** [DES ENG] A split pin, inserted into a hole, to hold a nut or cotter securely to a bolt or shaft, or to hold a pair of hinge plates together. { 'käd·ər ˌpin }

**Cotton balance** [ENG] A device which employs a current-carrying conductor of special shape to determine the strength of a magnetic field. { 'kät·ən 'bal·əns }

**Cottrell precipitator** [ENG] A machine for removing dusts and mists from gases, in which the gas passes through a grounded pipe with a fine axial wire at a high negative voltage, and particles are ionized by the corona discharge of the wire and migrate to the pipe. { 'kä·trəl prə'sip·əˌtād·ər }

**Couette viscometer** [ENG] A viscometer in which the liquid whose viscosity is to be measured fills the space between two vertical coaxial cylinders, the inner one suspended by a torsion wire; the outer cylinder is rotated at a constant rate, and the resulting torque on the inner cylinder is measured by the twist of the wire. Also known as rotational viscometer. { kü'et vis 'käm·əd·ər }

**coul** *See* coulomb.

**coulisse** [ENG] A piece of wood that has a groove cut in it to enable another piece of wood to slide in it. Also known as cullis. { kü'lēs }

**coulomb** [ELEC] A unit of electric charge, defined as the amount of electric charge that crosses a surface in 1 second when a steady current of 1 absolute ampere is flowing across the surface; this is the absolute coulomb and has been the legal standard of quantity of electricity since 1950; the previous standard was the international coulomb, equal to 0.999835 absolute coulomb. Abbreviated coul. Symbolized C. { 'kü,läm }

**Coulomb attraction** [ELEC] The electrostatic force of attraction exerted by one charged particle on another charged particle of opposite sign. Also known as electrostatic attraction. { 'kü ˌläm ə'trak·shən }

**Coulomb field** [ELEC] The electric field created by a stationary charged particle. { 'kü,läm ˌfēld }

**Coulomb force** [ELEC] The electrostatic force of attraction or repulsion exerted by one charged particle on another, in accordance with Coulomb's law. { 'kü,läm ˌfȯrs }

**Coulomb friction** [MECH] Friction occurring between dry surfaces. { 'kü,läm ˌfrik·shən }

**Coulomb interactions** [ELEC] Interactions of charged particles associated with the Coulomb forces they exert on one another. Also known as electrostatic interactions. { 'kü,läm in·tər'ak·shənz }

**coulombmeter** [ENG] An instrument that measures quantity of electricity in coulombs by integrating a stored charge in a circuit which has very high input impedance. { 'kü,läm,mēd·ər }

**Coulomb potential** [ELEC] A scalar point function equal to the work per unit charge done against the Coulomb force in transferring a particle bearing an infinitesimal positive charge from infinity to a point in the field of a specific charge distribution. { kü'läm pə'ten·chəl }

**Coulomb repulsion** [ELEC] The electrostatic force of repulsion exerted by one charged particle on another charged particle of the same sign. Also known as electrostatic repulsion. { kü'läm ri'pəl·shən }

**Coulomb's law** [ELEC] The law that the attraction or repulsion between two electric charges acts along the line between them, is proportional to the product of their magnitudes, and is inversely proportional to the square of the distance between them. Also known as law of electrostatic attraction. { 'kü'lämz ˌlȯ }

**Coulomb's theorem** [ELEC] The proposition that the intensity of an electric field near the surface of a conductor is equal to the surface charge density on the nearby conductor surface divided by the absolute permittivity of the surrounding medium. { 'kü,lämz ˌthir·əm }

**count** [DES ENG] The number of openings per linear inch in a wire cloth. { kaůnt }

**countdown** [ENG] A step-by-step process that culminates in a climatic event, each step being performed in accordance with a schedule marked by a count in inverse numerical order. { 'kaůntˌdaůn }

**counter** [ELECTR] *See* scaler. [ENG] A complete instrument for detecting, totalizing, and indicating a sequence of events. { 'kaůnt·ər }

**counterbalance** *See* counterweight. { ¦kaůnt·ər¦bal·əns }

**counterbalanced truck** [MECH ENG] An industrial truck configured so that all of its load during a normal transporting operation is external to the polygon formed by the points where the wheels contact the surface. { ¦kaůn·tər¦bal·ənst 'trək }

**counterbalance system** *See* two-step grooving system. { ¦kaůnt·ər¦bal·əns ˌsis·təm }

**counterblow hammer** [MECH ENG] A forging hammer in which the ram and anvil are driven toward each other by compressed air or steam. { 'kaůnt·ərˌblō ˌham·ər }

**counterbore** [DES ENG] A flat-bottom enlargement of the mouth of a cylindrical bore to enlarge a borehole and give it a flat bottom. [ENG] To enlarge a borehole by means of a counterbore. { 'kaůnt·ər,bȯr }

**counter circuit** *See* counting circuit. { 'kaůnt·ər ˌsər·kət }

**countercurrent distribution** [CHEM ENG] A profile of a compound's concentration in different ratios of two immiscible liquids. { 'kaůnt·ər,kər·ənt dis·trə'byü·shən }

**countercurrent extraction** [CHEM ENG] A liquid-liquid extraction process in which the solvent and the process stream in contact with each other flow in opposite directions. Also known as countercurrent separation. { 'kaůnt·ər,kər·ənt ˌek'strak·shən }

**countercurrent flow** [MECH ENG] A sensible heat-transfer system in which the two fluids flow in opposite directions. { 'kaůnt·ər,kər·ənt 'flō }

**countercurrent leaching** [CHEM ENG] A process utilizing a series of leach tanks and countercurrent flow of solvent through them in reverse order to the flow of solid. { 'kaůnt·ər,kər·ənt 'lēch·iŋ }

**countercurrent separation** *See* countercurrent extraction. { 'kaůnt·ər,kər·ənt ˌsep·ə'rā·shən }

**countercurrent spray dryer** [ENG] A dryer in which drying gases flow in a direction opposite to that of the spray. { 'kaůnt·ər,kər·ənt 'sprā ˌdrī·ər }

**counterfloor** *See* subfloor. { 'kaůn·tər,flȯr }

**counterflow** [ENG] Fluid flow in opposite directions in adjacent parts of an apparatus, as in a heat exchanger. { 'kaůnt·ər,flō }

**counterfort** [CIV ENG] A strengthening pier perpendicular and bonded to a retaining wall. { 'kaůnt·ər,fȯrt }

**counterfort wall** [CIV ENG] A type of retaining wall that resembles a cantilever wall but has braces at the back; the toe slab is a cantilever and the main steel is placed horizontally. { 'kaůnt·ər,fȯrt ˌwȯl }

**counter/frequency meter** [ENG] An instrument that contains a frequency standard and can be used to measure the number of events or the number of cycles of a periodic quantity that occurs in a specified time, or the time between two events. { 'kaůnt·ər 'frē·kwən·sē ˌmēd·ər }

**counterlath** [BUILD] **1.** A strip placed between two rafters to support crosswise laths. **2.** A lath placed between a timber and a sheet lath. **3.** A lath nailed at a more or less random spacing between two precisely spaced laths. **4.** A lath put on one side of a partition after the other side has been finished. { 'kaůnt·ər,lath }

**counterpoise** [ELEC] A system of wires or other conductors that is elevated above and insulated from the ground to form a lower system of conductors for an antenna. Also known as antenna counterpoise. [MECH ENG] *See* counterweight. { 'kaůnt·ər,pȯiz }

**counterpoise method** *See* substitution weighing. { 'kaůn·tər,pȯiz ˌmeth·əd }

**countershaft** [MECH ENG] A secondary shaft that is driven by a main shaft and from which power is supplied to a machine part. { 'kaůnt·ər,shaft }

**countersink** [DES ENG] The tapered and relieved cutting portion in a twist drill, situated between the pilot drill and the body. { 'kaůnt·ər,siŋk }

**countersinking** [MECH ENG] Drilling operation to form a flaring depression around the rim of a hole. { 'kaůnt·ər,siŋk·iŋ }

**countersunk bolt** [DES ENG] A bolt that has a circular head, a flat top, and a conical bearing surface tapering in from the top; in place, the head is flush-mounted. { ¦käun·tər,səŋk 'bōlt }

**counterweight** [MECH ENG] **1.** A device which counterbalances the original load in elevators and skip and mine hoists, going up when the load goes down, so that the engine must only drive against the unbalanced load and overcome friction. **2.** Any weight placed on a mechanism which is out of balance so as to maintain static equilibrium. Also known as counterbalance; counterpoise. { 'kaůnt·ər,wāt }

**counting circuit** [ELECTR] A circuit that counts pulses by frequency-dividing techniques, by charging a capacitor in such a way as to produce a voltage proportional to the pulse count, or by other means. Also known as counter circuit. { 'kaůnt·iŋ ˌsər·kət }

**couplant** [ENG] A substance such as water, oil, grease, or paste used to avoid the retarding of sound transmission by air between the transducer and the test piece during ultrasonic examination. { 'kəp·lənt }

**couple** [ELEC] To connect two circuits so signals are transferred from one to the other. [ELECTR] Two metals placed in contact, as in a thermocouple. [ENG] To connect with a coupling, such as of two belts or two pipes. [MECH] A system of two parallel forces of equal magnitude and opposite sense. { 'kəp·əl }

**coupled circuits** [ELEC] Two or more electric circuits so arranged that energy can transfer electrically or magnetically from one to another. { 'kəp·əld 'sər·kəts }

**coupled engine** [MECH ENG] A locomotive engine having the driving wheels connected by a rod. { 'kəp·əld 'en·jən }

**coupled oscillators** [MECH] A set of particles subject to elastic restoring forces and also to elastic interactions with each other. { 'kəp·əld 'äs·ə,lād·ərz }

**coupler** [ELEC] A component used to transfer energy from one circuit to another. [ENG] A device that connects two railroad cars. { 'kəp·lər }

**coupling** [ELEC] **1.** A mutual relation between two circuits that permits energy transfer from one to another, through a wire, resistor, transformer, capacitor, or other device. **2.** A hardware device used to make a temporary connection between two wires. [ENG] **1.** Any device that serves to connect the ends of adjacent parts, as railroad cars. **2.** A metal collar with internal threads used to connect two sections of threaded

pipe. [MECH ENG] The mechanical fastening that connects shafts together for power transmission. Also known as shaft coupling. { 'kəp·liŋ }

**coupling capacitor** [ELECTR] A capacitor used to block the flow of direct current while allowing alternating or signal current to pass; widely used for joining two circuits or stages. Also known as blocking capacitor; stopping capacitor. { 'kəp·liŋ kə'pas·əd·ər }

**coupon** [CHEM ENG] Polished metal strip of specified size and weight used to detect the corrosive action of liquid or gas products or to test the efficiency of corrosion-inhibitor additives. Also known as corrosion coupon. { 'kü,pän }

**course** [CIV ENG] A row of stone, block, or brick of uniform height. { kȯrs }

**coursed rubble** [CIV ENG] Masonry in which rough stones are fitted into approximately level courses. { ¦kȯrsd 'rəb·əl }

**course programmer** [CONT SYS] An item which initiates and processes signals in a manner to establish a vehicle in which it is installed along one or more projected courses. { 'kȯrs 'prō ˌgram·ər }

**coursing joint** [CIV ENG] A mortar joint connecting two courses of brick or pebble. { 'kȯrs·iŋ ˌjȯint }

**covering power** [ENG] The degree to which a coating obscures the underlying material. { 'kəv·riŋ ˌpaú·ər }

**cover plate** [ENG] A pane of glass in a welding helmet or goggles which protects the colored lens excluding harmful light rays from damage by weld spatter. { 'kəv·ər ˌplāt }

**cowling** [ENG] A metal cover that houses an engine. { 'kaú·liŋ }

**coyote hole** *See* gopher hole. { 'kī,ōd·ē ˌhōl }

**CPM** *See* critical path method.

**CP propeller** *See* controllable-pitch propeller. { ¦sē¦pē prə'pel·ər }

**CR** *See* catalytic reforming.

**crack** [ENG] To open something slightly, for instance, a valve. { krak }

**cracked residue** [CHEM ENG] The residue of fuel resulting from decomposition of hydrocarbons during thermal or catalytic cracking. { ¦krakt 'rez·əˌdü }

**cracking** [CHEM ENG] A process that is used to reduce the molecular weight of hydrocarbons by breaking the molecular bonds by various thermal, catalytic, or hydrocracking methods. [ENG] Presence of relatively large cracks extending into the interior of a structure, usually produced by overstressing the structural material. { 'krak·iŋ }

**cracking coil** [CHEM ENG] A coil used for cracking heavy petroleum products. { 'krak·iŋ ˌkȯil }

**cracking still** [CHEM ENG] The furnace, reaction chamber, and fractionator for thermal conversion of heavier charging stock to gasoline. { 'krak·iŋ ˌstil }

**cradle** [CIV ENG] A structure that moves along an inclined track on a riverbank and is equipped with a horizontal deck carrying tracks for transferring railroad cars to and from boats at different water elevations. [ENG] A framework or other resting place for supporting or restraining objects. { 'krād·əl }

**cramp** [DES ENG] A metal plate with bent ends used to hold blocks together. { kramp }

**crampon** [DES ENG] A device for holding heavy objects such as rock or lumber to be lifted by a crane or hoist; shaped like scissors, with points bent inward for grasping the load. Also spelled crampoon. { 'kramˌpän }

**crampoon** *See* crampon. { 'kramˌpün }

**crane** [MECH ENG] A hoisting machine with a power-operated inclined or horizontal boom and lifting tackle for moving loads vertically and horizontally. { krān }

**crane hoist** [MECH ENG] A mobile construction machine built principally for lifting loads by means of cables and consisting of an undercarriage on which the unit moves, a cab or house which envelops the main frame and contains the power units and controls, and a movable boom over which the cables run. { 'krān ˌhȯist }

**crane hook** [DES ENG] A hoisting fixture designed to engage a ring or link of a lifting chain, or the pin of a shackle or cable socket. { 'krān ˌhůk }

**crane truck** [MECH ENG] A crane with a jiblike boom mounted on a truck. Also known as yard crane. { 'krān ˌtrək }

**crank** [MECH ENG] A link in a mechanical linkage or mechanism that can turn about a center of rotation. { kraŋk }

**crank angle** [MECH ENG] **1.** The angle between a crank and some reference direction. **2.** Specifically, the angle between the crank of a slider crank mechanism and a line from crankshaft to the piston. { 'kraŋk ˌaŋ·gəl }

**crank arm** [MECH ENG] The arm of a crankshaft attached to a connecting rod and piston. { 'kraŋk ˌärm }

**crank axle** [MECH ENG] **1.** An axle containing a crank. **2.** An axle bent at both ends so that it can accommodate a large body with large wheels. { 'kraŋk ˌak·səl }

**crankcase** [MECH ENG] The housing for the crankshaft of an engine, where, in the case of an automobile, oil from hot engine parts is collected and cooled before returning to the engine by a pump. { 'kraŋkˌkās }

**crankcase breather** *See* breather pipe. { 'kraŋ·kās ˌbrēth·ər }

**crankpin** [DES ENG] A cylindrical projection on a crank which holds the connecting rod. { 'kraŋkˌpin }

**crank press** [MECH ENG] A punch press that applies power to the slide by means of a crank. { 'kraŋk ˌpres }

**crankshaft** [MECH ENG] The shaft about which a crank rotates. { 'kraŋkˌshaft }

**crank throw** [MECH ENG] **1.** The web or arm of a crank. **2.** The displacement of a crankpin from the crankshaft. { 'kraŋk ˌthrō }

**crank web** [MECH ENG] The arm of a crank connecting the crankshaft to crankpin, or connecting two adjacent crankpins. { 'kraŋk ˌweb }

**crash bar** [ENG] A bar that is installed on a panic exit device located on a door and serves to unlock the door and, sometimes, to activate an alarm. { 'krash ˌbär }

**crater** [MECH ENG] A depression in the face of a cutting tool worn down by chip contact. { 'krād·ər }

**crawler** [MECH ENG] **1.** One of a pair of an endless chain of plates driven by sprockets and used instead of wheels by certain power shovels, tractors, bulldozers, drilling machines, and such, as a means of propulsion. **2.** Any machine mounted on such tracks. { 'krȯ·lər }

**crawler crane** [MECH ENG] A self-propelled crane mounted on two endless tracks that revolve around wheels. { 'krȯ·lər ˌkrān }

**crawler tractor** [MECH ENG] A tractor that propels itself on two endless tracks revolving around wheels. { 'krȯ·lər ˌtrak·tər }

**crawler wheel** [MECH ENG] A wheel that drives a continuous metal belt, as on a crawler tractor. { 'krȯ·lər ˌwēl }

**crawl space** [BUILD] **1.** A shallow space in a building which workers can enter to gain access to pipes, wires, and equipment. **2.** A shallow space located below the ground floor of a house and surrounded by the foundation wall. { 'krȯl ˌspās }

**crazing** [ENG] A network of fine cracks on or under the surface of a material such as enamel, glaze, metal, or plastic. { 'krāz·iŋ }

**creep** [ELECTR] A slow change in a characteristic with time or usage. [ENG] The tendency of wood to move while it is being cut, particularly when being mitered. [MECH] A time-dependent strain of solids caused by stress. { krēp }

**creepage** [ELEC] The conduction of electricity across the surface of a dielectric. { 'krē·pij }

**creep buckling** [MECH] Buckling that may occur when a compressive load is maintained on a member over a long period, leading to creep which eventually reduces the member's bending stiffness. { 'krēp ˌbək·liŋ }

**creeper** [ENG] A low platform on small casters that is used for back support and mobility when a person works under a car. { 'krē·pər }

**creep error** [ENG] The error that occurs during a mass determination with a digital analytical balance when a value is read, printed, or processed before the display has reached its final position. { 'krēp ˌer·ər }

**creep-feed grinding** *See* creep grinding. { ˌkrēp ˌfēd 'grīnd·iŋ }

**creep grinding** [MECH ENG] A grinding operation that uses slow feed rates and produces heavy stock removal. Also known as creep-feed grinding. { 'krēp ˌgrīnd·iŋ }

**creep limit** [MECH] The maximum stress a given material can withstand in a given time without exceeding a specified quantity of creep. { 'krēp ˌlim·ət }

**creep recovery** [MECH] Strain developed in a period of time after release of load in a creep test. { 'krēp ri'kəv·ə·rē }

**creep rupture strength** [MECH] The stress which, at a given temperature, will cause a material to rupture in a given time. { 'krēp 'rəp·chər ˌstreŋkth }

**creep strength** [MECH] The stress which, at a given temperature, will result in a creep rate of 1% deformation within 100,000 hours. { 'krēp ˌstreŋkth }

**creep test** [ENG] Any one of a number of methods of measuring creep, for example, by subjecting a material to a constant stress or deforming it at a constant rate. { 'krēp ˌtest }

**cremone bolt** [DES ENG] A fastening for double doors or casement windows; employs vertical rods that move up and down to engage the top and bottom of the frame. { krə'mōn ˌbōlt }

**crescent beam** [ENG] A beam bounded by arcs having different centers of curvature, with the central section the largest. { 'kres·ənt ˌbēm }

**crest** [DES ENG] The top of a screw thread. { krest }

**crest clearance** [DES ENG] The clearance, in a radial direction, between the crest of the thread of a screw and the root of the thread with which the screw mates. { 'krest ˌklir·ənts }

**crest gate** [CIV ENG] A gate in the spillway of a dam which functions to maintain or change the water level. { 'krest ˌgāt }

**crib** [CIV ENG] The space between two successive ties along a railway track. [ENG] **1.** Any structure composed of a layer of timber or steel joists laid on the ground, or two layers across each other, to spread a load. **2.** Any structure composed of frames of timber placed horizontally on top of each other to form a wall. { krib }

**cricket** [BUILD] A device that is used to divert water at the intersections of roofs or at the intersection of a roof and chimney. { 'krik·ət }

**crimp** [ENG] **1.** To cause something to become wavy, crinkled, or warped, such as lumber. **2.** To pinch or press together, especially a tubular or cylindrical shape, in order to seal or unite. { krimp }

**crimp contact** [ELEC] A contact whose back portion is a hollow cylinder that will accept a wire; after a bared wire is inserted, a swaging tool is applied to crimp the contact metal firmly against the wire. Also known as solderless contact. { 'krimp ˌkänˌtakt }

**crinal** [MECH] A unit of force equal to 0.1 newton. { 'krīn·əl }

**cripple** [BUILD] A structural member, such as a stud above a window, that is cut less than full length. { 'krip·əl }

**crith** [MECH] A unit of mass, used for gases, equal to the mass of 1 liter of hydrogen at standard pressure and temperature; it is found experimentally to equal $8.9885 \times 10^{-5}$ kilogram. { krith }

**critical compression ratio** [MECH ENG] The lowest compression ratio which allows compression ignition of a specific fuel. { 'krid·ə·kəl kəm'presh·ən ˌrā·shō }

**critical density** [CIV ENG] For a highway, the density of traffic when the volume equals the capacity. [THERMO] The density of a substance at the liquid-vapor critical point. { 'krid·ə·kəl 'den·səd·ē }

**critical exponent** [THERMO] A parameter $n$ that characterizes the temperature dependence of a thermodynamic property of a substance near its critical point; the temperature dependence has the form $|T - T_c|^n$, where T is the temperature and $T_c$ is the critical temperature. { 'krid·ə·kəl ik'spō·nənt }

**critical humidity** [CHEM ENG] The humidity of a system's atmosphere above which a crystal of a water-soluble salt will always become damp (absorb moisture from the atmosphere) and below which it will always stay dry (release moisture to the atmosphere). { 'krid·ə·kəl yü'mid·əd·ē }

**critical isotherm** [THERMO] A curve showing the relationship between the pressure and volume of a gas at its critical temperature. { 'krid·ə·kəl 'ī·sə,thərm }

**critical moisture content** [CHEM ENG] The average moisture throughout a solid material being dried, its value being related to drying rate, thickness of material, and the factors that influence the movement of moisture within the solid. { 'krid·ə·kəl 'mȯis·chər ˌkän·tent }

**critical path method** [SYS ENG] A systematic procedure for detailed project planning and control. Abbreviated CPM. { 'krid·ə·kəl 'path ˌmeth·əd }

**critical pressure** [THERMO] The pressure of the liquid-vapor critical point. { 'krid·ə·kəl 'presh·ər }

**critical slope** [CIV ENG] The maximum angle with the horizontal at which a sloped bank of soil of a given height will remain undeformed without some form of support. { 'krid·ə·kəl 'slōp }

**critical speed** [MECH ENG] The angular speed at which a rotating shaft becomes dynamically unstable with large lateral amplitudes, due to resonance with the natural frequencies of lateral vibration of the shaft. { 'krid·ə·kəl 'spēd }

**critical vibration** [MECH ENG] A vibration that is significant and harmful to a structure. { 'krid·ə·kəl vī'brā·shən }

**critical weight** [ENG] In a drilling operation, the weight placed on a bit that will cause the drill string to become resonant with the angular speed at which the rotating shaft is operating. { 'krid·ə·kəl 'wāt }

**CR law** [ELEC] A law which states that when a constant electromotive force is applied to a circuit consisting of a resistor and capacitor connected in series, the time taken for the potential on the plates of the capacitor to rise to any given fraction of its final value depends only on the product of capacitance and resistance. { ¦sē¦är ˌlȯ }

**crochet file** [DES ENG] A thin, flat, round-edged file that tapers to a point. { krō'shā ˌfīl }

**crocodile shears** *See* lever shears. { 'kräk·ə,dīl ˌshirz }

**cross axle** [MECH ENG] **1.** A shaft operated by levers at its ends. **2.** An axle with cranks set at 90°. { 'krȯs ˌak·səl }

**crossbar** [CIV ENG] In a grating, one of the connecting bars which extend across bearing bars, usually perpendicular to them. { 'krȯsˌbär }

**crossbar micrometer** [ENG] An instrument consisting of two bars mounted perpendicular to each other in the focal plane of a telescope, and inclined to the east-west path of stars by 45°; used to measure differences in right ascension and declination of celestial objects. { 'krȯsˌbär mī'kräm·əd·ər }

**crossbeam** [BUILD] **1.** Also known as trave. **2.** A horizontal beam. **3.** A beam that runs transversely to the center line of a structure. { 'krȯsˌbēm }

**cross-belt drive** [DES ENG] A belt drive having parallel shafts rotating in opposite directions. { 'krȯs ˌbelt ˌdrīv }

**crossbolt** [DES ENG] A lock bolt with two parts which can be moved in opposite directions. { 'krȯsˌbōlt }

**cross bond** [CIV ENG] A masonry bond in which a course of alternating lengthwise and endwise bricks (Flemish bond) alternates with a course of bricks laid lengthwise. { 'krȯs ˌbänd }

**cross box** [MECH ENG] A boxlike structure for the connection of circulating tubes to the longitudinal drum of a header-type boiler. { 'krȯs ˌbäks }

**cross bracing** [BUILD] Boards which are nailed diagonally across studs or other boards so as to impart rigidity to a framework. { 'krȯs ˌbrās·iŋ }

**cross-correlation detection** *See* correlation detection. { 'krȯs kär·ə'lā·shən di'tek·shən }

**crosscut** [ENG] A cut made through wood across the grain. { 'krȯsˌkət }

**crosscut file** [DES ENG] A file with a rounded edge on one side and a thin edge on the other; used to sharpen straight-sided saw teeth with round gullets. { 'krȯsˌkət ˌfīl }

**crosscut saw** [DES ENG] A type of saw for cutting across the grain of the wood; designed with about eight teeth per inch. { 'krȯsˌkət ˌsȯ }

**cross drum boiler** [MECH ENG] A sectional header or box header type of boiler in which the axis of the horizontal drum is perpendicular to the axis of the main bank of tubes. { 'krȯs ˌdrəm ˌbȯil·ər }

**crossed belt** [MECH ENG] A pulley belt arranged so that the sides cross, thereby making the pulleys rotate in opposite directions. { ¦krȯst ¦belt }

**crossed-field amplifier** [ELECTR] A forward-wave, beam-type microwave amplifier that uses crossed-field interaction to achieve good phase stability, high efficiency, high gain, and wide bandwidth for most of the microwave spectrum. { 'krȯst ˌfēld 'am·plə,fī·ər }

**crossed-field device** [ELECTR] Any instrument

which uses the motion of electrons in perpendicular electric and magnetic fields to generate microwave radiation, either as an amplifier or oscillator. { 'krȯst ˌfēld di'vīs }

**crossed-needle meter** [ENG] A device consisting of two pointer-type analog meters inside a single enclosure with pointer movements centered at different positions so that their point of crossing indicates the value of some function of the two readings. { 'krȯst ˈnēd·əl 'mēd·ər }

**cross-fade** [ENG ACOUS] In dubbing, the overlapping of two sound tracks, wherein the outgoing track fades out while the incoming track fades in. { 'krȯs ˌfād }

**cross-flow baffle** [ENG] A type of baffle in a shell-and-tube heat exchanger that directs shell-side fluid back and forth or up and down across the tubes. Also known as transverse baffle. { 'krȯs ˌflō ˌbaf·əl }

**cross furring ceiling** [BUILD] A ceiling in which furring members are attached perpendicular to the main runners or other structural members. { 'krȯs ˌfər·iŋ ˌsēl·iŋ }

**cross hair** [ENG] An inscribed line or a strand of hair, wire, silk, or the like used in an optical sight, transit, or similar instrument for accurate sighting. { 'krȯs ˌher }

**crosshaul** [MECH ENG] A device for loading objects onto vehicles, consisting of a chain that is hooked on opposite sides of a vehicle, looped under the object, and connected to a power source and that rolls the object onto the vehicle. { 'krȯsˌhȯl }

**crosshead** [MECH ENG] A block sliding between guides and containing a wrist pin for the conversion of reciprocating to rotary motion, as in an engine or compressor. { 'krȯsˌhed }

**crossing plates** [CIV ENG] Plates placed between a crossing and the ties to support the crossing and protect the ties. { 'krȯs·iŋ ˌplāts }

**crosslap joint** [BUILD] A joint in which two wood members cross each other; half the thickness of each is removed so that at the joint the thickness is the same as that of the individual members. { 'krȯsˌlap ˌjȯint }

**cross-level** [ENG] To level at an angle perpendicular to the principal line of sight. { 'krȯs ˌlev·əl }

**crossover** [CIV ENG] **1.** An S-shaped section of railroad track joining two parallel tracks. **2.** A connection between two pipes in the same water supply system or a connection between two water supply systems. [ELEC] A point at which two conductors cross, with appropriate insulation between them to prevent contact. [ELECTR] The plane at which the cross section of a beam of electrons in an electron gun is a minimum. [ENG] The portion of a draw works' drum containing grooves for angle control so the wire rope can cross over to begin a new wrap. Also known as angle-control section. { 'krȯsˌō·vər }

**crossover distortion** [ELECTR] Amplitude distortion in a class B transistor power amplifier which occurs at low values of current, when input impedance becomes appreciable compared with driver impedance. { 'krȯsˌō·vər dis'tȯr·shən }

**crossover flange** [ENG] Intermediate pipe flange used to connect flanges of different working pressures. { 'krȯsˌō·vər ˌflanj }

**crossover frequency** [ENG ACOUS] **1.** The frequency at which a dividing network delivers equal power to the upper and lower frequency channels when both are terminated in specified loads. **2.** *See* transition frequency. { 'krȯsˌō·vər ˌfrē·kwən·sē }

**crossover network** [ENG ACOUS] A selective network used to divide the audio-frequency output of an amplifier into two or more bands of frequencies. Also known as dividing network; loudspeaker dividing network. { 'krȯsˌō·vər ˌnetˌwərk }

**crossover spiral** *See* lead-over groove. { 'krȯsˌō·vər ˌspī·rəl }

**crossover voltage** [ELECTR] In a cathode-ray storage tube, the voltage of a secondary writing surface, with respect to cathode voltage, on which the secondary emission is unity. { 'krȯsˌō·vər ˌvōl·tij }

**cross-peen hammer** [ENG] A hammer with a wedge-shaped surface at one end of the head. { 'krȯs ˌpēn 'ham·ər }

**cross slide** [MECH ENG] A part of a machine tool that allows the tool carriage to move at right angles to the main direction of travel. { 'krȯs ˌslīd }

**crosstalk** *See* magnetic printing. { 'krȯsˌtȯk }

**cross-thread** [ENG] To screw together two threaded pieces without aligning the threads correctly. { 'krȯs ˌthred }

**crosstie** [ENG] A timber or metal sill placed transversely under the rails of a railroad, tramway, or mine-car track. { 'krȯsˌtī }

**cross turret** [MECH ENG] A turret that moves horizontally and at right angles to the lathe guides. { 'krȯs ˌtər·ət }

**cross ventilation** [ENG] The movement of air from one side of a building or room and out the other side or through a monitor. { 'krȯs ˌvent·əl'ā·shən }

**crowbar** [DES ENG] An iron or steel bar that is usually bent and has a wedge-shaped working end; used as a lever and for prying. [ELEC] A device or action that in effect places a high overload on the actuating element of a circuit breaker or other protective device, thus triggering it. { 'krōˌbär }

**crown** [CIV ENG] **1.** Center of a roadway elevated above the sides. **2.** In plumbing, that part of a trap where the direction of flow changes from upward to horizontal or downward. [ENG] **1.** The part of a drill bit inset with diamonds. **2.** The vertex of an arch or arched surface. **3.** The top or dome of a furnace or kiln. **4.** A high spot forming on a tool joint shoulder as the result of drill pipe wobbling. { kraùn }

**crown post** [BUILD] Any upright member of a roof truss assembly, such as a king post. { 'kraùn ˌpōst }

**crown saw** [DES ENG] A saw consisting of a hollow cylinder with teeth around its edge; used for cutting round holes. Also known as hole saw. { 'kraün ˌsȯ }

**crown sheet** [MECH ENG] The structural element which forms the top of a furnace in a fire-tube boiler. { 'kraün ˌshēt }

**crown weir** [CIV ENG] The highest point on the internal bottom surface of the crown of a plumbing trap. { 'kraün ˌwer }

**crown wheel** [DES ENG] A gear that is light and crown-shaped. { 'kraün ˌwēl }

**crow's nest** [ENG] An elevated passageway for personnel located at the top of a derrick, refinery, or similar installation. { 'krōz ˌnest }

**CRT** *See* cathode-ray tube.

**crude assay** [CHEM ENG] A procedure for determining the general distillation characteristics and other quality information of crude oil. { ¦krüd 'as·ā }

**crude desalting** [CHEM ENG] The washing of crude oil with water in order to remove materials such as dirt, silt, and water-soluble minerals. { 'krüd dē'sȯlt·iŋ }

**crude material** *See* raw material. { 'krüd məˌtir·ē·əl }

**crude still** [CHEM ENG] The distillation equipment in which crude oil is separated into various products. { 'krüd ˌstil }

**crusher** [MECH ENG] A machine for crushing rock and other bulk materials. { 'krəsh·ər }

**crush-forming** [ENG] Shaping the face of a grinding wheel by forcing a rotating metal roll into it. { 'krəsh ˌfȯr·miŋ }

**crushing strain** [MECH] Compression which causes the failure of a material. { 'krəsh·iŋ ˌstrān }

**crushing strength** [MECH] The compressive stress required to cause a solid to fail by fracture; in essence, it is the resistance of the solid to vertical pressure placed upon it. { 'krəsh·iŋ ˌstreŋkth }

**crushing test** [ENG] A test of the suitability of stone that might be mined for roads or building use. { 'krəsh·iŋ ˌtest }

**cryochem process** [CHEM ENG] A freeze-drying technique involving conduction heat transfer to the frozen solid held on a metallic surface. { 'krī·ōˌkem ˌpräs·əs }

**cryoelectronics** [ELECTR] A branch of electronics concerned with the study and application of superconductivity and other low-temperature phenomena to electronic devices and systems. Also known as cryolectronics. { ¦krī·ō·iˌlek 'trän·iks }

**cryogenic engineering** [ENG] A branch of engineering specializing in technical operations at very low temperatures (about 200 to 400°R, or −160 to −50°C). { ˌkrī·əˈjen·ik en·jəˈnir·iŋ }

**cryogenic gyroscope** [ENG] A gyroscope in which a spherical rotor of superconducting niobium spins while in levitation at cryogenic temperatures. Also known as superconducting gyroscope. { ˌkrī·əˈjen·ik ˈjī·rəˌskōp }

**cryogenic transformer** [ELECTR] A transformer designed to operate in digital cryogenic circuits, such as a controlled-coupling transformer. { ˌkrī·əˈjen·ik tranzˈfȯr·mər }

**cryolectronics** *See* cryoelectronics. { ¦krī·ō·iˌlek 'trän·iks }

**cryology** [MECH ENG] The study of low-temperature (approximately 200°R, or −160°C) refrigeration. { krīˈäl·ə·jē }

**cryometer** [ENG] A thermometer for measuring low temperatures. { krīˈäm·əd·ər }

**cryopreservation** [ENG] Preservation of food, biologicals, and other materials at extremely low temperatures. { ¦krī·ō·prezˈər·vā·shən }

**cryosar** [ELECTR] A cryogenic, two-terminal, negative-resistance semiconductor device, consisting essentially of two contacts on a germanium wafer operating in liquid helium. { 'krī·ōˌsär }

**cryoscope** [ENG] A device to determine the freezing point of a liquid. { 'krī·əˌskōp }

**cryosistor** [ELECTR] A cryogenic semiconductor device in which a reverse-biased *pn* junction is used to control the ionization between two ohmic contacts. { ¦krī·əˈzis·tər }

**cryosorption pump** [MECH ENG] A high-vacuum pump that employs a sorbent such as activated charcoal or synthetic zeolite cooled by nitrogen or some other refrigerant; used to reduce pressure from atmospheric pressure to a few millitorr. { ˌkrī·əˈsȯrp·shən ˌpəmp }

**cryostat** [ENG] An apparatus used to provide low-temperature environments in which operations may be carried out under controlled conditions. { 'krī·əˌstat }

**cryotron** [ELECTR] A switch that operates at very low temperatures at which its components are superconducting; when current is sent through a control element to produce a magnetic field, a gate element changes from a superconductive zero-resistance state to its normal resistive state. { 'krī·əˌträn }

**cryotronics** [ELECTR] The branch of electronics that deals with the design, construction, and use of cryogenic devices. { ˌkrī·əˈträn·iks }

**cryptoclimate** [ENG] The climate of a confined space, such as inside a house, barn, or greenhouse, or in an artificial or natural cave; a form of microclimate. Also spelled kryptoclimate. { ¦krip·tōˈklī·mət }

**crystal** [ELECTR] A natural or synthetic piezoelectric or semiconductor material whose atoms are arranged with some degree of geometric regularity. { 'krist·əl }

**crystal activity** [ELECTR] A measure of the amplitude of vibration of a piezoelectric crystal plate under specified conditions. { 'krist·əl ak 'tiv·əd·ē }

**crystal calibrator** [ELECTR] A crystal-controlled oscillator used as a reference standard to check frequencies. { ¦krist·əl 'kal·əˌbrād·ər }

**crystal cartridge** [ENG ACOUS] A piezoelectric unit used with a stylus in a phonograph pickup to convert disk recordings into audio-frequency signals, or used with a diaphragm in a crystal

microphone to convert sound waves into af signals. { ¦krist·əl 'kär,trij }

**crystal control** [ELECTR] Control of the frequency of an oscillator by means of a quartz crystal unit. { 'krist·əl kən'trōl }

**crystal current** [ELECTR] The actual alternating current flowing through a crystal unit. { 'krist·əl ˌkər·ənt }

**crystal cutter** [ENG ACOUS] A cutter in which the mechanical displacements of the recording stylus are derived from the deformations of a crystal having piezoelectric properties. { 'krist·əl ˌkəd·ər }

