

McGraw-Hill Dictionary of Scientific and Technical Terms Fifth Edition

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**McGraw-Hill
Dictionary of
Scientific and
Technical
Terms
Fifth Edition**

McGraw-Hill Dictionary of Scientific and Technical Terms

Fifth Edition

Sybil P. Parker
Editor in Chief

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On the cover: Photomicrograph of crystals of vitamin B₁.
(Dennis Kunkel, University of Hawaii)

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McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, Fifth Edition

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absorption wavelengths that are unique to a specific material or element. { əb.sɔrp.tē.ə'met.rɪk ə'nal.ə.sɪs }

absorption [BIOL] The net movement (transport) of water and solutes from outside a cell or an organism to the interior. [CHEM] The taking up of matter in bulk by other matter, as in dissolving of a gas by a liquid. [ELEC] The property of a dielectric in a capacitor which causes a small charging current to flow after the plates have been brought up to the final potential, and a small discharging current to flow after the plates have been short-circuited, allowed to stand for a few minutes, and short-circuited again. Also known as dielectric soak. [ELECTROMAG] Taking up of energy from radiation by the medium through which the radiation is passing. [HYD] Entrance of surface water into the lithosphere. [IMMUNOL] 1. Removal of antibodies from an antiserum by addition of antigen. 2. Removal of antigens from a mixture by addition of antibodies. [NUCLEO] The process by which the quantity of particles entering a body is reduced by their interaction with the matter. [PHYSIO] Passage of a chemical substance, a pathogen, or radiant energy through a body membrane. (əb'sɔ:pʃən)

absorption atelectasis *See* obstructive atelectasis. { əb'sɔrp-
shan .əd:ə'lek:tə:sis }

absorption band [PHYS] A range of wavelengths or frequencies in the electromagnetic spectrum within which radiant energy is absorbed by a substance. { əb'sɔːrʃən .bænd }

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

absorption cell [OPTICS] A vessel with transparent walls for holding a gas or liquid whose absorptivity or absorption spectrum is to be measured. { əb'sɔːrʃən.səl }

absorption circuit [ELECTR] A series-resonant circuit used to absorb power at an unwanted signal frequency by providing a low impedance to ground at this frequency. { 'əb'sɔ:p-shən
'sə:kət }

absorption coefficient Also known as absorption factor; absorption ratio; coefficient of absorption. [ACOUS] The ratio of the sound energy absorbed by a surface of a medium or material to the sound energy incident on the surface. [PHYS] If a flux through a material decreases with distance x in proportion to e^{-ax} , then a is called the absorption coefficient. {əb'sɒrʃən, kə-ə'fɪʃ-ənt}

absorption column *See* absorption tower. { əb'sɔrp·ʃən ,kəl·əm }

absorption constant *See* absorptivity. { əb'sɔrp·ʃən ,kæns·
tənt }

absorption control [ELECTR] See absorption modulation.
[NUCLEO] Control of a nuclear reactor by a material that absorbs neutrons, such as cadmium or boron steel. Also known as absorber control. { ah'sŏrn-shən kan'trōl }

absorption cross section [ELECTROMAG] In radar, the ratio of the amount of power removed from a beam by absorption of radio energy by a target to the power in the beam incident upon the target. { əb'sɔ:p'shən 'krɒs 'sek'shən }

absorption current [ELEC] The component of a dielectric current that is proportional to the rate of accumulation of electric charges within the dielectric. (əb'sɔ:pʃən 'kærənt)

absorption curve [PHYS] A graph showing the curvilinear relationship of the variation in absorbed radiation as a function of wavelength. { əb'sɔ:rpʃən kərv }

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. { ab'sōrn-shən .sīkal }

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'sɔrpʃən dīn-ə'mām-əd-ər }

absorption edge [SPECT] The wavelength corresponding to a discontinuity in the variation of the absorption coefficient of a substance with the wavelength of the radiation. Also known as absorption limit. { əb'sɔ:pʃən.eɪ }

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'sɔ:m'shən ə'miʃ-ən pɪ'rɒm-əd-ər }

absorption factor *See* absorption coefficient. { əb'sɔrpʃən
ˌfaktər }

absorption fading [COMMUN] Slow type of fading, primarily caused by variations in the absorption rate along the radio path.
{ əb'sɔ:pʃən 'fæd-ɪn }

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'sɔrp-shən, fēld }

absorption gasoline [MATER] A gasoline obtained by using an oil to absorb the natural or refinery gas containing the gasoline and then distilling it from the oil. { əb'sɔ:p·shən gas·ə'lēn }

absorption 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'sɔrpʃən hɪ'græməd-ər }

absorption index [OPTICS] The complex index of refraction may be written as $n(1 + ik)$; the coefficient k is the absorption index. Also known as index of absorption. { əb'sɔɪp-ʃən 'in-deks }

absorption lens [OPTICS] Glass which prevents selected wavelengths from passing through it; used in eyeglasses.
{ əb'sɔ:p·ʃən .lɛnz }

absorption limit *See* absorption edge. { əb'sɔrp·ʃən 'lɪm-ət }
absorption line [SPECT] A minute range of wavelength or

frequency in the electromagnetic spectrum within which radiant energy is absorbed by the medium through which it is passing.
(əb'sɔrə'shən ,līn)

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. [COMMUN] That part of the transmission loss due to the dissipation or conversion of either sound energy or electromagnetic energy into other forms of energy, either within the medium or attendant upon a reflection. { əb'sɔ:p-rʃən
ˌlɒs }

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'sɔrpʃən 'mɛd-ər }

absorption modulation [ELECTR] A system of amplitude modulation in which a variable-impedance device is inserted in or coupled to the output circuit of the transmitter. Also known as absorption control; loss modulation. { əb'sɔrpʃən məd-yū'lā-shən }

absorption nebula See dark nebula. { əb'sɔrp·ʃən 'neb-yə-
lə }

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'sɔ:p-shən ,nəm·bər }

absorption oil [MATER] A petroleum or coal tar oil that is contacted with a vapor or gas mixture to remove heavy components, as in the recovery of natural gasoline from wet natural gas. Also known as absorber oil; scrubbing oil; wash oil.
{ əb'sɔːrʃən oɪl }

absorption peak [SPECT] A wavelength of maximum electromagnetic absorption by a chemical sample; used to identify specific elements, radicals, or compounds. { əb'sɔrp-shən ,pēk }

