C

cable, *n*. 1. A unit of distance equal to one-tenth of a sea mile. Sometimes called CABLE LENGTH. 2. A chain or very strong fiber or wire rope used to anchor or moor vessels or buoys. 3. A stranded conductor or an assembly of two or more electric conductors insulated from each other, but laid up together with a strong, waterproof covering. A coaxial cable consists of two concentric conductors insulated from each other.

cable buoy. l. A buoy used to mark one end of a cable being worked by a cable ship. 2. A floating support of a submarine cable.

cable length. See CABLE, definition 1.

cage, *n*. The upper part of the buoy built on top of the body of the buoy and used as a daymark or part thereof, usually to support a light, topmark and/or radar reflector. Also called SUPERSTRUCTURE.

cage, *v., t.* To erect a gyro or lock it in place by means of a caging mechanism.

caging mechanism. A device for erecting a gyroscope or locking it in position.

cairn, *n*. A mound of rough stones or concrete, particularly one intended to serve as a landmark or message location. The stones are customarily piled in a pyramidal or beehive shape.

caisson, *n*. A watertight gate for a lock, basin, etc.

calcareous, *adj*. Containing or composed of calcium or one of its compounds.

calculated altitude. See under COMPUTED ALTITUDE.

calculator. A device for mathematical computations; originally mechanical, modern ones are exclusively electronic, and able to run simple programs. A navigational calculator contains ephemeral data and algorithms for the solution of navigation problems. Compare with computers, which can be used for many other applications and run complex programs.

caldera, *n*. A volcanic crater.

calendar, *n*. A graphic or printed record of time, usually of days, weeks, months, etc., used to refer to future events. The Gregorian calendar is in common use today. See also JULIAN DAY.

calendar day. The period from midnight to midnight. The calendar day is 24 hours of mean solar time in length and coincides with the civil day unless a time change occurs during a day.

calendar line. *British terminology.* See DATE LINE.

calendar month. The month of the calendar, varying from 28 to 31 days in length.

calendar year. The year of the calendar. Common years have 365 days and leap years 366 days. Each year exactly divisible by 4 is a leap year, except century years (1800, 1900, etc.), which must be exactly divisible by 400 (2000, 2400, etc.) to be leap years. The calendar year is based on the tropical year. Also called CIVIL YEAR.

calibrate, *n*. To determine or rectify the scale graduations of an instrument.

calibration card. See under CALIBRATION TABLE.

calibration correction. The value to be added to or subtracted from the reading of an instrument to obtain the correct reading.

calibration error. The error in an instrument due to imperfection of calibration or maladjustment of its parts. Also called SCALE ERROR.

calibration radiobeacon. A special radiobeacon operated primarily for calibrating shipboard radio direction finders. These radiobeacons transmit either continuously during scheduled hours or upon request.

calibration table. A list of calibration corrections or calibrated values. A card having such a table on it is called a CALIBRATION CARD.

California Current. A North Pacific Ocean current flowing southeastward along the west coast of North America from a point west of Vancouver Island to the west of Baja (Lower) California where it gradually widens and curves southward and southwestward, to continue as the westerly flowing PACIFIC NORTH EQUATORIAL CURRENT. The California Current is the southern branch of the Aleutian Current, augmented by the North Pacific Current, and forms the eastern part of the general clockwise oceanic circulation of the North Pacific Ocean. Although usually described as a permanent ocean current, the California Current is actually a poorly defined and variable flow easily influenced by the winds. See also MEXICO CURRENT.

California Norther. See NORTHER.

Callipic cycle. A period of four Meteoric cycles equal to 76 Julian years of 27759 days. Devised by Callipus, a Greek astronomer, about 350 B.C., as a suggested improvement on the Meteoric cycle for a period in which new and full moon would recur on the same day of the year. Taking the length of the synodical month as 29.530588 days, there are 940 lunations in the Callipic cycle with about 0.25 day remaining.

calm, *adj*. In a state of calm; without motion.

calm, *n*. 1. Absence of appreciable wind; specifically, force 0 (less than l knot or 1 mile per hour) on the Beaufort wind scale. 2. The state of the sea when there are no waves.

calm belt. l. The doldrum sides of the trade winds, called *calms of Cancer* and *calms of Capricorn,* respectively.

calving, *n.* The breaking away of a mass of ice from an ice wall, ice front, or iceberg.

camanchaca, *n.* See GARUA.

camel, *n*. A float used as a fender. Also called BREASTING FLOAT.

canal, *n.* 1. An artificial waterway for navigation. 2. A long, fairly straight natural channel with steep sloping sides. 3. Any watercourse or channel. 4. A sluggish coastal stream, as used locally on the Atlantic coast of the U.S.