**crystal-diffraction spectrometer** *See* Bragg spectrometer. { 'krist·əl di'frak·shən spek'träm·əd·ər }

**crystal headphones** [ENG ACOUS] Headphones using Rochelle salt or other crystal elements to convert audio-frequency signals into sound waves. Also known as ceramic earphones. { 'krist·əl 'hed,fōnz }

**crystal holder** [DES ENG] A housing designed to provide proper support, mechanical protection, and connections for a quartz crystal plate. { 'krist·əl ˌhōl·dər }

**crystal hydrophone** [ENG ACOUS] A crystal microphone that responds to waterborne sound waves. { 'krist·əl 'hī·drəˌfōn }

**crystallizer** [CHEM ENG] Process vessel within which dissolved solids in a supersaturated solution are forced out of solution by cooling or evaporation, and then recovered as solid crystals. { 'kris·təˌliz·ər }

**crystal loudspeaker** [ENG ACOUS] A loudspeaker in which movements of the diaphragm are produced by a piezoelectric crystal unit that twists or bends under the influence of the applied audio-frequency signal voltage. Also known as piezoelectric loudspeaker. { ¦krist·əl 'laůdˌspēk·ər }

**crystal microphone** [ENG ACOUS] A microphone in which deformation of a piezoelectric bar by the action of sound waves or mechanical vibrations generates the output voltage between the faces of the bar. Also known as piezoelectric microphone. { ¦krist·əl 'mī·krəˌfōn }

**crystal oven** [ENG] A temperature-controlled oven in which a crystal unit is operated to stabilize its temperature and thereby minimize frequency drift. { 'krist·əl ˌəv·ən }

**crystal pickup** [ENG ACOUS] A phonograph pickup in which movements of the needle in the record groove cause deformation of a piezoelectric crystal, thereby generating an audio-frequency output voltage between opposite faces of the crystal. Also known as piezoelectric pickup. { ¦krist·əl 'pikˌəp }

**crystal spectrometer** *See* Bragg spectrometer. { 'krist·əl spek'träm·əd·ər }

**C size** [ENG] One of a series of sizes to which trimmed paper and board are manufactured; for size CN, with N equal to any integer, the length of the longer side is $2^{3/8-N/2}$ meters, while the length of the shorter side is $2^{1/8-N/2}$ meters, with both lengths rounded off to the nearest millimeter. { 'sē ˌsīz }

**CTC** *See* centralized traffic control.

**CTD recorder** *See* salinity-temperature-depth recorder. { ¦sē¦tē¦dē ri'kȯrd·ər }

**C-tube bourdon element** [ENG] Hollow tube of flexible (elastic) metal shaped like the arc of a circle; changes in internal gas or liquid pressure flexes the tube to a degree related to the pressure change; used to measure process-stream pressures. { 'sē ˌtüb 'bůrd·ən ˌel·ə·mənt }

**cu** *See* cubic.

**cubic** [MECH] Denoting a unit of volume, so that if $x$ is a unit of length, a cubic $x$ is the volume of a cube whose sides have length 1$x$; for example, a cubic meter, or a meter cubed, is the volume of a cube whose sides have a length of 1 meter. Abbreviated cu. { 'kyü·bik }

**cubical dilation** [MECH] The isotropic part of the strain tensor describing the deformation of an elastic solid, equal to the fractional increase in volume. { 'kyü·bə·kəl di'lā·shən }

**cubic boron nitride** [MECH ENG] A synthetic material composed of boron and nitrogen (1:1) that is almost as hard as diamond, used as a superabrasive powder and for cutting and grinding applications. { ¦kyü·bik¦bȯˌrän 'nīˌtrīd }

**cubic foot per minute** [MECH] A unit of volume flow rate, equal to a uniform flow of 1 cubic foot in 1 minute; equal to 1/60 cusec. Abbreviated cfm. { ¦kyü·bik ¦fůt pər 'min·ət }

**cubic foot per second** *See* cusec. { ¦kyü·bik ¦fůt pər 'sek·ənd }

**cubicle** [BUILD] Any small, approximately square room or compartment. [ENG] An enclosure for high-voltage equipment. { 'kyü·bə·kəl }

**cubic measure** [MECH] A unit or set of units to measure volume. { 'kyü·bik 'mezh·ər }

**cul-de-sac** [CIV ENG] A dead-end street with a circular area for turning around. { 'kəl·dəˌsak }

**cull** [CHEM ENG] In a plastics molding operation, material remaining in the transfer chamber after the mold has been filled. { kəl }

**cullet** *See* collet. { 'kəl·ət }

**cullis** *See* coulisse. { 'kəl·əs }

**cultellation** [ENG] Transferring a surveyed point from a high level (such as on overhang) to a lower level by dropping a marking pin. { kəl·tə'lā·shən }

**culvert** [ENG] A covered channel or a large-diameter pipe that takes a watercourse below ground level. { 'kəl·vərt }

**cumec** [MECH] A unit of volume flow rate equal to 1 cubic meter per second. { 'kyüˌmek }

**cumulative compound motor** [MECH ENG] A motor with operating characteristics between those of the constant-speed (shunt-wound) and the variable-speed (series-wound) types. { 'kyü·myə·lədˌiv ˌkämˌpaůnd 'mōd·ər }

**cumulative sum chart** [IND ENG] A statistical control chart on which the cumulative sum of deviations is plotted over a period of time and which often has a sliding V-shaped mask for comparing the plot with allowable limits. Also

known as cusum chart. { 'kyü·myə·ləd·iv 'səm ˌchärt }

**cup** [DES ENG] A cylindrical part with only one end open. [ENG] A low spot forming on a tool joint shoulder as a result of wobbling. { kəp }

**cup anemometer** [ENG] A rotation anemometer, usually consisting of three or four hemispherical or conical cups mounted with their diametral planes vertical and distributed symmetrically about the axis of rotation; the rate of rotation of the cups, which is a measure of the wind speed, is determined by a counter. { 'kəp an·ə'mäm·əd·ər }

**cup barometer** [ENG] A barometer in which one end of a graduated glass tube is immersed in a cup, both cup and tube containing mercury. { 'kəp bə'räm·əd·ər }

**cup-case thermometer** [ENG] Total-immersion type of thermometer with a cup container at the bulb end to hold a specified amount and depth of the material whose temperature is to be measured. { 'kəp ˌkās thər'mäm·əd·ər }

**cup electrometer** [ENG] An electrometer that has a metal cup attached to its plate so that a charged body touching the inside of the cup gives up its entire charge to the instrument. { 'kəp iˌlek'träm·əd·ər }

**curb** [CIV ENG] A border of concrete or row of joined stones forming part of a gutter along a street edge. { kərb }

**curb weight** [MECH ENG] The weight of a motor vehicle plus fuel and other components or equipment necessary for standard operation; does not include driver weight or payload. { 'kərb ˌwāt }

**cure** [CHEM ENG] *See* vulcanization. [ENG] A process by which concrete is kept moist for its first week or month to provide enough water for the cement to harden. Also known as mature. { kyůr }

**cure time** [CHEM ENG] The amount of time required for a rubber compound to reach maximum viscosity or modulus at a given temperature. { 'kyůr ˌtīm }

**Curle balance** [ENG] An instrument for determining the susceptibility of weakly magnetic materials, in which the deflection produced by a strong permanent magnet on a suspended tube containing the specimen is measured. { 'kyůr·ē ˌbal·əns }

**Curie principle** [THERMO] The principle that a macroscopic cause never has more elements of symmetry than the effect it produces; for example, a scalar cause cannot produce a vectorial effect. { 'kyůr·ē ˌprin·sə·pəl }

**Curie scale of temperature** [THERMO] A temperature scale based on the susceptibility of a paramagnetic substance, assuming that it obeys Curie's law; used at temperatures below about 1 kelvin. { ˌkyůr·ē ˌskāl əv 'tem·prə·chər }

**curing** [CHEM ENG] A process in which polymers or oligomers are chemically cross-linked to form polymer networks. [CIV ENG] A process for bringing freshly placed concrete to required strength and quality by maintaining the humidity and temperature at specified levels for a given period of time. Also known as seasoning. { 'kyůr·iŋ }

**curing time** [ENG] Time interval between the stopping of moving parts during thermoplastics molding and the release of mold pressure. Also known as molding time. { 'kyůr·iŋ ˌtīm }

**curling** [MECH ENG] A forming process in which the edge of a sheet-metal part is rolled over to produce a hollow tubular rim. { 'kərl·iŋ }

**curling dies** [MECH ENG] A set of tools that shape the ends of a piece of work into a form with a circular cross section. { 'kərl·iŋ ˌdīz }

**curling machine** [MECH ENG] A machine with curling dies; used to curl the ends of cans. { 'kərl·iŋ ˌmə'shēn }

**current** [ELEC] The net transfer of electric charge per unit time; a specialization of the physics definition. Also known as electric current. { 'kər·ənt }

**current amplification** [ELECTR] The ratio of output-signal current to input-signal current for an electron tube, transistor, or magnetic amplifier, the multiplier section of a multiplier phototube, or any other amplifying device; often expressed in decibels by multiplying the common logarithm of the ratio by 20. { 'kər·ənt am·plə·fə'kā·shən }

**current amplifier** [ELECTR] An amplifier capable of delivering considerably more signal current than is fed in. { 'kər·ənt ˌam·plə,fī·ər }

**current attenuation** [ELECTR] The ratio of input-signal current for a transducer to the current in a specified load impedance connected to the transducer; often expressed in decibels. { 'kər·ənt əˌten·yə'wā·shən }

**current collector** *See* charge collector. { 'kər·ənt kəˌlek·tər }

**current-controlled switch** [ELECTR] A semiconductor device in which the controlling bias sets the resistance at either a very high or very low value, corresponding to the "off" and "on" conditions of a switch. { 'kər·ənt kənˌtrōld 'swich }

**current density** [ELEC] The current per unit cross-sectional area of a conductor; a specialization of the physics definition. Also known as electric current density. { 'kər·ənt ˌden·səd·ē }

**current drain** [ELEC] The current taken from a voltage source by a load. Also known as drain. { 'kər·ənt ˌdrān }

**current drogue** [ENG] A current-measuring assembly consisting of a weighted current cross, sail, or parachute, and an attached surface buoy. { 'kər·ənt ˌdrōg }

**current feedback** [ELECTR] Feedback introduced in series with the input circuit of an amplifier. { 'kər·ənt ˌfēdˌbak }

**current feedback circuit** [ELECTR] A circuit used to eliminate effects of amplifier gain instability in an indirect-acting recording instrument, in which the voltage input (error signal) to an amplifier is the difference between the measured quantity and the voltage drop across a resistor. { 'kər·ənt ˌfēdˌbak ˌsər·kət }

**current gain** [ELECTR] The fraction of the current flowing into the emitter of a transistor which

flows through the base region and out the collector. { 'kər·ənt ˌgān }

**current generator** [ELECTR] A two-terminal circuit element whose terminal current is independent of the voltage between its terminals. { 'kər·ənt ˌjen·əˌrād·ər }

**current intensity** [ELEC] The magnitude of an electric current. Also known as current strength. { 'kər·ənt in'ten· səd·ē }

**current limiter** [ELECTR] A device that restricts the flow of current to a certain amount, regardless of applied voltage. Also known as demand limiter. { 'kər·ənt ˌlim·əd·ər }

**current line** [ENG] In marine operations, a graduated line attached to a current pole, used to measure the speed of a current; as the pole moves away with the current, the speed of the current is determined by the amount of line paid out in a specified time. Also known as log line. { 'kər·ənt ˌlīn }

**current meter** *See* ammeter; velocity-type flowmeter. { 'kər·ənt ˌmēd·ər }

**current mirror** [ELECTR] An electronic circuit that generates, at a high-impedance output node, an inflowing or outflowing current that is a scaled replica of an input current flowing into or out of a low-impedance input node. { 'kər·ənt ˌmir·ər }

**current-mode filter** [ELECTR] An integrated-circuit filter in which the signals are represented by current levels rather than voltage levels. { 'kər·ənt‚mōd ˌfil·tər }

**current-mode logic** [ELECTR] Integrated-circuit logic in which transistors are paralleled so as to eliminate current hogging. Abbreviated CML. { 'kər·ənt ˌmōd 'läj·ik }

**current noise** [ELECTR] Electrical noise of uncertain origin which is observed in certain resistances when a direct current is present, and which increases with the square of this current. { 'kər·ənt ˌnoiz }

**current pole** [ENG] A pole used to determine the direction and speed of a current; the direction is determined by the direction of motion of the pole, and the speed by the amount of an attached current line paid out in a specified time. { 'kər·ənt ˌpōl }

**current regulator** [ELECTR] A device that maintains the output current of a voltage source at a predetermined, essentially constant value despite changes in load impedance. { 'kər·ənt ˌreg·yəˌlād·ər }

**current saturation** *See* anode saturation. { 'kər·ənt sach·əˈrā·shən }

**current source** [ELECTR] An electronic circuit that generates a constant direct current into or out of a high-impedance output node. { 'kər·ənt ˌsȯrs }

**current strength** *See* current intensity. { 'kər·ənt ˌstreŋkth }

**current-type flowmeter** [ENG] A mechanical device to measure liquid velocity in open and closed channels; similar to the vane anemometer (where moving liquid turns a small windmill-type vane), but more rugged. { 'kər·ənt ¦tīp 'flō ˌmēd·ər }

**cursor** [DES ENG] A clear or amber-colored filter that can be placed over a radar screen and rotated until an etched diameter line on the filter passes through a target echo; the bearing from radar to target can then be read accurately on a stationary 360° scale surrounding the filter. { 'kər·sər }

**curtain board** [BUILD] A fire-retardant partition applied to a ceiling. { 'kərt·ən ˌbȯrd }

**curtain coating** [CHEM ENG] A method in which the substrate to be coated with low-viscosity resins or solutions is passed through, and is perpendicular to, a freely falling liquid curtain. { 'kərt·ən ˌkōd·iŋ }

**curtain wall** [CIV ENG] An external wall that is not load-bearing. { 'kərt·ən ˌwȯl }

**curved beam** [ENG] A beam bounded by circular arcs. { ¦kərvd 'bēm }

**curve resistance** [MECH] The force opposing the motion of a railway train along a track due to track curvature. { 'kərv ri'zis·təns }

**curve tracer** [ENG] An instrument that can produce a display of one voltage or current as a function of another voltage or current, with a third voltage or current as a parameter. { 'kərv ˌtrā·sər }

**curvilinear motion** [MECH] Motion along a curved path. { 'kər·vəˈlin·ē·ər 'mō·shən }

**cusec** [MECH] A unit of volume flow rate, used primarily to describe pumps, equal to a uniform flow of 1 cubic foot in 1 second. Also known as cubic foot per second (cfs). { 'kyüˌsek }

**cushion gas** *See* blanket gas. { 'kůsh·ən ˌgas }

**custodial area** [BUILD] Area of a building designated for service and custodial personnel; includes rooms, closets, storage, toilets, and lockers. { kəˈstōd·ē·əl ˌer·ē·ə }

**custom millwork** *See* architectural millwork. { 'kəs·təm 'milˌwərk }

**cusum chart** *See* cumulative sum chart. { ¦kyü ¦səm ˌchärt }

**cut** [CHEM ENG] A fraction obtained by a separation process. { kət }

**cut and fill** [CIV ENG] Construction of a road, a railway, or a canal which is partly embanked and partly below ground. { ¦kət ən 'fil }

**cutback** [CHEM ENG] Blending of heavier oils with lighter ones to bring the heavier to desired specifications. { 'kətˌbak }

**cut constraint** [SYS ENG] A condition sometimes imposed in an integer programming problem which excludes parts of the feasible solution space without excluding any integer points. { 'kət kənˈstrānt }

**cut-in** [CONT SYS] A value of temperature or pressure at which a control circuit closes. [ELEC] An electrical device that allows current to flow through an electric circuit. { 'kət ˌin }

**cut methods** [SYS ENG] Methods of solving integer programming problems that employ cut constraints derived from the original problem. { 'kət ˌmeth·ədz }

**cut nail** [DES ENG] A flat, tapered nail sheared from steel plate; it has greater holding power than a wire nail and is generally used for fastening flooring. { 'kət ˌnāl }

**cutoff** [CIV ENG] **1.** A channel constructed to straighten a stream or to bypass large bends, thereby relieving an area normally subjected to flooding or channel erosion. **2.** An impermeable wall, collar, or other structure placed beneath the base or within the abutments of a dam to prevent or reduce losses by seepage along otherwise smooth surfaces or through porous strata. [ELECTR] **1.** The minimum value of bias voltage, for a given combination of supply voltages, that just stops output current in an electron tube, transistor, or other active device. **2.** *See* cutoff frequency. [ENG] **1.** A misfire in a round of shots because of severance of fuse owing to rock shear as adjacent charges explode. **2.** The line on a plastic object formed by the meeting of the two halves of a compression mold. Also known as flash groove; pinch-off. [MECH ENG] **1.** The shutting off of the working fluid to an engine cylinder. **2.** The time required for this process. { 'kətˌȯf }

**cutoff bias** [ELECTR] The direct-current bias voltage that must be applied to the grid of an electron tube to stop the flow of anode current. { 'kətˌȯf ˌbī·əs }

**cutoff frequency** [ELECTR] A frequency at which the attenuation of a device begins to increase sharply, such as the limiting frequency below which a traveling wave in a given mode cannot be maintained in a waveguide, or the frequency above which an electron tube loses efficiency rapidly. Also known as critical frequency; cutoff. { 'kətˌȯf ˌfrē·kwən·sē }

**cutoff limiting** [ELECTR] Limiting the maximum output voltage of a vacuum tube circuit by driving the grid beyond cutoff. { 'kətˌȯf ˌlim·əd·iŋ }

**cutoff point** [MECH ENG] **1.** The point at which there is a transition from spiral flow in the housing of a centrifugal fan to straight-line flow in the connected duct. **2.** The point on the stroke of a steam engine where admission of steam is stopped. { 'kətˌȯf ˌpȯint }

**cutoff tool** [MECH ENG] A tool used on bar-type lathes to separate the finished piece from the bar stock. { 'kətˌȯf ˌtül }

**cutoff trench** [CIV ENG] A trench which is below the foundation base line of a dam or other structure and is filled with an impervious material, such as clay or concrete, to form a watertight barrier. { 'kətˌȯf ˌtrench }

**cutoff valve** [MECH ENG] A valve used to stop the flow of steam to the cylinder of a steam engine. { 'kətˌȯf ˌvalv }

**cutoff voltage** [ELECTR] **1.** The electrode voltage value that reduces the dependent variable of an electron-tube characteristic to a specified low value. **2.** *See* critical voltage. { 'kətˌȯf ˌvōl·tij }

**cutoff wall** [CIV ENG] A thin, watertight wall of clay or concrete built up from a cutoff trench to reduce seepage. Also known as core wall. { 'kətˌȯf ˌwȯl }

**cutoff wheel** [MECH ENG] A thin wheel impregnated with an abrasive used for severing or cutting slots in a material or part. { 'kətˌȯf ˌwēl }

**cut-out** [CONT SYS] A value of temperature or pressure at which a control circuit opens. { 'kət ˌau̇t }

**cutout angle** [ELECTR] The phase angle at which a semiconductor diode ceases to conduct; it is slightly less than 180° because the diode requires some forward bias to conduct. { 'kətˌau̇t ˌaŋ·gəl }

**cutover** [ENG] **1.** To place equipment in active use. **2.** The time when testing of equipment is completed and regular usage begins. { 'kətˌō·vər }

**cut point** [CHEM ENG] The boiling-temperature division between cuts of a crude oil or base stock. { 'kət ˌpȯint }

**cutscore** [ENG] A knife used in die-cutting processes, designed to cut just partway into the paper or board so that it can be folded. { 'kətˌskȯr }

**cutter** [ENG ACOUS] An electromagnetic or piezoelectric device that converts an electric input to a mechanical output, used to drive the stylus that cuts a wavy groove in the highly polished wax surface of a recording disk. Also known as cutting head; head; phonograph cutter; recording head. [MECH ENG] *See* cutting tool. { 'kəd·ər }

**cutter bar** [MECH ENG] The bar that supports the cutting tool in a lathe or other machine. { 'kəd·ər ˌbär }

**cutter compensation** [CONT SYS] The process of taking into account the difference in radius between a cutting tool and a programmed numerical control operation in order to achieve accuracy. { 'kəd·ər ˌkäm·pən'sā·shən }

**cutterhead** [MECH ENG] A device on a machine tool for holding a cutting tool. { 'kəd·ərˌhed }

**cutter sweep** [MECH ENG] The section that is cut off or eradicated by the milling cutter or grinding wheel in entering or leaving the flute. { 'kəd·ər ˌswēp }

**cutting angle** [MECH ENG] The angle that the cutting face of a tool makes with the work surface back of the tool. { 'kəd·iŋ ˌaŋ·gəl }

**cutting down** [MECH ENG] Removing surface roughness or irregularities from metal by the use of an abrasive. { 'kəd·iŋ 'dau̇n }

**cutting drilling** [MECH ENG] A rotary drilling method in which drilling occurs through the action of the drill steel rotating while pressed against the rock. { 'kəd·iŋ ˌdril·iŋ }

**cutting edge** [DES ENG] **1.** The point or edge of a diamond or other material set in a drill bit. Also known as cutting point. **2.** The edge of a lathe tool in contact with the work during a machining operation. { 'kəd·iŋ 'ej }

**cutting head** *See* cutter. { 'kəd·iŋ ˌhed }

**cutting in** [MECH ENG] An undesirable action occurring during loose-drum spooling in which a layer of wire rope spreads apart and forms

grooves in which the next layer travels. { 'kəd·iŋ 'in }

**cutting-off machine** [MECH ENG] A machine for cutting off metal bars and shapes; includes the lathe type using single-point cutoff tools, and several types of saws. { 'kəd·iŋ ˌȯf mə'shēn }

**cutting pliers** [DES ENG] Pliers with cutting blades on the jaws. { 'kəd·iŋ ˌplī·ərz }

**cutting point** *See* cutting edge. { 'kəd·iŋ ˌpȯint }

**cutting ratio** [ENG] As applied to metal cutting, the ratio of depth of cut to chip thickness for a given shear angle. { 'kəd·iŋ ˌrā·shō }

**cutting rule** [ENG] A sharp steel rule used in a machine for cutting paper or cardboard. { 'kəd·iŋ ˌrül }

**cutting speed** [MECH ENG] The speed of relative motion between the tool and workpiece in the main direction of cutting. Also known as feed rate; peripheral speed. { 'kəd·iŋ ˌspēd }

**cutting stylus** [ENG ACOUS] A recording stylus with a sharpened tip that removes material to produce a groove in the recording medium. { 'kəd·iŋ ˌstī·ləs }

**cutting tip** [ENG] The end of the snout of a cutting torch from which gas flows. { 'kəd·iŋ ˌtip }

**cutting tool** [MECH ENG] The part of a machine tool which comes into contact with and removes material from the workpiece by the use of a cutting medium. Also known as cutter. { 'kəd·iŋ ˌtül }

**cutting torch** [ENG] A torch that preheats metal while the surface is rapidly oxidized by a jet of oxygen issuing through the flame from an additional feed line. { 'kəd·iŋ ˌtȯrch }

**cutwater** [CIV ENG] A sharp-edged structure built around a bridge pier to protect it from the flow of water and material carried by the water. { 'kətˌwȯd·ər }

**cybernation** [IND ENG] The use of computers in connection with automation. { sī·bər'nā·shən }

**cycle** [ENG] To run a machine through a single complete operation. { 'sī·kəl }

**cyclegraph technique** [IND ENG] Recording a brief work cycle by attaching small lights to various parts of a worker and then exposing the work motions on a still-film time plate; motion will appear on the plate as superimposed streaks of light constituting a cyclegraph. { 'sī·klə‚graf ˌtekˌnēk }

**cycle plant** [CHEM ENG] A plant in which the liquid hydrocarbons are removed from natural gas and then the gas is put back into the earth to maintain pressure in the oil reservoir. { 'sī·kəl ˌplant }

**cycle skip** *See* skip logging. { 'sī·kəl ˌskip }

**cycle stock** [CHEM ENG] The unfinished product taken from a stage of a refinery process and recharged to the process at an earlier stage in the operation. { 'sī·kəl ˌstäk }

**cycle timer** [ELECTR] A timer that opens or closes circuits according to a predetermined schedule. { 'sī·kəl ˌtīm·ər }

**cyclic catalytic reforming process** [CHEM ENG] A method for the production of low-Btu reformed gas consisting of the conversion of carbureted water-gas sets by installing a bed of nickel catalyst in the superheater and using the carburetor as a combustion chamber and process steam superheater. Abbreviated CCR process. { 'sīk·lik ¦käd·əˌlid·ik ri'fȯr·miŋ ˌpräs·əs }

**cyclic coordinate** [MECH] A generalized coordinate on which the Lagrangian of a system does not depend explicitly. Also known as ignorable coordinate. { 'sīk·lik kō'ȯrd·ən·ət }

**cyclic element** [IND ENG] An element of an operation or process that occurs in each of its cycles. { 'sīk·lik 'el·ə·mənt }

**cyclic testing** [ENG] The repeated testing of a device or system at regular intervals to be assured of its reliability. { 'sīk·lik 'test·iŋ }

**cyclic train** [MECH ENG] A set of gears, such as an epicyclic gear system, in which one or more of the gear axes rotates around a fixed axis. { 'sīk·lik 'trān }

**cycling** [CHEM ENG] A series of operations in petroleum refining or natural-gas processing in which the steps are repeated periodically in the same sequence. [CONT SYS] A periodic change of the controlled variable from one value to another in an automatic control system. { 'sīk·liŋ }

**cyclograph** [ENG] An electronic instrument that produces on a cathode-ray screen a pattern which changes in shape according to core hardness, carbon content, case depth, and other metallurgical properties of a test sample of steel inserted in a sensing coil. { 'sī·klə‚graf }

**cycloidal gear teeth** [DES ENG] Gear teeth whose profile is formed by the trace of a point on a circle rolling without slippage on the outside or inside of the pitch circle of a gear; now used only for clockwork and timer gears. { sī'klȯid·əl 'gir ˌtēth }

**cycloidal pendulum** [MECH] A modification of a simple pendulum in which a weight is suspended from a cord which is slung between two pieces of metal shaped in the form of cycloids; as the bob swings, the cord wraps and unwraps on the cycloids; the pendulum has a period that is independent of the amplitude of the swing. { sī'klȯid·əl 'pen·jə·ləm }

**cyclone** [CHEM ENG] A static reaction vessel in which fluids under pressure form a vortex. [MECH ENG] Any cone-shaped air-cleaning apparatus operated by centrifugal separation that is used in particle collecting and fine grinding operations. { 'sī‚klōn }

**cyclone cellar** [CIV ENG] An underground shelter, often built in areas frequented by tornadoes. Also known as storm cellar; tornado cellar. { 'sī‚klōn ˌsel·ər }

**cyclone classifier** *See* cyclone separator. { 'sī‚klōn ˌklas·əˌfī·ər }

**cyclone furnace** [ENG] A water-cooled, horizontal cylinder in which fuel is fired cyclonically and heat is released at extremely high rates. { 'sī‚klōn ˌfər·nəs }

**cyclone separator** [MECH ENG] A funnel-shaped device for removing particles from air or

other fluids by centrifugal means; used to remove dust from air or other fluids, steam from water, and water from steam, and in certain applications to separate particles into two or more size classes. Also known as cyclone classifier. { 'sī,klōn 'sep·ə,rād·ər }

**cylinder** [CIV ENG] **1.** A steel tube 10–60 inches (25–152 centimeters) in diameter with a wall at least 1/8 inch (3 millimeters) thick that is driven into bedrock, excavated inside, filled with concrete, and used as a pile foundation. **2.** A domed, closed tank for storing hot water to be drawn off at taps. Also known as storage calorifier. [ENG] **1.** A container used to hold and transport compressed gas for various pressurized applications. **2.** The piston chamber in a pump from which the liquid is expelled. [MECH ENG] *See* engine cylinder. { 'sil·ən·dər }

**cylinder actuator** [MECH ENG] A device that converts hydraulic power into useful mechanical work by means of a tight-fitting piston moving in a closed cylinder. { 'sil·ən·dər ˌak·chəˌwād·ər }

**cylinder block** [DES ENG] The metal casting comprising the piston chambers of a multicylinder internal combustion engine. Also known as block; engine block. { 'sil·ən·dər ˌbläk }

**cylinder bore** [DES ENG] The internal diameter of the tube in which the piston of an engine or pump moves. { 'sil·ən·dər ˌbȯr }

**cylinder head** [MECH ENG] The cap that serves to close the end of the piston chamber of a reciprocating engine, pump, or compressor. { 'sil·ən·dər ˌhed }

**cylinder liner** [MECH ENG] A separate cylindrical sleeve inserted in an engine block which serves as the cylinder. { 'sil·ən·dər ˌlīn·ər }

**cylinder machine** [ENG] A paper-making machine consisting of one or a series of rotary cylindrical filters on which wet paper sheets are formed. { 'sil·ən·dər mə'shēn }

**cylindrical cam** [MECH ENG] A cam mechanism in which the cam follower undergoes translational motion parallel to the camshaft as a roller attached to it rolls in a groove in a circular cylinder concentric with the camshaft. { sə'lin·drə·kəl 'kam }

**cylindrical-coordinate robot** [CONT SYS] A robot in which the degrees of freedom of the manipulator arm are defined chiefly by cylindrical coordinates. { sə'lin·drə·kəl kō¦ōrd·ən·ət 'rōˌbät }

**cylindrical cutter** [DES ENG] Any cutting tool with a cylindrical shape, such as a milling cutter. { sə'lin·drə·kəl 'kəd·ər }

**cylindrical grinder** [MECH ENG] A machine for doing work on the peripheries or shoulders of workpieces composed of concentric cylindrical or conical shapes, in which a rotating grinding wheel cuts a workpiece rotated from a power headstock and carried past the face of the wheel. { sə'lin·drə·kəl 'grīnd·ər }

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# D

**dac** *See* digital-to-analog converter.

**dado head** [MECH ENG] A machine consisting of two circular saws with one or more chippers in between; used for cutting flat-bottomed grooves in wood. { 'dā·dō ˌhed }

**dado joint** [BUILD] A joint made by fitting the full thickness of the edge or the end of one board into a corresponding groove in another board. Also known as housed joint. { 'dāˌdō ˌjȯint }

**dado plane** [DES ENG] A narrow plane for cutting flat grooves in woodwork. { 'dā·dō ˌplān }

**Dahlin's algorithm** [CONT SYS] A digital control algorithm in which the requirement of minimum response time used in the deadbeat algorithm is relaxed to reduce ringing in the system response. { 'dä·lənz ˌal·gəˌri<u>th</u>·əm }

**d'Alembert's principle** [MECH] The principle that the resultant of the external forces and the kinetic reaction acting on a body equals zero. { ˌdal·əmˈbərz ˌprin·sə·pəl }

**Dall tube** [MECH ENG] Fluid-flow measurement device, similar to a venturi tube, inserted as a section of a fluid-carrying pipe; flow rate is measured by pressure drop across a restricted throat. { 'dȯl ˌtüb }

**Dalton's temperature scale** [THERMO] A scale for measuring temperature such that the absolute temperature T is given in terms of the temperature on the Dalton scale $\tau$ by $T = 273.15(373.15/273.15)^{\tau/100}$. { 'dȯl·tənz 'tem·prə·chər ˌskāl }

**dam** [CIV ENG] **1.** A barrier constructed to obstruct the flow of a watercourse. **2.** A pair of cast-steel plates with interlocking fingers built over an expansion joint in the road surface of a bridge. { dam }

**damage tolerance** [ENG] The ability of a structure to maintain its load-carrying capability after exposure to a sudden increase in load. { 'dam·ij ˌtäl·ə·rəns }

**damaging stress** [MECH] The minimum unit stress for a given material and use that will cause damage to the member and make it unfit for its expected length of service. { ˌdam·ə·jiŋ 'stres }

**damp** [ENG] To reduce the fire in a boiler or a furnace by putting a layer of damp coals or ashes on the fire bed. { damp }

**damp course** [CIV ENG] A layer of impervious material placed horizontally in a wall to keep out water. { ˌdamp ˌkȯrs }

**dampener** [ENG] A device for damping spring oscillations after abrupt removal or application of a load. { 'dam·pə·nər }

**damper** [ELECTR] A diode used in the horizontal deflection circuit of a television receiver to make the sawtooth deflection current decrease smoothly to zero instead of oscillating at zero; the diode conducts each time the polarity is reversed by a current swing below zero. [MECH ENG] A valve or movable plate for regulating the flow of air or the draft in a stove, furnace, or fireplace. { 'dam·pər }

**damper loss** [ENG] The reduction in rate of flow or of pressure of gas across a damper. { 'dam·pər ˌlȯs }

**damper pedal** [ENG] A pedal that controls the damping of piano strings. { 'dam·pər ˌped·əl }

**damping** [ENG] Reducing or eliminating reverberation in a room by placing sound-absorbing materials on the walls and ceiling. Also known as soundproofing. { 'dam·piŋ }

**damping capacity** [MECH] A material's capability in absorbing vibrations. { 'dam·piŋ kə'pas·əd·ē }

**damping coefficient** *See* resistance. { 'dam·piŋ ˌkō·iˌfish·ənt }

**damping constant** *See* resistance. { 'dam·piŋ ˌkän·stənt }

**damping resistor** [ELEC] **1.** A resistor that is placed across a parallel resonant circuit or in series with a series resonant circuit to decrease the Q factor and thereby eliminate ringing. **2.** A noninductive resistor placed across an analog meter to increase damping. { 'dam·piŋ riˌzis·tər }

**dancing step** *See* balanced step. { ˌdan·siŋ ˌstep }

**dancing winder** *See* balanced step. { ˌdan·siŋ ˌwīn·dər }

**Danckwerts model** [CHEM ENG] Theory applied to liquid flow across packing in a liquid-gas absorption tower; allows for liquid eddies that bring fresh liquid from the interior of the liquid body to the surface, thus contacting the gas in the column. { 'daŋk·verts ˌmäd·əl }

**dandy roll** [MECH ENG] A roll in a Fourdrinier paper-making machine; used to compact the sheet and sometimes to imprint a watermark. { 'dan·dē ˌrōl }

**Daniell hygrometer** [ENG] An instrument for measuring dew point; dew forms on the surface

of a bulb containing ether which is cooled by evaporation into another bulb, the second bulb being cooled by the evaporation of ether on its outer surface. { 'dan·yəl hī'gräm·əd·ər }

**Danjon prismatic astrolabe** [ENG] A type of astrolabe in which a Wollaston prism just inside the focus of the telescope converts converging beams of light into parallel beams, permitting a great increase in accuracy. { 'dän·yən priz'mad·ik 'as·trə,lāb }

**daraf** [ELEC] The unit of elastance, equal to the reciprocal of 1 farad. { 'da,raf }

**darby** [ENG] A flat-surfaced tool for smoothing plaster. { 'där·bē }

**d'Arsonval galvanometer** [ENG] A galvanometer in which a light coil of wire, suspended from thin copper or gold ribbons, rotates in the field of a permanent magnet when current is carried to it through the ribbons; the position of the coil is indicated by a mirror carried on it, which reflects a light beam onto a fixed scale. Also known as light-beam galvanometer. { 'dars·ən,vōl gal·və'näm·əd·ər }

**dashpot** [MECH ENG] A device used to dampen and control a motion, in which an attached piston is loosely fitted to move slowly in a cylinder containing oil. { 'dash,pät }

**datum** [ENG] **1.** A direction, level, or position from which angles, heights, speeds or distances are conveniently measured. **2.** Any numerical or geometric quantity or value that serves as a base reference for other quantities or values (such as a point, line, or surface in relation to which others are determined). { 'dad·əm, 'dād·əm, *or* 'däd·əm }

**datum level** *See* datum plane. { 'dad·əm ,lev·əl }

**datum plane** [ENG] A permanently established horizontal plane, surface, or level to which soundings, ground elevations, water surface elevations, and tidal data are referred. Also known as chart datum; datum level; reference level; reference plane. { 'dad·əm ,plān }

**daylight** *See* daylight opening. { 'dā,līt }

**daylight controls** [ENG] Special devices which automatically control the electric power to the lamp, causing the light to operate during hours of darkness and to be extinguished during daylight hours. { 'dā,līt kən'trōlz }

**daylighting** [CIV ENG] To light an area with daylight. { 'dā,līd·iŋ }

**daylight opening** [ENG] The space between two press platens when open. Also known as daylight. { 'dā,līt ,ō·pən·iŋ }

**day wage** [IND ENG] A fixed rate of pay per shift or per daily hours of work, irrespective of the amount of work completed. { 'dā ,wāj }

**dc** *See* direct current.

**dc-to-ac converter** *See* inverter. { ¦dē,sē tü ¦ā,sē kən'vərd·ər }

**dc-to-ac inverter** *See* inverter. { ¦dē,sē tü ¦ā,sē in'vərd·ər }

**dc-to-dc converter** [ELEC] An electronic circuit which converts one direct-current voltage into another, consisting of an inverter followed by a step-up or step-down transformer and rectifier. { ¦dē,sē tü ¦dē,sē kən'vərd·ər }

**Deacon process** [CHEM ENG] A method of chlorine production by passing a hot mixture of gaseous hydrochloric acid with oxygen over a cuprous chloride catalyst. { 'dēk·ən ,präs·əs }

**dead-air space** [BUILD] A sealed air space, such as in a hollow wall. { ¦ded 'er ,spās }

**dead area** *See* blind spot. { 'ded ,er·ē·ə }

**dead axle** [MECH ENG] An axle that carries a wheel but does not drive it. { ¦ded 'ak·səl }

**dead band** [ELEC] The portion of a potentiometer element that is shortened by a tap; when the wiper traverses this area, there is no change in output. [ENG] The range of values of the measured variable to which an instrument will not effectively respond. Also known as dead zone; neutral zone. { 'ded ,band }