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

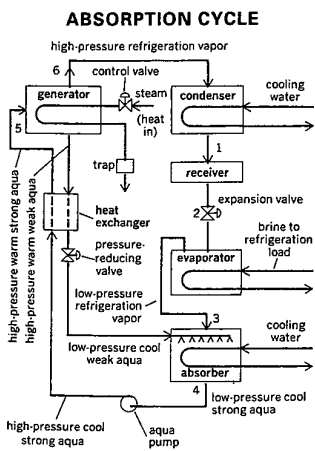
absorption process [CHEM ENG] A method in which light oil is introduced into an absorption tower so that it absorbs the gasoline in the rising wet gas; the light oil is then distilled to separate the gasoline. { əb'sɔːr̩-shən prə'ses }

absorption ratio *See* absorption coefficient. { əb'sɔrp·ʃən ,rā·
shō }

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. { ah'sŏm-shən rə-frī-jə-rā-shən }

absorption spectrophotometer [SPECT] An instrument used to measure the relative intensity of absorption spectral lines and bands. Also known as difference spectrophotometer.
{ ab'sôr-shən, spek-trə'fōt-əm-ə-dər }

absorption spectroscopy [SPECT] The study of spectra obtained by the passage of radiant energy from a continuous source



Basic absorption cycle for an air-conditioning system.

reflected impedance [ELEC] 1. Impedance value that appears to exist across the primary of a transformer due to current flowing in the secondary. 2. Impedance which appears at the input terminals as a result of the characteristics of the impedance at the output terminals. { ri'flek-təd im'pēd-əns }

reflected pressure [PHYS] The pressure from an explosion (especially an airburst bomb), which is reflected from a solid object or surface, rather than dissipated in the air. { ri'flek-təd 'presh-ər }

reflected ray [PHYS] A ray extending outward from a point of reflection. { ri'flek-təd 'rā }

reflected resistance [ELEC] Resistance value that appears to exist across the primary of a transformer when a resistive load is across the secondary. { ri'flek-təd ri'zist-əns }

reflected signal indicator [ENG] Pen recorder which presents the radar signals within frequency gates; these recordings enable the operator to determine that an airborne object has penetrated the Doppler link and its direction of penetration. { ri'flek-təd 'sig-nəl 'in-də,kād-ər }

reflected ultraviolet method [GRAPHICS] A method of ultraviolet photography in which an ultraviolet source is used and the camera is provided with a filter which permits only reflected ultraviolet light to reach the film. { ri'flek-təd 'ul-trə'vī-lat ,meth-əd }

reflected wave [PHYS] A wave reflected from a surface, discontinuity, or junction of two different media, such as the sky wave in radio, the echo wave from a target in radar, or the wave that travels back to the source end of a mismatched transmission line. { ri'flek-təd 'wāv }

reflecting antenna [ELECTROMAG] An antenna used to achieve greater directivity or desired radiation patterns, in which a dipole, slot, or horn radiates toward a larger reflector which shapes the radiated wave to produce the desired pattern; the reflector may consist of one or two plane sheets, a parabolic or paraboloidal sheet, or a paraboloidal horn. { ri'flek-tiŋ an'ten-ə }

reflecting curtain [ELECTROMAG] A vertical array of half-wave reflecting antennas, generally used one quarter-wave-length behind a radiating curtain of dipoles to form a high-gain antenna. { ri'flek-tiŋ 'kərt-ən }

reflecting electrode [ELECTR] Tubular outer electrode or the repeller plate in a microwave oscillator tube, corresponding in construction but not in function to the plate of an ordinary triode; used for generating extremely high frequencies. { ri'flek-tiŋ i'lek,trəd }

reflecting galvanometer See mirror galvanometer. { ri'flek-tiŋ ,gal-və'nām-əd-ər }

reflecting grating [ELECTROMAG] Arrangement of wires placed in a waveguide to reflect one desired wave while allowing one or more other waves to pass freely. { ri'flek-tiŋ 'grād-iŋ }

reflecting microscope [OPTICS] A microscope whose objective is composed of two mirrors, one convex and the other concave; its imaging properties are independent of the wavelength of light, allowing it to be used even for infrared and ultraviolet radiation. { ri'flek-tiŋ 'mīkr-ə,sköp }

reflecting nephoscope See mirror nephoscope. { ri'flek-tiŋ 'nef-ə,sköp }

reflecting prism [OPTICS] A prism used in place of a mirror for deviating light, usually designed so that there is no dispersion of light; the light undergoes at least one internal reflection. { ri'flek-tiŋ 'priz-əm }

reflecting sign [CIV ENG] A road sign painted with reflective paint so as to be easily visible in the light of a headlamp. { ri'flek-tiŋ 'sīn }

reflecting spectrograph [OPTICS] A solar spectrograph in which the collimator and camera element are long-focus concave mirrors. { ri'flek-tiŋ 'spek-trə,graf }

reflecting telescope [OPTICS] A telescope in which a concave parabolic mirror gathers light and forms a real image of an object. Also known as reflector telescope. { ri'flek-tiŋ 'tel-ə,sköp }

reflection [MATH] The reflection of a configuration in a line, in a plane, or in the origin of a coordinate system is the replacement of each point in the configuration by a point that is symmetric to the given point with respect to the line, plane, or origin. [PHYS] The return of waves or particles from surfaces on which they are incident. { ri'flek-shən }

reflection altimeter See radio altimeter. { ri'flek-shən al'tim-əd-ər }

reflection angle See angle of reflection. { ri'flek-shən ,an-ḡəl }

reflection coefficient [PHYS] The ratio of the amplitude of a wave reflected from a surface to the amplitude of the incident wave. Also known as coefficient of reflection. { ri'flek-shən ,kō-i,fi-sh-ənt }

reflection copy [GRAPHICS] Material for illustrations, such as photographs, which must be viewed or photographed by surface-reflected light. { ri'flek-shən ,kăp-ē }

