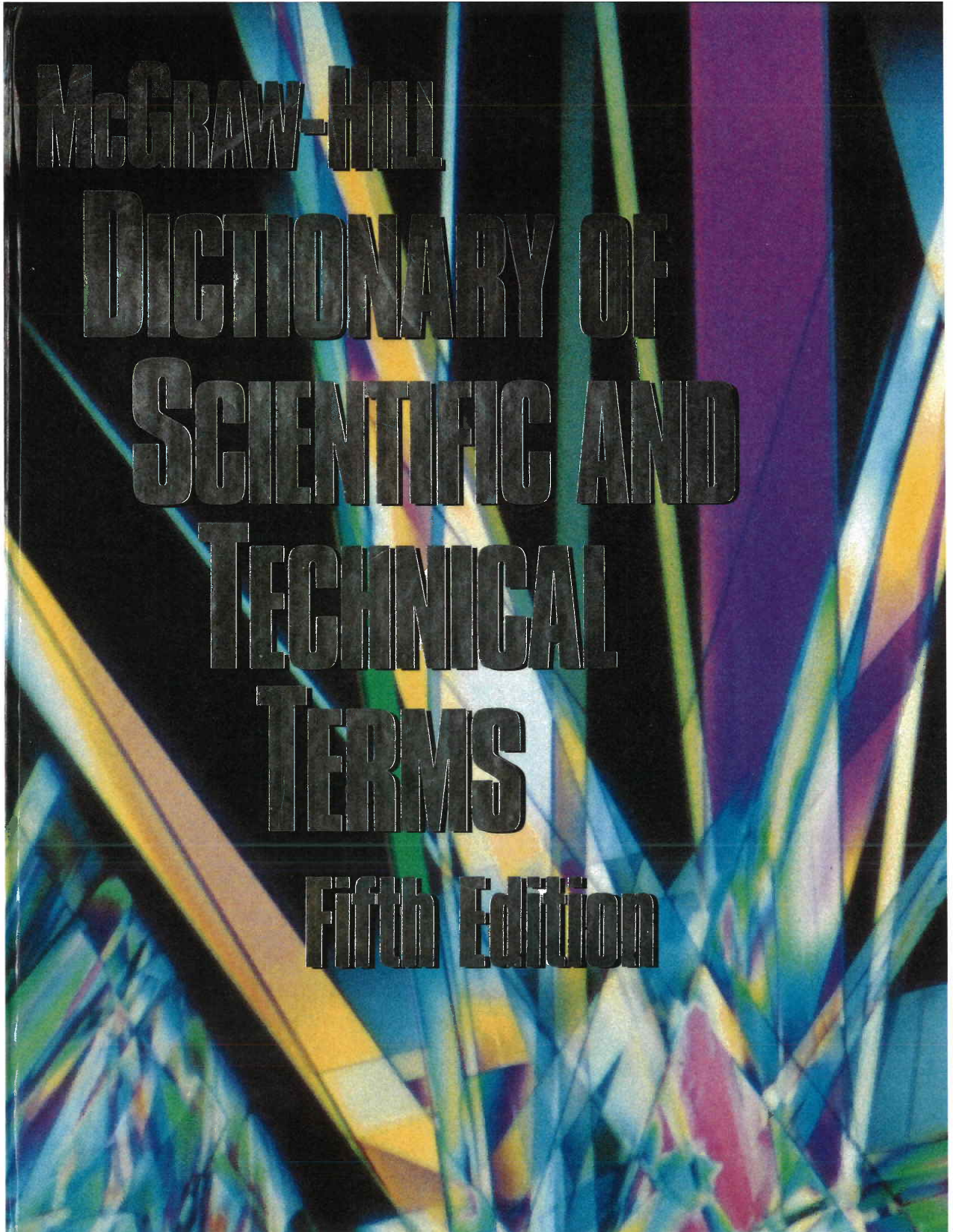


McGraw-Hill

**DICTIONARY OF
SCIENTIFIC AND
TECHNICAL
TERMS**

Fifth Edition



**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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2 3 4 5 6 7 8 9 0 DOW/DOW 9 9 8 7 6 5 4