**deadbeat** [MECH] Coming to rest without vibration or oscillation, as when the pointer of a meter moves to a new position without overshooting. Also known as deadbeat response. { 'ded,bēt }

**deadbeat algorithm** [CONT SYS] A digital control algorithm which attempts to follow set-point changes in minimum time, assuming that the controlled process can be modeled approximately as a first-order plus dead-time system. { 'ded,bēt 'al·gə,rith·əm }

**deadbeat response** *See* deadbeat. { 'ded,bēt ri'späns }

**dead block** [ENG] A device placed on the ends of railroad passenger cars to absorb the shock of impacts. { 'ded ,bläk }

**dead bolt** [DES ENG] A lock bolt that is moved directly by the turning of a knob or key, not by spring action. { 'ded ,bōlt }

**dead center** [MECH ENG] **1.** A position of a crank in which the turning force applied to it by the connecting rod is zero; occurs when the crank and rod are in a straight line. **2.** A support for the work on a lathe which does not turn with the work. { ¦ded 'sen·tər }

**dead-end tower** [CIV ENG] Antenna or transmission line tower designed to withstand unbalanced mechanical pull from all the conductors in one direction together with the wind strain and vertical loads. { 'ded ,end ,taù·ər }

**dead load** *See* static load. { 'ded ,lōd }

**deadlocking latch bolt** *See* auxiliary dead latch. { 'ded,läk·iŋ 'lach ,bōlt }

**deadman** [CIV ENG] **1.** A buried plate, wall, or block attached at some distance from and forming an anchorage for a retaining wall. Also known as anchorage; anchor block; anchor wall. **2.** *See* anchor log. { 'ded,man }

**deadman's brake** [MECH ENG] An emergency device that automatically is activated to stop a vehicle when the driver removes his or her foot from the pedal. { ¦ded,manz 'brāk }

**deadman's handle** [MECH ENG] A handle on a machine designed so that the operator must continuously press on it in order to keep the machine running. { ¦ded,manz 'han·dəl }

**dead rail** [CIV ENG] One of two rails on a railroad weighing platform that permit an excessive load to leave the platform. { 'ded ˌrāl }
**dead room** *See* anechoic chamber. { 'ded ˌrüm }
**dead sheave** [ENG] A grooved wheel on a crown block over which the deadline is fastened. { 'ded 'shēv }
**dead space** [THERMO] A space filled with gas whose temperature differs from that of the main body of gas, such as the gas in the capillary tube of a constant-volume gas thermometer. { 'ded ˌspās }
**dead-stroke** [MECH ENG] Having a recoilless or nearly recoilless stroke. { 'ded ˌstrōk }
**dead-stroke hammer** [MECH ENG] A power hammer provided with a spring on the hammer head to reduce recoil. { 'ded ˌstrōk 'ham·ər }
**dead time** [CONT SYS] The time interval between a change in the input signal to a process control system and the response to the signal. [ENG] The time interval, after a response to one signal or event, during which a system is unable to respond to another. Also known as insensitive time. { 'ded ˌtīm }
**dead-time compensation** [CONT SYS] The modification of a controller to allow for time delays between the input to a control system and the response to the signal. { 'ded ˌtīm käm·pən 'sā·shən }
**dead-time correction** [ENG] A correction applied to an observed counting rate to allow for the probability of the occurrence of events within the dead time. Also known as coincidence correction. { 'ded ˌtīm kə'rek·shən }
**dead track** [CIV ENG] **1.** Railway track that is no longer used. **2.** A section of railway track that is electrically isolated from the track signal circuits. { ¦ded ¦trak }
**deadweight gage** [ENG] An instrument used as a standard for calibrating pressure gages in which known hydraulic pressures are generated by means of freely balanced (dead) weights loaded on a calibrated piston. { 'ded,wāt ˌgāj }
**deaeration** [ENG] Removal of gas or air from a substance, as from feedwater or food. { dē ˌer'ā·shən }
**deaerator** [MECH ENG] A device in which oxygen, carbon dioxide, or other noncondensable gases are removed from boiler feedwater, steam condensate, or a process stream. { dē'er,ād·ər }
**deagglomeration** [CHEM ENG] Size-reduction process in which loosely adhered clumps (agglomerates) of powders or crystals are broken apart without further disintegration of the powder or crystal particles themselves. { ˌdē·ə,gläm·ə'rā·shən }
**deal** [DES ENG] **1.** A face on which numbers are registered by means of a pointer. **2.** A disk usually with a series of markings around its border, which can be turned to regulate the operation of a machine or electrical device. { dēl }
**deasphalting** [CHEM ENG] The process of removing asphalt from petroleum fractions. { dē'as,fȯl·tiŋ }
**deblooming** [CHEM ENG] The process by which the fluorescence, or bloom, is removed from petroleum oils by exposing them in shallow tanks to the sun and atmospheric conditions or by using chemicals. { dē'blüm·iŋ }
**Deborah number** [MECH] A dimensionless number used in rheology, equal to the relaxation time for some process divided by the time it is observed. Symbolized D. { də'bȯr·ə ˌnəm·bər }
**debris dam** [CIV ENG] A fixed dam across a stream channel for the retention of sand, gravel, driftwood, or other debris. { də'brē ˌdam }
**debubblizer** [ENG] A worker who removes bubbles from plastic rods and tubing. { dē,bə·bə,līz·ər }
**debug** [ELECTR] To detect and remove secretly installed listening devices popularly known as bugs. [ENG] To eliminate from a newly designed system the components and circuits that cause early failures. { dē'bəg }
**debutanization** [CHEM ENG] Removal of butane and lighter components in a natural-gasoline plant. { dē,byüt·ən·ə'zā·shən }
**debutanizer** [CHEM ENG] The fractionating column in a natural-gasoline plant in which butane and lighter components are removed. { de 'byüt·ən,īz·ər }
**debye** [ELEC] A unit of electric dipole moment, equal to $10^{-18}$ Franklin centimeter. { də'bī }
**Debye theory** [ELEC] The classical theory of the orientation polarization of polar molecules in which the molecules have a single relaxation time, and the plot of the imaginary part of the complex relative permittivity against the real part is a semicircle. { də'bī ˌthē·ə·rē }
**decade** [ELEC] A group or assembly of 10 units; for example, a decade counter counts 10 in one column, and a decade box inserts resistance quantities in multiples of powers of 10. { de'kād }
**decade bridge** [ELECTR] Electronic apparatus for measurement of unknown values of resistances or capacitances by comparison with known values (bridge); one secondary section of the oscillator-driven transformer is tapped in decade steps, the other in 10 uniform steps. { de'kād ˌbrij }
**decaliter** [MECH] A unit of volume, equal to 10 liters, or to 0.01 cubic meter. { 'dek·ə,lēd·ər }
**decameter** [MECH] A unit of length in the metric system equal to 10 meters. { 'dek·ə,mēd·ər }
**decantation** [ENG] A method for mechanical dewatering of a wet solid by pouring off the liquid without disturbing underlying sediment or precipitate. { 'dē,kan'tā·shən }
**decanter** [ENG] Tank or vessel in which solids or immiscible dispersions in a carrier liquid settle or coalesce, with clear upper liquid withdrawn (decanted) as overflow from the top. { də'kant·ər }
**decastere** [MECH] A unit of volume, equal to 10 cubic meters. { 'dek·ə,stir }
**deceleration** [MECH] The rate of decrease of speed of a motion. { dē,sel·ə'rā·shən }

**decelerometer** [ENG] An instrument that measures the rate at which the speed of a vehicle decreases. { dē,sel·ə'räm·əd·ər }

**deciare** [MECH] A unit of area, equal to 0.1 are or 10 square meters. { 'des·ē,er }

**decibar** [MECH] A metric unit of pressure equal to one-tenth bar. { 'des·ə,bär }

**decibel meter** [ENG] An instrument calibrated in logarithmic steps and labeled with decibel units and used for measuring power levels in communication circuits. { 'des·ə,bel ,mēd·ər }

**decigram** [MECH] A unit of mass, equal to 0.1 gram. { 'des·ə,gram }

**deciliter** [MECH] A unit of volume, equal to 0.1 liter, or $10^{-4}$ cubic meter. { 'des·ə,lēd·ər }

**decimal balance** [ENG] A balance having one arm 10 times the length of the other, so that heavy objects can be weighed by using light weights. { 'des·məl ,bal·ənS }

**decimal-binary switch** [ELEC] A switch that connects a single input lead to appropriate combinations of four output leads (representing 1, 2, 4, and 8) for each of the decimal-numbered settings of its control knob; thus, for position 7, output leads 1, 2, and 4 would be connected to the input. { ¦des·məl ¦bīn·ə·rē 'swich }

**decimeter** [MECH] A metric unit of length equal to one-tenth meter. { 'des·ə,mēd·ər }

**decision calculus** [SYS ENG] A guide to the process of decision-making, often outlined in the following steps: analysis of the decision area to discover applicable elements; location or creation of criteria for evaluation; appraisal of the known information pertinent to the applicable elements and correction for bias; isolation of the unknown factors; weighting of the pertinent elements, known and unknown, as to relative importance; and projection of the relative impacts on the objective, and synthesis into a course of action. { di'sizh·ən 'kal·kyə·ləs }

**decision rule** [SYS ENG] In decision theory, the mathematical representation of a physical system which operates upon the observed data to produce a decision. { di'sizh·ən ,rül }

**decision theory** [SYS ENG] A broad spectrum of concepts and techniques which have been developed to both describe and rationalize the process of decision making, that is, making a choice among several possible alternatives. { di'sizh·ən ,thē·ə·rē }

**decision tree** [IND ENG] Graphic display of the underlying decision process involved in the introduction of a new product by a manufacturer. { di'sizh·ən ,trē }

**deck** [CIV ENG] **1.** A floor, usually of wood, without a roof. **2.** The floor or roadway of a bridge. [ENG] A magnetic-tape transport mechanism. { dek }

**deck bridge** [CIV ENG] A bridge that carries the deck on the very top of the superstructure. { 'dek ,brij }

**decking** [CIV ENG] Surface material on a deck. [ENG] Separating explosive charges containing primers with layers of inert material to prevent passage of concussion. { 'dek·iŋ }

**deckle** [ENG] A detachable wood frame fitted around the edges of a papermaking mold. { 'dek·əl }

**deckle rod** [ENG] A small rod inserted at each end of the extrusion coating die to adjust the die opening length. { 'dek·əl ,räd }

**deckle strap** [ENG] An endless rubber band which runs longitudinally along the wire edges of a paper machine and determines web width. { 'dek·əl ,strap }

**deck roof** [BUILD] A roof that is nearly flat and without parapet walls. { 'dek ,rüf }

**deck truss** [CIV ENG] The frame of a deck. { 'dek ,trəs }

**declination axis** [ENG] For an equatorial mounting of a telescope, an axis of rotation that is perpendicular to the polar axis and allows the telescope to be pointed at objects of different declinations. { ,dek·lə'nā·shən ,ak·səs }

**declination circle** [ENG] For a telescope with an equatorial mounting, a setting circle attached to the declination axis that shows the declination to which the telescope is pointing. { ,dek·lə'nā·shən ,sər·kəl }

**declination compass** *See* declinometer. { ,dek·lə'nā·shən ,kəm· pəs }

**declination variometer** [ENG] An instrument that measures changes in the declination of the earth's magnetic field, consisting of a permanent bar magnet, usually about 0.4 inch (1 centimeter) long, suspended with a plane mirror from a fine quartz fiber 2–6 inches (5–15 centimeters) in length; a lens focuses to a point a beam of light reflected from the mirror to recording paper mounted on a rotating drum. Also known as D variometer. { ,dek·lə'nā·shən ,ver·ē'äm·əd·ər }

**declinometer** [ENG] A magnetic instrument similar to a surveyor's compass, but arranged so that the line of sight can be rotated to conform with the needle or to any desired setting on the horizontal circle; used in determining magnetic declination. Also known as declination compass. { ,dek·lə'näm·əd·ər }

**decoking** [CHEM ENG] Removal of petroleum coke from equipment. { dē'kōk·iŋ }

**decolorize** [CHEM ENG] To remove the color from, as from a liquid. { dē'kəl·ə,rīz }

**decolorizer** [CHEM ENG] An agent used to decolorize; the removal of color may occur by a chemical reaction or a physical reaction. { dē'kəl·ə,rīz·ər }

**decompression** [ENG] Any procedure for the relief of pressure or compression. { dē·kəm'presh·ən }

**decompression chamber** [ENG] **1.** A steel chamber fitted with auxiliary equipment to raise its air pressure to a value two to six times atmospheric pressure; used to relieve a diver who has decompressed too quickly in ascending. **2.** Such a chamber in which conditions of high atmospheric pressure can be simulated for experimental purposes. { dē·kəm'presh·ən ,chām·bər }

**decompression table** [ENG] A diving guide that

lists ascent rates and breathing mixtures to provide safe pressure reduction to atmospheric pressure after a dive. { dē·kəm'presh·ən ˌtā·bəl }

**deconcentrator** [ENG] An apparatus for removing dissolved or suspended material from feedwater. { dē'känsˌən,trād·ər }

**decontamination** [ENG] The removing of chemical, biological, or radiological contamination from, or the neutralizing of it on, a person, object, or area. { dē·kənˌtam·ə'nā·shən }

**decouple** [ENG] **1.** To minimize or eliminate airborne shock waves of a nuclear or other explosion by placing the explosives deep under the ground. **2.** To minimize the seismic effect of an underground explosion by setting it off in the center of an underground cavity. { dē'kəp·əl }

**decoupler** [IND ENG] A materials handling device designed specifically for cellular manufacturing. { dē'kəp·lər }

**decrement gage** [ENG] A type of molecular gage consisting of a vibrating quartz fiber whose damping is used to determine the viscosity and, thereby, the pressure of a gas. Also known as quartz-fiber manometer. { 'de·krə·mənt ˌgāj }

**decremeter** [ENG] An instrument for measuring the logarithmic decrement (damping) of a train of waves. { 'dek·rəˌmēd·ər }

**dedendum** [DES ENG] The difference between the radius of the pitch circle of a gear and the radius of its root circle. { də'den·dəm }

**dedendum circle** [DES ENG] A circle tangent to the bottom of the spaces between teeth on a gear wheel. { də'den·dəm ˌsər·kəl }

**deemphasis** [ENG ACOUS] A process for reducing the relative strength of higher audio frequencies before reproduction, to complement and thereby offset the preemphasis that was introduced to help override noise or reduce distortion. Also known as postemphasis; postequalization. { dē'em·fə·səs }

**deemphasis network** [ENG ACOUS] An RC filter inserted in a system to restore preemphasized signals to their original form. { dē'em·fə·səs ˌnet,wərk }

**deep-draw mold** [ENG] A mold for plastic material that is long in relation to the thickness of the mold wall. { ¦dēp ¦drȯ 'mōld }

**deep underwater muon and neutrino detector** [ENG] A proposed device for detecting and determining the direction of extraterrestrial neutrinos passing through a volume of approximately 1 cubic kilometer of ocean water, using an array of several thousand Cerenkov counters suspended in the water to sense the showers of charged particles generated by neutrinos. Abbreviated DUMAND. { ¦dēp ˌən·dər'wȯd·ər 'myü ˌän an nü'trē·nō di¸tek·tər }

**deep well** [CIV ENG] A well that draws its water from beneath shallow impermeable strata, at depths exceeding 22 feet (6.7 meters). { 'dēp ˌwel }

**deep-well pump** [MECH ENG] A multistage centrifugal pump for lifting water from deep, small-diameter wells; a surface electric motor operates the shaft. Also known as vertical turbine pump. { 'dēp ˌwel ˌpəmp }

**deethanize** [CHEM ENG] To separate and remove ethane and sometimes lighter fractions from heavy substances, such as propane, by distillation. { dē'eth·əˌnīz }

**deethanizer** [CHEM ENG] The equipment used to deethanize. { dē'eth·əˌnīz·ər }

**defecation** [CHEM ENG] Industrial purification, or clarification, of sugar solutions. { ˌdef·ə'kā·shən }

**defender** [IND ENG] A machine or facility which is being considered for replacement. { di'fen·dər }

**deferrization** [CHEM ENG] Removal of iron, for example, from water in an industrial process. { dēˌfer·ə'zā·shən }

**deflashing** [ENG] Finishing technique to remove excess material (flash) from a plastic or metal molding. { dē'flash·iŋ }

**deflected jet fluidic flowmeter** *See* fluidic flow sensor. { di¦flek·təd 'jet flü'id·ik 'flōˌmēd·ər }

**deflecting torque** [MECH] An instrument's moment, resulting from the quantity measured, that acts to cause the pointer's deflection. { di'flek·diŋ ˌtȯrk }

**deflection** [ELECTR] The displacement of an electron beam from its straight-line path by an electrostatic or electromagnetic field. [ENG] **1.** Shape change or reduction in diameter of a conduit, produced without fracturing the material. **2.** Elastic movement or sinking of a loaded structural member, particularly of the mid-span of a beam. { di'flek·shən }

**deflection bit** [DES ENG] A long, cone-shaped, noncoring bit used to drill past a deflection wedge in a borehole. { di'flek·shən ˌbit }

**deflection curve** [MECH] The curve, generally downward, described by a shot deviating from its true course. { di'flek·shən ˌkərv }

**deflection magnetometer** [ENG] A magnetometer in which magnetic fields are determined from the angular deflection of a small bar magnet that is pivoted so that it is free to move in a horizontal plane. { di'flek·shən ˌmag·nə'täm·əd·ər }

**deflection meter** [ENG] A flowmeter that applies the differential pressure generated by a differential-producing primary device across a diaphragm or bellows in such a way as to create a deflection proportional to the differential pressure. { di'flek·shən ˌmēd·ər }

**deflection-modulated indicator** *See* amplitude-modulated indicator. { di'flek·shən ¦mäj·əˌlād·əd 'in·dəˌkād·ər }

**deflection ultrasonic flowmeter** [ENG] A flowmeter for determining velocity from the deflection of a high-frequency sound beam directed across the flow. Also known as drift ultrasonic flowmeter. { di'flek·shən ¦əl·traˌsän·ik 'flō ˌmēd·ər }

**deflection wedge** [DES ENG] A wedge-shaped tool inserted into a borehole to direct the drill bit. { di'flek·shən ˌwej }

**deflectometer** [ENG] An instrument used for

measuring minute deformations in a structure under transverse stress. { ˌdēˌflek'täm·əd·ər }

**deflector** [ENG] A plate, baffle, or the like that diverts the flow of a forward-moving stream. { di'flek·tər }

**deflocculate** [CHEM ENG] To break up and disperse agglomerates and form a stable colloid. { dē'fläk·yəˌlāt }

**defoaming** [CHEM ENG] Reduction or elimination of foam. { dē'fōm·iŋ }

**defocus** [ENG] To make a beam of x-rays, electrons, light, or other radiation deviate from an accurate focus at the intended viewing or working surface. { dē'fō·kəs }

**deformation** [MECH] Any alteration of shape or dimensions of a body caused by stresses, thermal expansion or contraction, chemical or metallurgical transformations, or shrinkage and expansions due to moisture change. { ˌdef·ər'mā·shən }

**deformation curve** [MECH] A curve showing the relationship between the stress or load on a structure, structural member, or a specimen and the strain or deformation that results. Also known as stress-strain curve. { ˌdef·ər'mā·shən ˌkərv }

**deformation ellipsoid** *See* strain ellipsoid. { ˌdef·ər'mā·shən ə'lipˌsȯid }

**deformation thermometer** [ENG] A thermometer with transducing elements which deform with temperature; examples are the bimetallic thermometer and the Bourdon-tube type of thermometer. { ˌdef·erˈmā·shən thərˌmäm·əd·ər }

**deformed bar** [CIV ENG] A steel bar with projections or indentations to increase mechanical bonding; used to reinforce concrete. { dē ˈfȯrmd ˈbär }

**deformeter** [ENG] An instrument used to measure minute deformations in materials in structural models. { dē'fȯrˌmēd·ər }

**defrost** [ENG] To keep free of ice or to remove ice. [THERMO] To thaw out from a frozen state. { dē'frȯst }

**degas** [ELECTR] To drive out and exhaust the gases occluded in the internal parts of an electron tube or other gastight apparatus, generally by heating during evacuation. [ENG] To remove gas from a liquid or solid. { dē'gas }

**degassing** *See* breathing. { dē'gas·iŋ }

**degauss** [ELECTR] To remove, erase, or clear information from a magnetic tape, disk, drum, or core. { dē'gaùs }

**degradation** [THERMO] The conversion of energy into forms that are increasingly difficult to convert into work, resulting from the general tendency of entropy to increase. { ˌdeg·rə'dā·shən }

**degradation failure** [ENG] Failure of a device because of a shift in a parameter or characteristic which exceeds some previously specified limit. { ˌdeg·rə'dā·shən ˌfāl·yər }

**degrease** [CHEM ENG] **1.** To remove grease from wool with chemicals. **2.** To remove grease from hides or skins in tanning by tumbling them in solvents. { dē'grēs }

**degreaser** [ENG] A machine designed to clean grease and foreign matter from mechanical parts and like items, usually metallic, by exposing them to vaporized or liquid solvent solutions confined in a tank or vessel. { dē'grēs·ər }

**degree** [THERMO] One of the units of temperature or temperature difference in any of various temperature scales, such as the Celsius, Fahrenheit, and Kelvin temperature scales (the Kelvin degree is now known as the kelvin). { di'grē }

**degree-day** [MECH ENG] A measure of the departure of the mean daily temperature from a given standard; one degree-day is recorded for each degree of departure above (or below) the standard during a single day; used to estimate energy requirements for building heating and, to a lesser extent, for cooling. { di'grē ˌdā }

**degree of curve** [CIV ENG] A measure of the curvature of a railway or highway, equal to the angle subtended by a 100-foot (32.8-meter) chord (railway) or by a 100-foot arc (highway). { di'grē əv 'kərv }

**degree of freedom** [MECH] **1.** Any one of the number of ways in which the space configuration of a mechanical system may change. **2.** Of a gyro, the number of orthogonal axes about which the spin axis is free to rotate, the spin axis freedom not being counted; this is not a universal convention; for example, the free gyro is frequently referred to as a three-degree-of-freedom gyro, the spin axis being counted. { di'grē əv 'frē·dəm }

**degritting** [CHEM ENG] Removal of fine solid particles (grit) from a liquid carrier by gravity separation (settling) or centrifugation. { dē 'grid·iŋ }

**dehumidification** [MECH ENG] The process of reducing the moisture in the air; serves to increase the cooling power of air. { ˌdē·yüˌmid·ə·fəˈkā·shən }

**dehumidifier** [MECH ENG] Equipment designed to reduce the amount of water vapor in the ambient atmosphere. { ˌdē·yü'mid·əˌfī·ər }

**dehydration tank** [CHEM ENG] A tank in which warm air is blown through oil to remove moisture. { ˌdē·hī'drā·shən ˌtaŋk }

**dehydrator** [CHEM ENG] Vessel or process system for the removal of liquids from gases or solids by the use of heat, absorbents, or adsorbents. { dē'hīˌdrād·ər }

**dehydrocyclization** [CHEM ENG] Any process involving both dehydrogenation and cyclization, as in petroleum refining. { dēˌhī·drō,sīk·lə'zā·shən }

**deicing** [ENG] The removal of ice deposited on any object, especially as applied to aircraft icing, by heating, chemical treatment, and mechanical rupture of the ice deposit. { dē'īs·iŋ }

**deinking** [CHEM ENG] The process of removing ink from recycled paper so that the fibers can be used again. { dē'iŋk·iŋ }

**delamination** [ENG] Separation of a laminate into its constituent layers. { dēˌlam·ə'nā·shən }

**Delaunay orbit element** [MECH] In the *n*-body

problem, certain functions of variable elements of an ellipse with a fixed focus along which one of the bodies travels; these functions have rates of change satisfying simple equations. { dəˈlōˌnā ˈȯrˌbət ˌelˈəˌmənt }

**delay** [IND ENG] Interruption of the normal tempo of an operation; may be avoidable or unavoidable. { diˈlā }

**delay-action detonator** *See* delay blasting cap. { diˈlā ˌakˈshən ˈdetˌənˌādˈər }

**delay allowance** [IND ENG] A percentage of the normal operating time added to the normal time to allow for delays. { diˈlā əˌlaůˈəns }

**delay blasting cap** [ENG] A blasting cap which explodes at a definite time interval after the firing current has been passed by the exploder. Also known as delay-action detonator. { diˈlā ˈblastˌiŋ ˌkap }

**delayed coking** [CHEM ENG] A semicontinuous thermal process for converting heavy petroleum stock to lighter material. { diˈlād ˈkōkˌiŋ }

**delayed combustion** [ENG] Secondary combustion in succeeding gas passes beyond the furnace volume of a boiler. { diˈlād kəmˈbəsˌchən }

**delay time** [CONT SYS] The amount of time by which the arrival of a signal is retarded after transmission through physical equipment or systems. [ELECTR] The time taken for collector current to start flowing in a transistor that is being turned on from the cutoff condition. [IND ENG] A span of time during which a worker is idle because of factors beyond personal control. { diˈlā ˌtīm }

**delignification** [CHEM ENG] A chemical process for removing lignin from wood. { dēˌligˈnəˌfəˈkāˈshən }

**delta** [ELECTR] The difference between a partial-select output of a magnetic cell in a one state and a partial-select output of the same cell in a zero state. { ˈdelˈtə }

**delta modulation** [ELECTR] A pulse-modulation technique in which a continuous signal is converted into a binary pulse pattern, for transmission through low-quality channels. { ˈdelˈtə ˌmäjˈəˈlāˈshən }

**demand** *See* demand factor. { dəˈmand }

**demanded motions inventory** [IND ENG] A list of all motions that are required to perform a specific task, including an exact characterization of each. { dəˈmanˈdədˌmōˈshənz ˈinˈvənˌtȯrˈē }

**demand factor** [ELEC] The ratio of the maximum demand of a building for electric power to the total connected load. Also known as demand. { dəˈmand ˌfakˈtər }

**demand meter** [ENG] Any of several types of instruments used to determine a customer's maximum demand for electric power over an appreciable time interval; generally used for billing industrial users. { dəˈmand ˌmēdˈər }

**demand regulator** [ENG] A component of an open-circuit diving system that permits the diver to expel used air directly into the water without rebreathing exhaled carbon dioxide. { dəˈmand ˌregˈyəˌlādˈər }

**demand system** [ENG] A system in an airplane that automatically dispenses oxygen according to the demand of the flyer's body. { dəˈmand ˌsisˈtəm }

**demethanation** *See* demethanization. { dēˌmethˈəˈnāˈshən }

**demethanator** [CHEM ENG] The apparatus in which demethanization isconducted. { dēˈmethˈəˌnādˈər }

**demethanization** [CHEM ENG] The process of distillation in which methane is separated from the heavier components. Also known as demethanation. { dēˌmethˈənˈəˈzāˈshən }

**demineralization** [CHEM ENG] Removal of mineral constituents from water. { dēˌminˈrəˈlə ˈzāˈshən }

**demister** [MECH ENG] A series of ducts in automobiles arranged so that hot, dry air directed from the heat source is forced against the interior of the windscreen or windshield to prevent condensation. { dēˈmisˈtər }

**demister blanket** [ENG] A section of knitted wire mesh that is placed below the vapor outlet of a vaporizer or an evaporator to separate entrained liquid droplets from the stream of vapor. Also known as demister pad. { dēˈmisˈtər ˌblaŋˈkət }

**demister pad** *See* demister blanket. { dēˈmisˈtər ˌpad }

**demodulator** *See* detector. { dēˈmäjˈəˌladˈər }

**demolition** [CIV ENG] The act or process of tearing down a building or other structure. { ˌdemˈəˈlishˈən }

**demon of Maxwell** [THERMO] Hypothetical creature who controls a trapdoor over a microscopic hole in an adiabatic wall between two vessels filled with gas at the same temperature, so as to supposedly decrease the entropy of the gas as a whole and thus violate the second law of thermodynamics. Also known as Maxwell's demon. { ˈdēˈmən əv ˈmaksˌwel }

**demulsification** [CHEM ENG] Prevention or breaking of liquid-liquid emulsions by chemical, mechanical or electrical demulsifiers. { dəˌməlˈsəˈfəˈkāˈshən }

**demulsifier** [CHEM ENG] A chemical, mechanical, or electrical system that either breaks liquid-liquid emulsions or prevents them from forming. { dēˈməlˈsəˌfīˈər }

**demultiplexer** [ELECTR] A device used to separate two or more signals that were previously combined by a compatible multiplexer and transmitted over a single channel. { dēˌməlˈtəˌplekˈsər }

**Denison sampler** [ENG] A soil sampler consisting of a central nonrotating barrel which is forced into the soil as friction is removed by a rotating external barrel; the bottom can be closed to retain the sample during withdrawal. { ˈdenˈəˈsən ˌsamˈplər }

**De Nora cell** [CHEM ENG] Mercury-cathode cell used for production of chlorine and caustic soda by electrolysis of sodium chloride brine. { dəˈnȯrˈə ˌsel }

**dense-air refrigeration cycle** *See* reverse Brayton cycle. { ¦dens ¦er ri¸frij·ə'rā·shən ¸sī·kəl }

**dense-air system** *See* cold-air machine. { ¦dens 'er ¸sis·təm }

**densify** [ENG] To increase the density of a material such as wood by subjecting it to pressure or impregnating it with another material. { 'den·sə¸fī }

**densimeter** [ENG] An instrument which measures the density or specific gravity of a liquid, gas, or solid. Also known as densitometer; density gage; density indicator; gravitometer. { den 'sim·əd·ər }

**densitometer** [ENG] **1.** An instrument which measures optical density by measuring the intensity of transmitted or reflected light; used to measure photographic density. **2.** *See* densimeter. { ¸den·sə'täm·əd·ər }

**density** [MECH] The mass of a given substance per unit volume. { 'den· səd·ē }

**density bottle** *See* specific-gravity bottle. { 'den·səd·ē ¸bäd·əl }

**density correction** [ENG] **1.** The part of the temperature correction of a mercury barometer which is necessitated by the variation of the density of mercury with temperature. **2.** The correction, applied to the indications of a pressure-tube anemometer or pressure-plate anemometer, which is necessitated by the variation of air density with temperature. { 'den·səd·ē kə'rek·shən }

**density gage** *See* densimeter. { 'den·səd·ē ¸gāj }

**density indicator** *See* densimeter. { 'den·səd·ē ¸in·də¸kād·ər }

**density rule** [ENG] A grading system for lumber based on the width of annual rings. { 'den·səd·ē ¸rül }

**density transmitter** [ENG] An instrument used to record the density of a flowing stream of liquid by measuring the buoyant force on an air-filled chamber immersed in the stream. { 'den·səd·ē tranz'mid·ər }

**dental coupling** [MECH ENG] A type of flexible coupling used to join a steam turbine to a reduction-gear pinion shaft; consists of a short piece of shaft with gear teeth at each end, and mates with internal gears in a flange at the ends of the two shafts to be joined. { 'dent·əl 'kəp·liŋ }

**dental work** *See* cementation. { 'dent·əl ¸wərk }

**deodorizing** [CHEM ENG] A process for removing odor-creating substances from oil or fat, in which the oil or fat is held at high temperatures and low pressure while steam is blown through. { dē'ōd·ə¸rīz·iŋ }

**deoil** [CHEM ENG] To reduce the amount of liquid oil entrained in solid wax. { dē'ȯil }

**departure track** [CIV ENG] A railroad yard track for combining freight cars into outgoing trains. { di'pär·chər ¸trak }

**depentanizer** [CHEM ENG] A fractionating column for removal of pentane and lighter fractions from a hydrocarbon mixture. { də'pent·ən ¸īz·ər }

**deperm** *See* degauss. { dē'pərm }

**dephlegmation** [CHEM ENG] In a distillation operation, the partial condensation of vapor to form a liquid richer in higher boiling constituents than the original vapor. { dē¸fleg'mā·shən }

**dephlegmator** [CHEM ENG] An apparatus used in fractional distillation to cool the vapor mixture, thereby condensing higher-boiling fractions. { dē'fleg¸mād·ər }

**depilation** [ENG] Removal of hair from animal skins in processing leather. { ¸dep·ə'lā·shən }

**depletion** [ELECTR] Reduction of the charge-carrier density in a semiconductor below the normal value for a given temperature and doping level. { də'plē·shən }

**depletion layer** [ELECTR] An electric double layer formed at the surface of contact between a metal and a semiconductor having different work functions, because the mobile carrier charge density is insufficient to neutralize the fixed charge density of donors and acceptors. Also known as barrier layer (deprecated); blocking layer (deprecated); space-charge layer. { də'plē·shən ¸lā·ər }

**depletion-layer capacitance** *See* barrier capacitance. { di'plē·shən ¸lā·ər kə'pas·əd·əns }

**depletion-layer rectification** [ELECTR] Rectification at the junction between dissimilar materials, such as a *pn* junction or a junction between a metal and a semiconductor. Also known as barrier-layer rectification. { də'plē·shən ¸lā·ər ¸rek·tə·fə'kā·shən }

**depletion-layer transistor** [ELECTR] A transistor that relies directly on motion of carriers through depletion layers, such as spacistor. { də'plē·shən ¸lā·ər tran'zis·tər }

**depletion region** [ELECTR] The portion of the channel in a metal oxide field-effect transistor in which there are no charge carriers. { də'plē·shən ¸rē·jən }

**depolarization** [ELEC] The removal or prevention of polarization in a substance (for example, through the use of a depolarizer in an electric cell) or of polarization arising from the field due to the charges induced on the surface of a dielectric when an external field is applied. { dē¸pō·lə·rə'zā·shən }

**deposit gage** [ENG] The general name for instruments used in air pollution studies for determining the amount of material deposited on a given area during a given time. { də'päz·ət ¸gāj }

**depreciation** [IND ENG] Loss of value due to physical deterioration. { di¸prē·shē'ā·shən }

**depressed center car** [ENG] A flat railroad car having a low center section; used to provide adequate tunnel clearance for oversized loads. { di¦prest 'sent·ər ¸kär }

**depression angle** *See* angle of depression. { di 'presh·ən ¸aŋ·gəl }

**depressor** [CHEM ENG] An agent that prevents or retards a chemical reaction or process. { di 'pres·ər }

**depropanization** [CHEM ENG] In processing of petroleum, the removal of propane and sometimes higher fractions. { dē¸prō·pə·nə'zā·shən }

**depropanizer** [CHEM ENG] A fractionating column in a gasoline plant for removal of propane and lighter components. { dē'prō·pə,nīz·ər }

**depth finder** [ENG] A radar or ultrasonic instrument for measuring the depth of the sea. { 'depth ,fīnd·ər }

**depth gage** [DES ENG] An instrument or tool for measuring the depth of depression to a thousandth inch. { 'depth ,gāj }

**depth marker** [ENG] A thin board or other lightweight substance used as a means of identifying the surface of snow or ice which has been covered by a more recent snowfall. { 'depth ,märk·ər }

**depth micrometer** [DES ENG] A micrometer used to measure the depths of holes, slots, and distances of shoulders and projections. { 'depth mī'kräm·əd·ər }

**depth of engagement** [DES ENG] The depth of contact, in a radial direction, between mating threads. { 'depth əv ,en'gāj·mənt }

**depth of thread** [DES ENG] The distance, in a radial direction, from the crest of a screw thread to the base. { 'depth əv 'thred }

**depth sounder** [ENG] An instrument for mechanically measuring the depth of the sea beneath a ship. { 'depth ,saůnd·ər }

**depth-type filtration** [CHEM ENG] Removal of solids by passing the carrier fluid through a mass-filter medium that provides a tortuous path with many entrapments to catch the solids. { 'depth ,tīp fil'trā·shən }

**dequeue** [ENG] To select an item from a queue. { dē'kyü }

**derail** [ENG] **1.** To cause a railroad car or engine to run off the rails. **2.** A device to guide railway cars or engines off the tracks to avoid collision or other accident. { dē'rāl }

**derating** [ELECTR] The reduction of the rating of a device to improve reliability or to permit operation at high ambient temperatures. { dē 'rād·iŋ }

**derivative action** [CONT SYS] Control action in which the speed at which a correction is made depends on how fast the system error is increasing. Also known as derivative compensation; rate action. { də'riv·əd·iv ,ak·shən }

**derivative compensation** *See* derivative action. { də'riv·əd·iv ,käm·pən'sā·shən }

**derivative network** [CONT SYS] A compensating network whose output is proportional to the sum of the input signal and its derivative. Also known as lead network. { də'riv·əd·iv 'net ,wərk }

**derived sound system** [ENG ACOUS] A four-channel sound system that is artificially synthesized from conventional two-channel stereo sound by an adapter, to provide feeds to four loudspeakers for approximating quadraphonic sound. { də'rīvd 'saůnd ,sis·təm }

**derosination** [CHEM ENG] Removing excess resins from wood by saponification with alkaline aqueous solutions or organic solvents. { dē ,räz·ən'ā·shən }

**derrick** [MECH ENG] A hoisting machine consisting usually of a vertical mast, a slanted boom, and associated tackle; may be operated mechanically or by hand. { 'der·ik }

**derrick crane** *See* stiffleg derrick. { 'der·ik ,krān }

**derrick post** *See* king post. { 'der·ik ,pōst }

**desalination** [CHEM ENG] Removal of salt, as from water or soil. Also known as desalting. { dē,sal·ə'nā·shən }

**desalinization** *See* desalination. { dē,sal·ə·nə'zā·shən }

**desalting** [CHEM ENG] **1.** The process of extracting inorganic salts from oil. **2.** *See* desalination. { dē'sȯl·tiŋ }

**desander** [ENG] A centrifuge-type device for removing sand from drilling fluid in order to prevent abrasion damage to pumps. { dē'san·dər }