reflection density [OPTICS] The common logarithm of the ratio of the luminance of a nonabsorbing perfect diffuser to that of the surface under consideration, when both are illuminated at an angle of 45° to the normal and the direction of measurement is perpendicular to the surface. { ri'flek-shən ,den-səd-ē }

reflection diffraction [PHYS] Type of electron diffraction analysis in which the electron beam grazes the sample surface. { ri'flek-shən di,frak-shən }

reflection factor [ELEC] Ratio of the load current that is delivered to a particular load when the impedances are mismatched to that delivered under conditions of matched impedances. Also known as mismatch factor; reflectance; transition factor. { ri'flek-shən ,fak-tər }

reflection goniometer [ENG] A goniometer that measures the angles between crystal faces by reflection of a parallel beam of light from successive crystal faces. { ri'flek-shən ,gō-nē'am-əd-ər }

reflection HEED [PHYS] A form of HEED (high-energy electron diffraction) in which electrons are incident at small angles (0.5–4°) to the surface, and are reflected from it. Abbreviated RHEED. { ri'flek-shən ,hēd }

reflection law [PHYS] When a wave, such as electromagnetic radiation or sound, is reflected from a surface in a sharply defined direction, the reflected and incident waves travel in directions that make the same angle with a perpendicular to the surface and lie in a common plane with it. Also known as law of reflection. { ri'flek-shən ,lō }

reflection lobes [ELECTROMAG] Three-dimensional sections of the radiation pattern of a directional antenna, such as a radar antenna, which results from reflection of radiation from the earth's surface. { ri'flek-shən ,lōbz }

reflection loss [ELEC] 1. Reciprocal of the ratio, expressed in decibels, of the scalar values of the volt-amperes delivered to the load to the volt-amperes that would be delivered to a load of the same impedance as the source. 2. Apparent transmission loss of a line which results from a portion of the energy being reflected toward the source due to a discontinuity in the transmission line. { ri'flek-shən ,lōs }

reflection nebula [ASTRON] A type of bright diffuse nebula composed mainly of cosmic dust; it is visible because of starlight from nearby stars or nebula stars that is scattered by the dust particles. { ri'flek-shən ,neb-yə-lə }

reflection plane See plane of mirror symmetry; plane of reflection. { ri'flek-shən ,plān }

reflection plotter [NAV] An attachment fitted to a radar plan position indicator which provides a plotting surface permitting plotting without parallax errors; any mark made on the plotting surface will be reflected on the radarscope directly below. Also known as plotting head. { ri'flek-shən ,plād-ər }

reflection profile [ENG] A seismic profile obtained by designing the spread geometry in such a manner as to enhance reflected energy. { ri'flek-shən ,prō,fīl }

reflection rainbow [OPTICS] A rainbow formed by light rays which have been reflected from an extended water surface; not to be confused with a reflected rainbow whose image may be seen in a still body of water. { ri'flek-shən ,rān,bō }

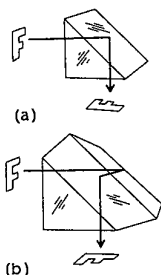
reflection seismology See reflection shooting. { ri'flek-shən siz'māl-ə-jē }

reflection shooting [ENG] A procedure in seismic prospecting based on the measurement of the travel times of waves which, originating from an artificially produced disturbance, have been reflected to detectors from subsurface boundaries separating media of different elastic-wave velocities; used primarily for oil and gas exploration. Also known as reflection seismology. { ri'flek-shən ,shüd-iŋ }

reflection spectrum [PHYS] The spectrum seen when incident waves are selectively altered by a reflecting substance. { ri'flek-shən ,spek-trəm }

reflection survey [ENG] Study of the presence, depth, and configuration of underground formations; a ground-level explo-

REFLECTING PRISM



Examples of reflecting prism.
(a) Right-angle. (b) Amici roof prism.

REFLECTION NEBULA



Reflection nebula associated with the Pleiades star cluster.

of petroleum naphtha into more volatile products of higher octane number; represents the total effect of numerous simultaneous reactions, such as cracking, polymerization, dehydrogenation and isomerization. { rē'fōrm'ij }

refracted ray [PHYS] A ray extending onward from the point of refraction. { ri'frak-təd 'rā }

refracted wave [PHYS] That portion of an incident wave which travels from one medium into a second medium. Also known as transmitted wave. { ri'frak-təd 'wāv }

refracting angle See apical angle. { ri'frak-tij, aŋ'gəl }

refracting edge [OPTICS] The intersection of the two refracting faces of a prism. { ri'frak-tij, ej }

refracting sphere [OPTICS] A sphere made of a transparent material whose index of refraction differs from the medium surrounding it, so that it refracts light passing through it. { ri'frak-tij, sfir }

refracting telescope [OPTICS] A telescope in which a lens gathers light and forms a real image of an object. Also known as refractor telescope. { ri'frak-tij 'tel-ə, sköp }

refraction [ELECTROMAG] The change in direction of lines of force of an electric or magnetic field at a boundary between media with different permittivities or permeabilities. [PHYS] The change of direction of propagation of any wave, such as an electromagnetic or sound wave, when it passes from one medium to another in which the wave velocity is different, or when there is a spatial variation in a medium's wave velocity. { ri'frak-shən }

refraction coefficient [OCEANOGR] The square root of the ratio of the spacing between orthogonal in deep water and in shallow water; it is a measure of the effect of refraction in diminishing wave height by increasing the length of the wave crest. { ri'frak-shən, kō-i, fish-ənt }

refraction diagram [OCEANOGR] A chart showing the position of the wave crests at a particular time, or the successive positions of a particular wave crest as it moves shoreward. { ri'frak-shən, dī-ə, gram }

refraction error [NAV] An error due to refraction, particularly such an error in a sextant altitude, due to atmospheric refraction. { ri'frak-shən, er-ər }

refraction loss [ELECTROMAG] Portion of the transmission loss that is due to refraction resulting from nonuniformity of the medium. { ri'frak-shən, lōs }

refraction process [ENG] Seismic (reflection) survey in which the distance between the explosive shot and the receivers (sensors) is large with respect to the depths to be mapped. { ri'frak-shən, präsəs }