Canary Current. The southern branch of the North Atlantic Current (which divides on the eastern side of the ocean); it moves south past Spain and southwestward along the Northwest coast of Africa and past the Canary islands. In the vicinity of the Cape Verde Islands, it divides into two branches, the western branch augmenting the Atlantic North Equatorial Current and the Eastern branch curving southward and continuing as the GUINEA CURRENT. The Canary Current forms the southeastern part of the general clockwise oceanic circulation of the North Atlantic Ocean. Also called the Canaries Current.

can buoy. An unlighted buoy of which the upper part of the body (above the waterline), or the larger part of the superstructure has the shape of a cylinder or nearly so. Also called CYLINDRICAL BUOY.

candela, *n*. The base unit of luminous intensity in the International System of Units (SI). It is the luminous intensity, in the perpendicular direction, of a surface of 1/600,000 square meter of a blackbody at the temperature of freezing platinum, under a pressure of 101,325 newtons per square meter. The definition was adopted by the Thirteenth General Conference on Weights and Measures (1967).

candela per square meter. The derived unit of luminance in the International System of Units.

candlepower, *n*. Luminous intensity expressed in candelas.

canyon, *n*. On the sea floor, a relatively narrow, deep depression with steep sides, the bottom of which generally has a continuous slope.

cap cloud. 1. A cloud resting on the top of an isolated mountain peak. The cloud appears stationary, but actually is being continually formed to windward and dissipated to leeward. A similar cloud over a mountain ridge is called a CREST CLOUD. See also BANNER CLOUD. 2. False cirrus over a towering cumulus, in the form of a cap or hood. See also SCARF CLOUD.

cape, *n.* A relatively extensive land area jutting seaward from a continent, or large island, which prominently marks a change in or interrupts notably the coastal trend.

Cape Breton Current. Originating in the Gulf of St. Lawrence, the Cape Brenton Current flows southeastward in the southwestern half of Cabot Strait, and merges with the Labrador Current Extension. It may be augmented by a branch of the constant but tide influenced Gaspe' Current to the northwest.

cape doctor. The strong southeast wind which blows on the South African coast. Also called DOCTOR.

Cape Horn Current. An ocean current that flows continuously eastward close to the tip of South America. It enters Drake Passage, at about longitude 70° W, in a 150-mile-wide band, with observed surface speeds to 2.4 knots. The current veers north-northeastward; when it crosses longitude 65° W, the current has narrowed to a width of about 85 miles, and its speed has decreased considerably. The current continues as the FALKLAND CURRENT.

card. An element of a computer consisting of the hard surface on which components are mounted. A completed card performs one or more specific functions, such as graphics.

cardinal heading. A heading in the direction of any of the cardinal points of the compass. See also INTERCARDINAL HEADING.

cardinal mark. An IALA aid to navigation intended to show the location of a danger to navigation based on its position relative to the danger. Its distinguishing features are black double-cone topmarks and black and yellow horizontal bands.

cardinal point. Any of the four principal directions; north, east, south, or west. Directions midway between cardinal points are called INTERCARDINAL POINTS.

cardinal system. A system of aids to navigation in which the shape, color, and number distinction are assigned in accordance with location relative to the nearest obstruction. The cardinal points delineate the sectors for aid location. The cardinal system is particularly applicable to a region having numerous small islands and isolated dangers. In the LATERAL SYSTEM, used in United States waters, the aids are assigned shape, color, and number distinction as a means of indicating navigable waters.

cardioid, *n*. The figure traced by a point on a circle which rolls around an equal fixed circle.

cargo transfer area. See under CARGO TRANSSHIPMENT AREAS.

cargo transshipment area. An area generally outside port limits that is specifically designated as suitable for the transshipment of oil or other materials from large ships to smaller ones. As the purpose of transshipment is usually to reduce the draft of the larger vessel to allow her to proceed to port, the operation is often known as lightening and the area may be called lightening area or cargo transfer area.