**descaling** [ENG] Removing scale, usually oxides, from the surface of a metal or the inner surface of a pipe, boiler, or other object. { dē 'skāl·iŋ }

**descending branch** [MECH] That portion of a trajectory which is between the summit and the point where the trajectory terminates, either by impact or air burst, and along which the projectile falls, with altitude constantly decreasing. Also known as descent trajectory. { di'sen·diŋ 'branch }

**descending vertical angle** *See* angle of depression. { di'sen·diŋ ¦vərd·i·kəl 'aŋ·gəl }

**descent trajectory** *See* descending branch. { di 'sent trə'jek·tə·rē }

**describing function** [CONT SYS] A function used to represent a nonlinear transfer function by an approximately equivalent linear transfer function; it is the ratio of the phasor representing the fundamental component of the output of the nonlinearity, determined by Fourier analysis, to the phasor representing a sinusoidal input signal. { di'skrīb·iŋ ,fəŋk·shən }

**desiccator** [CHEM ENG] A closed vessel, usually made of glass and having an airtight lid, used for drying solid chemicals by means of a desiccant. { 'des·ə,kād·ər }

**design engineering** [ENG] A branch of engineering concerned with the creation of systems, devices, and processes useful to and sought by society. { di'zīn ,en·jə'nir·iŋ }

**design factor** [ENG] A safety factor based on the ratio of ultimate load to maximum permissible load that can be safely placed on a structure. { di'zīn ,fak·tər }

**design flood** [CIV ENG] The flood, either observed or synthetic, which is chosen as the basis for the design of a hydraulic structure. { di 'zīn ,fləd }

**design for environment** [SYS ENG] A methodology for the design of products and systems that promotes pollution prevention and resource conservation by including within the design process the systematic consideration of the environmental implications of engineering designs. Abbreviated DFE. { di¦zīn fər in'vī·ərn·mənt }

**design head** [CIV ENG] The planned elevation between the free level of a water supply and

the point of free discharge or the level of free discharge surface. { di'zīn ˌhed }

**design heating load** [ENG] The space heating needs of a building or an enclosed area expressed in terms of the probable maximum requirement. { di'zīn 'hēd·iŋ ˌlōd }

**design load** [DES ENG] The most stressful combination of weight or other forces a building, structure, or mechanical system or device is designed to sustain. { di'zīn ˌlōd }

**design pressure** [CIV ENG] **1.** The force exerted by a body of still water on a dam. **2.** The pressure which the dam can withstand. [DES ENG] The pressure used in the calculation of minimum thickness or design characteristics of a boiler or pressure vessel in recognized code formulas; static head may be added where appropriate for specific parts of the structure. { di'zīn 'presh·ər }

**design speed** [CIV ENG] The highest continuous safe vehicular speed as governed by the design features of a highway. { di'zīn ˌspēd }

**design standards** [DES ENG] Generally accepted uniform procedures, dimensions, materials, or parts that directly affect the design of a product or facility. { di'zīn ˌstan·dərdz }

**design storm** [CIV ENG] A storm whose magnitude, rate, and intensity do not exceed the design load for a storm drainage system or flood protection project. { di'zīn ˌstȯrm }

**design stress** [DES ENG] A permissible maximum stress to which a machine part or structural member may be subjected, which is large enough to prevent failure in case the loads exceed expected values, or other uncertainties turn out unfavorably. { di'zīn ˌstres }

**design thickness** [DES ENG] The sum of required thickness and corrosion allowance utilized for individual parts of a boiler or pressure vessel. { di'zīn ˌthik·nəs }

**desilter** [MECH ENG] Wet, mechanical solids classifier (separator) in which silt particles settle as the carrier liquid is slowly stirred by horizontally revolving rakes; solids are plowed outward and removed at the periphery of the container bowl. { dē'sil·tər }

**desilting basin** [CIV ENG] A space or structure constructed just below a diversion structure of a canal to remove bed, sand, and silt loads. Also known as desilting works. { dē'sil·tiŋ ˌbā·sən }

**desilting works** *See* desilting basin. { dē'sil·tiŋ ˌwərks }

**desired track** *See* course. { də'zīrd 'trak }

**deslimer** [MECH ENG] Apparatus, such as a bowl-type centrifuge, used to remove fine, wet particles (slime) from cement rocks and to size pigments and abrasives. { dē'slīm·ər }

**destearinate** [CHEM ENG] A process of removing from a fatty oil the lower melting point compounds. { dē'stir·əˌnāt }

**destraction** [CHEM ENG] A high-pressure technique for separating high-boiling or nonvolatile material by dissolving it with application of supercritical gases. { di'strak·shən }

**destructive breakdown** [ELECTR] Breakdown of the barrier between the gate and channel of a field-effect transistor, causing failure of the transistor. { di'strək·tiv 'brākˌdaůn }

**destructive testing** [ENG] **1.** Intentional operation of equipment until it fails, to reveal design weaknesses. **2.** A method of testing a material that degrades the sample under investigation. { di'strək·tiv 'test·iŋ }

**desulfurization** [CHEM ENG] The removal of sulfur, as from molten metals or petroleum oil. { dēˌsəl·fə·rə'zā·shən }

**desulfurization unit** [CHEM ENG] A unit in petroleum refining for removal of sulfur compounds or sulfur. { dē·səl·fə·rə'zā·shən ˌyü·nət }

**detachable bit** [ENG] An all-steel drill bit that can be removed from the drill steel, and can be resharpened. Also known as knock-off bit; rip bit. { di'tach·ə·bəl 'bit }

**detailing** *See* screening. { 'dēˌtāl·iŋ }

**det drill** *See* fusion-piercing drill. { 'det ˌdril }

**detector bar** [CIV ENG] A device that keeps a railroad switch locked while a train is passing over it. { di'tek·tər ˌbär }

**detector car** [ENG] A railroad car used to detect flaws in rails. { di'tek·tər ˌkär }

**detent** [MECH ENG] A catch or lever in a mechanism which initiates or locks movement of a part, especially in escapement mechanisms. { 'dē ˌtent }

**detention basin** [CIV ENG] A reservoir without control gates for storing water over brief periods of time until the stream has the capacity for ordinary flow plus released water; used for flood regulation. { di'ten·chən ˌbā·sən }

**deterioration** [ENG] Decline in the quality of equipment or structures over a period of time due to the chemical or physical action of the environment. { diˌtir·ē·ə'rā·shən }

**determinant** [CONT SYS] The product of the partial return differences associated with the nodes of a signal-flow graph. { də'tər·mə·nənt }

**determinate structure** [MECH] A structure in which the equations of statics alone are sufficient to determine the stresses and reactions. { də'tər·mə·nət 'strək·chər }

**determinism** *See* causality. { də'tər·məˌniz·əm }

**detonating fuse** [ENG] A device consisting of a core of high explosive within a waterproof textile covering and set off by an electrical blasting cap fired from a distance by means of a fuse line; used in large, deep boreholes. { 'detˌən·ˌād·iŋ 'fyüz }

**detonating rate** [MECH] The velocity at which the explosion wave passes through a cylindrical charge. { 'det·ənˌād·iŋ ˌrāt }

**detonating relay** [ENG] A device used in conjunction with the detonating fuse to avoid short-delay blasting. { 'det·ənˌād·iŋ ˌrēˌlā }

**detonation** [MECH ENG] Spontaneous combustion of the compressed charge after passage of the spark in an internal combustion engine; it is accompanied by knock. { ˌdet·ən'ā·shən }

**detonation front** [ENG] The reaction zone of a detonation. { ˌdet·ən'ā·shən ˌfrənt }

**detonator** [ENG] A device, such as a blasting cap, employing a sensitive primary explosive to detonate a high-explosive charge. { 'det·ən ˌād·ər }

**detonator safety** [ENG] A fuse has detonator safety or is detonator safe when the functioning of the detonator cannot initiate subsequent explosive train components. { 'det·ənˌād·ər ˌsāf·tē }

**detonics** [ENG] The study of detonating and explosives performance. { de'tän·iks }

**detritus tank** [CIV ENG] A tank in which heavy suspended matter is removed in sewage treatment. { də'trīd·əs ˌtaŋk }

**Detroit rocking furnace** [ENG] An indirect arc type of rocking furnace having graphite electrodes entering horizontally from opposite ends. { də'trȯit 'räk·iŋ 'fər·nəs }

**development** [ENG] The exploratory work required to determine the best production techniques to bring a new process or piece of equipment to the production stage. { də'vel·əp·mənt }

**deviation** [ENG] The difference between the actual value of a controlled variable and the desired value corresponding to the set point. { ˌdēv·ē'ā·shən }

**deviation factor** *See* compressibility factor. { ˌdēv·ē'ā·shən ˌfak·tər }

**deviatonic stress** [MECH] The portion of the total stress that differs from an isostatic hydrostatic pressure; it is equal to the difference between the total stress and the spherical stress. { ˌdev·ē·ə'tän·ik 'stres }

**device** [ELECTR] An electronic element that cannot be divided without destroying its stated function; commonly applied to active elements such as transistors and transducers. [ENG] A mechanism, tool, or other piece of equipment designed for specific uses. { di'vīs }

**devil** *See* devil float. { 'dev·əl }

**devil float** [ENG] A hand float containing nails projecting at each corner and used to roughen the surface of plaster to provide a key for the next coat. Also known as devil; nail coat. { 'dev·əl ˌflōt }

**devil's pitchfork** [DES ENG] A tool with flexible prongs used in recovery of a bit, underreamer, cutters, or such lost during drilling. { 'de·vəlz 'pichˌfȯrk }

**devolatilize** [CHEM ENG] To remove volatile components from a material. { ˌdē'väl·ə·tə,līz }

**Dewar calorimeter** [ENG] **1.** Any calorimeter in which the sample is placed inside a Dewar flask to minimize heat losses. **2.** A calorimeter for determining the mean specific heat capacity of a solid between the boiling point of a cryogenic liquid, such as liquid oxygen, and room temperature, by measuring the amount of the liquid that evaporates when the specimen is dropped into the liquid. { ˌdü·ər ˌkal·ə'rim·əd·ər }

**dewaterer** [MECH ENG] Wet-type mechanical classifier (solids separator) in which solids settle out of the carrier liquid and are concentrated for recovery. { dē'wȯd·ər·ər }

**dewatering** [ENG] **1.** Removal of water from solid material by wet classification, centrifugation, filtration, or similar solid-liquid separation techniques. **2.** Removing or draining water from an enclosure or a structure, such as a riverbed, caisson, or mine shaft, by pumping or evaporation. { dē'wȯd·ər·iŋ }

**dewaxing** [CHEM ENG] Removing wax from a material or object; a process used to separate solid hydrocarbons from petroleum. { dē 'waks·iŋ }

**dew cell** [ENG] An instrument used to determine the dew point, consisting of a pair of spaced, bare electrical wires wound spirally around an insulator and covered with a wicking wetted with a water solution containing an excess of lithium chloride; an electrical potential applied to the wires causes a flow of current through the lithium chloride solution, which raises the temperature of the solution until its vapor pressure is in equilibrium with that of the ambient air. { 'dü ˌsel }

**dew-point boundary** [CHEM ENG] On a phase diagram for a gas-condensate reservoir (pressure versus temperature with constant gas-oil ratios), the area along which the gas-oil ratio approaches zero. { 'dü ˌpȯint ˌbau̇n·drē }

**dew-point composition** [CHEM ENG] The water vapor-air composition at saturation, that is, at the temperature at which water exerts a vapor pressure equal to the partial pressure of water vapor in the air-water mixture. { 'dü ˌpȯint ˌkäm·pə'zish·ən }

**dew-point curve** [CHEM ENG] On a PVT phase diagram, the line that separates the two-phase (gas-liquid) region from the one-phase (gas) region, and indicates the point at a given gas temperature or pressure at which the first dew or liquid phase occurs. { 'dü ˌpȯint ˌkərv }

**dew-point depression** [CHEM ENG] Reduction of the liquid-vapor dew point of a gas by removal of a portion of the liquid (such as water) from the gas (such as air). { 'dü ˌpȯint di'presh·ən }

**dew-point hygrometer** [CHEM ENG] An instrument for determining the dew point by measuring the temperature at which vapor being cooled in a silver vessel begins to condense. Also known as cold-spot hygrometer. { 'dü ˌpȯint hī'gräm·əd·ər }

**dew-point pressure** [CHEM ENG] The gas pressure at which a system is at its dew point, that is, the conditions of gas temperature and pressure at which the first dew or liquid phase occurs. { 'dü ˌpȯint ˌpresh·ər }

**dew-point recorder** [ENG] An instrument which gives a continuous recording of the dew point; it alternately cools and heats the target and uses a photocell to observe and record the temperature at which the condensate appears and disappears. Also known as mechanized dew-point meter. { 'dü ˌpȯint ri'kȯrd·ər }

**DFE** *See* design for environment.

**diabatic** [THERMO] A thermodynamic change of state of a system in which there is a transfer of

heat across the boundaries of the system. Also known as nonadiabatic. { ¦dī·ə¦bad·ik }

**diagnostics** [ENG] Information on what tests a device has failed and how they were failed; used to aid in troubleshooting. { ˌdī·əg'näs·tiks }

**diagonal** [CIV ENG] A sloping structural member, under compression or tension or both, of a truss or bracing system. { dī'ag·ən·əl }

**diagonal bond** [CIV ENG] A masonry bond with diagonal headers. { dī'ag·ən·əl 'bänd }

**diagonal pitch** [ENG] In rows of staggered rivets, the distance between the center of a rivet in one row to the center of the adjacent rivet in the next row. { dī'ag·ən·əl 'pich }

**diagonal pliers** [DES ENG] Pliers with cutting jaws at an angle to the handles to permit cutting off wires close to terminals. { dī'ag·ən·əl 'plī·ərz }

**diagonal stay** [MECH ENG] A diagonal member between the tube sheet and shell in a fire-tube boiler. { dī'ag·ən·əl 'stā }

**diagram factor** [MECH ENG] The ratio of the actual mean effective pressure, as determined by an indicator card, to the map of the ideal cycle for a steam engine. { 'dī·əˌgram ˌfak·tər }

**dial** [DES ENG] A separate scale or other device for indicating the value to which a control is set. { dīl }

**DIAL** *See* differential absorption lidar. { 'dīˌal }

**dial cable** [DES ENG] Braided cord or flexible wire cable used to make a pointer move over a dial when a separate control knob is rotated, or used to couple two shafts together mechanically. { dīl ˌkā·bəl }

**dial cord** [DES ENG] A braided cotton, silk, or glass fiber cord used as a dial cable. { 'dīl ˌkȯrd }

**dial feed** [MECH ENG] A device that rotates workpieces into position successively so they can be acted on by a machine. { 'dīl ˌfēd }

**dial indicator** [DES ENG] Meter or gage with a calibrated circular face and a pivoted pointer to give readings. { 'dīl ˌin·dəˌkād·ər }

**dialing step** [ENG] The minimum amount, expressed in units of mass, that can be added or removed on a balance fitted with dial weights. { 'dīl·iŋ ˌstep }

**dial press** [MECH ENG] A punch press with dial feed. { 'dīl ˌpres }

**dial weight** [ENG] A weight piece that acts on the invariable arm of an analytical balance and is added or removed from outside the case by a weight-lifting dialing system. { 'dīl ˌwāt }

**dialyzer** [CHEM ENG] **1.** The semipermeable membrane used for dialyzing liquid. **2.** The container used in dialysis; it is separated into compartments by membranes. { 'dī·əˌlīz·ər }

**diameter group** [MECH ENG] A dimensionless group, used in the study of flow machines such as turbines and pumps, equal to the fourth root of pressure number 2 divided by the square root of the delivery number. { dī'am·əd·ər ˌgrüp }

**diameter tape** [ENG] A tape for measuring the diameter of trees; when wrapped around the circumference of a tree, it reads the diameter directly. { dī'am·əd·ər ˌtāp }

**diametral pitch** [DES ENG] A gear tooth design factor expressed as the ratio of the number of teeth to the diameter of the pitch circle measured in inches. { dī'am·ə·trəl 'pich }

**diamond anvil** [ENG] A brilliant-cut diamond of extremely high quality that is modified to have 16 sides and has the culet cut off to create either a flat tip or a flat surface followed by a bevel of 5–10°. { 'dī·mənd 'an·vəl }

**diamond-anvil cell** [ENG] A device for generating an extremely high pressure in a sample that is sandwiched between two diamond anvils to which forces are applied. { ¦dī·mənd ¦an·vəl ˌsel }

**diamond bit** [DES ENG] A rotary drilling bit crowned with bort-type diamonds, used for rock boring. Also known as bort bit. { 'dīˌmənd ˌbit }

**diamond boring** [ENG] Boring with a diamond tool. { 'dī·mənd ˌbȯr·iŋ }

**diamond chisel** [DES ENG] A chisel having a V-shaped or diamond-shaped cutting edge. { 'dī·mənd ˌchiz·əl }

**diamond circuit** [ELECTR] A gate circuit that provides isolation between input and output terminals in its off state, by operating transistors in their cutoff region; in the on state the output voltage follows the input voltage as required for gating both analog and digital signals, while the transistors provide current gain to supply output current on demand. { 'dī·mənd ˌsər·kət }

**diamond coring** [ENG] Obtaining core samples of rock by using a diamond drill. { 'dī·mənd 'kȯr·iŋ }

**diamond count** [DES ENG] The number of diamonds set in a diamond crown bit. { 'dī·mənd ˌkaůnt }

**diamond crossing** [CIV ENG] An oblique railroad crossing that forms a diamond shape between the tracks. { 'dī·mənd ˌkrȯs·iŋ }

**diamond crown** [DES ENG] The cutting bit used in diamond drilling; it consists of a steel shell set with black diamonds on the face and cutting edges. { 'dī·mənd ˌkraůn }

**diamond drill** [DES ENG] A drilling machine with a hollow, diamond-set bit for boring rock and yielding continuous and columnar rock samples. { 'dī·mənd ˌdril }

**Diamond-Hinman radiosonde** [ENG] A variable audio-modulated radiosonde used by United States weather services; the carrier signal from the radiosonde is modulated by audio signals determined by the electrical resistance of the humidity- and temperature-transducing elements and by fixed reference resistors; the modulating signals are transmitted in a fixed sequence at predetermined pressure levels by means of a baroswitch. { ¦dī·mənd ¦hin·mən 'rād·ē·ōˌsänd }

**diamond indenter** [ENG] An instrument that measures hardness by indenting a material with a diamond point. { 'dī·mənd in'den·tər }

**diamond matrix** [DES ENG] The metal or alloy in which diamonds are set in a drill crown. { 'dī·mənd 'mā·triks }

**diamond orientation** [DES ENG] The set of a diamond in a cutting tool so that the crystal face will be in contact with the material being cut. { 'dī·mənd ˌȯr·ē·ən'tā·shən }

**diamond-particle bit** [DES ENG] A diamond bit set with small fragments of diamonds. { 'dī·mənd¦pärd·ə·kəl ˌbit }

**diamond pattern** [DES ENG] The arrangement of diamonds set in a diamond crown. { 'dī·mənd ˌpad·ərn }

**diamond point** [DES ENG] A cutting tool with a diamond tip. { 'dī·mənd ˌpȯint }

**diamond-point bit** *See* mud auger. { 'dī·mənd ¦pȯint ˌbit }

**diamond reamer** [DES ENG] A diamond-inset pipe behind, and larger than, the drill bit and core barrel that is used for enlarging boreholes. { 'dī·mənd ˌrēm·ər }

**diamond saw** [DES ENG] A circular, band, or frame saw inset with diamonds or diamond dust for cutting sections of rock and other brittle substances. { 'dī·mənd ˌsȯ }

**diamond setter** [ENG] A person skilled at setting diamonds by hand in a diamond bit or a bit mold. { 'dī·mənd ˌsed·ər }

**diamond size** [ENG] In the bit-setting and diamond-drilling industries, the number of equal-size diamonds having a total weight of 1 carat; a 10-diamond size means 10 stones weighing 1 carat. { 'dī·mənd ˌsīz }

**diamond stylus** [ENG ACOUS] A stylus having a ground diamond as its point. { 'dī·mənd 'stī·ləs }

**diamond tool** [DES ENG] **1.** Any tool using a diamond-set bit to drill a borehole. **2.** A diamond shaped to the contour of a single-pointed cutting tool, used for precision machining. { 'dī·mənd ˌtül }

**diamond wheel** [DES ENG] A grinding wheel in which synthetic diamond dust is bonded as the abrasive to cut very hard materials such as sintered carbide or quartz. { 'dī·mənd ˌwēl }

**diaphragm** [ENG] A thin sheet placed between parallel parts of a member of structural steel to increase its rigidity. [ENG ACOUS] A thin, flexible sheet that can be moved by sound waves, as in a microphone, or can produce sound waves when moved, as in a loudspeaker. { 'dī·əˌfram }

**diaphragm cell** [CHEM ENG] An electrolytic cell used to produce sodium hydroxide and chlorine from sodium chloride brine; porous diaphragm separates the anode and cathode compartments. { 'dī·əˌfram ˌsel }

**diaphragm compressor** [MECH ENG] Device for compression of small volumes of a gas by means of a reciprocally moving diaphragm, in place of pistons or rotors. { 'dī·əˌfram kəm'pres·ər }

**diaphragm gage** [ENG] Pressure- or vacuum-sensing instrument in which pressures act against opposite sides of an enclosed diaphragm that consequently moves in relation to the difference between the two pressures, actuating a mechanical indicator or electric-electronic signal. { 'dī·əˌfram ˌgāj }

**diaphragm horn** [ENG ACOUS] A horn that produces sound by means of a diaphragm vibrated by compressed air, steam, or electricity. { 'dī·əˌfram ˌhȯrn }

**diaphragm meter** [ENG] A flow meter which uses the movement of a diaphragm in the measurement of a difference in pressure created by the flow, such as a force-balance-type or a deflection-type meter. { 'dī·əˌfram ˌmēd·ər }

**diaphragm pump** [MECH ENG] A metering pump which uses a diaphragm to isolate the operating parts from pumped liquid in a mechanically actuated diaphragm pump, or from hydraulic fluid in a hydraulically actuated diaphragm pump. { 'dī·əˌfram ˌpəmp }

**diaphragm valve** [ENG] A fluid valve in which the open-close element is a flexible diaphragm; used for fluids containing suspended solids, but limited to low-pressure systems. { 'dī·əˌfram ˌvalv }

**diathermous envelope** [THERMO] A surface enclosing a thermodynamic system in equilibrium that is not an adiabatic envelope; intuitively, this means that heat can flow through the surface. { ¦dī·ə¦thər·məs 'en·vəˌlōp }

**dice** *See* die. { dīs }

**dicing** [ELECTR] Sawing or otherwise machining a semiconductor wafer into small squares, or dice, from which transistors and diodes can be fabricated. { 'dīs·iŋ }

**dicing cutter** [MECH ENG] A cutting mill for sheet material; sheet is first slit into horizontal strands by blades, then fed against a rotating knife for dicing. { 'dīs·iŋ ˌkəd·ər }

**die** [DES ENG] A tool or mold used to impart shapes to, or to form impressions on, materials such as metals and ceramics. [ELECTR] The tiny, sawed or otherwise machined piece of semiconductor material used in the construction of a transistor, diode, or other semiconductor device; plural is dice. { dī }

**die adapter** [ENG] That part of an extrusion die which holds the die block. { 'dī ə'dap·tər }

**die blade** [ENG] A deformable member attached to a die body which determines the slot opening and is adjusted to produce uniform thickness across plastic film or sheet. { 'dī ˌblād }

**die block** [ENG] **1.** A tool-steel block which is bolted to the bed of a punch press and into which the desired impressions are machined. **2.** The part of an extrusion mold die holding the forming bushing and core. { 'dī ˌbläk }

**die body** [ENG] The stationary part of an extrusion die, used to separate and form material. { 'dī ˌbäd·ē }

**die bushing** *See* button die. { 'dī ˌbůsh·iŋ }

**die casting** [ENG] A metal casting process in which molten metal is forced under pressure into a permanent mold; the two types are hot-chamber and cold-chamber. { 'dī ˌkast·iŋ }

**die chaser** [ENG] One of the cutting parts of a composite die or a die used to cut threads. { 'dī ˌchās·ər }

**Dieckman condensation** [CHEM ENG] Any condensation of esters of dicarboxylic acids which produce cyclic β-ketoesters. { 'dēk·mən ˌkän ˌden'sā·shən }

**die clearance** [ENG] The distance between die members that meet during an operation. { 'dī ˌklir·ənts }

**die cushion** [ENG] A device located in or under a die block or bolster to provide additional pressure or motion for stamping. { 'dī ˌkùsh·ən }

**die cutting** *See* blanking. { 'dī ˌkəd·iŋ }

**die gap** [ENG] In plastics and metals forming, the distance between the two opposing metal faces forming the opening of a die. { 'dī ˌgap }

**die holder** [ENG] A plate or block on which the die block is mounted; it is fastened to the bolster or press bed. { 'dī ˌhōld·ər }

**dieing machine** [MECH ENG] A vertical press with the slide activated by pull rods attached to the drive mechanism below the bed of the press. { 'dī·iŋ mə'shēn }

**die insert** [ENG] A removable part or the liner of a die body or punch. { 'dī ˌin·sərt }

**dielectric breakdown** [ELECTR] Breakdown which occurs in an alkali halide crystal at field strengths on the order of $10^6$ volts per centimeter. { ˌdī·ə'lek·trik 'brākˌdaun }

**dielectric constant** [ELEC] **1.** For an isotropic medium, the ratio of the capacitance of a capacitor filled with a given dielectric to that of the same capacitor having only a vacuum as dielectric. **2.** More generally, $1 + \gamma\chi$, where $\gamma$ is $4\pi$ in Gaussian and cgs electrostatic units or 1 in rationalized mks units, and $\chi$ is the electric susceptibility tensor. Also known as relative dielectric constant; relative permittivity; specific inductive capacity (SIC). { ˌdī·ə'lek·trik 'kän·stənt }

**dielectric curing** [ENG] A process for curing a thermosetting resin by subjecting it to a high-frequency electric charge. { ˌdī·ə'lek·trik 'kyůr·iŋ }

**dielectric fatigue** [ELECTR] The property of some dielectrics in which resistance to breakdown decreases after a voltage has been applied for a considerable time. { ˌdī·ə'lek·trik fə'tēg }

**dielectric field** [ELEC] The average total electric field acting upon a molecule or group of molecules inside a dielectric. Also known as internal dielectric field. { ˌdī·ə'lek·trik 'fēld }

**dielectric film** [ELEC] A film possessing dielectric properties; used as the central layer of a capacitor. { ˌdī·ə'lek·trik 'film }

**dielectric leakage** [ELEC] A very small steady current that flows through a dielectric subject to a steady electric field. { ˌdī·ə'lek·trik 'lēk·ij }

**dielectric loss factor** [ELEC] Product of the dielectric constant of a material and the tangent of its dielectric loss angle. { ˌdī·əˌlek·trik ˌlos ˌfak·tər }

**dielectric shielding** [ELEC] The reduction of an electric field in some region by interposing a dielectric substance, such as polystyrene, glass, or mica. { ˌdī·ə'lek·trik 'shēld·iŋ }

**dielectric strength** [ELEC] The maximum electrical potential gradient that a material can withstand without rupture; usually specified in volts per millimeter of thickness. Also known as electric strength. { ˌdī·ə'lek·trik 'streŋkth }

**dielectric susceptibility** *See* electric susceptibility. { ˌdī·ə'lek·trik səˌsep·tə'bil·əd·ē }

**die lines** [ENG] Lines or markings on the surface of a drawn, formed, or extruded product due to imperfections in the surface of the die. { 'dī ˌlīnz }

**diesel cycle** [THERMO] An internal combustion engine cycle in which the heat of compression ignites the fuel. { 'dē·zəl' ˌsī·kəl }

**diesel electric locomotive** [MECH ENG] A locomotive with a diesel engine driving an electric generator which supplies electric power to traction motors for propelling the vehicle. Also known as diesel locomotive. { ¦dē·zəl əˌlek·trik ˌlō·kə'mōd·iv }

**diesel electric power generation** [MECH ENG] Electric power generation in which the generator is driven by a diesel engine. { ¦dē·zəl əˌlek·trik 'paů·ər ˌjen·əˌrā·shən }

**diesel engine** [MECH ENG] An internal combustion engine operating on a thermodynamic cycle in which the ratio of compression of the air charge is sufficiently high to ignite the fuel subsequently injected into the combustion chamber. Also known as compression-ignition engine. { ¦dē·zəl 'en·jən }

**diesel index** [CHEM ENG] An empirical expression for the correlation between the aniline number of a diesel fuel and its ignitability. [MECH ENG] Diesel fuel rating based on ignition qualities; high-quality fuel has a high index number. { 'dē·zəl ˌinˌdeks }

**dieseling** [MECH ENG] **1.** Explosions of mixtures of air and lubricating oil in the compression chambers or in other parts of the air system of a compressor. **2.** Continuation of running by a gasoline spark-ignition engine after the ignition is turned off. Also known as run-on. { 'dē·zəl·iŋ }

**diesel knock** [MECH ENG] A combustion knock caused when the delayed period of ignition is long so that a large quantity of atomized fuel accumulates in the combustion chamber; when combustion occurs, the sudden high pressure resulting from the accumulated fuel causes diesel knock. { 'dē·zəl ˌnäk }

**diesel locomotive** *See* diesel electric locomotive. { 'dē·zəl ˌlō·kə'mōd·iv }

**diesel rig** [MECH ENG] Any diesel engine apparatus or machinery. { 'dē·zəl ˌrig }

**die set** [ENG] A tool or tool holder consisting of a die base for the attachment of a die and a punch plate for the attachment of a punch. { 'dī ˌset }

**die shoe** [MECH ENG] A block placed beneath the lower part of a die upon which the die holder is mounted; spreads the impact over the die bed, thereby reducing wear. { 'dī ˌshü }

**diesinking** [ENG] Making a depressed pattern in a die by forming or machining. { 'dī,siŋk·iŋ }

**die slide** [MECH ENG] A device in which the lower die of a power press is mounted; it slides in and out of the press for easy access and safety in feeding the parts. { 'dī ,slīd }

**die swell ratio** [ENG] The ratio of the outer parison diameter (or parison thickness) to the outer diameter of the die (or die gap). { 'dī ,swel ,rā·shō }

**Dieterici equation of state** [THERMO] An empirical equation of state for gases, $pe^{a/RT}(v - b) = RT$, where $p$ is the pressure, T is the absolute temperature, $v$ is the molar volume, R is the gas constant, and $a$ and $b$ are constants characteristic of the substance under consideration. { dē·də'rē·chē i'kwā·zhen əv 'stāt }

**difference channel** [ENG ACOUS] An audio channel that handles the difference between the signals in the left and right channels of a stereophonic sound system. { 'dif·rəns ,chan·əl }

**differential** [CONT SYS] The difference between levels for turn-on and turn-off operation in a control system. [MECH ENG] Any arrangement of gears forming an epicyclic train in which the angular speed of one shaft is proportional to the sum or difference of the angular speeds of two other gears which lie on the same axis; allows one shaft to revolve faster than the other, the speed of the main driving member being equal to the algebraic mean of the speeds of the two shafts. Also known as differential gear. { ,dif·ə'ren·chəl }

**differential absorption lidar** [ENG] A technique for the remote sensing of atmospheric gases, in which lasers transmit pulses of radiation into the atmosphere at two wavelengths, one of which is absorbed by the gas to be measured and one is not, and the difference between the return signals from atmospheric backscattering on the absorbed and nonabsorbed wavelengths is used as a direct measure of the concentration of the absorbing species. Abbreviated DIAL. { ,dif·ə'ren·chəl əb'sȯrp·shən 'līˌdär }

**differential air thermometer** [ENG] A device for detecting radiant heat, consisting of a U-tube manometer with a closed bulb at each end, one clear and the other blackened. { ,dif·ə'ren·chəl 'er thər'mäm·əd·ər }

**differential brake** [MECH ENG] A brake in which operation depends on a difference between two motions. { ,dif·ə'ren·chəl 'brāk }

**differential calorimetry** [THERMO] Technique for measurement of and comparison (differential) of process heats (reaction, absorption, hydrolysis, and so on) for a specimen and a reference material. { ,dif·ə'ren·chəl ,kal·ə'rim·ə·trē }

**differential chemical reactor** [CHEM ENG] A flow reactor operated at constant temperature and very low concentrations (resulting from very short residence times), with product and reactant concentrations essentially constant at the levels in the feed. { ,dif·ə'ren·chəl 'kem·i·kəl rē'ak·tər }

**differential effects** [MECH] The effects upon the elements of the trajectory due to variations from standard conditions. { ,dif·ə'ren·chəl i'feks }

**differential extraction** [CHEM ENG] Theoretical limiting case of crosscurrent extraction in a single vessel where feed is continuously extracted with infinitesimal amounts of fresh solvent; true differential extraction cannot be achieved. { ,dif·ə'ren·chəl ik'strak·shən }

**differential frequency meter** [ENG] A circuit that converts the absolute frequency difference between two input signals to a linearly proportional direct-current output voltage that can be used to drive a meter, recorder, oscilloscope, or other device. { ,dif·ə'ren·chəl 'frē·kwən·sē ,mēd·ər }

**differential game** [CONT SYS] A two-sided optimal control problem. { ,dif·ə'ren·chəl 'gām }

**differential gap controller** [CONT SYS] A two-position (on-off) controller that actuates when the manipulated variable reaches the high or low value of its range (differential gap). { ,dif·ə'ren·chəl 'gap kənˌtrōl·ər }

**differential gear** *See* differential. { ,dif·ə'ren·chəl 'gir }

**differential heat of solution** [THERMO] The partial derivative of the total heat of solution with respect to the molal concentration of one component of the solution, when the concentration of the other component or components, the pressure, and the temperature are held constant. { ,dif·ə'ren·chəl 'hēt əv sə'lü·shən }

**differential indexing** [MECH ENG] A method of subdividing a circle based on the difference between movements of the index plate and index crank of a dividing engine. { ,dif·ə'ren·chəl 'in ,deks·iŋ }

**differential instrument** [ENG] Galvanometer or other measuring instrument having two circuits or coils, usually identical, through which currents flow in opposite directions; the difference or differential effect of these currents actuates the indicating pointer. { ,dif·ə'ren·chəl 'in·strə·mənt }

**differential leak detector** [ENG] A leak detector consisting of two tubes and a trap which directs the tracer gas from the system into the desired tube. { ,dif·ə'ren·chəl 'lēk di'tek·tər }

**differential leveling** [ENG] A surveying process in which a horizontal line of sight of known elevation is intercepted by a graduated standard, or rod, held vertically on the point being checked. { ,dif·ə'ren·chəl 'lev·əl·iŋ }

**differential manometer** [ENG] An instrument in which the difference in pressure between two sources is determined from the vertical distance between the surfaces of a liquid in two legs of an erect or inverted U-shaped tube when each of the legs is connected to one of the sources. { ,dif·ə'ren·chəl mə'näm·əd·ər }

**differential microphone** *See* double-button microphone. { ,dif·ə'ren·chəl 'mī·krəˌfōn }

**differential motion** [MECH ENG] A mechanism in which the follower has two driving elements; the net motion of the follower is the difference

between the motions that would result from either driver acting alone. { ˌdif·ə'ren·chəl 'mō·shən }

**differential piece-rate system** [IND ENG] A wage plan based on a standard task time whereby the worker receives increased or decreased piece rates as his or her production varies from that expected for the standard time. Also known as accelerating incentive. { ˌdif·ə'ren·chəl 'pēs ˌrāt ˌsis·təm }

**differential-pressure fuel valve** [MECH ENG] A needle or spindle normally closed, with seats at the back side of the valve orifice. { ˌdif·ə¦ren·chəl ¦presh·ər 'fyül ˌvalv }

**differential-pressure gage** [ENG] Apparatus to measure pressure differences between two points in a system; it can be a pressured liquid column balanced by a pressured liquid reservoir, a formed metallic pressure element with opposing force, or an electrical-electronic gage (such as strain, thermal-conductivity, or ionization). { ˌdif·ə¦ren·chəl 'presh·ər ˌgāj }

**differential process** [CHEM ENG] A process in which a system is caused to move through a bubble point and as a result to form two phases, the minor phase being removed from further contact with the major phase; thus the system continuously changes in quantity and composition. { ˌdif·ə¦ren·chəl 'präs·əs }

**differential-producing primary device** [ENG] An instrument that modifies the flow pattern of a fluid passing through a pipe, duct, or open channel, and thereby produces a difference in pressure between two points, which can then be measured to determine the rate of flow. { dif·ə'ren·chəl prəˌdüs·iŋ ¦prīˌmer·ē di'vīs }

**differential pulley** [MECH ENG] A tackle in which an endless cable passes through a movable lower pulley, which carries the load, and two fixed coaxial upper pulleys having different diameters; yields a high mechanical advantage. { ˌdif·ə'ren·chəl 'pül·ē }

**differential scanning calorimeter** [CHEM ENG] An instrument for studying overall chemical reactions by measuring the associated exothermic and endothermic reactions that occur over a specified temperature cycle. { ˌdif·ə¦ren·chəl ¦skan·iŋ ˌkal·ə'rim·əd·ər }

**differential scatter** [ENG] A technique for the remote sensing of atmospheric particles in which the ackscattering from laser beams at a number of infrared wavelengths is measured and correlated with scattering signatures that are uniquely related to particle composition. Abbreviated DISC. { ˌdif·ə'ren·chəl 'skad·ər }

**differential screw** [MECH ENG] A type of compound screw which produces a motion equal to the difference in motion between the two component screws. { ˌdif·ə'ren·chəl 'skrü }

**differential separation** [CHEM ENG] Release of gas (vapor) from liquids by a reduction in pressure that allows the vapor to come out of the solution, so that the vapor can be removed from the system; differs from flash separation, in which the vapor and liquid are kept in contact following pressure reduction. { ˌdif·ə'ren·chəl ˌsep·ə'rā·shən }