refraction profile [ENG] A seismic profile obtained by designing the spread geometry in such a manner as to enhance refracted energy. { ri'frak-shən, prō, fil }

refraction shooting [ENG] A type of seismic shooting based on the measurement of seismic energy as a function of time after the shot and of distance from the shot, by determining the arrival times of seismic waves which have traveled nearly parallel to the bedding in high-velocity layers, in order to map the depth of such layers. { ri'frak-shən, shūd-ij }

refractive constant See index of refraction. { ri'frak-tiv 'kän-stənt }

refractive index See index of refraction. { ri'frak-tiv, in, deks }

refractive modulus See modified index of refraction. { ri'frak-tiv 'māj-ə-ləs }

refractivity [ELECTROMAG] 1. Some quantitative measure of refraction, usually a measure of the index of refraction. 2. The index of refraction minus 1. { rē, frak'tiv-əd-ē }

refractometer [ENG] An instrument used to measure the index of refraction of a substance in any one of several ways, such as measurement of the refraction produced by a prism, measurement of the critical angle, observation of an interference pattern produced by passing light through the substance, and measurement of the substance's dielectric constant. { rē, frak'täm-əd-ər }

refractometry [OPTICS] The measurement of the index of refraction of a substance; it is an important tool in analytical chemistry. { rē, frak'täm-ə-trē }

refractor telescope See refracting telescope. { ri'frak-tər 'tel-ə, sköp }

refractory [MATER] 1. A material of high melting point. 2. The property of resisting heat. [MED] Not readily yielding to treatment. { ri'frak-trē }

refractory cement [MATER] Any of a variety of mixtures,

such as fireclay-silica-ganister mixture, or fireclay mixed with crushed brick, or fireclay and silica sand, with a refractory range of 2600–2800°F (1412–1523°C); used for furnace and oven linings and for fillers. { ri'frak-trē s'i'ment }

refractory clay [MATER] Clay with a melting point above 1600°C; used to make firebrick and linings for furnaces and reactors. { ri'frak-trē 'klā }

refractory coating [MATER] A coating composed of a refractory material. { ri'frak-trē 'kōd-ij }

refractory concrete [MATER] Heat-resistant concrete made with high-alumina or calcium-aluminate cement and a refractory aggregate. { ri'frak-trē 'kän, krēt }

refractory enamel [MATER] An enamel for coating and protecting metals against attack by hot gases. { ri'frak-trē i'nam-əl }

refractory hard metals [CHEM] True chemical compounds composed of two or more metals in the crystalline form, and having a very high melting point and high hardness. { ri'frak-trē 'hārd 'med-əlz }

refractory-lined firebox boiler [MECH ENG] A horizontal fire-tube boiler with the front portion of the shell located over a refractory furnace; the rear of the shell contains the first-pass tubes, and the second-pass tubes are located in the upper part of the shell. { ri'frak-trē 'lind 'fir, bāks, 'bōil-ər }

refractory metal [MET] A metal or alloy that is heat-resistant, having a high melting point. { ri'frak-trē 'med-əl }

refractory period [PHYSIO] A brief period of time following the stimulation of a nerve during which the nerve will not respond to a second stimulus. { ri'frak-trē, 'pir-əd }

refractory sand [MATER] Sand used for refractory which is capable of resisting high temperatures. { ri'frak-trē 'sand }

refrangible [PHYS] Capable of being refracted. { ri'fran-jə-bəl }

refresh [COMPUT SCI] A process of periodically replacing data to prevent the data from decaying, as on a cathode-ray-tube display or in a dynamic random-access memory. { ri'fres }

refrigerant [MATER] A substance that by undergoing a change in phase (liquid to gas, gas to liquid) releases or absorbs a large latent heat in relation to its volume, and thus effects a considerable cooling effect; examples are ammonia, sulfur dioxide, ethyl or methyl chloride (these are no longer widely used), and the fluorocarbons, such as Freon, Ucon, and Genetron. { ri'fri-j-ərənt }

refrigerant 23 See fluoroform. { ri'fri-j-ərənt, 'tweŋ-tē'thrē }

refrigerated truck [MECH ENG] An insulated truck equipped and used as a refrigerator to transport fresh perishable or frozen products. { ri'fri-j-ə, rād-əd 'trək }

refrigeration [MECH ENG] The cooling of a space or substance below the environmental temperature. { ri, frij-ə'rā-shən }

refrigeration condenser [MECH ENG] A vapor condenser in a refrigeration system, where the refrigerant is liquefied and discharges its heat to the environment. { ri, frij-ə'rā-shən kən, den-sər }

refrigeration cycle [THERMO] A sequence of thermodynamic processes whereby heat is withdrawn from a cold body and expelled to a hot body. { ri, frij-ə'rā-shən, sī-kəl }

refrigeration oil [MATER] A mineral oil with all moisture and wax removed; used for lubricating refrigerating machinery. { ri, frij-ə'rā-shən, ōil }

refrigeration system [MECH ENG] A closed-flow system in which a refrigerant is compressed, condensed, and expanded to produce cooling at a lower temperature level and rejection of heat at a higher temperature level for the purpose of extracting heat from a controlled space. { ri, frij-ə'rā-shən, sistəm }

refrigerator [MECH ENG] An insulated, cooled compartment. { ri'fri-j-ə, rād-ər }

refrigerator car [MECH ENG] An insulated freight car constructed and used as a refrigerator. { ri'fri-j-ə, rād-ər, kār }

Refsum's disease [MED] A familial disorder characterized by visual disturbances, ataxia, neuritic changes, and cardiac damage, associated with high blood level of phytanic acid. { 'ref-səmz di, zēz }

