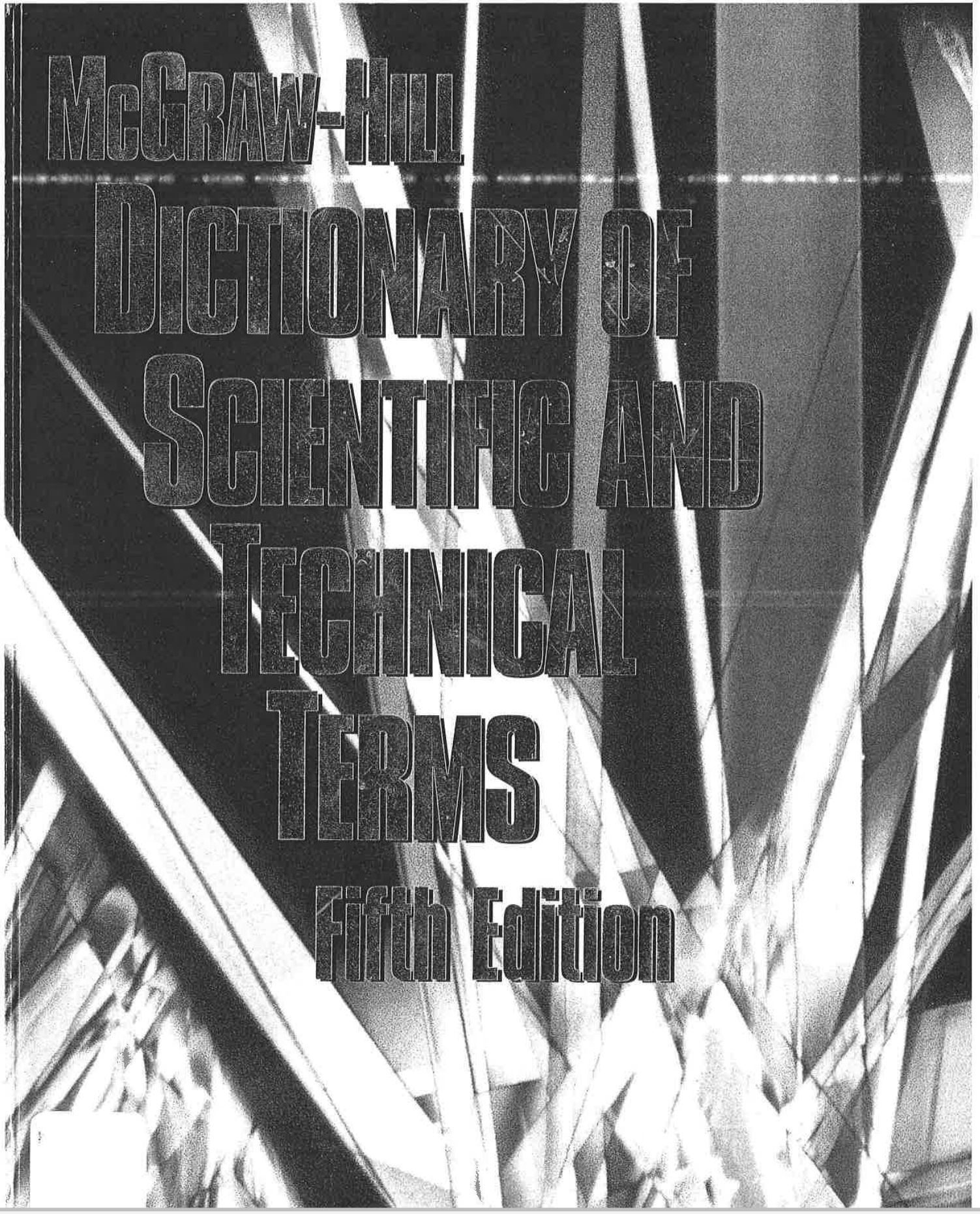

On the cover: Photomicrograph of crystals of vitamin B_1.
(Dennis Kunkel, University of Hawaii)