**differential steam calorimeter** [ENG] An instrument for measuring small specific-heat capacities, such as those of gases, in which the amount of steam condensing on a body containing the substance whose heat capacity is to be measured is compared with the amount condensing on a similar body which is evacuated or contains a substance of known heat capacity. { ˌdif·ə'ren·chəl 'stēm kal·ə'rim·əd·ər }

**differential thermal analysis** [THERMO] A method of determining the temperature at which thermal reactions occur in a material undergoing continuous heating to elevated temperatures; also involves a determination of the nature and intensity of such reactions. { ˌdif·ə'ren·chəl 'thər·məl ə'nal·ə·səs }

**differential thermogravimetric analysis** [THERMO] Thermal analysis in which the rate of material weight change upon heating versus temperature is plotted; used to simplify reading of weight-versus-temperature thermogram peaks that occur close together. { ˌdif·ə'ren·chəl ¦thər·mōˌgrav·ə¦me·trik ə'nal·ə·səs }

**differential thermometer** *See* bimetallic thermometer. { ˌdif·ə'ren·chəl thər'mäm·əd·ər }

**differential timing** [IND ENG] A time-study technique in which the time value of an element of extremely short duration is determined by various calculations involving cycle values that first include and then exclude the element under consideration. { ˌdif·ə'ren·chəl 'tīm·iŋ }

**differential windlass** [MECH ENG] A windlass in which the barrel has two sections, each having a different diameter; the rope winds around one section, passes through a pulley (which carries the load), then winds around the other section of the barrel. { ˌdif·ə'ren·chəl 'wind·ləs }

**diffuser** [ENG] A duct, chamber, or section in which a high-velocity, low-pressure stream of fluid (usually air) is converted into a high-velocity, high-pressure flow { də'fyüz·er }

**diffusion** [ELECTR] A method of producing a junction by difusing an impurity metal into a semiconductor at a high temperature. [MECH ENG] The conversion of air velocity into static pressure in the diffuser casing of a centrifugal fan, resulting from increases in the radius of the air spin and in area. { də'fyü·zhən }

**diffusion barrier** [CHEM ENG] Porous barrier through which gaseous mixtures are passed for enrichment of the lighter-molecular-weight constituent of the diffusate; used as a many-stage cascade system for the recovery of $^{235}UF_6$ isotopes from a $^{238}UF_6$ stream. { də'fyü·zhən ˌbar·ē·ər }

**diffusion hygrometer** [ENG] A hygrometer based upon the diffusion of water vapor through a porous membrane; essentially, it consists of a closed chamber having porous walls and containing a hygroscopic compound, whose absorption of water vapor causes a pressure drop within the chamber that is measured by a manometer. { də'fyü·zhən hī'gräm·əd·ər }

**diffusion pump** [ENG] A vacuum pump in which a stream of heavy molecules, such as mercury vapor, carries gas molecules out of the volume being evacuated; also used for separating isotopes according to weight, the lighter molecules being pumped preferentially by the vapor stream. { dəˈfyü·zhən ˌpəmp }

**diffusiophoresis** [CHEM ENG] A process in a scrubber whereby water vapor moving toward the cold water surface carries particulates with it. { dəˌfyü·zē·ō·fəˈrē·səs }

**diffusivity** [THERMO] The quantity of heat passing normally through a unit area per unit time divided by the product of specific heat, density, and temperature gradient. Also known as thermal diffusivity; thermometric conductivity. { difˌyüˈziv·əd·ē }

**digested sludge** [CIV ENG] Sludge or thickened mixture of sewage solids with water that has been decomposed by anaerobic bacteria. { dəˈjes·təd ˈsləj }

**digester** [CHEM ENG] A vessel used to produce cellulose pulp from wood chips by cooking under pressure. [CIV ENG] A sludge-digestion tank containing a system of hot water or steam pipes for heating the sludge. { dəˈjes·tər }

**digestion** [CHEM ENG] **1.** Preferential dissolving of mineral constituents in concentrations of ore. **2.** Liquefaction of organic waste materials by action of microbes. **3.** Separation of fabric from tires by the use of hot sodium hydroxide. **4.** Removing lignin from wood in manufacture of chemical cellulose paper pulp. [CIV ENG] The process of sewage treatment by the anaerobic decomposition of organic matter. { dəˈjes·chən }

**digger** [ENG] A tool or apparatus for digging in the ground. { ˈdig·ər }

**digging** [ENG] A sudden increase in cutting depth of a cutting tool due to an erratic change in load. { ˈdig·iŋ }

**digging line** *See* inhaul cable. { ˈdig·iŋ ˌlīn }

**digital circuit** [ELECTR] A circuit designed to respond at input voltages at one of a finite number of levels and, similarly, to produce output voltages at one of a finite number of levels. { ˈdij·əd·əl ˈsər·kət }

**digital control** [CONT SYS] The use of digital or discrete technology to maintain conditions in operating systems as close as possible to desired values despite changes in the operating environment. { ˈdij·əd·əl kənˈtrōl }

**digital delayer** [ENG ACOUS] A device for introducing delay in the audio signal in a sound-reproducing system, which converts the audio signal to digital format and stores it in a digital shift register before converting it back to analog form. { ˈdij·əd·əl diˈlā·ər }

**digital log** [ENG] A well log that has undergone discrete sampling and recording on a magnetic tape preparatory to use in computerized interpretation and plotting. { ˈdij·əd·əl ˈläg }

**digital-to-analog converter** [ELECTR] A converter in which digital input signals are changed to essentially proportional analog signals. Abbreviated dac. { ˈdij·əd·əl tü ˈan·əˌläg kənˈvərd·ər }

**dike** [CIV ENG] An embankment constructed on dry ground along a riverbank to prevent overflow of lowlands and to retain floodwater. { dīk }

**dilatometer** [ENG] An instrument for measuring thermal expansion and dilation of liquids or solids. { ˌdilˈäˈtäm·əd·ər }

**dilute phase** [CHEM ENG] In liquid-liquid extraction, the liquid phase that is dilute with respect to the material being extracted. { dəˈlüt ˌfāz }

**dimpling** [ENG] Forming a conical depression in a metal surface in order to countersink a rivet head. { ˈdim·pliŋ }

**Dines anemometer** [ENG] A pressure-tube anemometer in which the pressure head on a weather vane is kept facing into the wind, and the suction head, near the bearing which supports the vane, develops a suction independent of wind direction; the pressure difference between the heads is proportional to the square of the wind speed and is measured by a float manometer with a linear wind scale. { ˈdīnz anˈəˈmäm·əd·ər }

**Dings magnetic separator** [MECH ENG] A device which is suspended above a belt conveyor to pull out and separate magnetic material from burden as thick as 40 inches (1 meter) and at belt speeds up to 750 feet (229 meters) per minute. { ˈdiŋz magˈned·ik ˌsep·əˌrād·ər }

**dinking** [MECH ENG] Using a sharp, hollow punch for cutting light-gage soft metals or nonmetallic materials. { ˈdiŋk·iŋ }

**dioctyl phthalate test** [ENG] A method used to evaluate air filters to be used in critical air-cleaning applications; a light-scattering technique counts the number of particles of controlled size (0.3 micrometer) entering and emerging from the test filter. Abbreviated DOP test. { dīˈäkt·əl ˈthaˌlāt ˌtest }

**diode** [ELECTR] **1.** A two-electrode electron tube containing an anode and a cathode. **2.** *See* semiconductor diode. { ˈdīˌōd }

**diode alternating-current switch** *See* trigger diode. { ˈdīˌōd ˈȯl·tərˌnād·iŋ ˈkər·ənt ˌswich }

**diode amplifier** [ELECTR] A microwave amplifier using an IMPATT, TRAPATT, or transferred-electron diode in a cavity, with a microwave circulator providing the input/output isolation required for amplification; center frequencies are in the gigahertz range, from about 1 to 100 gigahertz, and power outputs are up to 20 watts continuous-wave or more than 200 watts pulsed, depending on the diode used. { ˈdīˌōd ˈam·pləˌfī·ər }

**diode bridge** [ELECTR] A series-parallel configuration of four diodes, whose output polarity remains unchanged whatever the input polarity. { ˈdīˌōd ˌbrij }

**diode-capacitor transistor logic** [ELECTR] A circuit that uses diodes, capacitors, and transistors to provide logic functions. { ˈdīˌōd kəˈpas·əd·ər tranˈzis·tər ˌläj·ik }

**diode characteristic** [ELECTR] The composite

electrode characteristic of an electron tube when all electrodes except the cathode are connected together. { 'dī,ōd ,kar·ik·tə·'ris·tik }

**diode clamp** *See* diode clamping circuit. { 'dī,ōd ,klamp }

**diode clamping circuit** [ELECTR] A clamping circuit in which a diode provides a very low resistance whenever the potential at a certain point rises above a certain value in some circuits or falls below a certain value in others. Also known as diode clamp. { ¦dī,ōd 'klamp·iŋ ,sər·kət }

**diode clipping circuit** [ELECTR] A clipping circuit in which a diode is used as a switch to perform the clipping action. { ¦dī,ōd 'klip·iŋ ,sər·kət }

**diode-connected transistor** [ELECTR] A bipolar transistor in which two terminals are shorted to give diode action. { 'dī,ōd kə¦nek·təd tran'zis·tər }

**diode demodulator** [ELECTR] A demodulator using one or more diodes to provide a rectified output whose average value is proportional to the original modulation. Also known as diode detector. { 'dī,ōd dē'mäj·ə,lād·ər }

**diode detector** *See* diode demodulator. { 'dī,ōd di'tek·tər }

**diode drop** *See* diode forward voltage. { 'dī,ōd ,dräp }

**diode forward voltage** [ELECTR] The voltage across a semiconductor diode that is carrying current in the forward direction; it is usually approximately constant over the range of currents commonly used. Also known as diode drop; diode voltage; forward voltage drop. { 'dī,ōd ¦fȯr·wərd 'vōl·tij }

**diode function generator** [ELECTR] A function generator that uses the transfer characteristics of resistive networks containing biased diodes; the desired function is approximated by linear segments. { 'dī,ōd 'feŋk·shən ,jen·ə,rād·ər }

**diode gate** [ELECTR] An AND gate that uses diodes as switching elements. { 'dī,ōd ,gāt }

**diode limiter** [ELECTR] A peak-limiting circuit employing a diode that becomes conductive when signal peaks exceed a predetermined value. { ,dī,ōd 'lim·əd·ər }

**diode logic** [ELECTR] An electronic circuit using current-steering diodes, such that the relations between input and output voltages correspond to AND or OR logic functions. { 'dī,ōd ,läj·ik }

**diode matrix** [ELECTR] A two-dimensional array of diodes used for a variety of purposes such as decoding and read-only memory. { 'dī,ōd ,mā·triks }

**diode mixer** [ELECTR] A mixer that uses a crystal or electron tube diode; it is generally small enough to fit directly into a radio-frequency transmission line. { 'dī,ōd ,mik·sər }

**diode switch** [ELECTR] Diode which is made to act as a switch by the successive application of positive and negative biasing voltages to the anode (relative to the cathode), thereby allowing or preventing, respectively, the passage of other applied waveforms within certain limits of voltage. { 'dī,ōd ,swich }

**diode transistor logic** [ELECTR] A circuit that uses diodes, transistors, and resistors to provide logic functions. Abbreviated DTL. { ¦dī,ōd tran'zis·tər ,läj·ik }

**diode-triode** [ELECTR] Vacuum tube having a diode and a triode in the same envelope. { ¦dī,ōd 'trī,ōd }

**diode voltage** *See* diode forward voltage. { 'dī,ōd ,vōl·tij }

**diode voltage regulator** [ELECTR] A voltage regulator with a Zener diode, making use of its almost constant voltage over a range of currents. Also known as Zener diode voltage regulator. { ¦dī,ōd 'vōl·tij ,reg·yə,lād·ər }

**diolefin hydrogenation** [CHEM ENG] A fixed-bed catalytic process used to hydrogenate diolefins in $C_4$ and $C_5$ fractions to mono-olefin in alkylation feedstocks. { dī'ō·lə,fən ,hī·drə·jə'nā·shən }

**dip** [ENG] The vertical angle between the sensible horizon and a line to the visible horizon at sea, due to the elevation of the observer and to the convexity of the earth's surface. Also known as dip of horizon. { dip }

**DIP** *See* dual in-line package. { dip }

**dip circle** *See* inclinometer. { 'dip ,sər·kəl }

**dip coating** [ENG] A coating applied to ceramic ware or metal by immersion into a tank of melted nonmetallic material, such as resin or plastic, then chilling the adhering melt. { 'dip ,kōd·iŋ }

**dip inductor** *See* earth inductor. { 'dip in,dək·tər }

**dipmeter** [ENG] **1.** An instrument used to measure the direction and angle of dip of geologic formations. **2.** An absorption wavemeter in which bipolar or field-effect transistors replace the electron tubes used in older grid-dip meters. { 'dip,mēd·ər }

**dip mold** [ENG] A one-piece glassmaking mold with an open top; used to mold patterns. { 'dip ,mōld }

**dip needle** [ENG] An obsolete type of magnetometer consisting of a magnetized needle that rotates freely in the vertical plane, with an adjustable weight on one side of the pivot. { 'dip ,nēd·əl }

**dip of horizon** *See* dip. { 'dip əv hə'rīz·ən }

**dipole moment** *See* electric dipole moment. { 'dī,pōl ,mō·mənt }

**dipper dredge** [MECH ENG] A power shovel resembling a grab crane mounted on a flat-bottom boat for dredging under water. Also known as dipper shovel. { 'dip·ər ,drej }

**dipper stick** [MECH ENG] A straight shaft connecting the digging bucket of an excavating machine or power shovel with the boom. { 'dip·ər ,stik }

**dipper trip** [MECH ENG] A device which releases the door of a shovel bucket. { 'dip·ər ,trip }

**dipping sonar** [ENG] A sonar transducer that is lowered into the water from a hovering antisubmarine-warfare helicopter and recovered after the search is complete. Also known as dunking sonar. { 'dip·iŋ 'sō,när }

**dipstick** [ENG] A graduated rod which measures depth when dipped in a liquid, used, for example, to measure the oil in an automobile engine crankcase. { 'dip,stik }

**dipstick microscopy** [ENG] A technique for mapping the variation of thickness of a thin liquid film by repeatedly dipping the tip of an atomic force microscope into the film at different locations and calculating its thickness at each location. { 'dip,stik mī'kräs·kə·pē }

**direct-acting pump** [MECH ENG] A displacement reciprocating pump in which the steam or power piston is connected to the pump piston by means of a rod, without crank motion or flywheel. { də¦rekt ¦akt·iŋ 'pəmp }

**direct-acting recorder** [ENG] A recorder in which the marking device is mechanically connected to or directly operated by the primary detector. { də¦rekt ¦akt·iŋ ri'kȯrd·ər }

**direct-arc furnace** [ENG] A furnace in which a material in a refractory-lined shell is rapidly heated to pour temperature by an electric arc which goes directly from electrodes to the material. { də¦rekt ¦ärk ˌfər·nəs }

**direct bearing** [CIV ENG] A direct vertical support in a structure. { də¦rekt 'ber·iŋ }

**direct-bonded bearing** [MECH ENG] A bearing formed by pouring molten babbitt metal directly into the bearing housing, allowing it to cool, and then machining the metal to the specified diameter. { də¦rekt ¦bän·dəd 'ber·iŋ }

**direct command guidance** [ENG] Control of a missile or drone entirely from the launching site by radio or by signals sent over a wire. { də¦rekt kə¦mand 'gīd·əns }

**direct-connected** [MECH ENG] The connection between a driver and a driven part, as a turbine and an electric generator, without intervening speed-changing devices, such as gears. { də ¦rekt kə'nek·təd }

**direct-contact condenser** *See* contact condenser. { də¦rekt ¦kän,takt kən,den·sər }

**direct control function** *See* regulatory control function. { də¦rekt kən'trōl ˌfəŋk·shən }

**direct cost** [IND ENG] The cost in goods and labor to produce a product which would not be spent if the product were not made. { də¦rekt 'kȯst }

**direct-coupled** [MECH ENG] Joined without intermediate connections. { də¦rekt 'kəp·əld }

**direct coupling** [ELEC] Coupling of two circuits by means of a non-frequency-sensitive device, such as a wire, resistor, or battery, so both direct and alternating current can flow through the coupling path. [MECH ENG] The direct connection of the shaft of a prime mover (such as a motor) to the shaft of a rotating mechanism (such as a pump or compressor). { də¦rekt 'kəp·liŋ }

**direct current** [ELEC] Electric current which flows in one direction only, as opposed to alternating current. Abbreviated dc. { də¦rekt 'kə·rənt }

**direct-current power supply** [ELEC] A power supply that provides one or more dc output voltages, such as a dc generator, rectifier-type power supply, converter, or dynamotor. { də¦rekt ¦kə·rənt 'paù·ər sə,plī }

**direct digital control** [CONT SYS] The use of a digital computer generally on a time-sharing or multiplexing basis, for process control in petroleum, chemical, and other industries. { də¦rekt ¦dij·əd·əl kən'trōl }

**direct drive** [MECH ENG] A drive in which the driving part is directly connected to the driven part. { də¦rekt 'drīv }

**direct-drive arm** [CONT SYS] A robot arm whose joints are directly coupled to high-torque motors. { də'rekt ¦drīv ˌärm }

**direct-drive vibration machine** [MECH ENG] A vibration machine in which the vibration table is forced to undergo a displacement by a positive linkage driven by a direct attachment to eccentrics or camshafts. { də¦rekt ¦drīv vī'brā·shən mə,shēn }

**direct energy conversion** [ENG] Conversion of thermal or chemical energy into electric power by means of direct-power generators. { də¦rekt 'en·ər·jē kən,vər·zhən }

**direct-expansion coil** [MECH ENG] A finned coil, used in air cooling, inside of which circulates a cold fluid or evaporating refrigerant. Abbreviated DX coil. { də¦rekt ik'span·chən ˌkȯil }

**direct expert control system** [CONT SYS] An expert control system that contains rules that directly associate controller output values with different values of the controller measurements and set points. Also known as rule-based control system. { də¦rekt ˌeks·pərt kən'trōl ˌsis·təm }

**direct extrusion** [ENG] Extrusion by movement of ram and product in the same direction against a die orifice. { də¦rekt ik'strü·zhən }

**direct-feedback system** [CONT SYS] A system in which electrical feedback is used directly, as in a tachometer. { də¦rekt 'fēdˌbak ˌsis·təm }

**direct-fire** [ENG] To fire a furnace without preheating the air or gas. { də'rekt ˌfīr }

**direct-fired evaporator** [CHEM ENG] An evaporator in which the flame and combustion gases are separated from the boiling liquid by a metal wall, or other heating surface. { də'rekt ¦fīrd i'vap·ə,rād·ər }

**direct-geared** [MECH ENG] Joined by a gear on the shaft of one machine meshing with a gear on the shaft of another machine. { də'rekt ¦gird }

**direct-imaging mass analyzer** [ENG] A type of secondary ion mass spectrometer in which secondary ions pass through an electrostatic immersion lens which forms an image that bears a point-to-point relation to the ion's place of origin on the sample surface, and then traverse magnetic sectors which effect mass separation. Also known as Castaing-Slodzian mass analyzer. { də¦rekt ¦im·ij·iŋ ¦mas 'an·ə,līz·ər }

**direction** [ENG] The position of one point in space relative to another without reference to the distance between them; may be either three-dimensional or two-dimensional, the horizontal

being the usual plane of the latter; usually indicated in terms of its angular distance from a reference direction. { dəˈrek·shən }

**directional control** [ENG] Control of motion about the vertical axis; in an aircraft, usually by the rudder. { dəˈrek·shən·əl kənˈtrōl }

**directional control valve** [ENG] A control valve serving primarily to direct hydraulic fluid to the point of application. { dəˈrek·shən·əl kənˈtrōl ˌvalv }

**directional drilling** [ENG] A drilling method involving intentional deviation of a wellbore from the vertical. { dəˈrek·shən·əl ˈdril·iŋ }

**directional gain** *See* directivity index. { dəˈrek·shən·əl ˈgān }

**directional gyro** [MECH] A two-degrees-of-freedom gyro with a provision for maintaining its spin axis approximately horizontal. { dəˈrek·shən·əl ˈjī·rō }

**directional hydrophone** [ENG ACOUS] A hydrophone whose response varies significantly with the direction of sound incidence. { dəˈrek·shən·əl ˈhī·drəˌfōn }

**directional microphone** [ENG ACOUS] A microphone whose response varies significantly with the direction of sound incidence. { dəˈrek·shən·əl ˈmī·krəˌfōn }

**directional response pattern** *See* directivity pattern. { dəˈrek·shən·əl riˈspänz ˌpad·ərn }

**direction cosine** [ENG] In tracking, the cosine of the angle between a baseline and the line connecting the center of the baseline with the target. { dəˈrek·shən ˈkōˌsīn }

**direction-independent radar** [ENG] Doppler radar used in sentry applications. { dəˌrek·shən ˌin·dəˈpen·dənt ˈrāˌdär }

**directivity factor** [ENG ACOUS] **1.** The ratio of radiated sound intensity at a remote point on the principal axis of a loudspeaker or other transducer, to the average intensity of the sound transmitted through a sphere passing through the remote point and concentric with the transducer; the frequency must be stated. **2.** The ratio of the square of the voltage produced by sound waves arriving parallel to the principal axis of a microphone or other receiving transducer, to the mean square of the voltage that would be produced if sound waves having the same frequency and mean-square pressure were arriving simultaneously from all directions with random phase; the frequency must be stated. { dəˌrek'tiv·əd·ə ˌfak·tər }

**directivity index** [ENG ACOUS] The directivity factor expressed in decibels; it is 10 times the logarithm to the base 10 of the directivity factor. Also known as directional gain. { dəˌrek'tiv·əd·ə ˌinˌdeks }

**directivity pattern** [ENG ACOUS] A graphical or other description of the response of a transducer used for sound emission or reception as a function of the direction of the transmitted or incident sound waves in a specified plane and at a specified frequency. Also known as beam pattern; directional response pattern. { dəˌrek'tiv·əd·ə ˌpad·ərn }

**direct labor** [IND ENG] The labor or effort actually producing goods or services. { dəˈrekt ˈlā·bər }

**direct labor standard** *See* standard time. { dəˈrect ˈlā·bər ˈstan·dərd }

**directly heated cathode** *See* filament. { dəˈrect·lē ˈhēd·əd ˈkāˌthōd }

**direct material** [IND ENG] Any raw or semifinished material which will be incorporated into the product. { dəˈrekt məˈtir·ē·əl }

**direct-power generator** [ENG] Any device which converts thermal or chemical energy into electric power by methods more direct than the conventional thermal cycle. { dəˈrekt ˈpaù·ər ˈjen·əˌrād·ər }

**direct-radiator speaker** [ENG ACOUS] A loudspeaker in which the radiating element acts directly on the air, without a horn. { dəˈrekt ˈrād·ēˌād·ər ˌspēk·ər }

**direct-reading gage** [ENG] Gage that records directly (instead of inferentially) measured values, for example, a liquid-level gage pointer actuated by direct linkage with a float. { dəˈrekt ˈrēd·iŋ ˈgāj }

**direct recording** [ENG ACOUS] Recording in which a record is produced immediately, without subsequent processing, in response to received signals. { dəˈrekt riˈkȯrd·iŋ }

**direct return system** [MECH ENG] In a heating or cooling system, a piping arrangement in which the fluid is returned to its origin (boiler or evaporator) by the shortest direct path after it has passed through each heat exchanger. { diˈrekt riˈtərn ˌsis·təm }

**direct-writing galvanometer** [ENG] A direct-writing recorder in which the stylus or pen is attached to a moving coil positioned in the field of the permanent magnet of a galvanometer. { dəˈrekt ˈwrīd·iŋ ˌgal·vəˈnäm·əd·ər }

**direct-writing recorder** [ENG] A recorder in which the permanent record of varying electrical quantities or signals is made on paper, directly by a pen attached to the moving coil of a galvanometer or indirectly by a pen moved by some form of motor under control of the galvanometer. Also known as mechanical oscillograph. { dəˈrekt ˈwrīd·iŋ riˈkȯrd·ər }

**disappearing filament pyrometer** *See* optical pyrometer. { ˈdis·əˌpir·iŋ ˌfil·ə·mənt pīˈräm·əd·ər }

**disappearing stair** [BUILD] A stair that can be swung up into a ceiling space. { ˈdis·əˌpir·iŋ ˈster }

**disassemble** [ENG] To take apart into constituent parts. { ˌdis·əˈsem·bəl }

**disc** *See* disk. { disk }

**DISC** *See* differential scatter. { disk }

**discharge** [ELEC] To remove a charge from a battery, capacitor, or other electric-energy storage device. [ELECTR] The passage of electricity through a gas, usually accompanied by a glow, arc, spark, or corona. Also known as electric discharge. { ˈdisˌchärj }

**discharge channel** [MECH ENG] The passage in a pressure-relief device through which the fluid

is released to the outside of the device. { 'dis ˌchärj ˌchan·əl }

**discharged solids** *See* residue. { ¦disˌchärjd 'säl·ədz }

**discharge head** [MECH ENG] Vertical distance between the intake level of a water pump and the level at which it discharges water freely to the atmosphere. { 'disˌchärj ˌhed }

**discharge hydrograph** [CIV ENG] A graph showing the discharge or flow of a stream or conduit with respect to time. { 'disˌchärj 'hī·drəˌgraf }

**discharge line** [ENG] The length of pipe through which drilling mud travels from the mud pump through the standpipe on its way to the borehole. { 'disˌchärj ˌlīn }

**discharge liquor** [CHEM ENG] Liquid that has passed through a processing operation. Also known as effluent; product. { 'disˌchärj ˌlik·ər }

**discharge tube** [ELECTR] An evacuated enclosure containing a gas at low pressure, through which current can flow when sufficient voltage is applied between metal electrodes in the tube. Also known as electric-discharge tube. [MECH ENG] A tube through which steam and water are released into a boiler drum. { 'disˌchärj ˌtüb }

**discharge-tube leak indicator** [ENG] A device which detects the presence of a tracer gas by using a glass tube attached to a high-voltage source; the presence of leaked gas is indicated by the color of the electric discharge. { 'dis ˌchärj ˌtüb 'lēk ˌin·dəˌkād·ər }

**discharging arch** [CIV ENG] A support built over, and not touching, a weak structural member, such as a wooden lintel, to carry the main load. Also known as relieving arch. { 'dis ˌchärj·iŋ ˌärch }

**disconnect** [ELEC] To open a circuit by removing wires or connections, as distinguished from opening a switch to stop current flow. [ENG] To sever a connection. { ˌdis·kə'nekt }

**discontinuous construction** [BUILD] A building in which there is no solid connection between the rooms and the building structure or between different sections of the building; the design aims to reduce the transmission of noise. { ˌdis·kən'tin·yə·wəs kən'strək·shən }

**discount** [IND ENG] A reduction from the gross amount, price, or value. { 'disˌkaunt }

**discrete sound system** [ENG ACOUS] A quadraphonic sound system in which the four input channels are preserved as four discrete channels during recording and playback processes; sometimes referred to as a 4-4-4 system. { di'skrēt 'saund ˌsis·təm }

**discrete system** [CONT SYS] A control system in which signals at one or more points may change only at discrete values of time. Also known as discrete-time system. { di'skrēt 'sis·təm }

**discrete-time system** *See* discrete system. { di 'skrēt ˌtīm 'sis·təm }

**discrete transfer function** *See* pulsed transfer function. { di¦skrēt 'tranz·fər ˌfəŋk·shən }

**disdrometer** [ENG] Equipment designed to measure and record the size distribution of raindrops as they occur in the atmosphere. { diz 'dräm·əd·ər }

**disengage** [ENG] To break the contact between two objects. { ˌdis·ən'gāj }

**dishing** [ENG] In metal-forming or plastics-molding operations, producing a shallow concave surface. { 'dish·iŋ }

**disintegrator** [MECH ENG] An apparatus used for pulverizing or grinding substances, consisting of two steel cages which rotate in opposite directions. { dis'in·təˌgrād·ər }

**disk** *See* phonograph record. { disk }

**disk-and-doughnut** [CHEM ENG] A type of fractionating tower construction of alternating disks and plates that are doughnut-shaped, to provide mixing. { ¦disk ən 'dō·nət }

**disk attrition mill** *See* disk mill. { ¦disk ə'trish·ən ˌmil }

**disk brake** [MECH ENG] A type of brake in which disks attached to a fixed frame are pressed against disks attached to a rotating axle or against the inner surfaces of a rotating housing. { ¦disk ¦brāk }

**disk cam** [MECH ENG] A disk with a contoured edge which rotates about an axis perpendicular to the disk, communicating motion to the cam follower which remains in contact with the edge of the disk. { ¦disk ¦kam }

**disk canvas wheel** [DES ENG] A polishing wheel made of disks of canvas sewn together with heavy twine or copper wire, and reinforced by steel side plates and side rings with bolts or screws. { ¦disk 'kan·vəs ˌwēl }

**disk centrifuge** [MECH ENG] A centrifuge with a large bowl having a set of disks that separate the liquid into thin layers to create shallow settling chambers. { ¦disk 'sen·trəˌfyüj }

**disk clutch** [MECH ENG] A clutch in which torque is transmitted by friction between friction disks with specially prepared friction material riveted to both sides and contact plates keyed to the inner surface of an external hub. { ¦disk ¦kləch }

**disk coupling** [MECH ENG] A flexible coupling in which the connecting member is a flexible disk. { 'disk ˌkəp·liŋ }

**disk engine** [MECH ENG] A rotating engine in which the piston is a disk. { 'disk ˌen·jən }

**disk filter** [ENG] A filter in which the substance to be filtered is drawn through membranes stretched on segments of revolving disks by a vacuum inside each disk; the solids left on the membrane are lifted from the tank and discharged. Also known as American filter. { ¦disk ¦fil·tər }

**disk grinder** [MECH ENG] A grinding machine that employs abrasive disks. { 'disk ˌgrīnd·ər }

**disk grinding** [MECH ENG] Grinding with the flat side of a rigid, bonded abrasive disk or segmental wheel. { 'disk ˌgrīnd·iŋ }

**disk leather wheel** [DES ENG] A polishing wheel made of leather disks glued together. { ¦disk 'leth·ər ˌwēl }

**disk meter** [ENG] A positive displacement meter to measure flow rate of a fluid; consists of a disk that wobbles or nutates within a chamber so that each time the disk nutates a known volume of fluid passes through the meter. { 'disk ˌmēd·ər }

**disk mill** [MECH ENG] Size-reduction apparatus in which grinding of feed solids takes place between two disks, either or both of which rotate. Also known as disk attrition mill. { 'disk ˌmil }

**disk recording** [ENG ACOUS] **1.** The process of inscribing suitably transformed acoustical or electrical signals on a phonograph record. **2.** *See* phonograph record. { ˈdisk ri'kȯrd·iŋ }

**disk sander** [MECH ENG] A machine that uses a circular disk coated with abrasive to smooth or shape surfaces. { 'disk ˌsand·ər }

**disk signal** [CIV ENG] Automatic block signal with colored disks that indicate train movements. { ˈdisk ˈsig·nəl }

**disk spring** [MECH ENG] A mechanical spring that consists of a disk or washer supported by one force (distributed by a suitable chuck or holder) at the periphery and by an opposing force on the center or hub of the disk. { 'disk ˌspriŋ }

**disk wheel** [DES ENG] A wheel in which a solid metal disk, rather than separate spokes, joins the hub to the rim. { 'disk ˌwēl }

**dispatching** [IND ENG] The selecting and sequencing of tasks to be performed at individual work stations and the assigning of these tasks to the personnel. { dis'pach·iŋ }

**dispenser** [ENG] Device that automatically dispenses radar chaff from an aircraft. { də'spen·sər }

**dispersal** [CIV ENG] The practice of building or establishing industrial plants, government offices, or the like, in separated areas, to reduce vulnerability to enemy attack. { də'spər·səl }

**dispersion mill** [MECH ENG] Size-reduction apparatus that disrupts clusters or agglomerates of solids, rather than breaking down individual particles; used for paint pigments, food products, and cosmetics. { də'spər·zhən ˌmil }

**displacement** [ELEC] *See* electric displacement. [MECH] **1.** The linear distance from the initial to the final position of an object moved from one place to another, regardless of the length of path followed. **2.** The distance of an oscillating particle from its equilibrium position. [MECH ENG] The volume swept out in one stroke by a piston moving in a cylinder as for an engine, pump, or compressor. { dis'plās·mənt }

**displacement compressor** [MECH ENG] A type of compressor that depends on displacement of a volume of air by a piston moving in a cylinder. { dis'plās·mənt kəm,pres·ər }

**displacement engine** *See* piston engine. { dis 'plās·mənt ˌen·jən }

**displacement gyroscope** [ENG] A gyroscope that senses, measures, and transmits angular displacement data. { dis'plās·mənt 'jī·rə ˌskōp }

**displacement manometer** [ENG] A differential manometer which indicates the pressure difference across a solid or liquid partition which can be displaced against a restoring force. { dis 'plās·mənt mə'näm·əd·ər }

**displacement meter** [ENG] A water meter that measures water flow quantitatively by recording the number of times a vessel of known capacity is filled and emptied. { dis'plās·mənt ˌmēd·ər }

**displacement pump** [MECH ENG] A pump that develops its action through the alternate filling and emptying of an enclosed volume as in a piston-cylinder construction. { dis'plās·mənt ˌpəmp }

**displacer-type meter** [ENG] Apparatus to detect liquid level or gas density by measuring the effect of the fluid (gas or liquid) on the buoyancy of a displacer unit immersed within the fluid. { di'splās·ər ˌtīp ˌmēd·ər }

**disposable** [ENG] Within a manufacturing system, designed to be discarded after use and replaced by an identical item, such as a filter element. { də'spō·zə·bəl }

**disposal field** *See* absorption field. { də'spō·zəl ˌfēld }

**dissipation factor** [ELEC] The inverse of Q, the storage factor. { ˌdis·ə'pā·shən ˌfak·tər }

**dissipation function** *See* Rayleigh's dissipation function. { ˌdis·ə'pā·shən ˌfəŋk·shən }

**dissipation loss** [ELEC] A measure of the power loss of a transducer in transmitting signals, expressed as the ratio of its input power to its output power. { ˌdis·ə'pā·shən ˌlȯs }

**dissipative muffler** [ENG] A device which absorbs sound energy as the gas passes through it; a duct lined with sound-absorbing material is the most common type. { ˌdis·ə'pād·iv 'məf·lər }

**dissolved air flotation** [CHEM ENG] A liquid-solid separation process wherein the main mechanism of suspended-solids removal is the change of apparent specific gravity of those suspended solids in relation to that of the suspending liquid by the attachment of small gas bubbles formed by the release of dissolved gas to the solids. Also known as air flotation. { də'zälvd ˌer flō'tā·shən }

**distance** [MECH] The spatial separation of two points, measured by the length of a hypothetical line joining them. { 'dis·təns }

**distance marker** [ENG] One of a series of concentric circles, painted or otherwise fixed on the screen of a plan position indicator, from which the distance of a target from the radar antenna can be read directly; used for surveillance and navigation where the relative distances between a number of targets are required simultaneously. Also known as radar range marker; range marker. { 'dis·təns ˌmärk·ər }

**distance ratio** [MECH ENG] The ratio of the distance moved by the effort or input of a machine in a specified time to the distance moved by the load or output. { 'dis·təns ˌrā·shō }

**distance resolution** [ENG] The minimum radial distance by which targets must be separated to

be separately distinguishable by a particular radar. Also known as range discrimination; range resolution. { 'dis·tənts ˌrez·əˌlü·shən }

**distance/velocity lag** [CONT SYS] The delay caused by the amount of time required to transport material or propagate a signal or condition from one point to another. Also known as transportation lag; transport lag. { ¦dis·tənsvə'läs·əd·ē ˌlag }

**distant signal** [CIV ENG] A signal placed at a distance from a block of track to give advance warning when the block is closed. { ¦dis·tənt 'sig·nəl }

**distillation test** [CHEM ENG] A standardized procedure for finding the initial, intermediate, and final boiling points in the boiling range of petroleum products. { ˌdis·tə'lā·shən ˌtest }

**distortion** [ELECTR] Any undesired change in the waveform of an electric signal passing through a circuit or other transmission medium. [ENG] In general, the extent to which a system fails to accurately reproduce the characteristics of an input signal at its output. [ENG ACOUS] Any undesired change in the waveform of a sound wave. { di'stȯr·shən }

**distortion meter** [ENG] An instrument that provides a visual indication of the harmonic content of an audio-frequency wave. { di'stȯr·shən ˌmēd·ər }

**distributed collector** [ENG] A component of a solar heating system comprising a series of modular focusing collectors that are interconnected with an absorber pipe network to carry the working fluid to a heat exchanger. { di'strib·yəd·əd kə'lek·tər }

**distributed control system** [CONT SYS] A collection of modules, each with its own specific function, interconnected tightly to carry out an integrated data acquisition and control application. { di'strib·yəd·əd kən'trōlˌsis·təm }

**distributed numerical control** [CONT SYS] The use of central computers to distribute part-classification data to machine tools which themselves are controlled by computers or numerical control tapes. { di'strib·yəd·əd nü'mer·ə·kəl kən'trōl }

**distributed-parameter system** *See* distributed system. { di'strib·yəd·əd pə'ram·əd·ər ˌsis·təm }

**distributed system** [CONT SYS] A collection of modules, each with its own specific function, interconnected to carry out integrated data acquisition and control in a critical environment. [SYS ENG] A system whose behavior is governed by partial differential equations, and not merely ordinary differential equations. Also known as distributed-parameter system. { di'strib·yəd·əd 'sis·təm }