Refugian [GEOL] A North American stage of geologic time in the Eocene and Oligocene, above the Fresnian and below the Zemorrian. { rə'fyü-jē-ən }

refugium [ECOL] An area which has escaped the great changes which occurred in the region as a whole, often providing conditions in which relic colonies can survive; for example, a drift-

projecting tines for breaking down a road surface 2 feet (60 centimeters) or less. { 'skär-ə, fī-ər }

scarious [BOT] Having a thin, membranous texture. { 'skar-ē-əs }

scarlet See scarlet red. { 'skär-lät }

scarlet fever [MED] An acute, contagious bacterial disease caused by *Streptococcus hemolyticus*; characterized by a papular, or rough, bright-red rash over the body, with fever, sore throat, headache, and vomiting occurring 2-3 days after contact with a carrier. { 'skär-lät 'fē-vər }

scarlet fever streptococcus antitoxin [IMMUNOL] A sterile aqueous solution of antitoxins obtained from the blood of animals immunized against group A beta hemolytic streptococci toxin; formerly used in the treatment of, and to produce immunity against, scarlet fever. { 'skär-lät 'fē-vər 'strep-tə, kāk-əs ,anti-tāk-sən }

scarlet fever streptococcus toxin [IMMUNOL] Toxic filtrate of cultures of *Streptococcus pyogenes* responsible for the characteristic rash of scarlet fever; the toxin is used in the Dick test. { 'skär-lät 'fē-vər 'strep-tə, kāk-əs 'tāk-sən }

scarlet red [ORG CHEM] $\text{CH}_3\text{C}_6\text{H}_4\text{H}:\text{NC}_6\text{H}_3\text{CH}_2\text{N}:\text{N}:\text{C}_{10}\text{H}_{15}\text{OH}$ A brown, water-insoluble powder, used as a dye in ointments. Also known as Biebrich red; scarlet. { 'skär-lät 'red }

scarp See escarpment. { 'skärp }

Scarpa's fascia [ANAT] The deep, membranous layer of the superficial fascia of the lower abdomen. { 'skär-pəz, fā-shə }

scarped plain [GEOL] A terrain characterized by a succession of faintly inclined or gently folded strata. { 'skärpt 'plān }

scarp face See scarp slope. { 'skärp, fās }

scarp-foot spring [HYD] A spring that flows onto the land surface at or near the foot of an escarpment. { 'skärp 'füt ,sprɪŋ }

scarpland [GEOGR] A region marked by a succession of nearly parallel cuestas separated by lowlands. { 'skärp-lənd }

scarplet See piedmont scarp. { 'skärplət }

scarpline [GEOL] A relatively straight line of cliffs of considerable extent, produced by faulting or erosion along a fault. { 'skärp, lɪn }

scarp slope [GEOL] The steep face of a cuesta, or asymmetric ridge, facing in an opposite direction to the dip of the strata. Also known as front slope; inface; scarp face. { 'skärp, slōp }

scarp stream [HYD] An obsequent stream flowing down a scarp, such as down the scarp slope of a cuesta. { 'skärp ,strēm }

scar tissue [MED] Contracted, dense connective tissue that is formed by the healing process of a wound or diseased tissue. { 'skär, tɪʃ-ü }

SC asphalt See slow-curing liquid asphaltic material. { 'es; sē 'as, fōlt }

Scatopsidae [INV ZOO] The minute black scavenger flies, a family of orthorrhaphous dipteran insects in the series Nematocera. { skə'täp-sə, də }

scatter angle See scattering angle. { 'skad-ər, ʌŋ-gəl }

scatter band [COMMUN] In pulse interrogation systems, the total bandwidth occupied by the frequency spread by numerous interrogations operating on the same nominal radio frequency. { 'skad-ər, bænd }

scatter diagram [PETR] See point diagram. [STAT] A plot of the pairs of values of two variates in rectangular coordinates. Also known as scatter gram. { 'skad-ər, dɪ-ə, gram }

scattered [METEOROL] Descriptive of a sky cover of 0.1 to 0.5 (5 to 54%), applied only when clouds or obscuring phenomena aloft are present, not applied for surface-based obscuring phenomena. { 'skad-əd }

scattergram See scatter diagram. { 'skad-ər, gram }

scattering [ELECTROMAG] Diffusion of electromagnetic waves in a random manner by air masses in the upper atmosphere, permitting long-range reception, as in scatter propagation. Also known as radio scattering. [PHYS] 1. The change in direction of a particle or photon because of a collision with another particle or a system. 2. Diffusion of acoustic or electromagnetic waves caused by inhomogeneity or anisotropy of the transmitting medium. 3. In general, causing a collection of entities to assume a less orderly arrangement. { 'skad-ərɪŋ }

scattering amplitude [QUANT MECH] A quantity, depending in general on the energy and scattering angle, which specifies the wave function of particles scattered in a collision, and whose

squared modulus is proportional to the number of particles scattered in a given direction. { 'skad-ərɪŋ ,am-plə,tüd }

scattering angle [PHYS] The angle between the initial and final directions of motion of a scattered particle. Also known as scatter angle. { 'skad-ərɪŋ ,ʌŋ-gəl }

scattering coefficient [ELECTROMAG] One of the elements of the scattering matrix of a waveguide junction; that is, a transmission or reflection coefficient of the junction. [PHYS] The fractional decrease in intensity of a beam of electromagnetic radiation or particles per unit distance traversed, which results from scattering rather than absorption. Also known as dissipation coefficient. { 'skad-ərɪŋ ,kō-i, fɪʃ-ənt }

scattering cross section [ELECTROMAG] The power of electromagnetic radiation scattered by an antenna divided by the incident power. [PHYS] The sum of the cross sections for elastic and inelastic scattering. { 'skad-ərɪŋ 'krōs, sek-shən }

scattering function [ELECTROMAG] The intensity of scattered radiation in a given direction per lumen of flux incident upon the scattering material. { 'skad-ərɪŋ ,fəŋk-shən }

scattering layer [OCEANOGR] A layer of organisms in the sea which causes sound to scatter and to return echoes. { 'skad-ərɪŋ ,lā-ər }

scattering length [NUC PHYS] A parameter used in analyzing nuclear scattering at low energies; as the energy of the bombarding particle becomes very small, the scattering cross section approaches that of an impenetrable sphere whose radius equals this length. Also known as scattering power. { 'skad-ərɪŋ ,leŋkθ }

scattering loss [ELECTROMAG] The portion of the transmission loss that is due to scattering within the medium or roughness of the reflecting surface. { 'skad-ərɪŋ ,lōs }