ISBN 0-07-042333-4

Library of Congress Cataloging-in-Publication Data

McGraw-Hill dictionary of scientific and technical terms /
Sybil P. Parker, editor in chief.—5th ed.
p. cm.
ISBN 0-07-042333-4
1. Science—Dictionaries. 2. Technology—Dictionaries.
I. Parker, Sybil P.
Q123.M34 1993
503—dc20
93-34772
CIP

INTERNATIONAL EDITION

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When ordering this title, use ISBN 0-07-112584-7

... are uniformly distributed over a part of phase space whose energies lie within an infinitesimal range. { 'mī·krō·kāl'ān'sām·bəl }

microcapacitor [ELECTR] Any very small capacitor used in microelectronics, usually consisting of a thin film of dielectric material sandwiched between electrodes. { 'mī·krō·kə'pas·əd·ər }

microcapsule [CHEM ENG] A capsule with a plastic or wax-like coating having a diameter anywhere from well below 1 micrometer to over 2000 micrometers. { 'mī·krō,kap·səl }

microcard [GRAPHICS] A type of microtext, consisting of photographic prints 7.5 by 12.5 centimeters in size prepared from 16- or 35-millimeter film, commonly at a reduction of 20 diameters. { 'mī·krō,kārd }

microcell [CYTOL] A micronucleus within a layer of cytoplasm and a membrane. { 'mī·krə,sel }

microcentrum [CYTOL] The centrosome, or a group of centrosomes, functioning as the dynamic center of a cell. { 'mī·krə,sentrəm }

microcephalus [MED] An individual with microcephaly. { 'mī·krō'sef·ə'ləs }

microcephaly [MED] The condition of having an abnormally small head, with a circumference less than two standard deviations below the mean. { 'mī·krō'sef·ə·lē }

microceratous [INV ZOO] Having short antennae. { 'mī·krō'ser·ətəs }

microcerous cercaria [INV ZOO] A cercaria with a very short broad tail. { 'mī·krō'serkəs sə'r'kər·ē·ə }

microchannel plate [ELECTR] A plate that consists of extremely small cylinder-shaped electron multipliers mounted side by side, to provide image intensification factors as high as 100,000. Also known as channel plate multiplier. { 'mī·krō'chan·əl'plāt }

microchemistry [BIOCHEM] The chemistry of individual cells and minute organisms. [CHEM] The study of chemical reactions, using small quantities of materials, frequently less than 1 milligram or 1 milliliter, and often requiring special small apparatus and microscopical observation. { 'mī·krō'kem·ə'strē }

microchiroptera [VERT ZOO] A suborder of the mammalian order Chiroptera composed of the insectivorous bats. { 'mī·krō'kī·rō·tēr·ə }

microchronometer [HOROL] A spring-driven, fast-moving clock capable of indicating time intervals as small as 1/2000 of a minute; used as a timing device in micrometry studies. { 'mī·krō'krə'nām·əd·ər }

microcircuitry [ELECTR] Electronic circuit structures that are orders of magnitude smaller and lighter than circuit structures produced by the most compact combinations of discrete components. Also known as microelectronic circuitry; micro-miniature circuitry. { 'mī·krō'serk·ə·trē }

microcirculation [PHYSIO] The flow of blood or lymph in the vessels of the microcirculatory system. { 'mī·krō,sər'kyə'lā·shən }

microcirculatory system [ANAT] Those vessels of the blood and lymphatic systems which are visible only with a microscope. { 'mī·krō'sər'kyə'lə,tōr·ē ,sis·təm }

microclimate [CLIMATOL] The local, rather uniform climate of a specific place or habitat, compared with the climate of the entire area of which it is a part. { 'mī·krō'klī·mət }

microclimatology [CLIMATOL] The study of a microclimate, including the study of profiles of temperature, moisture and wind in the lowest stratum of air, the effect of the vegetation and of shelterbelts, and the modifying effect of towns and buildings. { 'mī·krō,klī·mə'täl·ə·jē }

microcline [MINERAL] KAlSi3O8 A triclinic potassium-rich feldspar, usually containing minor amounts of sodium; may be clear, white, pale-yellow, brick-red, or green, and is generally characterized by crosshatch twinning. { 'mī·krə,klīn }