**distribution** [IND ENG] All activities that involve efficient movement of finished products from the end of the production line to the consumer. { ˌdis·trə'byü·shən }

**distribution amplifier** [ELECTR] A radio-frequency power amplifier used to feed television or radio signals to a number of receivers, as in an apartment house or a hotel. [ENG ACOUS] An audio-frequency power amplifier used to feed a speech or music distribution system and having sufficiently low output impedance so changes in load do not appreciably affect the output voltage. { ˌdis·trə'byü·shən 'am·pləˌfī·ər }

**distribution box** [CIV ENG] In sanitary engineering, a box in which the flow of effluent from a septic tank is distributed equally into the lines that lead to the absorption field. { ˌdis·trə'byü·shən 'bäks }

**distribution reservoir** [CIV ENG] A service reservoir connected with the conduits of a primary water supply; used to supply water to consumers according to fluctuations in demand over short time periods and serves for local storage in case of emergency. { ˌdis·trə'byü·shən 'rez·əvˌwär }

**distributor** [ELEC] **1.** Any device which allocates a telegraph line to each of a number of channels, or to each row of holes on a punched tape, in succession. **2.** A rotary switch that directs the high-voltage ignition current in the proper firing sequence to the various cylinders of an internal combustion engine. [ELECTR] The electronic circuitry which acts as an intermediate link between the accumulator and drum storage. [ENG] A device for delivering an exact amount of fuel at the exact time at which it is required. { də'strib·yəd·ər }

**distributor gear** [MECH ENG] A gear which meshes with the camshaft gear to rotate the distributor shaft. { də'strib·yəd·ər ˌgir }

**district heating** [MECH ENG] The supply of heat, either in the form of steam or hot water, from a central source to a group of buildings. { 'di·strikt 'hēd·iŋ }

**disturbance** [CONT SYS] An undesired command signal in a control system. { də'stər·bəns }

**ditch** [CIV ENG] **1.** A small artificial channel cut through earth or rock to carry water for irrigation or drainage. **2.** A long narrow cut made in the earth to bury pipeline, cable, or similar installations. { dich }

**ditch check** [CIV ENG] A small dam positioned at intervals in a road ditch to prevent erosion. { 'dich ˌchek }

**ditcher** *See* trench excavator. { 'dich·ər }

**ditching** [ENG] The digging of ditches, as around storage tanks or process areas to hold liquids in the event of a spill or along the sides of a roadway for drainage. { 'dich·iŋ }

**dither** [CONT SYS] A force having a controlled amplitude and frequency, applied continuously to a device driven by a servomotor so that the device is constantly in small-amplitude motion and cannot stick at its null position. Also known as buzz. { 'di<u>th</u>·ər }

**divariant system** [THERMO] A system composed of only one phase, so that two variables, such as pressure and temperature, are sufficient to define its thermodynamic state. { di¦ver·ē·ənt 'sis·təm }

**dive** [ENG] To submerge into an underwater environment so that it may be studied or utilized; includes the use of specialized equipment such

as scuba, diving helmets, diving suits, diving bells, and underwater research vessels. { 'dīv }

**divergent die** [ENG] A die with the internal channels that lead to the orifice diverging, such as the dies used for manufacture of hollow-body plastic items. { də'vər·jənt 'dī }

**divergent nozzle** [DES ENG] A nozzle whose cross section becomes larger in the direction of flow. { də'vər·jənt 'näz·əl }

**diverging duct** [DES ENG] Fluid-flow conduit whose internal cross-sectional area increases in the direction of flow. { də'vərj·iŋ ˌdəkt }

**diversion canal** [CIV ENG] An artificial channel for diverting water from one place to another. { də'vər·zhən kəˌnal }

**diversion chamber** [ENG] A chamber designed to direct a stream into a channel or channels. { də'vər·zhən ˌchām·bər }

**diversion dam** [CIV ENG] A fixed dam for diverting stream water away from its course. { də'vər·zhən ˌdam }

**diversion gate** [CIV ENG] A gate which may be closed to divert water from the main conduit or canal to a lateral or some other channel. { də'vər·zhən ˌgāt }

**diversion tunnel** [CIV ENG] An underground passageway used to divert flowing water around a construction site. { də'vər·zhən ˌtən·əl }

**diversity radar** [ENG] A radar that uses two or more transmitters and receivers, each pair operating at a slightly different frequency but sharing a common antenna and video display, to obtain greater effective range and reduce susceptibility to jamming. { də'vər·səd·ē 'rāˌdär }

**diverter valve** *See* air bypass valve. { də'vərd·ər ˌvalv }

**divided lane** [CIV ENG] A highway divided into lanes by a median strip. { də'vīd·əd 'lān }

**divided pitch** [DES ENG] In a screw with multiple threads, the distance between corresponding points on two adjacent threads measured parallel to the axis. { də'vīd·əd 'pich }

**divider** [DES ENG] A tool like a compass, used in metalworking to lay out circles or arcs and to space holes or other dimensions. { də'vīd·ər }

**dividing network** *See* crossover network. { də'vīd·iŋ ˌnetˌwərk }

**diving bell** [ENG] An early diving apparatus constructed in the shape of a box or cylinder without a bottom and connected to a compressed-air hose. { 'dīv·iŋ ˌbel }

**diving suit** [ENG] A waterproof outfit designed for diving, especially one with a helmet connected to a compressed-air hose. { 'dīv·iŋ ˌsüt }

**division plate** [MECH ENG] A diaphragm which surrounds the piston rod of a crosshead-type engine and separates the crankcase from the lower portion of the cylinder. { də'vizh·ən ˌplāt }

**division wall** [BUILD] A wall used to create major subdivisions in a building. { də'vizh·ən ˌwȯl }

**dock** [CIV ENG] **1.** The slip or waterway that is between two piers or cut into the land for the berthing of ships. **2.** A basin or enclosure for reception of vessels, provided with means for controlling the water level. { däk }

**docking block** [CIV ENG] A timber used to support a ship in dry dock. { däk·iŋ ˌbläk }

**dockyard** [CIV ENG] A yard utilized for ship construction and repair. { 'däkˌyärd }

**doctor bar** *See* doctor blade. { 'däk·tər ˌbär }

**doctor blade** [ENG] A device for regulating the amount of liquid material on the rollers of a spreader. Also known as doctor bar; doctor knife; doctor roll. { 'däk·tər ˌblād }

**doctor knife** *See* doctor blade. { 'däk·tər ˌnīf }

**doctor roll** [CHEM ENG] Roller device used to remove accumulated filter cake from rotary filter drums. *See* doctor blade. { 'däk·tər ˌrōl }

**doctor solution** [CHEM ENG] Sodium plumbite solution used to remove mercaptan sulfur from gasoline and other light petroleum distillates; used in doctor treatment. { 'däk·tər sə'lü·shən }

**doctor test** [CHEM ENG] A procedure using doctor solution (sodium plumbite) to detect sulfur compounds in light petroleum distillates which react with the sodium plumbite. { 'däk·tər ˌtest }

**doctor treatment** [CHEM ENG] Refining process to sweeten (reduce the odor) of gasoline, solvents, and kerosine; sodium plumbite and sulfur convert the odoriferous mercaptans into disulfides. { 'däk·tər ˌtrēt·mənt }

**dodge chain** [DES ENG] A chain with detachable bearing blocks between the links. { 'däj ˌchān }

**Dodge-Romig tables** [IND ENG] Tabular data for acceptance sampling, including lot tolerance and AOQL tables. { ¦däj ¦rō·mig ˌtā·bəlz }

**dodo** [ENG] A rectangular groove cut across the grain of a board. { 'dōˌdō }

**Doebner-Miller synthesis** [CHEM ENG] Synthesis of methylquinoline by heating aniline with paraldehyde in the presence of hydrochloric acid. { ¦deb·nər ¦mil·ər 'sin·thə·səs }

**dog** [DES ENG] **1.** Any of various simple devices for holding, gripping, or fastening, such as a hook, rod, or spike with a ring, claw, or lug at the end. **2.** An iron for supporting logs in a fireplace. **3.** A drag for the wheel of a vehicle. { dȯg }

**dog clutch** [DES ENG] A clutch in which projections on one part fit into recesses on the other part. { 'dȯg ˌkləch }

**dog iron** [DES ENG] **1.** A short iron bar with ends bent at right angles. **2.** An iron pin that can be inserted in stone or timber in order to lift it. { 'dȯg ˌī·ərn }

**dog screw** [DES ENG] A screw with an eccentric head; used to mount a watch in its case. { 'dȯg ˌskrü }

**dog's tooth** [CIV ENG] A masonry string course in which the brick corner projects. { 'dȯgz ˌtüth }

**dolly** [ENG] Any of several types of industrial hand trucks consisting of a low platform or specially shaped carrier mounted on rollers or combinations of fixed and swivel casters; used to

carry such things as furniture, milk cans, paper rolls, machinery weighing up to 80 tons, and television cameras short distances. { 'däl·ē }

**dolphin** [CIV ENG] **1.** A group of piles driven close and tied together to provide a fixed mooring in the open sea or a guide for ships coming into a narrow harbor entrance. **2.** A mooring post on a wharf. { 'däl·fən }

**dome** [ENG] The portion of a cylindrical container used in a filament-winding process that forms an integral end of the container. [ENG ACOUS] An enclosure for a sonar transducer, projector, or hydrophone and associated equipment; designed to have minimum effect on sound waves traveling underwater. { dōm }

**domestic induction heater** [ENG] A cooking utensil heated by current (usually of commercial power line frequency) induced in it by a primary inductor. { də'mes·tik in'dək·shən ˌhēd·ər }

**domestic refrigerator** [MECH ENG] A refrigeration system for household use which typically has a compression machine designed for continuous automatic operation and for conservation of the charges of refrigerant and oil, and is usually motor-driven and air-cooled. Also known as refrigerator. { də'mes·tik ri'frij·əˌrād·ər }

**donkey engine** [MECH ENG] A small auxiliary engine which is usually portable or semiportable and powered by steam, compressed air, or other means, particularly one used to power a windlass to lift cargo on shipboard or to haul logs. { 'dəŋ·kē ˌen·jən }

**Donohue equation** [THERMO] Equation used to determine the heat-transfer film coefficient for a fluid on the outside of a baffled shell-and-tube heat exchanger. { 'dän·ə·hü iˌkwā·zhən }

**doodlebug** [MECH ENG] **1.** A small tractor. **2.** A motor-driven railcar used for maintenance and repair work. { 'düd·əlˌbəg }

**door** [ENG] A piece of wood, metal, or other firm material pivoted or hinged on one side, sliding along grooves, rolling up and down, revolving, or folding, by means of which an opening into or out of a building, room, or other enclosure is open or closed to passage. { dȯr }

**door check** *See* door closer. { 'dȯr ˌchek }

**door closer** [DES ENG] **1.** A device that makes use of a spring for closing, and a compression chamber from which liquid or air escapes slowly, to close a door at a controlled speed. Also known as door check. **2.** In elevators, a device or assembly of devices which closes an open car or hoistway door by the use of gravity or springs. { 'dȯr ˌklōz·ər }

**doorstop** [BUILD] A strip positioned on the doorjamb for the door to close against. { 'dȯrˌstäp }

**dope** *See* doping agent. { dōp }

**doped junction** [ELECTR] A junction produced by adding an impurity to the melt during growing of a semiconductor crystal. { ˌdōpt 'jəŋk·shən }

**doping** [ELECTR] The addition of impurities to a semiconductor to achieve a desired characteristic, as in producing an *n*-type or *p*-type material. Also known as semiconductor doping. [ENG] Coating the mold or mandrel with a substance which will prevent the molded plywood part from sticking to it and will facilitate removal. { 'dōp·iŋ }

**doping agent** [ELECTR] An impurity element added to semiconductor materials used in crystal diodes and transistors. Also known as dopant; dope. { 'dōp·iŋ ˌā·jənt }

**doping compensation** [ELECTR] The addition of donor impurities to a *p*-type semiconductor or of acceptor impurities to an *n*-type semiconductor. { 'dōp·iŋ käm·pən'sā·shən }

**Doppler current meter** [ENG] An acoustic current meter in which a collimated ultrasonic signal of known frequency is projected into the water and the reverberation frequency is measured; the difference in frequencies (Doppler shift) is proportional to the speed of water traveling past the meter. { 'däp·lər ˌkər·ənt ˌmēd·ər }

**Doppler radar** [ENG] A radar that makes use of the Doppler shift of an echo due to relative motion of target and radar to differentiate between fixed and moving targets and measure target velocities. { 'däp·lər 'rāˌdär }

**Doppler range** *See* doran. { 'däp·lər ˌrānj }

**Doppler sonar** [ENG] Sonar based on Doppler shift measurement technique. Abbreviated DS. { 'däp·lər 'sōˌnär }

**Doppler tracking** [ENG] Tracking of a target by using Doppler radar. { 'däp·lər ˌtrak·iŋ }

**Doppler ultrasonic flowmeter** [ENG] An instrument for determining the velocity of fluid flow from the Doppler shift of high-frequency sound waves reflected from particles or discontinuities in the flowing fluid. { 'däp·lər əl·trə'sän·ik 'flō ˌmēd·ər }

**DOP test** *See* dioctyl phthalate test. { 'däp ˌtest }

**doran** [ENG] A Doppler ranging system that uses phase comparison of three different modulation frequencies on the carrier wave, such as 0.01, 0.1, and 1 megahertz, to obtain missile range data with high accuracy. Derived from Doppler range. { 'dȯˌrän }

**dormer window** [BUILD] An extension of an attic room through a sloping roof to accommodate a vertical window. { 'dȯr·mər 'winˌdō }

**Dorr agitator** [MECH ENG] A tank used for batch washing of precipitates which cannot be leached satisfactorily in a tank; equipped with a slowly rotating rake at the bottom, which moves settled solids to the center, and an air lift that lifts slurry to the launders. Also known as Dorr thickener. { 'dȯr 'ajˌ·əˌtād·ər }

**Dorr classifier** [MECH ENG] A horizontal flow classifier consisting of a rectangular tank with a sloping bottom, a rake mechanism for moving sands uphill along the bottom, an inlet for feed, and outlets for sand and slime. { 'dȯr 'klas·əˌfī·ər }

**Dorr thickener** *See* Dorr agitator. { 'dȯr 'thik·ə·nər }

**dosing tank** [CIV ENG] A holding tank that discharges sewage at a rate required by treatment processes. { 'dōs·iŋ ˌtaŋk }

**dot** *See* button. { dät }

**double-acting** [MECH ENG] Acting in two directions, as with a reciprocating piston in a cylinder with a working chamber at each end. {ˌdəb·əl 'ak·tiŋ}

**double-acting compressor** [MECH ENG] A reciprocating compressor in which both ends of the piston act in working chambers to compress the fluid. {ˌdəb·əl ˌak·tiŋ kəm'pres·ər}

**double-acting pawl** [MECH ENG] A double pawl which can drive in either direction. {ˌdəb·əl ˌak·tiŋ 'pól}

**double-action mechanical press** [MECH ENG] A press having two slides which move one within the other in parallel movements. {ˌdəb·əl ˌak·shən məˌkan·ə·kəl 'pres}

**double-amplitude-modulation multiplier** [ELECTR] A multiplier in which one variable is amplitude-modulated by a carrier, and the modulated signal is again amplitude-modulated by the other variable; the resulting double-modulated signal is applied to a balanced demodulator to obtain the product of the two variables. {ˌdəb·əl ˌam·pləˌtüd ˌmäj·əˌlā·shən 'məl·təˌplī·ər}

**double-barrier resonant tunneling diode** [ELECTR] A variant of the tunnel diode with thin layers of aluminum gallium arsenide and gallium arsenide that have sharp interfaces and have widths comparable to the Schrödinger wavelengths of the electrons, permitting resonant behavior. Abbreviated DBRT diode. {ˌdəb·əl ˌbar·ē·ər ˌrez·ən·ənt ˌtən·əl·iŋ 'dīˌōd}

**double-base diode** *See* unijunction transistor. {ˌdəb·əl ˌbās 'dīˌōd}

**double-base junction diode** *See* unijunction transistor. {ˌdəb·əl ˌbās ˌjəŋk·shən 'dīˌōd}

**double-base junction transistor** [ELECTR] A tetrode transistor that is essentially a junction triode transistor having two base connections on opposite sides of the central region of the transistor. Also known as tetrode junction transistor. {ˌdəb·əl ˌbās ˌjəŋk·shən tran'zis·tər}

**double block and bleed system** [ENG] A valve system configuration in which a full-flow vent valve is installed in a pipeline between two shutoff valves to provide a means of releasing excess pressure between them. {'dəb·əl ˌbläk ən 'blēd ˌsis·təm}

**double-block brake** [MECH ENG] Two single-block brakes in symmetrical opposition, where the operating force on one lever is the reaction on the other. {ˌdəb·əl ˌbläk 'brāk}

**double bridge** *See* Kelvin bridge. {ˌdəb·əl 'brij}

**double-button microphone** [ENG ACOUS] A carbon microphone having two carbon-filled buttonlike containers, one on each side of the diaphragm, to give twice the resistance change obtainable with a single button. Also known as differential microphone. {ˌdəb·əl ˌbət·ən 'mī·krəˌfōn}

**double-cone bit** [DES ENG] A type of roller bit having only two cone-shaped cutting members. {ˌdəb·əl ˌkōn 'bit}

**double-core barrel drill** [DES ENG] A core drill consisting of an inner and an outer tube; the inner member can remain stationary while the outer one revolves. {ˌdəb·əl ˌkór 'bar·əl ˌdril}

**double-coursed** [BUILD] Covered with a material such as shingles in such a way that no area is covered with less than two thicknesses. {ˌdəb·əl 'kórst}

**double-crank press** [MECH ENG] A mechanical press with a single wide slide operated by a crankshaft having two crank pins. {ˌdəb·əl ˌkraŋk 'pres}

**double crossover** *See* scissors crossover. {ˌdəb·əl 'krósˌō·vər}

**double-cut file** [DES ENG] A file covered with two series of parallel ridges crossing at angles to each other. {ˌdəb·əl ˌkət 'fīl}

**double-cut planer** [MECH ENG] A planer designed to cut in both the forward and reverse strokes of the table. {ˌdəb·əl ˌkət 'plān·ər}

**double-cut saw** [DES ENG] A saw with teeth that cut during the forward and return strokes. {ˌdəb·əl ˌkət 'sȯ}

**double-diffused transistor** [ELECTR] A transistor in which two *pn* junctions are formed in the semiconductor wafer by gaseous diffusion of both *p*-type and *n*-type impurities; an intrinsic region can also be formed. {ˌdəb·əl dəˌfyüzd tran'zis·tər}

**double diode** *See* binode; duodiode. {ˌdəb·əl 'dīˌōd}

**double-diode limiter** [ELECTR] Type of limiter which is used to remove all positive signals from a combination of positive and negative pulses, or to remove all the negative signals from such a combination of positive and negative pulses. {ˌdəb·əl ˌdīˌōd 'lim·əd·ər}

**double distribution** [CHEM ENG] The product distribution resulting from counter double-current extraction, a scheme in which each of the two liquid phases is transferred simultaneously and continuously in opposite directions through an interconnected train of contact vessels. {ˌdəb·əl dis·trə'byü·shən}

**double-doped transistor** [ELECTR] The original grown-junction transistor, formed by successively adding *p*-type and *n*-type impurities to the melt during growing of the crystal. {ˌdəb·əl ˌdōpt tran'zis·tər}

**double-drum hoist** [MECH ENG] A hoisting device consisting of two cable drums which rotate in opposite directions and can be operated separately or together. {ˌdəb·əl ˌdrəm 'hoist}

**double floor** [BUILD] A floor in which binding joists support the ceiling joists below as well as the floor joists above. {ˌdəb·əl 'flȯr}

**doublehand drilling** [ENG] A rock-drilling method performed by two men, one striking the rock with a long-handled sledge hammer while a second holds the drill and twists it between strokes. Also known as double jacking. {'dəb·əlˌhand 'dril·iŋ}

**double Hooke's joint** [MECH ENG] A universal joint which eliminates the variation in angular displacement and angular velocity between driving and driven shafts, consisting of two Hooke's

joints with an intermediate shaft. { 'dəb·əl 'hùks ˌjȯint }

**double-housing planer** [MECH ENG] A planer having two housings to support the cross rail, with two heads on the cross rail and one side-head on each housing. { ¦dəb·əl ˌhaùz·iŋ 'plān·ər }

**double-hung** [BUILD] Of a window, having top and bottom sashes which are counterweighted or equipped with a spring on each side for easier raising and lowering. { ¦dəb·əl 'həŋ }

**double impeller breaker** *See* impact breaker. { ¦dəb·əl im'pel·ər ˌbrāk·ər }

**double-integrating gyro** [MECH] A single-degree-of-freedom gyro having essentially no restraint of its spin axis about the output axis. { ¦dəb·əl ¦in·təˌgrād·iŋ 'jī·rō }

**double jack** [DES ENG] A heavy hammer, weighing about 10 pounds (4.5 kilograms), requiring the use of both hands. { ¦dəb·əl 'jak }

**double jacking** *See* doublehand drilling. { ¦dəb·əl 'jak·iŋ }

**double load** [ENG] A charge separated by inert material in a borehole. { ¦dəb·əl ¦lōd }

**double mast** *See* A frame. { ¦dəb·əl 'mast }

**double pendulum** [MECH] Two masses, one suspended from a fixed point by a weightless string or rod of fixed length, and the other similarly suspended from the first; often the system is constrained to remain in a vertical plane. { ¦dəb·əl 'pen·jə·ləm }

**double-pipe exchanger** [CHEM ENG] Fluid-fluid heat exchanger made of two concentric pipe sections; one fluid (such as a coolant) flows in the annular space between pipes, and the other fluid (such as hot process stream) flows through the inner pipe. { ¦dəb·əl ˌpīp iks'chān·jər }

**double-quirked bead** *See* quirk bead. { ¦dəb·əl ¦kwərkt 'bēd }

**double-rivet** [ENG] To rivet a lap joint with two rows of rivets or a butt joint with four rows. { ¦dəb·əl 'riv·ət }

**double-roll crusher** [MECH ENG] A machine which crushes materials between teeth on two roll surfaces; used mainly for coal. { ¦dəb·əl 'rōl ˌkrəsh·ər }

**double sampling** [IND ENG] Inspecting one sample and then deciding whether to accept or reject the lot or to defer action until a second sample is inspected. { ¦dəb·əl 'sam·pliŋ }

**double-shot molding** [ENG] A means of turning out two-color parts in thermoplastic materials by successive molding operations. { ¦dəb·əl ˌshät 'mōld·iŋ }

**double-sided board** [ELECTR] A printed wiring board that contains circuitry on both external layers. { ¦dəb·əl ˌsīd·əd 'bȯrd }

**double-slider coupling** *See* slider coupling. { ¦dəb·əl ¦slīd·ər 'kəp·liŋ }

**double-solvent refining** [CHEM ENG] Petroleum-refining process using two solvents to simultaneously deasphalt and solvent-treat lubricating-oil stocks. { ¦dəb·əl ¦säl·vənt rə'fīn·iŋ }

**double square** *See* adjustable square. { ¦dəb·əl 'skwer }

**double-stream amplifier** [ELECTR] Microwave traveling-wave amplifier in which amplification occurs through interaction of two electron beams having different average velocities. { ¦dəb·əl ˌstrēm 'am·pləˌfī·ər }

**double-theodolite observation** [ENG] A technique for making winds-aloft observations in which two theodolites located at either end of a base line follow the ascent of a pilot balloon; synchronous measurements of the elevation and azimuth angles of the balloon, taken at periodic intervals, permit computation of the wind vector as a function of height. { ¦dəb·əl thē'ädˌəlˌīt äbˌzər'vā·shən }

**double-track tape recorder** [ENG ACOUS] A tape recorder with a recording head that covers half the tape width, so two parallel tracks can be recorded on one tape. Also known as dual-track tape recorder; half-track tape recorder. { ¦dəb·əl ˌtrak 'tāp riˌkȯrd·ər }

**double-tuned circuit** [ELECTR] A circuit that is resonant to two adjacent frequencies, so that there are two approximately equal values of peak response, with a dip between. { ¦dəb·əl ˌtünd 'sər·kət }

**double-tuned detector** [ELECTR] A type of frequency-modulation discriminator in which the limiter output transformer has two secondaries, one tuned above the resting frequency and the other tuned an equal amount below. { ¦dəb·əl ˌtünd di'tek·tər }

**double-wall cofferdam** [CIV ENG] A cofferdam consisting of two lines of steel piles tied to each other, and having the space between filled with sand. { ¦dəb·əl ˌwȯl 'kȯfˑərˌdam }

**double weighing** [MECH] A method of weighing to allow for differences in lengths of the balance arms, in which object and weights are balanced twice, the second time with their positions interchanged. Also known as Gauss method of weighing. { ¦dəb·əl 'wā·iŋ }

**dovetail joint** [DES ENG] A joint consisting of a flaring tenon in a fitting mortise. { 'dəvˌtāl ¦jȯint }

**dovetail saw** [DES ENG] A short stiff saw with a thin blade and fine teeth; used for accurate woodwork. { 'dəvˌtāl 'sȯ }

**dowel** [DES ENG] **1.** A headless, cylindrical pin which is sunk into corresponding holes in adjoining parts, to locate the parts relative to each other or to join them together. Also known as dowel pin. **2.** A round wooden stick from which dowel pins are cut. { 'daùl }

**dowel pin** *See* dowel. { 'daùl ˌpin }

**dowel plate** [DES ENG] A hardened steel plate with drilled holes that is used to fashion dowels by driving pegs through the holes to remove excess wood. { 'daùl ˌplāt }

**dowel screw** [DES ENG] A dowel with threads at both ends. { 'daùl ˌskrü }

**down** [ENG] Not in operation. { daùn }

**downcomer** [BUILD] *See* downspout. [CHEM ENG] A method of conveying liquid from one tray to the one below in a bubble-tray column. [ENG] In an air-pollution control system, a pipe

that conducts gases downward to a device that removes undesirable substances. [MECH ENG] A tube in a boiler waterwall system wherein the fluid flows downward. { 'daůn,kəm·ər }

**downdraft carburetor** [MECH ENG] A carburetor in which the fuel is fed into a downward current of air. { 'daůn,draft 'kär·bə,rād·ər }

**down-feed system** [MECH ENG] In a heating or cooling system, a piping arrangement in which the fluid is circulated through supply mains that are located above the levels of the units they serve. { 'daůn ,fēd ,sis·təm }

**downhole equipment** *See* drill fittings. { 'daůn ,hōl i¦kwip·mənt }

**Downs cell** [CHEM ENG] A brick-lined steel vessel with four graphite anodes projecting upward from the bottom, with cathodes in the form of steel cylinders concentric with the anodes, containing an electrolyte which is 40% sodium chloride (NaCl) and 60% calcium chloride ($CaCl_2$) at 590°C; used to make sodium. { 'daůnz ,sel }

**downspout** [BUILD] A vertical pipe that leads water from a roof drain or gutter down to the ground or a cistern. Also known as downcomer; leader. { 'daůn,spaůt }

**Down's process** [CHEM ENG] A method for producing sodium and chlorine from sodium chloride; potassium chloride and fluoride are added to the sodium chloride to reduce the melting point; the fused mixture is electrolyzed, with sodium forming at the cathode and chlorine at the anode. { 'daůnz ,präs·əs }

**downstream** [CHEM ENG] Portion of a product stream that has already passed through the system; that portion located after a specific process unit. { 'daůn,strēm }

**downtime** [IND ENG] The lost production time during which a piece of equipment is not operating correctly due to a breakdown, maintenance, necessities, or power failure. { 'daůn,tīm }

**dr** *See* dram.

**drachm** *See* dram. { dram }

**draft** Also spelled draught. [CIV ENG] A line of a traverse survey. [ENG] **1.** In molds, the degree of taper on a side wall or the angle of clearance present to facilitate removal of cured or hardened parts from a mold. **2.** The area of a water discharge opening. { draft }

**draft gage** [ENG] **1.** A modified U-tube manometer used to measure draft of low gas heads, such as draft pressure in a furnace, or small differential pressures, for example, less than 2 inches (5 centimeters) of water. **2.** A hydrostatic depth indicator, installed in the side of a vessel below the light load line, to indicate amount of submergence. { 'draft ,gāj }

**draft hood** [ENG] A device used to facilitate the escape of combustion products from the combustion chamber of an appliance, to prevent a backdraft in the combustion chamber, and to neutralize the effect of stack action of the chinney or gas vent on the efficient operation of the appliance. { 'draft ,hůd }

**draft loss** [MECH ENG] A decrease in the static pressure of a gas in a furnace or boiler due to flow resistance. { 'draft ,lòs }

**draftsman** [ENG] An individual skilled in drafting, especially of machinery and structures. { 'draf·smən }

**draft tube** [MECH ENG] The piping system for a reaction-type hydraulic turbine that allows the turbine to be set safely above tail water and yet utilize the full head of the site from head race to tail race. { 'draf ,tüb }

**drag** [ENG] **1.** A tool fashioned from sheet steel and having a toothed edge along the long dimension; used to level and scratch plaster to produce a key for the next coat of plaster. Also known as comb. **2.** A tool consisting of a steel plate with a finely serrated edge; dragged over the surface to dress stone. { drag }

**drag bit** *See* bit drag. { 'drag ,bit }

**drag-body flowmeter** [ENG] Device to meter liquid flow; measures the net force parallel to the direction of flow; the resulting pressure difference is used to solve flow equations. { 'drag ,bäd·ē 'flō,mēd·ər }

**drag chain** [ENG] **1.** A chain dragged along the ground from a motor vehicle chassis to prevent the accumulation of static electricity. **2.** A chain for coupling rail cars. { 'drag ,chān }

**drag-chain conveyor** [MECH ENG] A conveyor in which the open links of a chain drag material along the bottom of a hard-faced concrete or cast iron trough. Also known as dragline conveyor. { 'drag ,chān kən'vā·ər }

**drag classifier** [MECH ENG] A continuous belt containing transverse rakes, used to separate coarse sand from fine; the belt moves up through an inclined trough, and fast-settling sands are dragged along by the rakes. { 'drag 'klas·ə ,fī·ər }

**drag conveyor** *See* flight conveyor. { 'drag kən'vā·ər }

**drag-cup generator** [ENG] A type of tachometer which uses eddy currents and functions in control systems; it consists of two stationary windings, positioned so as to have zero coupling, and a nonmagnetic metal cup, which is revolved by the source whose speed is to be measured; one of the windings is used for excitation, inducing eddy currents in the rotating cup. Also known as drag-cup tachometer. { 'drag ,kəp 'jen·ə,rād·ər }

**drag-cup tachometer** *See* drag-cup generator. { 'drag ,kəp tə'käm·əd·ər }

**drag cut** [ENG] A drill hole pattern for breaking out rock, in which angled holes are drilled along a floor toward a parting, or on a free face and then broken by other holes drilled into them. { 'drag ,kət }

**drag factor** [CHEM ENG] Ratio of hindered diffusion rate to unhindered rate through a swollen dialysis membrane. Also known as Faxen drag factor; hindrance factor. { 'drag ,fak·tər }

**dragline** [MECH ENG] An excavator operated by pulling a bucket on ropes towards the jib from

which it is suspended. Also known as dragline excavator. { 'drag,līn }

**dragline conveyor** *See* drag-chain conveyor. { 'drag,līn kən'vā·ər }

**dragline excavator** *See* dragline. { 'drag,līn 'eks·kə,vād·ər }

**dragline scraper** [MECH ENG] A machine with a flat, plowlike blade or partially open bucket pulled on rope for withdrawing piled material, such as stone or coal, from a stockyard to the loading platform; the empty bucket is subsequently returned to the pile of material by means of a return rope. { 'drag,līn 'skrāp·ər }

**drag link** [MECH ENG] A four-bar linkage in which both cranks traverse full circles; the fixed member must be the shortest link. { 'drag ,liŋk }

**dragsaw** [DES ENG] A saw that cuts on the pulling stroke; used in power saws for cutting felled trees. { 'drag,sȯ }

**drag-type tachometer** *See* eddy-current tachometer. { 'drag ,tīp tə'käm·əd·ər }

**drain** [CIV ENG] **1.** A channel which carries off surface water. **2.** A pipe which carries off liquid sewage. [ELEC] *See* current drain. [ELECTR] The region into which majority carriers flow in a field-effect transistor; it is comparable to the collector of a bipolar transistor and the anode of an electron tube. { drān }

**drainage** [CIV ENG] Removal of groundwater or surface water, or of water from structures, by gravity or pumping. { 'drān·ij }

**drainage canal** [CIV ENG] An artificial canal built to drain water from an area having no natural outlet for precipitation accumulation. { 'drān·ij kə,nal }

**drainage gallery** [CIV ENG] A gallery in a masonry dam parallel to the top of the dam, to intercept seepage from the upstream face and conduct it away from the downstream face. { 'drān·ij ,gal·rē }

**drainage well** [CIV ENG] A vertical shaft in a masonry dam to intercept seepage before it reaches the downstream side. { 'drān·ij ,wel }

**drain tile** [BUILD] A cylindrical tile with holes in the walls used at the base of a building foundation to carry away groundwater. { 'drān ,tīl }

**drain valve** [CHEM ENG] A valve used to drain off material that has separated from a fluid or gas stream, or one used to empty a process line, vessel, or storage tank. { 'drān ,valv }

**dram** [MECH] **1.** A unit of mass, used in the apothecaries' system of mass units, equal to 1/8 apothecaries' ounce or 60 grains or 3.8879346 grams. Also known as apothecaries' dram (dram ap); drachm (British). **2.** A unit of mass, formerly used in the United Kingdom, equal to 1/16 ounce (avoirdupois) or approximately 1.77185 grams. Abbreviated dr. { dram }

**dram ap** *See* dram. { 'dram ,ap }

**drape forming** [ENG] A method of forming thermoplastic sheet in which the sheet is clamped into a movable frame, heated, and draped over high points of a male mold; vacuum is then applied to complete the forming operation. { 'drāp ,fȯr·miŋ }

**Draper effect** [CHEM ENG] The increase in volume at constant pressure at the start of the reaction of hydrogen and chlorine to form hydrogen chloride; the volume increase is caused by an increase in temperature of the reactants, due to heat released in the reaction. { 'drā·pər i,fekt }

**draught** *See* draft. { draft }

**draught stop** *See* fire stop. { 'draf ,stȯp }

**draw** [ENG] To haul a load. { drȯ }

**drawbar** [ENG] **1.** A bar used to connect a tender to a steam locomotive. **2.** A beam across the rear of a tractor for coupling machines or other loads. **3.** A clay block submerged in a glass-making furnace to define the point at which sheet glass is drawn. { 'drȯ,bär }

**drawbar horsepower** [MECH ENG] The horsepower available at the drawbar in the rear of a locomotive or tractor to pull the vehicles behind it. { 'drȯ,bär 'hȯrs,paù·ər }

**drawbar pull** [MECH ENG] The force with which a locomotive or tractor pulls vehicles on a drawbar behind it. { 'drȯ,bär ,půl }

**drawbridge** [CIV ENG] Any bridge that can be raised, lowered, or drawn aside to provide clear passage for ships. { 'drȯ,brij }

**drawdown ratio** [ENG] The ratio of die opening thickness to product thickness. { 'drȯ,daůn ,rā·shō }

**drawer** [ENG] A box or receptacle that slides or rolls on tracks within a cabinet. { 'drȯ·ər }

**draw-filing** [ENG] Filing by pushing and pulling a file sideways across the work. { 'drȯ ,fīl·iŋ }

**drawing** [CHEM ENG] Removing ceramic ware from a kiln after it has been fired. { 'drȯ·iŋ }

**drawknife** [DES ENG] A woodcutting tool with a long, narrow blade and two handles mounted at right angles to the blade. { 'drȯ,nīf }

**drawpoint** [ENG] A steel point used to scratch lines or to pierce holes. { 'drȯ,pȯint }

**dredge** [ENG] A cylindrical or rectangular device for collecting samples of bottom sediment and benthic fauna. [MECH ENG] A floating excavator used for widening or deepening channels, building canals, constructing levees, raising material from stream or harbor bottoms to be used elsewhere as fill, or mining. { drej }

**dredging** [ENG] Removing solid matter from the bottom of a water area. { 'drej·iŋ }

**dress** [CIV ENG] To smooth the surface of concrete or stone. [ELECTR] The arrangement of connecting wires in a circuit to prevent undesirable coupling and feedback. [MECH ENG] **1.** To shape a tool. **2.** To restore a tool to its original shape and sharpness. { dres }

**dresser** [ENG] Any tool or apparatus used for dressing something. { 'dres·ər }

**dressing** [CIV ENG] The process of smoothing or squaring lumber or stone for use in a building. [ENG] The sharpening, repairing, and replacing of parts, notably drilling bits and tool joints, to ready equipment for reuse. { 'dres·iŋ }

**Dressler kiln** [MECH ENG] The first successful muffle-type tunnel kiln. { 'dres·lər ˌkil }

**drier** [ENG] A device to remove water. { 'drī·ər }

**drift** [ENG] **1.** A gradual deviation from a set adjustment, such as frequency or balance current, or from a direction. **2.** The deviation, or the angle of deviation, of a borehole from the vertical or from its intended course. **3.** To measure the size of a pipe opening by passing a mandrel through it. [MECH ENG] The water lost in a cooling tower as mist or droplets entrained by the circulating air, not including the evaporative loss. { drift }

**drift bolt** [ENG] **1.** A bolt used to force out other bolts or pins. **2.** A metal rod used to secure timbers. { 'drift ˌbōlt }

**drifter** [MECH ENG] A rock drill, similar to but usually larger than a jack hammer, mounted for drilling holes up to $4\frac{1}{2}$ inches (11.4 centimeters) in diameter. { 'drif·tər }