scattering matrix [ELECTROMAG] A square array of complex numbers consisting of the transmission and reflection coefficients of a waveguide junction. [QUANT MECH] A matrix which expresses the initial state in a scattering experiment in terms of the possible final states. Also known as collision matrix; S matrix. { 'skad-ərɪŋ ,mā-trɪks }

scattering-matrix theory See S-matrix theory. { 'skad-ərɪŋ ,mā-trɪks, thē-ə-rē }

scattering operator [PHYS] An operator which acts in the vector space of solutions of a wave equation, transforming solutions representing incoming waves in a domain exterior to a bounded obstacle into solutions representing outgoing waves. { 'skad-ərɪŋ ,äp-ə, rād-ər }

scattering plane [PHYS CHEM] In a quasielastic light-scattering experiment performed with the use of polarizers, the plane containing the incident and scattered beams. { 'skad-ərɪŋ ,plān }

scattering power See scattering length. { 'skad-ərɪŋ ,pau-ər }

scattering theory [PHYS] The discipline that mathematically determines the amplitudes of the scattered fields in a scattering process or collision from the equations of motion of the interacting particles, including the potential energy of the interaction. Also known as direct scattering theory. { 'skad-ərɪŋ, thē-ə-rē }

scatter loading [COMPUT SCI] The process of loading a program into main memory such that each section or segment of the program occupies a single, connected memory area but the several sections of the program need not be adjacent to each other. { 'skad-ər, lōd-ɪŋ }

scatterometer [ENG] A microwave sensor that is essentially a radar without ranging circuits, used to measure only the reflection or scattering coefficient while scanning the surface of the earth from an aircraft or a satellite. { 'skad-ə'räm-əd-ər }

scatter propagation [ELECTROMAG] Transmission of radio waves far beyond line-of-sight distances by using high power and a large transmitting antenna to beam the signal upward into the atmosphere and by using a similar large receiving antenna to pick up the small portion of the signal that is scattered by the atmosphere. Also known as beyond-the-horizon communication; forward-scatter propagation; over-the-horizon propagation. { 'skad-ər, prəp-ə, gā-shən }

scatter read [COMPUT SCI] An input operation that places various segments of an input record into noncontiguous areas in central memory. { 'skad-ər, rēd }

scatter reflections [ELECTROMAG] Reflections from portions of the ionosphere having different virtual heights, which mutually interfere and cause rapid fading. { 'skad-ər rɪ, flek-shənz }

scaur See scar. { skär }

puter with its associated data terminals. { tranz'mish-ən 'in-tər, fās kən, vārd-ər }

transmission level [COMMUN] The ratio of the signal power at any point in a transmission system to the signal power at some point in the system chosen as a reference point; usually expressed in decibels. { tranz'mish-ən ,lev-əl }

transmission line [ELEC] A system of conductors, such as wires, waveguides, or coaxial cables, suitable for conducting electric power or signals efficiently between two or more terminals. { tranz'mish-ən ,līn }

transmission-line admittance [ELEC] The complex ratio of the current flowing in a transmission line to the voltage across the line, where the current and voltage are expressed in phasor notation. { tranz'mish-ən ,līn ad,mīt-əns }

transmission-line attenuation [ELEC] The decrease in power of a transmission-line signal from one point to another, expressed as a ratio or in decibels. { tranz'mish-ən ,līn ə,ten-yə,wāshən }

transmission-line cable [ELEC] The coaxial cable, waveguide, or microstrip which forms a transmission line; a number of standard types have been designated, specified by size and materials. { tranz'mish-ən ,līn ,kā-bəl }

transmission-line constants See transmission-line parameters. { tranz'mish-ən ,līn ,kän-stəns }

transmission-line current [ELEC] The amount of electrical charge which passes a given point in a transmission line per unit time. { tranz'mish-ən ,līn ,kə-rənt }

transmission-line efficiency [ELEC] The ratio of the power of a transmission-line signal at one end of the line to that at the other end where the signal is generated. { tranz'mish-ən ,līn i,fīsh-ən-sē }

transmission-line impedance [ELEC] The complex ratio of the voltage across a transmission line to the current flowing in the line, where voltage and current are expressed in phasor notation. { tranz'mish-ən ,līn im,pēd-əns }

transmission-line parameters [ELEC] The quantities which are necessary to specify the impedance per unit length of a transmission line, and the admittance per unit length between various conductors of the line. Also known as linear electrical parameters; line parameters; transmission line constants. { tranz'mish-ən ,līn pə,ram-əd-ərz }

transmission-line power [ELEC] The amount of energy carried past a point in a transmission line per unit time. { tranz'mish-ən ,līn ,pau-ər }

transmission-line reflection coefficient [ELEC] The ratio of the voltage reflected from the load at the end of a transmission line to the direct voltage. { tranz'mish-ən ,līn rī'flek-shən ,kō-i,fīsh-ənt }

transmission-line theory [ELEC] The application of electrical and electromagnetic theory to the behavior of transmission lines. { tranz'mish-ən ,līn ,thē-ə-rē }

transmission-line transducer loss [ELEC] The ratio of the power delivered by a transmission line to a load to that produced at the generator, expressed in decibels; equal to the sum of the attenuation of the line and the mismatch loss. { tranz'mish-ən ,līn trans'dū-sər,lōs }

transmission-line voltage [ELEC] The work that would be required to transport a unit electrical charge between two specified conductors of a transmission line at a given instant. { tranz'mish-ən ,līn ,vōltij }

transmission loss [COMMUN] 1. The ratio of the power at one point in a transmission system to the power at a point farther along the line; usually expressed in decibels. 2. The actual power that is lost in transmitting a signal from one point to another through a medium or along a line. Also known as loss. { tranz'mish-ən ,lōs }

transmission mode See mode. { tranz'mish-ən ,mōd }

transmission modulation [ELECTR] Amplitude modulation of the reading-beam current in a charge storage tube as the beam passes through apertures in the storage surface; the degree of modulation is controlled by the stored charge pattern. { tranz'mish-ən ,māj-ə'lā-shən }

transmission oil [MATER] A lubricant especially compounded for automobile transmissions. { tranz'mish-ən ,ōil }