microcneme [INV ZOO] Microsepta in certain anemones. { 'mī·krə,nēm }

micrococcaceae [MICROBIO] A family of gram-positive cocci; chemoorganotrophic organisms with respiratory or fermentative metabolism. { 'mī·krō'kək'sās·e·ē }

microcode [COMPUT SCI] A code that employs microinstructions; not ordinarily used in programming. { 'mī·krō'kōd }

minicomputer. Also known as micro. { 'mī·krō·kəm 'pyü·dər }

microcomputer development system [COMPUT SCI] A complete microcomputer system that is used to test both the software and hardware of other microcomputer-based systems. { 'mī·krō·kəm'pyü·dər di'vel·əp·mənt ,sis·təm }

microconsumer See decomposer. { 'mī·krō·kən'sü·mər }

microcontroller [ELECTR] A microcomputer, microprocessor, or other equipment used for precise process control in data handling, communication, and manufacturing. { 'mī·krō·kən'tröl·ər }

microcopy [GRAPHICS] A photographic reproduction that is too small to be read without magnification. { 'mī·krō,köp·ē }

microcoquina [PETR] A clastic limestone composed wholly or partially of cemented sand-size particles of shell detritus. { 'mī·krō·kə'kē·nə }

Microcotyloidea [INV ZOO] A superfamily of ectoparasitic trematodes in the subclass Monogenea. { 'mī·krō,käd·əl'oid·e·ə }

microcoulomb [ELEC] A unit of electric charge equal to one-millionth of a coulomb. Abbreviated μC . { 'mī·krō'kü,läm }

microcrack See microfissure. { 'mī·krō,krak }

microcrystalline [CRYSTAL] Composed of or containing crystals that are visible only under the microscope. { 'mī·krō'krist·əl·ən }

microcrystalline wax [MATER] A petroleum wax containing small, indistinct crystals, and having a higher molecular weight, melting point, and viscosity than paraffin wax; used in laminated paper and electrical coil coating. { 'mī·krō'krist·əl·ən 'waks }

Microcyprini [VERT ZOO] The equivalent name for Cyprinodontiformes. { 'mī·krō'sə'prē,nē }

microcyst [MED] A very small cyst. { 'mī·krə,sist }

microcyte [MED] A red blood cell whose diameter or mean corpuscular volume or both are more than two standard deviations below the normal mean. Also known as microerythrocyte. { 'mī·krə,sīt }

microcythemia [MED] Blood characterized by the presence of small red blood cells. { 'mī·krō'sī'thē·mē·ə }

microcytic anemia [MED] Any form of anemia in which small erythrocytes occur in the blood. { 'mī·krə'sid·ik ə'nē·mē·ə }

microcytosis [MED] A blood disorder characterized by a preponderance of microcytes. { 'mī·krə'sīt·ō·səs }

microdactyly [MED] A condition of abnormal smallness of fingers or toes. { 'mī·krō'dak·tə·lē }

microdensitometer [SPECT] A high-sensitivity densitometer used in spectroscopy to detect spectrum lines too faint on a negative to be seen by the human eye. { 'mī·krō,den·sə'tām·əd·ər }

microdiagnostic program [COMPUT SCI] A microprogram that tests a specific hardware component, such as a bus or store location, for faults. { 'mī·krō,dī·əg'nās·tik 'prō·grəm }

microdiffusimeter [ENG] A type of diffusimeter in which diffusion is measured over microscopic distances, greatly reducing the time required for the measurement and the effects of vibration and temperature changes. { 'mī·krō-də'fyüz·ər }

microdisk [COMPUT SCI] A small floppy disk with a diameter between 3 and 4 inches (7 and 10 centimeters). Also known as microfloppy disk. { 'mī·krō,disk }

microdissection [BIOL] Dissection under a microscope. { 'mī·krō'di'sek·shən }

Microdomatacea [PALEON] An extinct superfamily of gastropod mollusks in the order Aspidobranchia. { 'mī·krə,dō·mə'tās·ē·ə }

microearthquake [GEOPHYS] An earthquake with a low intensity, usually less than 3 on the Richter scale. Also known as microquake. { 'mī·krō'ərth,kwāk }

microelectrolysis [PHYS CHEM] Electrolysis of small quantities of material. { 'mī·krō·i,lek'trəl·ə·səs }

microelectronic circuitry See microcircuitry. { 'mī·krō·i,lek'trən·ik 'sər·kə·trē }