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of thorium which has mass number 228. Symbolized RdTh. { ¦rād·ē·ō'thȯr·ē·əm }

radio time signal [COMMUN] A time signal sent by radio broadcast. { 'rād·ē·ō 'tīm ˌsig·nəl }

radio tower [COMMUN] A tower, usually several hundred meters tall, either guyed or freestanding, on which a transmitting antenna is mounted to increase the range of radio transmission; in some cases, the tower itself may be the antenna. { 'rād·ē·ō ˌtaù·ər }

radiotracer *See* radioactive tracer. { ¦rād·ē·ō'trā·sər }

radio tracking [ENG] The process of keeping a radio or radar beam set on a target and determining the range of the target continuously. { 'rād·ē·ō 'trak·iŋ }

radio transmission [COMMUN] The transmission of signals through space at radio frequencies by means of radiated electromagnetic waves. { 'rād·ē·ō tranz'mish·ən }

radio transmitter [ELECTR] The equipment used for generating and amplifying a radio-frequency carrier signal, modulating the carrier signal with intelligence, and feeding the modulated carrier to an antenna for radiation into space as electromagnetic waves. Also known as radio set; transmitter. { 'rād·ē·ō 'tranz,mid·ər }

radio transponder [ELECTR] A transponder which receives and transmits radio waves, in contrast to a sonar transponder, which receives and transmits acoustic waves. { 'rād·ē·ō tran'spän·dər }

radio tube *See* electron tube. { 'rād·ē·ō ˌtüb }

radio watch *See* watch. { 'rād·ē·ō ˌwäch }

radio wave [ELECTROMAG] An electromagnetic wave produced by reversal of current in a conductor at a frequency in the range from about 10 kilohertz to about 300,000 megahertz. { 'rād·ē·ō ˌwāv }

radio wavefront distortion [ELECTROMAG] Change in the direction of advance of a radio wave. { 'rād·ē·ō 'wāv,frənt di,stȯr·shən }

radio-wave propagation [ELECTROMAG] The transfer of energy through space by electromagnetic radiation at radio frequencies. { 'rād·ē·ō ¦wāv ˌpräp·ə,gā·shən }

radio window [GEOPHYS] A band of frequencies extending from about 6 to 30,000 megahertz, in which radiation from the outer universe can enter and travel through the atmosphere of the earth. { 'rād·ē·ō ˌwin·dō }

radish [BOT] *Raphanus sativus*. **1.** An annual or biennial crucifer belonging to the order Capparales. **2.** The edible, thickened hypocotyl of the plant. { 'rad·ish }

radist [NAV] Radio-navigation system in which the comparison of arrival times of transmitted pulses, at three or more ground stations, indicates the position of the vehicle. { 'rā,dist }

radium [CHEM] **1.** A radioactive member of group II, symbol Ra, atomic number 88; the most abundant naturally occurring isotope has mass number 226 and a half-life of 1620 years. **2.** A highly toxic solid that forms water-soluble compounds; decays by emission of α, β, and γ-radiation; melts at 700°C, boils at 1140°C; turns black in air; used in medicine, in industrial radiography, and as a source of neutrons and radon. { 'rād·ē·əm }

radium age [NUCLEO] The age of a mineral as calculated from the numbers of radium atoms present originally, now, and when equilibrium is established with ionium. { 'rād·ē·əm ˌāj }

radium bromide [INORG CHEM] $RaBr_2$ Water-soluble, poisonous, radioactive white powder, corrosive to skin or flesh; melts at 728°C; used in medicine, physical research, and luminous paint. { 'rād·ē·əm 'brō,mīd }

radium carbonate [INORG CHEM] $RaCO_3$ Water-insoluble, poisonous, radioactive, white powder; used in medicine. { 'rād·ē·əm 'kär·bəˌnāt }

radium cell [NUCLEO] A sealed thin-wall tube containing radium. { 'rād·ē·əm ˌsel }

radium chloride [INORG CHEM] $RaCl_2$ Water- and alcohol-soluble, poisonous, radioactive, yellow-white crystals; corrosive effect on skin and flesh; melts at 1000°C; used in medicine, physical research, and luminous paint. { 'rād·ē·əm 'klȯrˌīd }

radium F *See* polonium-210. { 'rād·ē·əm 'ef }

radium needle [NUCLEO] A radium cell in the form of a needle, usually of platinum-iridium or gold alloy, designed primarily for insertion in tissue. { 'rād·ē·əm ˌnēd·əl }

radium plaque [NUCLEO] A radium container in which the radium is distributed over a surface; the shielding is usually small in one direction so as to permit transmission of β-rays as well as γ-rays. { 'rād·ē·əm ˌplak }

radium sulfate [INORG CHEM] $RaSO_4$ Water-insoluble, radioactive, poisonous, white crystals; used in medicine. { 'rād·ē·əm 'səl,fāt }