transmission plane [OPTICS] The plane of vibration of polarized light that will pass through a Nicol prism or other polarizer. { tranz'mish-ən ,plān }

transmission primaries [COMMUN] The set of three color primaries that correspond to the three independent signals con-

tained in the color television picture signal. { tranz'mish-ən ,prī,merēz }

transmission range See night visual range. { tranz'mish-ən ,rānj }

transmission regulator [ELECTR] In electrical communications, a device that maintains substantially constant transmission levels over a system. { tranz'mish-ən ,reg-yə,lād-ər }

transmission security [COMMUN] Component of communications security which results from all measures designed to protect transmissions from unauthorized interception, traffic analysis, and imitative deception. { tranz'mish-ən sī,kūr-əd-ē }

transmission speed [COMMUN] The number of information elements sent per unit time; usually expressed as bits, characters, bands, word groups, or records per second or per minute. { tranz'mish-ən ,spēd }

transmission substation [ELEC] An electric power substation associated with high voltage levels. { tranz'mish-ən 'səb,stā-shən }

transmission time [COMMUN] Absolute time interval from transmission to reception of a signal. { tranz'mish-ən ,tīm }

transmission tower [ENG] A concrete, metal, or timber structure used to carry a transmission line. { tranz'mish-ən ,tau-ər }

transmissivity [ELECTROMAG] The ratio of the transmitted radiation to the radiation arriving perpendicular to the boundary between two mediums. { ,tranz-mə'siv-əd-ē }

transmissometer [ENG] An instrument for measuring the extinction coefficient of the atmosphere and for the determination of visual range. Also known as hazemeter; transmittance meter. { ,tranz-mə'sām-əd-ər }

transmissometry [OPTICS] The technique of determining the extinction characteristics of a medium by measuring the transmission of a light beam of known initial intensity directed into that medium. { ,tranz-mə'sām-ə-trē }

transmit [COMMUN] To send a message, program, or other information to a person or place by wire, radio, or other means. [COMPUT SCI] To move data from one location to another. { tranz'mit }

transmit-receive tube [ELECTR] A gas-filled radio-frequency switching tube used to disconnect a receiver from its antenna during the interval for pulse transmission in radar and other pulsed radio-frequency systems. Also known as TR box; TR cell (British usage); TR switch; TR tube. { tranz'mit rī'sēv ,tūb }

transmittability [COMMUN] The ability of standard electronic and mechanical elements and automatic communications equipment to handle a code under various signal-to-noise ratios; for example, a code with a variable number of elements such as Morse presents technical problems in automatic interpretation not encountered in a fixed-length code. { tranz'mid-ə'bil-əd-ē }

transmittance [ANALY CHEM] During absorption spectroscopy, the amount of radiant energy transmitted by the solution under analysis. [ELECTROMAG] The radiant power transmitted by a body divided by the total radiant power incident upon the body. Also known as transmission. { tranz'mid-əns }

transmittance meter See transmissometer. { tranz'mid-əns ,mēd-ər }

transmittancy [ELECTROMAG] The transmittance of a solution divided by that of the pure solvent of the same thickness. { tranz'mid-ən-sē }

transmitted-carrier operation [COMMUN] Form of amplitude-modulated carrier transmission in which the carrier wave is transmitted. { tranz'mid-əd ,kär-ər ,āp-ə,rāshən }

transmitted wave See refracted wave. { tranz'mid-əd 'wāv }

transmitter [COMMUN] 1. In telephony, the carbon microphone that converts sound waves into audio-frequency signals. 2. See radio transmitter. [ELEC] See synchro transmitter. { tranz'mid-ər }

transmitter-distributor [ELEC] In teletypewriter operations, a motor-driven device which translates teletypewriter code combinations from perforated tape into electrical impulses, and transmits these impulses to one or more receiving stations. Abbreviated TD. { tranz'mid-ər dī'strib-yəd-ər }

transmitter noise See frying noise. { tranz'mid-ər ,nōiz }

transmitter off [COMMUN] A signal sent by a receiving device to a transmitter, directing it to stop sending information if it is doing so, or not to send information if it is preparing to do so. Abbreviated XOFF. { tranz'mid-ər 'ōf }

transmitter on [COMMUN] A signal sent by a receiving device to a transmitter, directing it to transmit any information it has to send. Abbreviated XON. { tranz'mid-ər 'on }

transmitter-receiver See transceiver. { tranz'mid-ər ri'sē-vər }

transmitter synchro See synchro transmitter. { tranz'mid-ər ,siŋ'krō }

transmitting loop loss [COMMUN] That part of the repetition equivalent assignable to the station set, subscriber line, and battery supply circuit which is on the transmitting end. { tranz'mid-iŋ ,lūp ,lōs }

transmitting mode [COMPUT SCI] Condition of an input/output device, such as a magnetic tape when it is actually reading or writing. { tranz'mid-iŋ ,mōd }

transmittivity [ELECTROMAG] The internal transmittance of a piece of nondiffusing substance of unit thickness. { ,trans-mə'tiv-əd-ē }

transmutation [NUC PHYS] A nuclear process in which one nuclide is transformed into the nuclide of a different element. Also known as nuclear transformation. { ,trans-myū'tā-shən }

transobuoy [ENG] A free-floating or moored automatic weather station developed for the purpose of providing weather reports from the open oceans; it transmits barometric pressure, air temperature, sea-water temperature, and wind speed and direction. { 'trans-ə,bōi }

transolver [ELEC] A synchro having a two-phase cylindrical rotor within a three-phase stator, for use as a transmitter or a control transformer with no degradation of accuracy or nulls. { tran'sāl-vər }

transom [BUILD] A window above a door. [NAV ARCH] The flat, vertical aft end of a ship or boat as distinguished from a canoe-shaped or cruiser stern. { 'trans-əm }

transonic [PHYS] That which occurs or is occurring within the range of speed in which flow patterns change from subsonic to supersonic (or vice versa), about Mach 0.8 to 1.2, as in transonic flight or transonic flutter. { tran'sān'ik }