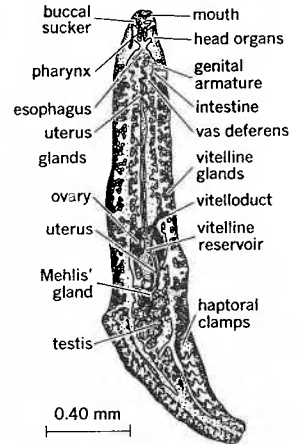
microelectronics [ELECTR] The technology of constructing circuits and devices in extremely small packages by various techniques. Also known as microminiaturization; microsystem

MICROCERCIOUS CERCARIA



Drawing of a microcerous cercaria showing small tail. (From R. M. Cable, An Illustrated Laboratory Manual of Parasitology, Burgess, 1958)

MICROCOTYLOIDEA



Ventral view of Heteraxinoides xanthophilis (Hargis), an ectoparasite of the spot fish (Leiostomus xanthurus).

instead of each user getting an individual narrow band. { 'ran-dəm 'ak,ses di'skrēt ə'dres }

random-access disk file [COMPUT SCI] A file which is contained on a disk having one head per track and in which consecutive records are not necessarily in consecutive locations. { 'ran-dəm 'ak,ses 'disk ,fil }

random-access input/output [COMPUT SCI] A technique which minimizes seek time and overlaps with processing. { 'ran-dəm 'ak,ses 'in,püt 'aüt,püt }

random-access memory [COMPUT SCI] A data storage device having the property that the time required to access a randomly selected datum does not depend on the time of the last access or the location of the most recently accessed datum. Abbreviated RAM. Also known as direct-access memory; direct-access storage; random-access storage; random storage; uniformly accessible storage. { 'ran-dəm 'ak,ses 'mem-rē }

random-access programming [COMPUT SCI] Programming without regard for the time required for access to the storage positions called for in the program, in contrast to minimum-access programming. { 'ran-dəm 'ak,ses 'prō,gram-iŋ }

random-access storage See random-access memory. { 'ran-dəm 'ak,ses 'stōr-ij }

random coil [PHYS CHEM] Any of various irregularly coiled polymers that can occur in solution. Also known as cyclic coil. { 'ran-dəm 'kōil }

random copolymer [ORG CHEM] Resin copolymer in which the molecules of each monomer are randomly arranged in the polymer backbone. { 'ran-dəm kō'pāl-i-mər }

random diffusion chamber See reverberation chamber. { 'ran-dəm di'fjū-zhən ,chām-bər }

random digit [STAT] Digit taken from a table of random numbers according to some specified probability rule. { 'ran-dəm 'dij-ət }

random error [STAT] An error that can be predicted only on a statistical basis. { 'ran-dəm 'er-ər }

random experiments [STAT] Experiments which do not always yield the same result when repeated under the same conditions. { 'ran-dəm ik'sper-ə-məns }

random forecast [METEOROL] A forecast in which one of a set of meteorological contingencies is selected on the basis of chance; it is often used as a standard of comparison in determining the degree of skill of another forecast method. { 'ran-dəm 'fōr,kast }

random function [MATH] A function whose domain is an interval of the extended real numbers and has range in the set of random variables on some probability space; more precisely, a mapping of the cartesian product of an interval in the extended reals with a probability space to the extended reals so that each section is a random variable. { 'ran-dəm 'fəŋk-shən }

random interstratification [SOLID STATE] A crystalline structure in which two or more types of layers alternate in a random fashion. { 'ran-dəm ,in-tər,stra-ti-fə'kā-shən }

randomization [STAT] Assigning subjects to treatment groups by use of tables of random numbers. { ,ran-də-mə'zā-shən }