radium therapy [MED] Radiotherapy using the radiations from radium. { 'rād·ē·əm ˌther·ə·pē }

radius [ANAT] The outer of the two bones of the human forearm or of the corresponding part in vertebrates other than fish. [MATH] **1.** A line segment joining the center and a point of a circle or sphere. **2.** The length of such a line segment. { 'rād·ē·əs }

radius cutter [MECH ENG] A formed milling cutter with teeth ground to produce a radius on the workpiece. { 'rād·ē·əs ˌkad·ər }

radius of action [ENG] The maximum distance a ship, aircraft, or other vehicle can travel away from its base along a given course with normal load and return without refueling, but including the fuel required to perform those maneuvers made necessary by all safety and operating factors. { 'rād·ē·əs əv 'ak·shən }

radius of convergence [MATH] The positive real number corresponding to a power series expansion about some number a with the property that if $x - a$ has absolute value less than this number the power series converges at x, and if $x - a$ has absolute value greater than this number the power series diverges at x. { 'rād·ē·əs əv kən'vər·jəns }

radius of curvature [MATH] The radius of the circle of curvature at a point of a curve. { 'rād·ē·əs əv 'kər·və·chər }

radius of damage [ORD] The distance from ground zero of a nuclear blast at which there is a 0.50 probability of achieving the desired damage. { 'rād·ē·əs əv 'dam·ij }

radius of geodesic curvature [MATH] For a point on a curve lying on a surface, the reciprocal of the geodesic curvature at the point. { ¦rād·ē·əs əv ˌjē·ə¦des·ik 'kər·və·chər }

radius of geodesic torsion [MATH] The reciprocal of the geodesic torsion of a surface at a point in a given direction. { ¦rād·ē·əs əv ˌjē·ə¦des·ik 'tȯr·shən }

radius of gyration [MATH] The square root of the ratio of the moment of inertia of a plane figure about a given axis to its area. [MECH] The square root of the ratio of the moment of inertia of a body about a given axis to its mass. { 'rād·ē·əs əv jī'rā·shən }

radius of normal curvature [MATH] The reciprocal of the normal curvature of a surface at a point and in a given direction. { ¦rād·ē·əs əv ¦nȯr·məl 'kər·və·chər }

radius of protection [ENG] The radius of the circle within which a lightning discharge will not strike, due to the presence of an elevated lightning rod at the center. { 'rād·ē·əs əv prə'tek·shən }

radius of rupture [ORD] Greatest distance from the center of an underground explosive charge at which the explosion will be destructive. { 'rād·ē·əs əv 'rəp·chər }

radius of safety [ORD] The horizontal distance from ground area beyond which the weapon effects on friendly troops are acceptable. { 'rād·ē·əs əv 'sāf·tē }

radius of torsion [MATH] The reciprocal of the torsion of a space curve at a point. { ¦rād·ē·əs əv 'tȯr·shən }

radius of total curvature [MATH] The quantity $\sqrt{-TC}$, where C is the total curvature of a surface at a point. { 'rād·ē·əs əv ¦tōd·əl 'kər·və·chər }

radius of visibility [NAV] The radius of a circle limiting the area in which an objective can be seen under specified conditions. { 'rād·ē·əs əv ˌviz·ə'bil·əd·ē }

radius ratio [PHYS CHEM] The ratio of the radius of a cation to the radius of an ion; relative ionic radii are pertinent to crystal lattice structure, particularly the determination of coordination number. { 'rād·ē·əs ˌrā·shō }

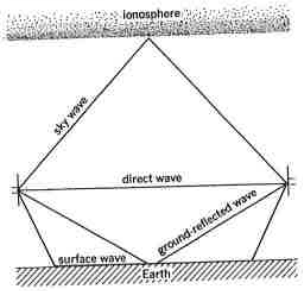
radius rod [ENG] A rod which restricts movement of a part to a given arc. { 'rād·ē·əs ˌräd }

radius vector [ASTRON] A line joining the center of an orbiting body with the focus of its orbit located near its primary. [MATH] The coordinate r in a polar coordinate system; which gives the distance of a point from the origin. { 'rād·ē·əs 'vek·tər }

radix *See* base of a number system; root. { 'rād·iks }

radix approximation [MATH] The approximation of a number by a number that can be expressed by a specified finite

RADIO-WAVE PROPAGATION



Possible transmission paths of electromagnetic radiation at radio frequencies.