transonic flight [AERO ENG] Flight of vehicles at speeds near the speed of sound (660 miles per hour or 1060 kilometers per hour, at 35,000 feet or 10,700 meters altitude), characterized by great increase in drag, decrease in lift at any altitude, and abrupt changes in the moments acting on the aircraft; the vehicle may shake or buffet. { tran'sān'ik 'flīt }

transonic flow [FL MECH] Flow of a fluid over a body in the range just above and just below the acoustic velocity. { tran'sān'ik 'flō }

transonic range [FL MECH] The range of speeds between the speed at which one point on a body reaches supersonic speed, and the speed at which all points reach supersonic speed. { tran'sān'ik 'rānj }

transonic speed [FL MECH] The speed of a body relative to the surrounding fluid at which the flow is in some places on the body subsonic and in other places supersonic. { tran'sān'ik 'spēd }

transonic wind tunnel [ENG] A type of high-speed wind tunnel capable of testing the effects of airflow past an object at speeds near the speed of sound, Mach 0.7 to 1.4; sonic speed occurs where the cross section of the tunnel is at a minimum, that is, where the test object is located. { tran'sān'ik 'wind ,tən-əl }

transorbital lobotomy [MED] A lobotomy performed through the roof of the orbit. { tranz'ōr-bəd-əl lə'bād-ə-mē }

transosonde [ENG] The flight of a constant-level balloon, whose trajectory is determined by tracking with radio-direction-finding equipment; thus, it is a form of upper-air, quasi-horizontal sounding. { 'tran-zə,sānd }

transparency [GRAPHICS] An image fixed on a clear base by means of a photographic, printing, chemical, or other process, especially adaptable for viewing by transmitted light. [OPTICS] The ability of a substance to transmit light of different wavelengths, sometimes measured in percent of radiation which penetrates a distance of 1 meter. { tranz'par-ən-sē }

transparency range [NUC PHYS] A postulated energy range for extremely high-energy heavy-ion collisions in which the projectile passes through the target and emerges with its temperature and density raised to the point at which a quark-gluon plasma forms. { tranz'par-ən-sē ,rānj }

transparent [COMPUT SCI] Pertaining to a device or system that processes data without the user being aware of or needing to understand its operation. [PHYS] Permitting passage of radiation or particles. { tranz'par-ənt }

transparent medium [OPTICS] 1. A medium which has the property of transmitting rays of light in such a way that the human eye may see through the medium distinctly. 2. A medium transparent to other regions of the electromagnetic spectrum, such as x-rays and microwaves. { tranz'par-ənt 'mēd-ē-əm }

transparent sky cover [METEOROL] In United States weather-observing practice, that portion of sky cover through which higher clouds and blue sky may be observed; opposed to opaque sky cover. { tranz'par-ənt 'ski ,kəv-ər }

transpassive region [PHYS CHEM] That portion of an anodic polarization curve in which metal dissolution increases as the potential becomes noble. { tranz'pas-iv 'rē-jən }

transphaser [OPTICS] A nonlinear optical device that uses one light beam to modulate another, in a manner analogous to an electronic transistor, and that operates through the transfer of a phase shift from one beam to the other. { 'tranz'fāz-ər }

transpiration [BIOL] The passage of a gas or liquid (in the form of vapor) through the skin, a membrane, or other tissue. { ,tranz-pə'rā-shən }

transpiration cooling See sweat cooling. { ,tranz-pə'rā-shən 'kūl-iŋ }

transplantation [BIOL] 1. The artificial removal of part of an organism and its replacement in the body of the same or of a different individual. 2. To remove a plant from one location and replant it in another place. { ,tranz-plan'tā-shən }

transplantation antigen [IMMUNOL] An antigen in a cell which induces a histocompatibility reaction when the cell is transplanted into an organism not having that antigen. { ,tranz-plan'tā-shən 'anti-rjən }

transplantation disease [MED] Disease ascribable to an immunological graft-versus-host reaction which occurs after transplantation of adult lymphoid cells to incompatible recipients who cannot reject them. { ,tranz-plan'tā-shən di,zēz }

transplanter [AGR] A special kind of equipment designed for the planting of cuttings or small plants; it transports one or more workers who assist the action of the machine in placing plants in a furrow and covering them; it commonly supplies a small quantity of water to each plant. { tranz'plan-tər }

transplutonium element [INORG CHEM] An element having an atomic number greater than that of plutonium (94). { 'tranz-plō'tō-nē-əm 'el-ə-mənt }

transpolarizer [ELEC] An electrostatically controlled circuit impedance that can have about 30 discrete and reproducible impedance values: two capacitors, each having a crystalline ferroelectric dielectric with a nearly rectangular hysteresis loop, are connected in series and act as a single low impedance to an alternating-current sensing signal when both capacitors are polarized in the same direction; application of 1-microsecond pulses of appropriate polarity increases the impedance in steps. { tranz'pō-lə,rīz-ər }

transponder [COMMUN] A transmitter-receiver capable of accepting the challenge of an interrogator and automatically transmitting an appropriate reply. { tranz'pān-dər }

transponder beacon See responder beacon. { tranz'pān-dər ,bē-kən }

transponder dead time [ELECTR] Time interval between the start of a pulse and the earliest instant at which a new pulse can be received or produced by a transponder. { tranz'pān-dər 'ded ,tīm }

transponder set [ELECTR] A complete electronic set which is designed to receive an interrogation signal, and which retransmits coded signals that can be interpreted by the interrogating station; it may also utilize the received signal for actuation of additional equipment such as local indicators or servo amplifiers. { tranz'pān-dər ,set }

transponder suppressed time delay [ELECTR] Overall fixed time delay between reception of an interrogation and transmission of a reply to this interrogation. { tranz'pān-dər sə'prest 'tīm di,lā }

transport [COMPUT SCI] 1. To convey as a whole from one storage device to another in a digital computer. 2. See tape transport. [ENG] Conveyance equipment such as vehicular transport, hydraulic transport, and conveyor-belt setups. [NAV ARCH] A ship designed to carry military personnel from one place to another. Also known as troop ship. { trans'pōrt (verb), 'tranz,pōrt (noun) }

transportable computer [COMPUT SCI] A microcomputer