**drift indicator** [ENG] Device used to record directional logs; records only the amount of drift (deviation from the vertical), and not the direction. { 'drift ˌin·dəˌkād·ər }

**driftpin** [DES ENG] A round, tapered metal rod that is driven into matching rivet holes of two metal parts for stretching the parts and bringing them into alignment. { 'driftˌpin }

**drift plug** [ENG] A plug that can be driven into a pipe to straighten it or to flare its opening. { 'drift ˌpləg }

**drift ultrasonic flowmeter** *See* deflection ultrasonic flowmeter. { ¦drift ¦əl·trəˈsän·ik 'flōˌmēd·ər }

**drill** [ENG] A rotating-end cutting tool for creating or enlarging holes in a solid material. Also known as drill bit. { dril }

**drillability** [ENG] Fitness for being drilled, denoting ease of penetration. { ˌdril·əˈbil·əd·ē }

**drill angle gage** *See* drill grinding gage. { 'dril ˌaŋ·gəl ˌgāj }

**drill bit** *See* drill. { 'dril ˌbit }

**drill cable** [ENG] A cable used to pull up drill rods, casing, and other drilling equipment used in making a borehole. { 'dril ˌkā·bəl }

**drill capacity** [MECH ENG] The length of drill rod of specified size that the hoist on a diamond or rotary drill can lift or that the brake can hold on a single line. { 'dril kəˌpas·əd·ē }

**drill carriage** [MECH ENG] A platform or frame on which several rock drills are mounted and which moves along a track, for heavy drilling in large tunnels. Also known as jumbo. { 'dril ˌkar·ij }

**drill chuck** [DES ENG] A chuck for holding a drill or other cutting tool on a spindle. { 'dril ˌchək }

**drill collar** [DES ENG] A ring which holds a drill bit and gives it radial location with respect to a bearing. { 'dril ˌkäl·ər }

**drill cuttings** [ENG] Cuttings of rock and other subterranean materials brought to the surface during the drilling of wellholes. { 'dril ˌkəd·iŋz }

**drill drift** [ENG] A steel wedge used to remove tapered shank tools from spindles, sockets, and sleeves. { 'dril ˌdrift }

**drilled caisson** [CIV ENG] A drilled hole filled with concrete and lined with a cylindrical steel casing if needed. { ¦drild 'kāˌsän }

**driller** [ENG] A person who operates a drilling machine. [MECH ENG] *See* drilling machine. { 'dril·ər }

**drill extractor** [ENG] A tool for recovering broken drill pieces or a detached drill from a borehole. { 'dril ikˌstrak·tər }

**drill feed** [MECH ENG] The mechanism by which the drill bit is fed into the borehole during drilling. { 'dril ˌfēd }

**drill fittings** [ENG] All equipment used in a borehole during drilling. Also known as downhole equipment. { 'dril ˌfid·iŋz }

**drill floor** [ENG] A work area covered with planks around the collar of a borehole at the base of a drill tripod or derrick. { 'dril ˌflōr }

**drill footage** [ENG] The lineal feet of borehole drilled. { 'dril ˌfůd·ij }

**drill gage** [DES ENG] A thin, flat steel plate that has accurate holes for many sizes of drills; each hole, identified as to drill size, enables the diameter of a drill to be checked. [ENG] Diameter of a borehole. { 'dril ˌgāj }

**drill grinding gage** [DES ENG] A tool that checks the angle and length of a twist drill while grinding it. Also known as drill angle gage; drill point gage. { 'dril ˌgrīnd·iŋ ˌgāj }

**drill hole** [ENG] A hole created or enlarged by a drill or auger. Also known as borehole. { 'dril ˌhōl }

**drill-hole logging** *See* borehole logging. { 'dril ˌhōl 'läg·iŋ }

**drill-hole pattern** [ENG] The number, position, angle, and depth of the shot holes forming the round in the face of a tunnel or sinking pit. { 'dril ˌhōl ˌpad·ərn }

**drill-hole survey** *See* borehole survey. { 'dril ˌhōl ˌsərˌvā }

**drilling** [ENG] The creation or enlarging of a hole in a solid material with a drill. { 'dril·iŋ }

**drilling column** [ENG] The column of drill rods, with the drill bit attached to the end. { 'dril·iŋ ˌkäl·əm }

**drilling machine** [MECH ENG] A device, usually motor-driven, fitted with an end cutting tool that is rotated with sufficient power either to create a hole or to enlarge an existing hole in a solid material. Also known as driller. { 'dril·iŋ məˌshēn }

**drilling platform** [ENG] The structural base upon which the drill rig and associated equipment is mounted during the drilling operation. { 'dril·iŋ ˌplatˌfȯrm }

**drilling rate** [MECH ENG] The number of lineal feet drilled per unit of time. { 'dril·iŋ ˌrāt }

**drilling time** [ENG] **1.** The time required in rotary drilling for the bit to penetrate a specified thickness (usually 1 foot) of rock. **2.** The actual time the drill is operating. { 'dril·iŋ ˌtīm }

**drilling time log** [ENG] Foot-by-foot record of how fast a formation is drilled. { 'dril·iŋ 'tīm ˌläg }

**drill jig** [MECH ENG] A device fastened to the

work in repetition drilling to position and guide the drill. { 'dril ˌjig }

**drill log** [ENG] **1.** A record of the events and features of the formations penetrated during boring. Also known as boring log. **2.** A record of all occurrences during drilling that might help in a complete logging of the hole or in determining the cost of the drilling. { 'dril ˌläg }

**drill out** [ENG] **1.** To complete one or more boreholes. **2.** To penetrate or remove a borehole obstruction. **3.** To locate and delineate the area of a subsurface ore body or of petroleum by a series of boreholes. { ¦dril 'aůt }

**drill-over** [ENG] The act or process of drilling around a casing lodged in a borehole. { 'dril ˌō·vər }

**drill point gage** *See* drill grinding gage. { 'dril ˌpȯint ˌgāj }

**drill press** [MECH ENG] A drilling machine in which a vertical drill moves into the work, which is stationary. { 'dril ˌpres }

**drill rod** [ENG] The long rod that drives the drill bit in drilling boreholes. { 'dril ˌräd }

**drill sleeve** [ENG] A tapered, hollow steel shaft designed to fit the tapered shank of a cutting tool to adapt it to the drill press spindle. { 'dril ˌslēv }

**drill socket** [ENG] An adapter to fit a tapered shank drill to a taper hole that is larger than that in the drill press spindle. { 'dril ˌsäk·ət }

**drill string** [MECH ENG] The assemblage of drill rods, core barrel, and bit, or of drill rods, drill collars, and bit in a borehole, which is connected to and rotated by the drill collar of the borehole. { 'dril ˌstriŋ }

**drip cap** [BUILD] A horizontal molding installed over the frame for a door or window to direct water away from the frame. { 'drip ˌkap }

**drip edge** [BUILD] A metal strip that extends beyond the other parts of the roof and is used to direct rainwater off. { 'drip ˌej }

**drive** [ELECTR] *See* excitation. [MECH ENG] The means by which a machine is given motion or power (as in steam drive, diesel-electric drive), or by which power is transferred from one part of a machine to another (as in gear drive, belt drive). { drīv }

**drive-by-wire** [MECH ENG] Electronic throttle control in automobiles. { ¦drīv bī 'wīr }

**drive chuck** [MECH ENG] A mechanism at the lower end of a diamond-drill drive rod on the swivel head by means of which the motion of the drive rod can be transmitted to the drill string. { drīv ˌchək }

**drive fit** [DES ENG] A fit in which the larger (male) part is pressed into a smaller (female) part; the assembly must be effected through the application of an external force. { ˌdrīv ˌfit }

**drivehead** [ENG] A cap fitted over the end of a mechanical part to protect it while it is being driven. { 'drīvˌhed }

**driveline** [MECH ENG] In an automotive vehicle, the group of parts, including the universal joint and the drive shaft, that connect the transmission with the driving wheels. { 'drīvˌlīn }

**driven caisson** [CIV ENG] A caisson formed by driving a cylindrical steel shell into the ground with a pile-driving hammer and then placing concrete inside; the shell may be removed when concrete sets. { ¦driv·ən 'kāˌsän }

**driven gear** [MECH ENG] The member of a pair of gears to which motion and power are transmitted by the other. { ¦driv·ən 'gir }

**drivepipe** [ENG] A thick-walled casing pipe that is driven through overburden or into a deep drill hole to prevent caving. { 'drīvˌpīp }

**drive pulley** [MECH ENG] The pulley that drives a conveyor belt. { 'drīv ˌpůl·ē }

**driver** [ELECTR] The amplifier stage preceding the output stage in a receiver or transmitter. [ENG ACOUS] The portion of a horn loudspeaker that converts electrical energy into acoustical energy and feeds the acoustical energy to the small end of the horn. { 'drī·vər }

**drive rod** [ENG] Hollow shaft in the swivel head of a diamond-drill machine through which energy is transmitted from the drill motor to the drill string. Also known as drive spindle. { 'drīv ˌräd }

**drive sampling** [ENG] The act or process of driving a tubular device into soft rock material for obtaining dry samples. { 'drīv ˌsam·pliŋ }

**drivescrew** [DES ENG] A screw that is driven all the way in, or nearly all the way in, with a hammer. { 'drīvˌskrü }

**drive shaft** [MECH ENG] A shaft which transmits power from a motor or engine to the rest of a machine. { 'drīv ˌshaft }

**drive shoe** [DES ENG] A sharp-edged steel sleeve attached to the bottom of a drivepipe or casing to act as a cutting edge and protector. { 'drīv ˌshü }

**drive spindle** *See* drive rod. { 'drīv ˌspin·dəl }

**drive train** *See* power train. { 'drīv ˌtrān }

**driving clock** [ENG] A mechanism for driving an instrument at a required rate. { 'drīv·iŋ ˌkläk }

**driving pinion** [MECH ENG] The input gear in the differential of an automobile. { 'drīv·iŋ ˌpin·yən }

**driving-point function** [CONT SYS] A special type of transfer function in which the input and output variables are voltages or currents measured between the same pair of terminals in an electrical network. { 'drīv·iŋ ˌpȯint ˌfəŋk·shən }

**driving resistance** [MECH] The force exerted by soil on a pile being driven into it. { 'drīv·iŋ ri'zis·təns }

**driving wheel** [MECH ENG] A wheel that supplies driving power. { 'drīv·iŋ ˌwēl }

**drogue** [ENG] **1.** A device, such as a sea anchor, usually shaped like a funnel or cone and dragged or towed behind a boat or seaplane for deceleration, stabilization, or speed control. **2.** A current-measuring assembly consisting of a weighted current cross, sail, or parachute and an attached surface buoy. Also known as drag anchor; sea anchor. { drōg }

**droop governor** [MECH ENG] A governor whose equilibrium speed decreases as the load on the

machinery controlled by the governor increases. { 'drüp ˌgə·vər·nər }

**drop ball** [ENG] A ball, weighing 3000–4000 pounds (1400–1800 kilograms), dropped from a crane through about 20–33 feet (6–10 meters) onto oversize quarry stones left after blasting; this method is used to avoid secondary blasting. { 'dräp ˌbȯl }

**drop bar** [ELEC] Protective device used to ground a high-voltage capacitor when opening a door. [MECH ENG] A bar that guides sheets of paper into a printing or folding machine. { 'dräp ˌbär }

**drop hammer** *See* pile hammer. { 'dräp ˌham·ər }

**droplet condensation** [THERMO] The formation of numerous discrete droplets of liquid on a wall in contact with a vapor, when the wall is cooled below the local vapor saturation temperature and the liquid does not wet the wall. { ¦dräp·lət ˌkän·dən'sā·shən }

**dropout** [ELEC] Of a relay, the maximum current, voltage, power, or such, at which it will release from its energized position. [ELECTR] A reduction in output signal level during reproduction of recorded data, sufficient to cause a processing error. { 'dräpˌaůt }

**dropout error** [ELECTR] Loss of a recorded bit or any other error occurring in recorded magnetic tape due to foreign particles on or in the magnetic coating or to defects in the backing. { 'dräpˌaůt ˌer·ər }

**drop press** *See* punch press. { 'dräp ˌpres }

**drop repeater** [ELECTR] Microwave repeater that is provided with the necessary equipment for local termination of one or more circuits. { 'dräp riˌpēd·ər }

**drop siding** [BUILD] Building siding with a shiplap joint. { 'dräp ˌsīd·iŋ }

**dropsonde** [ENG] A radiosonde dropped by parachute from a high-flying aircraft to measure weather conditions and report them back to the aircraft. Also known as dropwindsonde; parachute radiosonde. { 'dräpˌsänd }

**dropsonde dispenser** [ENG] A chamber from which dropsonde instruments are released from weather reconnaissance aircraft; used only for some models of equipment, ejection chambers being used for others. { 'dräpˌsänd də'spen·sər }

**drop spillway** [CIV ENG] A spillway usually less than 20 feet (6 meters) high having a vertical downstream face, and water drops over the face without touching the face. { ¦dräp 'spilˌwā }

**drop vent** [ENG] In a plumbing system, a type of vent that is connected to a drain or vent pipe at a point below the fixture it is serving. { 'dräp ˌvent }

**dropwindsonde** *See* dropsonde. { ˌdräp'wind ˌsänd }

**dropwise condensation** [THERMO] Condensation of a vapor on a surface in which the condensate forms into drops. { ¦dräpˌwīz ˌkän·dən'sā·shən }

**drosometer** [ENG] An instrument used to measure the amount of dew deposited on a given surface. { drō'säm· əd·ər }

**drum** [CHEM ENG] Tower or vessel in a refinery into which heated products are conducted so that volatile portions can separate. [DES ENG] **1.** A hollow, cylindrical container. **2.** A metal cylindrical shipping container for liquids having a capacity of 12–110 gallons (45–416 liters). [ELECTR] A computer storage device consisting of a rapidly rotating cylinder with a magnetizable external surface on which data can be read or written by many read/write heads floating a few millionths of an inch off the surface. Also known as drum memory; drum storage; magnetic drum; magnetic drum storage. [MECH ENG] **1.** A horizontal cylinder about which rope or wire rope is wound in a hoisting mechanism. **2.** A hollow or solid cylinder or barrel that acts on, or is acted upon by, an exterior entity, such as the drum in a drum brake. Also known as hoisting drum. { drəm }

**drum brake** [MECH ENG] A brake in which two curved shoes fitted with heat- and wear-resistant linings are forced against the surface of a rotating drum. { 'drəm ˌbrāk }

**drum cam** [MECH ENG] A device consisting of a drum with a contoured surface which communicates motion to a cam follower as the drum rotates around an axis. { 'drəm ˌkam }

**drum dryer** [MECH ENG] A machine for removing water from substances such as milk, in which a thin film of the product is moved over a turning steam-heated drum and a knife scrapes it from the drum after moisture has been removed. { 'drəm ˌdrī·ər }

**drum feeder** [MECH ENG] A rotating drum with vanes or buckets to lift and carry parts and drop them into various orienting or chute arrangements. Also known as tumbler feeder. { 'drəm ˌfēd·ər }

**drum filter** [MECH ENG] A cylindrical drum that rotates through thickened ore pulp, extracts liquid by a vacuum, and leaves solids, in the form of a cake, on a permeable membrane on the drum end. Also known as rotary filter; rotary vacuum filter. { 'drəm ˌfil·tər }

**drum gate** [CIV ENG] A movable crest gate in the form of an arc hinged at the apex and operated by reservoir pressure to open and close a spillway. { 'drəm ˌgāt }

**drum memory** *See* drum. { ¦drəm 'mem·rē }

**drum meter** *See* liquid-sealed meter. { 'drəm ˌmēd·ər }

**drum plotter** [ENG] A graphics output device that draws lines with a continuously moving pen on a sheet of paper rolled around a rotating drum that moves the paper in a direction perpendicular to the motion of the pen. { 'drəm ˌpläd·ər }

**drum storage** *See* drum. { 'drəm ˌstȯr·ij }

**drum trap** [ENG] In plumbing, a trap in the form of a cylinder with a vertical axis that is fitted with a removable cover plate. { 'drəm ˌtrap }

**drum-type boiler** *See* bent-tube boiler. { 'drəm ˌtīp ˌbȯil·ər }

**dry abrasive cutting** [MECH ENG] Frictional cutting using a rotary abrasive wheel without the use of a liquid coolant. { ¦drī ə¸brā·siv ¦kəd·iŋ }

**dry-back boiler** *See* scotch boiler. { ¦drī ¸bak ¦bȯil·ər }

**dry bed** [CHEM ENG] A configuration of solid adsorption materials, for example molecular sieves or charcoal, used to recover liquid from or purify a gas stream. { ¦drī ¦bed }

**dry blast cleaning** [ENG] Cleaning of metallic surfaces by blasting with abrasive material traveling at a high velocity; abrasive may be accelerated by an air nozzle or a centrifugal wheel. { ¦drī ¸blast ¦klēn·iŋ }

**dry-box process** [CHEM ENG] The passing of coke-oven or other industrial gases through boxes containing trays of iron oxide coated on wood shavings or other supporting material in order to remove hydrogen sulfide. { ¦drī ¸bäks ¸präs·əs }

**dry-bulb thermometer** [ENG] An ordinary thermometer, especially one with an unmoistened bulb; not dependent upon atmospheric humidity. { ¦drī ¸bəlb thər'mäm·əd·ər }

**dry cargo** [IND ENG] Nonliquid cargo, including minerals, grain, boxes, and drums. { ¦drī ¦kär¸gō }

**dry cell** [ELEC] A voltage-generating cell having an immobilized electrolyte. { ¦drī ¸sel }

**dry-chemical fire extinguisher** [CHEM ENG] A dry powder, consisting principally of sodium bicarbonate, which is used for extinguishing small fires, especially electrical fires. { ¦drī ¸kem·i·kəl ¦fīr ik¸stiŋ·gwə·shər }

**dry cleaning** [ENG] To utilize dry-cleaning fluid to remove stains from textile. { ¦drī klēn·iŋ }

**dry coloring** [CHEM ENG] A plastics coloring method in which uncolored particles of the plastic material are tumble-blended with selected dyes and pigments. [ENG] A method to color plastics by tumbleblending colorless plastic particles with dyes and pigments. { ¦drī ¸kəl·ə·riŋ }

**dry cooling tower** [MECH ENG] A structure in which water is cooled by circulation through finned tubes, transferring heat to air passing over the fins; there is no loss of water by evaporation because the air does not directly contact the water. { ¦drī ¸kül·iŋ ¸taù·ər }

**dry course** [BUILD] An initial roofing course of felt or paper not bedded in tar or asphalt. { ¦drī ¸kȯrs }

**dry-desiccant dehydration** [CHEM ENG] Use of silica gel or other solid absorbent to remove liquids from gases, such as water from air, or liquid hydrocarbons from natural gas. { ¦drī ¦des·ə·kənt ¸dē·hī'drā·shən }

**dry-disk rectifier** *See* metallic rectifier. { ¦drī ¸disk ¦rek·tə¸fī·ər }

**dry dock** [CIV ENG] A dock providing support for a vessel and a means for removing the water so that the bottom of the vessel can be exposed. { ¦drī ¸däk }

**dry-dock caisson** [CIV ENG] The floating gate to a dry dock. Also known as caisson. { ¦drī ¸däk ¦kā¸sän }

**dry friction** [MECH] Resistance between two dry solid surfaces, that is, surfaces free from contaminating films or fluids. { ¦drī ¦frik·shən }

**dry grinding** [ENG] Reducing particle sizes without a liquid medium. { ¦drī ¦grīnd·iŋ }

**dry hole** [ENG] A hole driven without the use of water. { ¦drī ¦hōl }

**drying oven** [ENG] A closed chamber for drying an object by heating at relatively low temperatures. { ¦drī·iŋ ¸əv·ən }

**dry kiln** [ENG] A heated room or chamber used to dry and season cut lumber. { ¦drī ¦kil }

**dry limestone process** [CHEM ENG] An air-pollution control method in which sulfur oxides are exposed to limestone to convert them to disposable residues. { ¦drī ¦līm¸stōn ¸präs·əs }

**dry machining** [MECH ENG] Cutting, drilling, and grinding operations in which the use of a cutting fluid (lubricant) has been eliminated. { ¦drī mə'shēn·iŋ }

**dry measure** [MECH] A measure of volume for commodities that are dry. { ¦drī ¦mezh·ər }

**dry mill** [MECH ENG] Grinding device used to powder or pulverize solid materials without an associated liquid. { ¦drī ¦mil }

**dry permeability** [ENG] A property of dried bonded sand to permit passage of gases while molten material is poured into a mold. { ¦drī ¸pər·mē·ə'bil·əd·ē }

**dry pint** *See* pint. { ¦drī ¦pīnt }

**dry pipe** [MECH ENG] A perforated metal pipe above the normal water level in the steam space of a boiler which prevents moisture or extraneous matter from entering steam outlet lines. { ¦drī ¦pīp }

**dry-pipe system** [ENG] A sprinkler system that admits water only when the air it normally contains has been vented; used for systems subjected to freezing temperatures. { ¦drī ¸pīp ¸sis·təm }

**dry-pit pump** [MECH ENG] A pump operated with the liquid conducted to and from the unit by piping. { ¦drī ¸pit ¸pəmp }

**dry plasma etching** *See* plasma etching. { ¦drī ¦plaz·mə }

**dry pressing** [ENG] Molding clayware by compressing moist clay powder in metal dies. { ¦drī ¦pres·iŋ }

**dry pt** *See* pint.

**dry run** [ENG] Any practice test or session. { ¦drī ¦rən }

**Drysdale ac polar potentiometer** [ENG] A potentiometer for measuring alternating-current voltages in which the voltage is applied across a slide-wire supplied with current by a phase-shifting transformer; this current is measured by an ammeter and brought into phase with the unknown voltage by adjustment of the transformer rotor, and the unknown voltage is measured by observation of the slide-wire setting for a null indication of a vibration galvanometer. { 'drīz¸dāl ¦ā¦sē ¦pō·lər pə¸ten·chē'äm·əd·ər }

**dry sieving** [ENG] Particle-size distribution analysis of powdered solids; the sample is placed on the top sieve screen of a nest (stack), with

mesh openings decreasing in size from the top to the bottom of the nest. { ˈdrī ˈsiv·iŋ }

**dry sleeve** [MECH ENG] A cylinder liner which is not in contact with the coolant. { ˈdrī ˈslēv }

**dry spot** [CHEM ENG] **1.** An open area of an incomplete surface film on laminated plastic. **2.** A section of laminated glass where the interlayer and glass are not bonded. { ˈdrī ˌspät }

**dry-steam drum** [MECH ENG] **1.** Pressurized chamber into which steam flows from the steam space of a boiler drum. **2.** That portion of a two-stage furnace that extends forward of the main combustion chamber; fuel is dried and gasified therein, with combustion of gaseous products accomplished in the main chamber; the refractory walls of the Dutch oven are sometimes water-cooled. { ˈdrī ˌstēm ˈdrəm }

**dry-steam energy system** [ENG] **1.** A geothermal energy source that produces superheated steam. **2.** A hydrothermal convective system driven by vapor with a temperature in excess of 300°F (150°C). { ˈdrī ˈstēm ˈen·ər·jē ˌsis·təm }

**dry storage** [MECH ENG] Cold storage in which refrigeration is provided by chilled air. { ˈdrī ˌstȯr·ij }

**dry strength** [ENG] The strength of an adhesive joint determined immediately after drying under specified conditions or after a period of conditioning in the standard laboratory atmosphere. { ˈdrī ˌstreŋkth }

**dry test meter** [ENG] Gas-flow rate meter with two compartments separated by a movable diaphragm which is connected to a series of gears that actuate a dial; when one chamber is full, a valve switches to the other, empty chamber; used to measure household gas-flow rates and to calibrate flow-measurement instruments. { ˈdrī ˈtest ˌmēd·ər }

**dry ticket** [IND ENG] Tank inspection form signed by shore and ship inspectors before loading and after discharging the ship. { ˈdrī ˌtik·ət }

**dry wall** [BUILD] A wall covered with wallboard, in contrast to plaster. [ENG] A wall constructed of rock without cementing material. { ˈdrī ˌwȯl }

**dry well** [CIV ENG] **1.** A well that has been completely drained. **2.** An excavated well filled with broken stone and used to receive drainage when the water percolates into the soil. **3.** Compartment of a pumping station in which the pumps are housed. { ˈdrī ˌwel }

**Drzewiecki theory** [MECH ENG] In theoretical investigations of windmill performance, a theory concerning the air forces produced on an element of the blade. { ˈdərz·vē·kē ˌthē·ə·rē }

**DS** *See* Doppler sonar.

**Dualayer distillate process** [CHEM ENG] A process for the removal of mercaptan and oxygenated compounds from distillate fuel oils; treatment is with concentrated caustic Dualayer solution and electrical precipitation of the impurities. { ˈdü·əˌlā·ər ˈdis·təl·ət ˌpräs·əs }

**Dualayer solution** [CHEM ENG] A concentrated potassium or sodium hydroxide solution containing a solubilizer; used in the Dualayer distillate process. { ˈdü·əˌlā·ər səˈlü·shən }

**dual-bed dehumidifier** [MECH ENG] A sorbent dehumidifier with two beds, one bed dehumidifying while the other bed is reactivating, thus providing a continuous flow of air. { ˈdü·əl ˈbed ˌdē·yüˈmid·əˌfī·ər }

**dual-channel amplifier** [ENG ACOUS] An audiofrequency amplifier having two separate amplifiers for the two channels of a stereophonic sound system, usually operating from a common power supply mounted on the same chassis. { ˈdü·əl ˈchan·əl ˈam·pləˌfī·ər }

**dual control** [CONT SYS] An optimal control law for a stochastic adaptive control system that gives a balance between keeping the control errors and the estimation errors small. { ˈdü·əl kənˈtrōl }

**dual-flow oil burner** [MECH ENG] An oil burner with two sets of tangential slots in its atomizer for use at different capacity levels. { ˈdü·əl ˈflō ˈȯil ˌbər·nər }

**dual-fuel engine** [MECH ENG] Internal combustion engine that can operate on either of two fuels, such as natural gas or gasoline. { ˈdü·əl ˈfyül ˈen·jən }

**dual-gravity valve** [CHEM ENG] A float-operated valve that operates on the interface between two immiscible liquids of different specific gravities. { ˈdü·əl ˈgrav·əd·ē ˌvalv }

**dual in-line package** [ELECTR] Microcircuit package with two rows of seven vertical leads that are easily inserted into an etched circuit board. Abbreviated DIP. { ˈdü·əl ˈin ˌlīn ˈpak·ij }

**dual meter** [ENG] Meter constructed so that two aspects of an electric circuit may be read simultaneously. { ˈdü·əl ˈmēd·ər }

**dual-mode control** [CONT SYS] A type of control law which consists of two distinct types of operation; in linear systems, these modes usually consist of a linear feedback mode and a bang-bang-type mode. { ˈdü·əl ˌmōd kənˈtrōl }

**dual-track tape recorder** *See* double-track tape recorder. { ˈdü·əl ˌtrak ˈtāp riˌkȯrd·ər }

**dub** [ENG ACOUS] **1.** To transfer recorded material from one recording to another, with or without the addition of new sounds, background music, or sound effects. **2.** To combine two or more sources of sound into one record. **3.** To add a new sound track or new sounds to a motion picture film, or to a recorded radio or television production. { dəb }

**Dubbs cracking** [CHEM ENG] A continuous, liquid-phase, thermal cracking process. { ˈdəbz ˈkrak·iŋ }

**duckbill** [MECH ENG] A shaking type of combination loader and conveyor whose loading end is generally shaped like a duck's bill. { ˈdəkˌbil }

**duckfoot** [ENG] In a piping system, a support fitted to the bend of a vertical pipe to permit the direct load of the pipework and fittings to be transferred to the floor, foundation, or associated installations. { ˈdəkˌfút }

**duct** [MECH ENG] A fluid flow passage which may range from a few inches in diameter to many feet in rectangular cross section, usually constructed of galvanized steel, aluminum, or copper, through which air flows in a ventilation system or to a compressor, supercharger, or other equipment at speeds ranging to thousands of feet per minute. { dəkt }

**ducted fan** [MECH ENG] A propeller or multibladed fan inside a coaxial duct or cowling. Also known as ducted propeller; shrouded propeller. { ¦dək·təd 'fan }

**ducted propeller** *See* ducted fan. { ¦dək·təd prə'pel·ər }

**ductile fracture** *See* fibrous fracture. { ¦dək·təl 'frak·chər }

**Dufour effect** [THERMO] Energy flux due to a mass gradient occurring as a coupled effect of irreversible processes. { ¦dü·fôr i'fekt }

**Dufour number** [THERMO] A dimensionless number used in studying thermodiffusion, equal to the increase in enthalpy of a unit mass during isothermal mass transfer divided by the enthalpy of a unit mass of mixture. Symbol $Du_2$. { ¦dü·fôr ˌnəm·bər }

**Duhem-Margules equation** [THERMO] An equation showing the relationship between the two constituents of a liquid-vapor system and their partial vapor pressures: $\frac{d \ln p_A}{d \ln x_A} = \frac{d \ln p_B}{d \ln x_B}$ where $x_A$ and $x_B$ are the mole fractions of the two constituents, and $p_A$ and $p_B$ are the partial vapor pressures. { dü'em 'mär·gyə·lēz iˌkwā·zhən }

**Dukler theory** [CHEM ENG] Relationship of velocity and temperature distribution in thin films on vertical walls; used to calculate eddy viscosity and thermal conductivity near the solid boundary. { 'dük·lər ˌthē·ə·rē }

**Dulong-Petit law** [THERMO] The law that the product of the specific heat per gram and the atomic weight of many solid elements at room temperature has almost the same value, about 6.3 calories (264 joules) per degree Celsius. { də'lóŋ pə'tē ˌlò }

**Dulong's formula** [ENG] A formula giving the gross heating value of coal in terms of the weight fractions of carbon, hydrogen, oxygen, and sulfur from the ultimate analysis. { də'lóŋz ˌfōr·myə·lə }

**DUMAND** *See* deep underwater muon and neutrino detector. { 'dü,mand }

**dumb iron** [ENG] **1.** A rod for opening seams prior to caulking. **2.** A rigid connector between the frame of a motor vehicle and the spring shackle. { 'dəm ˌī·ərn }

**dumbwaiter** [MECH ENG] An industrial elevator which carries small objects but is not permitted to carry people. { 'dəmˌwād·ər }

**dummy** [ENG] Simulating device with no operating features, as a dummy heat coil. { 'dəm·ē }

**dummy joint** [ENG] A groove cut into the top half of a concrete slab, sometimes packed with filler, to form a line where the slab can crack with only minimum damage. { ¦dəm·ē ˌjòint }

**dump bailer** [ENG] A cylindrical vessel designed to deliver cement or water into a well which otherwise might cave in if fluid was poured from the top. { 'dəmp ˌbāl·ər }

**dump bucket** [MECH ENG] A large bucket with movable discharge gates at the bottom; used to move soil or other construction materials by a crane or cable. { 'dəmp ˌbək·ət }

**dump car** [MECH ENG] Any of several types of narrow-gage rail cars with bodies which can easily be tipped to dump material. { 'dəmp ˌkär }

**dump tank** *See* measuring tank. { 'dəmp ˌtaŋk }

**dump truck** [ENG] A motor or hand-propelled truck for hauling and dumping loose materials, equipped with a body that discharges its contents by gravity. { 'dəmp ˌtrək }

**dump valve** [ENG] A large valve located at the bottom of a tank or container used in emergency situations to empty the tank quickly; for example, to jettison fuel from an airplane fuel tank. { 'dəmp ˌvalv }

**dumpy level** [ENG] A surveyor's level which has the telescope with its level tube rigidly attached to a vertical spindle and is capable only of horizontal rotary movement. { ¦dəm·pē 'lev·əl }

**dunking sonar** *See* dipping sonar. { 'dəŋk·iŋ ˌsōˌnär }

**dunnage** [ENG] A configuration of members that forms a structural support for a cooling tower or similar appendage to a building but is not part of the building itself. [IND ENG] **1.** Padding material placed in a container to protect shipped goods from damage. **2.** Loose wood or waste material placed in the ship's hold to protect the cargo from shifting and damage. { 'dən·ij }

**duplex** [ENG] Consisting of two parts working together or in a similar fashion. { 'dü,pleks }

**duplexed system** [ENG] A system with two distinct and separate sets of facilities, each of which is capable of assuming the system function while the other assumes a standby status. Also known as redundant system. { 'dü,plekst ˌsis·təm }

**duplex lock** [DES ENG] A lock with two independent pin-tumbler cylinders on the same bolt. { ¦dü,pleks 'läk }

**duplex operation** [ENG] In radar, a condition of operation when two identical and interchangeable equipments are provided, one in an active state and the other immediately available for operation. { ¦dü,pleks äp·ə'rā·shən }

**duplex pump** [MECH ENG] A reciprocating pump with two parallel pumping cylinders. { 'dü,pleks ˌpəmp }

**duplex tandem compressor** [MECH ENG] A compressor having cylinders on two parallel frames connected through a common crankshaft. { ¦dü,pleks ¦tan·dəm kəm'pres·ər }

**duplicate cavity plate** [ENG] In plastics molds, the removable plate in which the molding cavities are retained; used in operating where two plates are necessary for insert loading. { ¦düp·lə·kət 'kav·əd·ē ˌplāt }

**Dupré equation** [THERMO] The work $W_{LS}$ done

by adhesion at a gas-solid-liquid interface, expressed in terms of the surface tensions $\gamma$ of the three phases, is $W_{LS} = \gamma_{GS} + \gamma_{GL} - \gamma_{LS}$. { dü'prā i,kwā·zhən }

**durability** [ENG] The quality of equipment, structures, or goods of continuing to be useful after an extended period of time and usage. { ,dùr·ə'bil·əd·ē }

**durable goods** [ENG] Products whose usefulness continues for a number of years and that are not consumed or destroyed in a single usage. Also known as durables; hard goods. { ¦dùr·ə·bəl 'gůdz }

**durables** *See* durable goods. { 'dùr·ə·bəlz }

**duration** [MECH] A basic concept of kinetics which is expressed quantitatively by time measured by a clock or comparable mechanism. { də'rā·shən }

**durometer** [ENG] An instrument consisting of a small drill or blunt indenter point under pressure; used to measure hardness of metals and other materials. { də'räm·əd·ər }

**durometer hardness** [ENG] The hardness of a material as measured by a durometer. { də 'räm·əd·ər ,härd·nəs }

**dust chamber** [ENG] A chamber through which gases pass to permit deposition of solid particles for collection. Also known as ash collector; dust collector. { 'dəst ,chām·bər }

**dust collector** *See* dust chamber. { 'dəst kə,lek·tər }

**dust control system** [ENG] System to capture, settle, or inert dusts produced during handling, drying, or other process operations; considered important for safety and health. { 'dəst kən,trōl ,sis·təm }

**dust counter** [ENG] A photoelectric apparatus which measures the size and number of dust particles per unit volume of air. Also known as Kern counter. { 'dəst ,kaůnt·ər }

**dust-counting microscope** [ENG] A microscope equipped for quantitative dust sample analysis; magnification is usually 100X. { 'dəst ,kaůnt·iŋ 'mī·krə,skōp }

**dust explosion** [ENG] An explosion following the ignition of flammable dust suspended in the air. { 'dəst ik'splō·zhən }

**dust filter** [ENG] A gas-cleaning device using a dry or viscous-coated fiber or fabric for separation of particulate matter. { 'dəst ,fil·tər }

**dust separator** [ENG] Device or system to remove dust from a flowing stream of gas; includes electrostatic precipitators, wet scrubbers, bag filters, screens, and cyclones. { 'dəst ,sep·ə,rād·ər }

**Dutch door** [BUILD] A door with upper and lower parts that can be opened and closed independently. { ¦dəch 'dȯr }

**dutchman** [ENG] A filler piece for closing a gap between two pipes or between a pipe or fitting and a piece of equipment, if the pipe is too short to achieve closure or if the pipe and equipment are not aligned. { 'dəch·mən }

**Dutchman's log** [ENG] A buoyant object thrown overboard to determine the speed of a vessel; the time required for a known length of the vessel to pass the object is measured, and the speed can then be computed. { ¦dəch·mənz 'läg }

**Dutch process** [CHEM ENG] A process for making white lead; metallic lead is placed in vessels containing a dilute acetic acid, and the vessels are stacked in bark or manure. { 'dəch ,präs·əs }

**duty cycle** [ELECTR] *See* duty ratio. [ENG] **1.** The time intervals devoted to starting, running, stopping, and idling when a device is used for intermittent duty. **2.** The ratio of working time to total time for an intermittently operating device, usually expressed as a percent. Also known as duty factor. { 'düd·ē ,sī·kəl }

**duty cyclometer** [ENG] Test meter which gives direct reading of duty cycle. { 'düd·ē sī'kläm·əd·ər }

**D variometer** *See* declination variometer. { 'dē ,ver·ē'äm·əd·ər }

**Dvorak keyboard** [ENG] A keyboard whose layout is altered from that of the standard qwerty keyboard to speed up typing; more of the frequently used keys are on the home row. { də¦vȯr ,ak 'kē,bȯrd }

**dwell** [DES ENG] That part of a cam that allows the cam follower to remain at maximum lift for a period of time. [ELEC] The number of degrees through which the distributor cam rotates from the time that the contact points close to the time that they open again. Also known as dwell angle. [ENG] A pause in the application of pressure to a mold. { dwel }

**dwell angle** *See* dwell. { 'dwel ,aŋ·gəl }

**dwt** *See* pennyweight.

**DX coil** *See* direct-expansion coil. { ¦dē¦eks ,kȯil }

**dyecrete process** [ENG] A process of adding permanent color to concrete with organic dyes. { 'dī,krēt ,präs·əs }

**dyeing** [CHEM ENG] The application of color-producing agents to material, usually fibrous or film, in order to impart a degree of color permanence demanded by the projected end use. { 'dī·iŋ }