randomized blocks [STAT] An experimental design in which the various treatments are reproduced in each of the blocks and are randomly assigned to the units within the blocks, permitting unbiased estimates of error to be made. { 'ran-də,mīzd 'bläks }

randomized jitter [ELECTR] Jitter by means of noise modulation. { 'ran-də,mīzd 'jid-ər }

randomized test [STAT] Acceptance or rejection of the null hypothesis by use of a random variable to decide whether an observation causes rejection or acceptance. { 'ran-də,mīzd 'test- }

randomizing scheme [COMPUT SCI] A technique of distributing records among storage modules to ensure even distribution and seek time. { 'ran-də,mīz-iŋ ,skēm }

random length [ENG] One of a group of various lengths of pipe as delivered by the manufacturer, usually 13-23 feet (4-7 meters) long. Also known as mill length. { 'ran-dəm 'length }

random line [ENG] A trial surveying line that is directed as closely as circumstances permit toward a fixed terminal point that cannot be seen from the initial point. Also known as random traverse. { 'ran-dəm 'līn }

arising in control theory. [PHYS] Noise characterized by a large number of overlapping transient disturbances occurring at random, such as thermal noise and shot noise. Also known as fluctuation noise. { 'ran-dəm 'nōiz }

random number generator [COMPUT SCI] 1. A mathematical program which generates a set of numbers which pass a randomness test. 2. An analog device that generates a randomly fluctuating variable, and usually operates from an electrical noise source. { 'ran-dəm 'nəm-bər ,jen-ə,rād-ər }

random numbers [MATH] A listing of numbers which is nonrepetitive and satisfies no algorithm. { 'ran-dəm 'nəm-bərz }

random ordered sample [STAT] An ordered sample of size s drawn from a population of size N such that the probability of any particular ordered sample is the reciprocal of the number of permutations of N things taken s at a time. { 'ran-dəm 'ōr-dərd 'səm-pəl }

random process See stochastic process. { 'ran-dəm 'prā-səs }

random pulsing [COMMUN] Continuous, varying, pulse-repetition rate, accomplished by noise modulation or continuous frequency change. { 'ran-dəm 'pəls-iŋ }

random sampling [STAT] A sampling from some population where each entry has an equal chance of being drawn. { 'ran-dəm 'səm-pliŋ }

random-sampling voltmeter [ENG] A sampling voltmeter which takes samples of an input signal at random times instead of at a constant rate; the synchronizing portions of the instrument can then be simplified or eliminated. { 'ran-dəm 'səm-pliŋ 'völt,mēd-ər }

random sequence [MET] A longitudinal sequence of weld beads deposited in random increments. { 'ran-dəm 'sē-kwəns }

random start [STAT] In a systematic sample, the random selection of a starting point in the first sample block followed by taking that value in the same position in every succeeding block. { 'ran-dəm 'stārt }

random storage See random-access memory. { 'ran-dəm 'stōr-ij }

random structure [CRYSTAL] A crystal structure in which different types of atoms are associated with the various points in a crystal lattice in a random fashion. { 'ran-dəm 'strək-chər }

random superimposed coding [COMPUT SCI] A system of coding in which a set of random numbers is assigned to each concept to be encoded; with punched cards, each number corresponds to some one hole to be punched in a given field. { 'ran-dəm 'sü-pər-im'pōzd 'kōd-iŋ }

random traverse See random line. { 'ran-dəm trə'vərs }

random variable [MATH] A measurable function on a probability space; usually real valued, but possibly with values in a general measurable space. Also known as chance variable; stochastic variable; variate. { 'ran-dəm 'ver-ə-bəl }

random vector See diverse vector. { 'ran-dəm 'vek-tər }

random vibration [MECH] A varying force acting on a mechanical system which may be considered to be the sum of a large number of irregularly timed small shocks; induced typically by aerodynamic turbulence, airborne noise from rocket jets, and transportation over road surfaces. { 'ran-dəm vi'brā-shən }

random walk [MATH] A succession of movements along line segments where the direction and possibly the length of each move is randomly determined. { 'ran-dəm 'wōk }

random winding [ELEC] A coil winding in which the turns are positioned haphazardly rather than in layers. { 'ran-dəm 'wind-iŋ }

Raney nickel [MET] A nickel powder prepared from an alloy of nickel and aluminum in equal parts by preferentially dissolving the aluminum in a warm solution of sodium hydroxide. { 'rā-nē ,nik-əl }

rang [PETR] A unit of subdivision in the C.I.P.W. (Cross-Iddings-Pirsson-Washington) classification of igneous rocks. { rāŋ }

range [CIV ENG] Any series of contiguous townships of the U.S. Public Land Survey system. [COMMUN] 1. In printing telegraphy, that fraction of a perfect signal element through which the time of selection may be varied to occur earlier or

reactor fuel element See nuclear fuel element. { 'rē'ak-tər 'fyul əl-ə-mənt }

reactor fuel pellet See nuclear fuel pellet. { 'rē'ak-tər 'fyul ,pel-əl }

reactor period [NUCLEO] The time required for the power of a nuclear reactor to increase by a factor of $e = 2.72$ for a given multiplication constant. { 'rē'ak-tər ,pī-rē-əd }

reactor physics [NUCLEO] The science of the interaction of the elementary particles and radiations characteristic of nuclear reactors with matter in bulk. { 'rē'ak-tər ,fiz-iks }

reactor vessel [NUCLEO] A large tanklike structure built to prevent radioactive materials from escaping from the reactor and associated equipment. { 'rē'ak-tər ,ves-əl }

read [COMMUN] To understand clearly, as in radio communication. [COMPUT SCI] 1. To acquire information, usually from some form of storage in a computer. 2. To convert magnetic spots, characters, or punched holes into electrical impulses. [ELECTR] To generate an output corresponding to the pattern stored in a charge storage tube. { 'rēd }

read-around number See read-around ratio. { 'rēd ə ,raund ,nəm-bər }

read-around ratio [COMPUT SCI] The number of times that a particular bit in electrostatic storage may be read without seriously affecting nearby bits. Also known as read-around number. { 'rēd ə ,raund ,rā-shō }

read-back check See echo check. { 'rēd ,bak ,ček }

read diode [ELECTR] A high-frequency semiconductor diode consisting of an avalanche *pn* junction, biased to fields of several hundred thousand volts per centimeter, at one end of a high-resistance carrier serving as a drift space for the charge carriers. { 'rēd ,dī ,ōd }

reader [COMPUT SCI] A device that converts information from one form to another, as from punched paper tape to magnetic tape. [GRAPHICS] A projection device for viewing an enlarged microimage with the unaided eye. { 'rēd-ər }

reader-interpreter [COMPUT SCI] A service routine that reads an input string, stores programs and data on random-access storage for later processing, identifies the control information contained in the input string, and stores this control information separately in the appropriate control lists. { 'rēd-ər in 'tər-prəd-ər }

reader-punch equipment [COMPUT SCI] An input/output unit which can punch computer results on cards and read card data into the computer. { 'rēd-ər 'pəntʃ i ,kɹɪp-mənt }

read error [COMPUT SCI] A condition in which the content of a storage device cannot be electronically identified. { 'rēd ,er-ər }

read head [COMPUT SCI] A device that converts digital information stored on a magnetic tape, drum, or disk into electrical signals usable by the computer arithmetic unit. { 'rēd ,hed }

read-in [COMPUT SCI] To sense information contained in some source and transmit this information to an internal storage. { 'rēd ,in }

readiness review [COMPUT SCI] An on-site examination of the adequacy of preparations for effective utilization upon installation of a computer, and to identify any necessary corrective actions. { 'rēd-i-nəs rī ,vyū }

readiness time [ENG] The length of time required to obtain a stabilized system ready to perform its intended function (readiness time includes warm-up time); the time is measured from the point when the system is unassembled or uninstalled to such time as it can be expected to perform as accurately as at any later time; maintenance time is excluded from readiness time. { 'rēd-i-nəs ,tīm }

reading [ENG] 1. The indication shown by an instrument. 2. Observation of the readings of one or more instruments. [MOLEC BIO] A linear process by which amino acid sequences are recognized by the protein-synthesizing system of a cell from messenger ribonucleic codes. { 'rēd-iŋ }