**dynamical similarity** [MECH] Two flow fields are dynamically similar if one can be transformed into the other by a change of length and velocity scales. All dimensionless numbers of the flows must be the same. { dī¦nam·ə·kəl sim·ə'lar·əd·ē }

**dynamical variable** [MECH] One of the quantities used to describe a system in classical mechanics, such as the coordinates of a particle, the components of its velocity, the momentum, or functions of these quantities. { dī¦nam·ə·kəl 'ver·ē·ə·bəl }

**dynamic augment** [MECH ENG] Force produced by unbalanced reciprocating parts in a steam locomotive. { dī¦nam·ik 'ȯg,ment }

**dynamic balance** [MECH] The condition which exists in a rotating body when the axis about which it is forced to rotate, or to which reference is made, is parallel with a principal axis of inertia; no products of inertia about the center of gravity of the body exist in relation to the selected rotational axis. { dī¦nam·ik 'bal·əns }

**dynamic behavior** [ENG] A description of how a system or an individual unit functions with respect to time. { dī'nam·ik bə'hāv·yər }

**dynamic braking** [MECH] A technique of electric braking in which the retarding force is supplied by the same machine that originally was the driving motor. { dī'nam·ik 'brāk·iŋ }

**dynamic check** [ENG] Check used to ascertain the correct performance of some or all components of equipment or a system under dynamic or operating conditions. { dī'nam·ik 'chek }

**dynamic compressor** [MECH ENG] A compressor which uses rotating vanes or impellers to impart velocity and pressure to the fluid. { dī'nam·ik kəm'pres·ər }

**dynamic creep** [MECH] Creep resulting from fluctuations in a load or temperature. { dī'nam·ik 'krēp }

**dynamic equilibrium** [MECH] The condition of any mechanical system when the kinetic reaction is regarded as a force, so that the resultant force on the system is zero according to d'Alembert's principle. Also known as kinetic equilibrium. { dī'nam·ik ē·kwə'lib·rē·əm }

**dynamic holdup** [CHEM ENG] Liquid held by a tank or process vessel, with constant introduction of fresh material and counteracting withdrawal of held material to maintain a constant liquid level. { dī'nam·ik 'hōld,əp }

**dynamic leak test** [ENG] A type of leak test in which the vessel to be tested is evacuated and an external tracer gas is applied; an internal leak detector will respond if gas is drawn through any leaks. { dī'nam·ik 'lēk ,test }

**dynamic load** [CIV ENG] A force exerted by a moving body on a resisting member, usually in a relatively short time interval. Also known as energy load. { dī'nam·ik 'lōd }

**dynamic loudspeaker** [ENG ACOUS] A loudspeaker in which the moving diaphragm is attached to a current-carrying voice coil that interacts with a constant magnetic field to give the in-and-out motion required for the production of sound waves. Also known as dynamic speaker; moving-coil loudspeaker. { dī'nam·ik 'laud ,spēk·ər }

**dynamic microphone** [ENG ACOUS] A moving-conductor microphone in which the flexible diaphragm is attached to a coil positioned in the fixed magnetic field of a permanent magnet. Also known as moving-coil microphone. { dī'nam·ik 'mī·krə,fōn }

**dynamic model** [ENG] A model of an aircraft or other object which has its linear dimensions and its weight and moments of inertia reproduced in scale in proportion to the original. { dī'nam·ik 'mäd·əl }

**dynamic noise suppressor** [ENG ACOUS] An audio-frequency filter circuit that automatically adjusts its band-pass limits according to signal level, generally by means of reactance tubes; at low signal levels, when noise becomes more noticeable, the circuit reduces the low-frequency response and sometimes also reduces the high-frequency response. { dī'nam·ik 'nȯiz sə,pres·ər }

**dynamic packing** [ENG] Any packing that operates on moving surfaces; in functioning, to retain fluid under pressure, they carry the hydraulic load and therefore operate like bearings. { dī'nam·ik 'pak·iŋ }

**dynamics** [MECH] That branch of mechanics which deals with the motion of a system of material particles under the influence of forces, especially those which originate outside the system under consideration. { dī'nam·iks }

**dynamic sensitivity** [ENG] The minimum leak rate which a leak detector is capable of sensing. { dī'nam·ik sen·sə'tiv·əd·ē }

**dynamic similarity** [MECH ENG] A relation between two mechanical systems (often referred to as model and prototype) such that by proportional alterations of the units of length, mass, and time, measured quantities in the one system go identically (or with a constant multiple for each) into those in the other; in particular, this implies constant ratios of forces in the two systems. { dī'nam·ik ,sim·ə'lar·əd·ē }

**dynamic speaker** *See* dynamic loudspeaker. { dī'nam·ik 'spēk·ər }

**dynamic stability** [MECH] The characteristic of a body, such as an aircraft, rocket, or ship, that causes it, when disturbed from an original state of steady motion in an upright position, to damp the oscillations set up by restoring moments and gradually return to its original state. Also known as stability. { dī'nam·ik stə'bil·əd·ē }

**dynamic test** [ENG] A test conducted under active or simulated load. { dī'nam·ik 'test }

**dynamic time warping** [ENG ACOUS] In speech recognition, the operation of compressing or stretching the temporal pattern of speech signals to take speaker variations into account. { dī,nam·ik 'tīm ,wȯrp·iŋ }

**dynamic unbalance** [MECH ENG] Failure of the rotation axis of a piece of rotating equipment to coincide with one of the principal axes of inertia due to forces in a single axial plane and on opposite sides of the rotation axis, or in different axial planes. { dī'nam·ik ən'bal·əns }

**dynamic work** [IND ENG] A sustained pattern of work that results in motion around an anatomical joint, for example, a handling or assembly task. { dī'nam·ik ,wərk }

**dynamometer** [ENG] **1.** An instrument in which current, voltage, or power is measured by the force between a fixed coil and a moving coil. **2.** A special type of electric rotating machine used to measure the output torque or driving torque of rotating machinery by the elastic deformation produced. { ,dī·nə'mäm·əd·ər }

**dyne** [MECH] The unit of force in the centimeter-gram-second system of units, equal to the force which imparts an acceleration of 1 $cm/s^2$ to a 1 gram mass. { dīn }

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# E

**E** *See* electric-field vector.

**earliest finish time** [IND ENG] The earliest time for completion of an activity of a project; for the entire project, it equals the earliest start time of the final event included in the schedule. { ¦ər·lē·əst 'fin·ish ˌtīm }

**earliest start time** [IND ENG] The earliest time at which an activity may begin in the schedule of a project; it equals the earliest time that all predecessor activities can be completed. { ¦ər·lē·əst 'start ˌtīm }

**early finish date** [IND ENG] The earliest time that an activity can be completed. { ¦ər·lē 'fin·ish ˌdāt }

**early start date** [IND ENG] The earliest time that an activity may be commenced. { ¦ər·lē 'stärt ˌdāt }

**earned value** [IND ENG] The budgeted cost of the work performed for a given project. { ¦ərnd 'val·yü }

**earphone** [ENG ACOUS] **1.** An electroacoustical transducer, such as a telephone receiver or a headphone, actuated by an electrical system and supplying energy to an acoustical system of the ear, the waveform in the acoustical system being substantially the same as in the electrical system. **2.** A small, lightweight electroacoustic transducer that fits inside the ear, used chiefly with hearing aids. { 'irˌfōn }

**earplug** [ENG] A device made of a pliable substance which fits into the ear opening; used to protect the ear from excessive noise or from water. { 'irˌpləg }

**ear protector** [ENG] A device, such as a plug or ear muff, used to protect the human ear from loud noise that may be injurious to hearing, such as that of jet engines. { 'ir prəˌtek·tər }

**earth** *See* ground. { ərth }

**earth current** [ELEC] Return, fault, leakage, or stray current passing through the earth from electrical equipment. Also known as ground current. { 'ərth ˌkə·rənt }

**earth dam** [CIV ENG] A dam having the main section built of earth, sand, or rock, and a core of impervious material such as clay or concrete. { 'ərth ˌdam }

**earthenware** [ENG] Ceramic products of natural clay, fired at 1742–2129°F (950–1165°C), that is slightly porous, opaque, and usually covered with a nonporous glaze. { 'ər·thənˌwer }

**earth inductor** [ENG] A type of inclinometer that has a coil which rotates in the earth's field and in which a voltage is induced when the rotation axis does not coincide with the field direction; used to measure the dip angle of the earth's magnetic field. Also known as dip inductor; earth inductor compass; induction inclinometer. { 'ərth inˌdək·tər }

**earth inductor compass** *See* earth inductor. { 'ərth in'dək·tər ˌkäm·pəs }

**earthmover** [MECH ENG] A machine used to excavate, transport, or push earth. { 'ərthˌmüv·ər }

**earth pressure** [CIV ENG] The pressure which exists between earth materials (such as soil or sediments) and a structure (such as a wall). { 'ərth ˌpresh·ər }

**earthquake-resistant** [CIV ENG] Of a structure or building, able to withstand lateral seismic stresses at the base. { 'ərthˌkwāk riˌzis·tənt }

**earth thermometer** *See* soil thermometer. { 'ərth thərˌmäm·əd·ər }

**earthwork** [CIV ENG] **1.** Any operation involving the excavation or construction of earth embankments. **2.** Any construction made of earth. { 'ərthˌwərk }

**easement** [CIV ENG] The right held by one person over another person's land for a specific use; rights of tenants are excluded. { 'ēz·mənt }

**easement curve** [CIV ENG] A curve, as on a highway, whose degree of curvature is varied to provide a gradual transition between a tangent and a simple curve, or between two simple curves which it connects. Also known as transition curve. { 'ēz·mənt 'kərv }

**eave** [BUILD] The border of a roof overhanging a wall. { ēv }

**eaves board** [BUILD] A strip nailed along the eaves of a building to raise the end of the bottom course of tile or slate on the roof. { 'ēvz ˌbȯrd }

**eaves molding** [BUILD] A cornicelike molding below the eaves of a building. { 'ēvz ˌmōl·diŋ }

**Ebert ion counter** [ENG] An ion counter of the aspiration condenser type, used for the measurement of the concentration and mobility of small ions in the atmosphere. { 'ā·bərt ī·ən ˌkaünt·ər }

**ebullating-bed reactor** [CHEM ENG] A type of fluidized bed in which catalyst particles are held in suspension by the upward movement of the

liquid reactant and gas flow. Also known as slurry-bed reactor. { ¦eb·yə¸lād·iŋ ¦bed rē¸ak·tər }

**eccentric bit** [DES ENG] A modified chisel for drilling purposes having one end of the cutting edge extended further from the center of the bit than the other. { ek¦sen·trik 'bit }

**eccentric cam** [DES ENG] A cylindrical cam with the shaft displaced from the geometric center. { ek¦sen·trik 'kam }

**eccentric gear** [DES ENG] A gear whose axis deviates from the geometric center. { ek¦sen·trik 'gir }

**eccentricity** [MECH] The distance of the geometric center of a revolving body from the axis of rotation. { ¸ek·sən'tris·əd·ē }

**eccentric load** [ENG] A load imposed on a structural member at some point other than the centroid of the section. { ek¦sen·trik 'lōd }

**eccentric reducer** [ENG] A threaded or butt-welded fitting for pipes whose ends are not the same size and are eccentric to each other. { ek ¦sen·trik ri'düs·ər }

**eccentric rotor engine** [MECH ENG] A rotary engine, such as the Wankel engine, wherein motion is imparted to a shaft by a rotor eccentric to the shaft. { ek¦sen·trik 'rōd·ər ¸en·jən }

**eccentric signal** [ENG] A survey signal whose position is not in a vertical line with the station it is representing. { ek¦sen·trik 'sig·nəl }

**eccentric station** [ENG] A survey point over which an instrument is centered and which is not positioned in a vertical line with the station it is representing. { ek¦sen·trik 'stā·shən }

**eccentric valve** [ENG] A rubber-lined slurry or fluid valve with an eccentric rotary cut-off body to reduce corrosion and wear on mechanical moving valve parts. { ek¦sen·trik 'valv }

**ECDIS** *See* electronic chart display and information system. { 'ek¸dis or ¦ē¦sē¦dē¦ī'es }

**echogram** [ENG] The graphic presentation of echo soundings recorded as a continuous profile of the sea bottom. { 'ek·ō¸gram }

**echograph** [ENG] An instrument used to record an echogram. { 'ek·ō¸graf }

**echo matching** [ENG] Rotating an antenna to a position in which the pulse indications of an echo-splitting radar are equal. { 'ek·ō ¸mach·iŋ }

**echo ranging** [ENG] Active sonar, in which underwater sound equipment generates bursts of ultrasonic sound and picks up echoes reflected from submarines, fish, and other objects within range, to determine both direction and distance to each target. { 'ek·ō ¸rānj·iŋ }

**echo-ranging sonar** [ENG] Active sonar, in which underwater sound equipment generates bursts of ultrasonic sound and picks up echoes reflected from submarines, fish, and other objects within range, to determine both direction and distance to each target. { 'ek·ō ¸rānj·iŋ 'sō¸när }

**echo recognition** [ENG] Identification of a sonar reflection from a target, as distinct from energy returned by other reflectors. { 'ek·ō ¸rek·ig¸nish·ən }

**echo repeater** [ENG ACOUS] In sonar calibration and training, an artificial target that returns a synthetic echo by receiving a signal and retransmitting it. { 'ek·ō ri¸pēd·ər }

**echosonogram** [ENG] A graphic display obtained with ultrasound pulse-reflection techniques; for example, an echocardiogram. { ¦ek·ō 'sän·ə¸gram }

**echo sounder** *See* sonic depth finder. { 'ek·ō ¸saůnd·ər }

**echo sounding** [ENG] Determination of the depth of water by measuring the time interval between emission of a sonic or ultrasonic signal and the return of its echo from the sea bottom. { 'ek·ō ¸saůnd·iŋ }

**echo-splitting radar** [ENG] Radar in which the echo is split by special circuits associated with the antenna lobe-switching mechanism, to give two echo indications on the radarscope screen; when the two echo indications are equal in height, the target bearing is read from a calibrated scale. { ¦ek·ō ¸splid·iŋ 'rā¸där }

**econometrics** [IND ENG] The application of mathematical and statistical techniques to the estimation of mathematical relationships for testing of economic theories and the solution of economic problems. { ē¦kän·ə¦me·triks }

**economic life** [IND ENG] The number of years after which a capital good should be replaced in order to minimize the long-run annual cost of operation, repair, depreciation, and capital. Also known as project life. { ¸ek·ə'näm·ik 'līf }

**economic lot size** [IND ENG] The number of units of a product or item to be manufactured at each setup or purchased on each order so as to minimize the cost of purchasing or setup, and the cost of holding the average inventory over a given period, usually annual. Also known as project life. { ¸ek·ə'näm·ik 'lät ¸sīz }

**economic order quantity** [IND ENG] The number of orders required to fulfill the economic lot size. { ¸ek·ə'näm·ik 'ȯr·dər ¸kwän·ə·dē }

**economic purchase quantity** [IND ENG] The economic lot size for a purchased quantity. { ¸ek·ə'näm·ik 'pər·chəs ¸kwän·ə·dē }

**economics** [IND ENG] A social science that deals with production, distribution, and consumption of commodities, or wealth. { ¸ek·ə'näm·iks *or* ¸ē·kə'näm·iks }

**economic tool life** [IND ENG] In metal machining, the total time, usually expressed in minutes, during which a given tool performs its required function under the most efficient cutting conditions. { ¸ēk·ə¦näm·ik 'tül ¸līf }

**economizer** [ENG] A reservoir in a continuous-flow oxygen system in which oxygen exhaled by the user is collected for recirculation in the system. [MECH ENG] A forced-flow, once-through, convection-heat-transfer tube bank in which feedwater is raised in temperature on its way to the evaporating section of a steam boiler,

thus lowering flue gas temperature, improving boiler efficiency, and saving fuel. { ē'kän·ə,miz·ər }

**economy** [CHEM ENG] In a multiple-effect evaporation system, the total weight of water vaporized in an evaporator per unit weight of the original steam supplied. { ē'kän·ə·mē }

**ECR** *See* electronic cash register.

**ED** *See* electronic dummy.

**eddy conduction** *See* eddy heat conduction. { 'ed·ē kən,dək·shən }

**eddy conductivity** [THERMO] The exchange coefficient for eddy heat conduction. { 'ed·ē ,kän ,dək'tiv·əd·ē }

**eddy-current brake** [MECH ENG] A control device or dynamometer for regulating rotational speed, as of flywheels, in which energy is converted by eddy currents into heat. { 'ed·ē ,kə·rənt ,brāk }

**eddy-current clutch** [MECH ENG] A type of electromagnetic clutch in which torque is transmitted by means of eddy currents induced by a magnetic field set up by a coil carrying direct current in one rotating member. { 'ed·ē ,kə·rənt ,kləch }

**eddy-current heating** *See* induction heating. { 'ed·ē ,kə·rənt ,hēd·iŋ }

**eddy-current sensor** [ENG] A proximity sensor which uses an alternating magnetic field to create eddy currents in nearby objects, and then the currents are used to detect the presence of the objects. { 'ed·ē ,kə·rənt 'sen·sər }

**eddy-current tachometer** [ENG] A type of tachometer in which a rotating permanent magnet induces currents in a spring-mounted metal cylinder; the resulting torque rotates the cylinder and moves its attached pointer in proportion to the speed of the rotating shaft. Also known as drag-type tachometer. { 'ed·ē ,kə·rənt tə'käm·əd·ər }

**eddy heat conduction** [THERMO] The transfer of heat by means of eddies in turbulent flow, treated analogously to molecular conduction. Also known as eddy heat flux; eddy conduction. { 'ed·ē 'hēt kən'dək·shən }

**eddy heat flux** *See* eddy heat conduction. { 'ed·ē 'hēt ,fləks }

**Edeleanu process** [CHEM ENG] A process for removal of compounds of sulfur from petroleum fractions by an extraction procedure utilizing liquid sulfur dioxide, or liquid sulfur dioxide and benzene. { ə,del·ē'ä·nü ,präs·əs }

**EDEL room** [ENG ACOUS] A control room in a sound-recording studio in which reflective or diffusive surfaces are placed near the loudspeaker and above the mixing console, while the rear wall behind the mixer is made absorptive. Derived from LEDE room (by reverse spelling). { 'ed·əl ,rüm *or* ¦ē¦dē¦ē'el ,rüm }

**edge connector** [ELECTR] A row of etched lines on the edge of a printed circuit board that is inserted into a slot to establish a connection with another printed circuit board. { 'ej kə,nek·tər }

**edge effect** [ELEC] An outward-curving distortion of lines of force near the edges of two parallel metal plates that form a capacitor. { 'ej i,fekt }

**edge runner** *See* Chile mill. { 'ej ,rən·ər }

**Edison effect** *See* thermionic emission. { 'ed·ə·sən i,fekt }

**eductor** [ENG] **1.** An ejectorlike device for mixing two fluids. **2.** *See* ejector. { ē'dək·tər }

**effective area** [CHEM ENG] Absolute or cross-sectional area of process media involved in the process, such as the actual area of filter media through which a fluid passes, or the available surface area of absorbent contacted by a gas or liquid. { ə¦fek·tiv 'er·ē·ə }

**effective bandwidth** [ELECTR] The bandwidth of an assumed rectangular band-pass having the same transfer ratio at a reference frequency as a given actual band-pass filter, and passing the same mean-square value of a hypothetical current having even distribution of energy throughout that bandwidth. { ə¦fek·tiv 'band,width }

**effective center** [ENG ACOUS] In a sonar projector, the point where lines coincident with the direction of propagation, as observed at different points some distance from the projector, apparently intersect. Also known as apparent source. { ə¦fek·tiv 'sen·tər }

**effective confusion area** [ENG] Amount of chaff whose radar cross-sectional area equals the radar cross-sectional area of the particular aircraft at a particular frequency. { ə¦fek·tiv kən'fyü·zhən ,er·ē·ə }

**effective discharge area** [DES ENG] A nominal or calculated area of flow through a pressure relief valve for use in flow formulas to determine valve capacity. { ə¦fek·tiv 'dis,chärj ,er·ē·ə }

**effective force** *See* inertial force. { ə¦fek·tiv 'fôrs }

**effective gun bore line** [MECH] The line which a projectile should follow when the muzzle velocity of the antiaircraft gun is vectorially added to the aircraft velocity. { ə¦fek·tiv 'gən ¦bȯr ,līn }

**effective launcher line** [MECH] The line along which the aircraft rocket would go if it were not affected by gravity. { ə¦fek·tiv 'lȯn·chər ,līn }

**effective rake** [MECH ENG] The angular relationship between the plane of the tooth face of the cutter and the line through the tooth point measured in the direction of chip flow. { ə¦fek·tiv 'rāk }

**effective surface** [ENG] In a heat exchanger, a surface that actively transfers heat. { ə¦fek·tiv 'sər·fəs }

**effective thermal resistance** [ELECTR] Of a semiconductor device, the effective temperature rise per unit power dissipation of a designated junction above the temperature of a stated external reference point under conditions of thermal equilibrium. Also known as thermal resistance. { ə¦fek·tiv ¦thər·məl ri'zis·təns }

**effector** [CONT SYS] A motor, solenoid, or hydraulic piston that turns commands to a teleoperator into specific manipulatory actions. { ə'fek·tər }

**efficiency** Abbreviated eff. [ENG] **1.** Measure of

the degree of heat output per unit of fuel when all available oxidizable materials in the fuel have been burned. **2.** Ratio of useful energy provided by a dynamic system to the energy supplied to it during a specific period of operation. [THERMO] The ratio of the work done by a heat engine to the heat energy absorbed by it. Also known as thermal efficiency. { ə'fish·ən·sē }

**efficiency expert** [IND ENG] An individual who analyzes procedures, productivity, and jobs in order to recommend methods for achieving maximum utilization of resources and equipment. { ə'fish·ən·sē ˌek·spərt }

**effluent** [CHEM ENG] *See* discharge liquor. [CIV ENG] The liquid waste of sewage and industrial processing. { ə'flü·ənt }

**effluent weir** [CIV ENG] A dam at the outflow end of a watercourse. { ə'flü·ənt 'wer }

**effluvium** [IND ENG] By-products of food and chemical processes, in the form of wastes. { ə'flü·vē·əm }

**effort-controlled cycle** [IND ENG] A work cycle which is performed entirely by hand or in which the hand time controls the place. Also known as manually controlled work. { 'ef·ərt kənˌtrōld ˌsī·kəl }

**effort rating** [IND ENG] Assessing the level of manual effort expended by the operator, based on the observer's concept of normal effort, in order to adjust time-study data. Also known as pace rating; performance rating. { 'ef·ərt ˌrād·iŋ }

**Egerton's effusion method** [THERMO] A method of determining vapor pressures of solids at high temperatures, in which one measures the mass lost by effusion from a sample placed in a tightly sealed silica pot with a small hole; the pot rests at the bottom of a tube that is evacuated for several hours, and is maintained at a high temperature by a heated block of metal surrounding it. { ˌej·ər·tənz ə'fyü·zhən ˌmeth·əd }

**Ehrenfest's equations** [THERMO] Equations which state that for the phase curve P(T) of a second-order phase transition the derivative of pressure P with respect to temperature T is equal to $(Cfp - Cip)/TV(\gamma^f - \gamma^i) = (\gamma^f - \gamma^i)/(K^f - K^i)$, where $i$ and $f$ refer to the two phases, $\gamma$ is the coefficient of volume expansion, K is the compressibility, $C_p$ is the specific heat at constant pressure, and V is the volume. { 'er·ənˌfests iˌkwā·zhənz }

**Einthoven galvanometer** *See* string galvanometer. { 'īntˌhō·vən ˌgal·və'näm·əd·ər }

**ejection** [ENG] The process of removing a molding from a mold impression by mechanical means, by hand, or by compressed air. { ē'jek·shən }

**ejector** [ENG] **1.** Any of various types of jet pumps used to withdraw fluid materials from a space. Also known as eductor. **2.** A device that ejects the finished casting from a mold. { ē'jek·tər }

**ejector condenser** [MECH ENG] A type of direct-contact condenser in which vacuum is maintained by high-velocity injection water; condenses steam and discharges water, condensate, and noncondensables to the atmosphere. { ē'jek·tər kənˌden·sər }

**ejector pin** [ENG] A pin driven into the rear of a mold cavity to force the finished piece out. Also known as knockout pin. { ē'jek·tər ˌpin }

**ejector plate** [ENG] The plate backing up the ejector pins and holding the ejector assembly together. { ē'jek·tər ˌplāt }

**ejector rod** [ENG] A rod that activates the ejector assembly of a mold when it is opened. { ē'jek·tər 'räd }

**Ekman current meter** [ENG] A mechanical device for measuring ocean current velocity which incorporates a propeller and a magnetic compass and can be suspended from a moored ship. { 'ek·mən 'kə·rənt ˌmēd·ər }

**Ekman dredge** [ENG] A special type of dredge for sampling sediment that is fitted with opposable jaws operated by a messenger traveling down a cable to release a spring catch. { 'ek·mən ˌdrej }

**Ekman water bottle** [ENG] A cylindrical tube fitted with plates at both ends and used for deep-water samplings; when hit by a messenger it turns 180°, closing the plates and capturing the water sample. { 'ek·mən 'wōd·ər ˌbäd·əl }

**elastance** [ELEC] The reciprocal of capacitance. { i'las·təns }

**elastic** [MECH] Capable of sustaining deformation without permanent loss of size or shape. { i'las·tik }

**elastica** [MECH] The elastic curve formed by a uniform rod that is originally straight, then is bent in a principal plane by applying forces, and couples only at its ends. { i'las·tə·kə }

**elastic aftereffect** [MECH] The delay of certain substances in regaining their original shape after being deformed within their elastic limits. Also known as elastic lag. { i'las·tik 'af·tər·iˌfekt }

**elastic axis** [MECH] The lengthwise line of a beam along which transverse loads must be applied in order to produce bending only, with no torsion of the beam at any section. { i'las·tik 'ak·səs }

**elastic body** [MECH] A solid body for which the additional deformation produced by an increment of stress completely disappears when the increment is removed. Also known as elastic solid. { i'las·tik 'bäd·ē }

**elastic buckling** [MECH] An abrupt increase in the lateral deflection of a column at a critical load while the stresses acting on the column are wholly elastic. { i'las·tik 'bək·liŋ }

**elastic center** [MECH] That point of a beam in the plane of the section lying midway between the flexural center and the center of twist in that section. { i'las·tik 'sen·tər }

**elastic collision** [MECH] A collision in which the sum of the kinetic energies of translation of the participating systems is the same after the collision as before. { i'las·tik kə'lizh·ən }

**elastic constant** *See* compliance constant; stiffness constant. { i'las·tik 'kän·stənt }

**elastic curve** [MECH] The curved shape of the longitudinal centroidal surface of a beam when the transverse loads acting on it produced wholly elastic stresses. { i'las·tik 'kərv }

**elastic deformation** [MECH] Reversible alteration of the form or dimensions of a solid body under stress or strain. { i'las·tik ˌdē·fər'mā·shən }

**elastic design** [CIV ENG] In the design of a structural member, a method of analysis based on a linear stress-strain relationship, with the assumption that the working stresses constitute only a fraction of the elastic limit of the material. { i¦las·tik di'zīn }

**elastic equilibrium** [MECH] The condition of an elastic body in which each volume element of the body is in equilibrium under the combined effect of elastic stresses and externally applied body forces. { i¦las·tik ˌē·kwə'lib·rē·əm }

**elastic failure** [MECH] Failure of a body to recover its original size and shape after a stress is removed. { i'las·tik 'fāl·yər }

**elastic flow** [MECH] Return of a material to its original shape following deformation. { i'las·tik 'flō }

**elastic force** [MECH] A force arising from the deformation of a solid body which depends only on the body's instantaneous deformation and not on its previous history, and which is conservative. { i'las·tik 'fȯrs }

**elastic hysteresis** [MECH] Phenomenon exhibited by some solids in which the deformation of the solid depends not only on the stress applied to the solid but also on the previous history of this stress; analogous to magnetic hysteresis, with magnetic field strength and magnetic induction replaced by stress and strain respectively. { i'las·tik ˌhis·tə'rē·səs }

**elasticity** [MECH] **1.** The property whereby a solid material changes its shape and size under action of opposing forces, but recovers its original configuration when the forces are removed. **2.** The existence of forces which tend to restore to its original position any part of a medium (solid or fluid) which has been displaced. { iˌlas'tis·əd·ē }

**elasticity modulus** *See* modulus of elasticity. { iˌlas'tis·əd·ē ˌmäj·ə·ləs }

**elastic lag** *See* elastic aftereffect. { i'las·tik 'lag }

**elastic limit** [MECH] The maximum stress a solid can sustain without undergoing permanent deformation. { iˌlas'tis·tik 'lim·ət }

**elastic modulus** *See* modulus of elasticity. { iˌlas·tik 'mäj·ə·ləs }

**elastic potential energy** [MECH] Capacity that a body has to do work by virtue of its deformation. { i'las·tik pə¦ten·chəl ¦en·ər·jē }

**elastic ratio** [MECH] The ratio of the elastic limit to the ultimate strength of a solid. { i'las·tik 'rā·shō }

**elastic recovery** [MECH] That fraction of a given deformation of a solid which behaves elastically. { i'las·tik ri'kəv·ə·rē }

**elastic scattering** [MECH] Scattering due to an elastic collision. { i'las·tik 'skad·ə·riŋ }

**elastic solid** *See* elastic body. { i'las·tik 'säl·əd }

**elastic strain energy** [MECH] The work done in deforming a solid within its elastic limit. { i'las·tik 'strān ˌen·ər·jē }

**elastic theory** [MECH] Theory of the relations between the forces acting on a body and the resulting changes in dimensions. { i'las·tik 'thē·ə·rē }

**elastic vibration** [MECH] Oscillatory motion of a solid body which is sustained by elastic forces and the inertia of the body. { i'las·tik vī'brā·shen }

**elastodynamics** [MECH] The study of the mechanical properties of elastic waves. { i¦la·stō·dī¦nam·iks }

**elastoplasticity** [MECH] State of a substance subjected to a stress greater than its elastic limit but not so great as to cause it to rupture, in which it exhibits both elastic and plastic properties. { i¦las·tō·plə'stis·əd·ē }

**elastoresistance** [ELEC] The change in a material's electrical resistance as it undergoes a stress within its elastic limit. { i¦las·tō·ri'zis·təns }

**elbow** [DES ENG] **1.** A fitting that connects two pipes at an angle, often of 90°. **2.** A sharp corner in a pipe. { 'elˌbō }

**elbow meter** [ENG] Pipe elbow used as a liquids flowmeter; flow rate is measured by determining the differential pressure developed between the inner and outer radii of the bend by means of two pressure taps located midway on the bend. { 'elˌbō ˌmēd·ər }

**electret** [ELEC] A solid dielectric possessing persistent electric polarization, by virtue of a long time constant for decay of a charge instability. { i'lekˌtret }

**electret headphone** [ENG ACOUS] A headphone consisting of an electret transducer, usually in the form of a push-pull transducer. { i'lekˌtret 'hedˌfōn }

**electret microphone** [ENG ACOUS] A microphone consisting of an electret transducer in which the foil electret diaphragm is placed next to a perforated, ridged, metal or metal-coated backplate, and output voltage, taken between diaphragm and backplate, is proportional to the displacement of the diaphragm. { i'lekˌtret 'mī·krəˌfōn }

**electret transducer** [ELECTR] An electroacoustic or electromechanical transducer in which a foil electret, stretched out to form a diaphragm, is placed next to a metal or metal-coated plate, and motion of the diaphragm is converted to voltage between diaphragm and plate, or vice versa. { i'lekˌtret tranz'dü·sər }

**electric** [ELEC] Containing, producing, arising from, or actuated by electricity; often used interchangeably with electrical. { i'lek·trik }

**electrical** [ELEC] Related to or associated with electricity, but not containing it or having its properties or characteristics; often used interchangeably with electric. { ə'lek·trə·kəl }

**electrical blasting cap** [ENG] A blasting cap ignited by electric current and not by a spark. { ə'lek·trə·kəl 'blast·iŋ ˌkap }
**electrical breakdown** *See* breakdown. { ə'lek·trə·kəl 'brākˌdaůn }
**electrical conductance** *See* conductance. { ə'lek·trə·kəl kən'dək·təns }
**electrical conduction** *See* conduction. { ə'lek·trə·kəl kən'dək·shən }
**electrical conductivity** *See* conductivity. { ə'lek·trə·kəl ˌkänˌdək'tiv·əd·ē }
**electrical drainage** [ELEC] Diversion of electric currents from subterranean pipes to prevent electrolytic corrosion. { i'lek·trə·kəl 'drān·ij }
**electrical engineer** [ENG] An engineer whose training includes a degree in electrical engineering from an accredited college or university (or who has comparable knowledge and experience), to prepare him or her for dealing with the generation, transmission, and utilization of electric energy. { i'lek·trə·kəl ˌen·jə'nir }
**electrical engineering** [ENG] Engineering that deals with practical applications involving current flow through conductors, as in motors and generators. { i'lek·trə·kəl ˌen·jə'nir·iŋ }
**electrical fault** *See* fault. { i'lek·trə·kəl 'fólt }
**electrical image** [ENG] An image that is obtained in the course of borehole logging and is based on electrical rather than optical contrasts. { iˌlek·trə·kəl 'im·ij }
**electrical impedance** Also known as impedance. [ELEC] **1.** The total opposition that a circuit presents to an alternating current, equal to the complex ratio of the voltage to the current in complex notation. Also known as complex impedance. **2.** The ratio of the maximum voltage in an alternating-current circuit to the maximum current; equal to the magnitude of the quantity in the first definition. { i'lek·trə·kəl im'pēd·əns }
**electrical insulator** *See* insulator. { i'lek·trə·kəl 'in·səˌlād·ər }
**electrical loading** *See* loading. { i'lek·trə·kəl 'lōd·iŋ }
**electrical log** [ENG] Recorded measurement of the conductivities and resistivities down the length of uncased borehole; gives a complete record of the formations penetrated. { i'lek·trə·kəl 'läg }
**electrical logging** [ENG] The recording in uncased sections of a borehole of the conductivities and resistivities of the penetrated formations; used for geological correlations of the strata and evaluation of possibly productive horizons. Also known as electrical well logging. { i'lek·trə·kəl 'läg·iŋ }
**electrically suspended gyro** [ENG] A gyroscope in which the main rotating element is suspended by an electromagnetic or an electrostatic field. { i'lek·trə·klē səs'pen·dəd 'jī·rō }
**electrical pressure transducer** *See* pressure transducer. { i'lek·trə·kəl 'preshˌər tranzˌdü·sər }
**electrical properties** [ELEC] Properties of a substance which determine its response to an electric field, such as its dielectric constant or conductivity. { i'lek·trə·kəl 'präp·ərd·ēz }
**electrical prospecting** [ENG] The use of downhole electrical logs to obtain subsurface information for geological analysis. { i'lek·trə·kəl 'präs ˌpek·tiŋ }
**electrical resistance** *See* resistance. { i'lek·trə·kəl ri'zis·təns }
**electrical-resistance meter** *See* resistance meter. { i'lek·trə·kəl ri'zis·təns ˌmēd·ər }
**electrical-resistance strain gage** [ENG] A vibration-measuring device consisting of a grid of fine wire cemented to the vibrating object to measure fluctuating strains. { i'lek·trə·kəl ri'zis·təns 'strān ˌgāj }
**electrical-resistance thermometer** *See* resistance thermometer. { i'lek·trə·kəl ri'zis·təns thər 'mäm·əd·ər }
**electrical resistivity** [ELEC] The electrical resistance offered by a material to the flow of current, times the cross-sectional area of current flow and per unit length of current path; the reciprocal of the conductivity. Also known as resistivity; specific resistance. { i'lek·trə·kəl ˌrē·zis'tiv·əd·ē }
**electrical resistor** *See* resistor. { i'lek·trə·kəl ri 'zis·tər }
**electrical symbol** [ELEC] A simple geometrical symbol used to represent a component of a circuit in a schematic circuit diagram. { i'lek·trə·kəl 'sim·bəl }
**electrical transcription** *See* transcription. { i'lek·trə·kəl tranz'krip·shən }
**electrical unit** [ELEC] A standard in terms of which some electrical quantity is evaluated. { i'lek·trə·kəl 'yü·nət }
**electrical weighing system** [ENG] An instrument which weighs an object by measuring the change in resistance caused by the elastic deformation of a mechanical element loaded with the object. { i'lek·trə·kəl 'wā·iŋ ˌsis·təm }
**electrical well logging** *See* electrical logging. { i'lek·trə·kəl 'wel ˌläg·iŋ }
**electric arc** [ELEC] A discharge of electricity through a gas, normally characterized by a voltage drop approximately equal to the ionization potential of the gas. Also known as arc. { iˌlek·trik 'ärk }
**electric battery** *See* battery. { iˌlek·trik 'bad·ə·rē }
**electric boiler** [MECH ENG] A steam generator using electric energy, in immersion, resistor, or electrode elements, as the source of heat. { iˌlek·trik 'bȯil·ər }
**electric brake** [MECH ENG] An actuator in which the actuating force is supplied by current flowing through a solenoid, or through an electromagnet which is thereby attracted to disks on the rotating member, actuating the brake shoes; this force is counteracted by the force of a compression spring. Also known as electromagnetic brake. { iˌlek·trik 'brāk }
**electric bridge** *See* bridge. { iˌlek·trik 'brij }
**electric car** [MECH ENG] An automotive vehicle that is propelled by one or more electric motors powered by a special rechargeable electric battery rather than by an internal combustion engine. { i'lek·trik 'kär }