reading frame [MOLEC BIO] A nucleotide sequence that starts with an initiation codon, partitions the subsequent nucleotides into a series of amino acid-encoding triplets, and ends with a termination codon. { 'rēd-iŋ ,frām }

reading microscopes [OPTICS] A set of microscopes used to

or more amino acid residues in a polypeptide chain during genetic translation. { 'rēd-iŋ mə'stāk }

reading point See breakpoint. { 'rēd-iŋ ,pɔɪnt }

reading rate [COMPUT SCI] Number of characters, words, fields, blocks, or cards sensed by an input sensing device per unit of time. { 'rēd-iŋ ,rāt }

reading station [COMPUT SCI] The position in a punched-card machine at which the data on the card are read, by sensing the positions of the holes, and converted into electrical impulses. Also known as sensing station. { 'rēd-iŋ ,stā-shən }

read-in program [COMPUT SCI] Computer program that can be put into a computer in a simple binary form and allows other programs to be read into the computer in more complex forms. { 'rēd ,in ,prɔ-g-rām }

read-only memory [COMPUT SCI] A device for storing data in permanent, or nonerasable, form; usually a static electronic or magnetic device allowing extremely rapid access to data. Abbreviated ROM. Also known as read-only storage. { 'rēd 'ɔn-lē 'mem-rē }

read-only storage See read-only memory. { 'rēd 'ɔn-lē 'stɔ-r-ij }

read-only terminal [COMPUT SCI] A peripheral device, such as a printer, that can only receive signals. { 'rēd 'ɔn-lē 'tər-mən-əl }

readout [COMPUT SCI] 1. The presentation of output information by means of lights, printed or punched tape or cards, or other methods. 2. To sense information contained in some computer internal storage and transmit this information to a storage external to the computer. { 'rēd ,aʊt }

readout station [COMMUN] A recording or receiving radio station at which data are received, as the transmitter in a missile, probe, satellite, or other spacecraft reads the data out. { 'rēd ,aʊt ,stā-shən }

read-punch unit [COMPUT SCI] An input-output unit of a computing system which punches computed results into cards, reads input information into the system, and segregates output cards; the read-punch unit generally consists of a card feed, a read station, a punch station, another read station, and two output card stackers. { 'rēd 'pəntʃ ,yü-nət }

read screen [COMPUT SCI] In optical character recognition (OCR), the transparent component part of most character readers through which appears the input document to be recognized. { 'rēd ,skrēn }

readthrough [GEN] Transcription beyond a termination sequence due to failure of ribonucleic acid polymerase to recognize the termination codon. { 'rēd ,θruː }

read time [COMPUT SCI] The time interval between the instant at which information is called for from storage and the instant at which delivery is completed in a computer. { 'rēd ,tīm }

read-while-writing [COMPUT SCI] The reading of a record or group of records into storage from tape at the same time another record or group of records is written from storage to tape. { 'rēd ,wɪl 'rɪd-iŋ }

read/write channel [COMPUT SCI] A path along which information is transmitted between the central processing unit of a computer and an input, output, or storage unit under the control of the computer. { 'rēd 'rɪt ,chan-əl }

read/write check indicator [COMPUT SCI] A device incorporated in certain computers to indicate upon interrogation whether or not an error was made in reading or writing; the machine can be made to stop, retry the operation, or follow a special subroutine, depending upon the result of the interrogation. { 'rēd 'rɪt 'ček ,in-'dæ ,kād-ər }

read/write comb [COMPUT SCI] The set of arms mounted with magnetic heads that reach between the disks of a disk storage device to read and record information. { 'rēd 'rɪt ,kɔm }

read/write head [COMPUT SCI] A magnetic head that both senses and records data. Also known as combined head. { 'rēd 'rɪt ,hed }

read/write memory [COMPUT SCI] A computer storage in which data may be stored or retrieved at comparable intervals. { 'rēd 'rɪt ,mem-rē }

read/write random-access memory [COMPUT SCI] A random access memory in which data can be written into memory as well as read out of memory. { 'rēd 'rɪt 'ran-dəm 'ak,sɛs