Caribbean Current. An ocean current flowing westward through the Caribbean Sea to the Yucatan Channel. It is formed by the co-mingling of part of the waters of the Atlantic North Equatorial Current with those of the Guiana Current.

carrier, *n*. 1. A radio wave having at least one characteristic which may be varied from a known reference value by modulation. 2. The part of a modulated wave that corresponds in a specified manner to the unmodulated wave. 3. In a frequency stabilized system, the sinusoidal component of a modulated wave; or the output of a transmitter when the modulating wave is made zero; or a wave generated at a point in the transmitting system and subsequently modulated by the signal; or a wave generated locally at the receiving terminal which, when combined with the sidebands in a suitable detector, produces the modulating wave. Also called CARRIER WAVE.

carrier frequency. 1. The frequency of the unmodulated fundamental output of a radio transmitter. 2. In a periodic carrier, the reciprocal of its period. The frequency of a periodic pulse carrier often is called PULSE REPETITION FREQUENCY.

carrier power. See under POWER (OF A RADIO TRANSMITTER).

carrier wave. See CARRIER.

cartesian coordinates. Magnitudes defining a point relative to two intersecting lines, called AXES. The magnitudes indicate the distance from each axis, measured along a parallel to the other axis. If the axes are perpendicular, the coordinates are rectangular; if not perpendicular, they are oblique coordinates.

cartographer, *n*. One who designs and constructs charts or maps.

cartographic feature. A natural or cultural object shown on a map or chart by a symbol or line. See also TOPOGRAPHY.

cartography, *n*. The art and science of making charts or maps.

cartometer, *n*. A device consisting of a small wheel and a calibrated dial used to measure distances on a map by following the desired route.

cartouche, *n*. A panel of a map, often with decoration, enclosing the title, scale, publishing information, and other notes.

cask buoy. A buoy in the shape of a cask.

Cassegrainian telescope. A reflecting telescope in which the incoming light is reflected from the primary mirror onto a secondary mirror and back through a small central aperture in the primary mirror. See also NEWTONIAN TELESCOPE.

cast, *n., t.* 1. To turn a ship in her own length. 2. To turn a ship to a desired direction without gaining headway or sternway. 3. To take a sounding with the lead.

catamaran, *n.* 1. A double-hulled vessel. 2. A raft consisting of a rectangular frame attached to two parallel cylindrical floats and which may be used for working alongside a ship. See also CAMEL.

catenary, *n.* The curve formed by a uniform cable supported only at its ends. Navigators are concerned with the catenary of overhead cables which determines clearance underneath, and the catenary of the anchor rode, which in part determines holding power and swing circle.

cathode, *n*. 1. The electrode through which a primary stream of electrons enters the interelectrode space. 2. The general term for a negative electrode. See also ANODE.

cathode ray. A stream of electrons emitted from the cathode of any vacuum tube, but normally used in reference to special purpose tubes designed to provide a visual display.

cathode-ray tube (CRT). A vacuum tube in which the instantaneous position of a sharply focused electron beam, deflected by means of electrostatic or electromagnetic fields, is indicated by a spot of light produced by impact of the electrons on a fluorescent screen at the end of the tube opposite the cathode. Used in radar displays.

catoptric light. A light concentrated into a parallel beam by means of one or more reflectors. One so concentrated by means of refracting lens or prisms is a DIOPTRIC LIGHT.

cat's paw. A puff of wind; a light breeze affecting a small area, as one that causes patches of ripples on the surface the water.

causeway, *n*. A raised earthen road across wet ground or water. See also BRIDGE definition 2; VIADUCT.

cautionary characteristic. Of a light, a unique characteristic which can be recognized as imparting a special cautionary significance e.g., a quick flashing characteristic phase indicating a sharp turn in a channel.

cautionary note. Information calling special attention to some fact, usually a danger area, shown on a map or chart.

caver, kaver, *n*. A gentle breeze in the Hebrides.

cavitation. The formation of bubbles in a liquid which occurs when the static pressure becomes less than the fluid vapor pressure; it usually occurs from rotating propellers and is acoustically very noisy.

cay, kay, *n*. A low, flat, tropical or sub-tropical island of sand and coral built up on a reef lying slightly above high water. Also called KEY.

C-band. A radiofrequency band of 3,900 to 6,200 megahertz. This band overlaps the S- and X-bands. See also FREQUENCY.

ceiling, *n*. The height above the earth's surface of the lowest layer of generally solid clouds, not classified as thin or partial.

celestial, *adj*. Of or pertaining to the heavens.

celestial body. Any aggregation of matter in space constituting a unit for astronomical study, as the sun, moon, a planet, comet, star, nebula, etc. Also called HEAVENLY BODY.

celestial concave. See CELESTIAL SPHERE.

celestial coordinates. Any set of coordinates used to define a point on the celestial sphere. The horizon, celestial equator, and the ecliptic systems of celestial coordinates are based on the celestial horizon, celestial equator, and the ecliptic, respectively, as the primary great circle.

celestial equator. The primary great circle of the celestial sphere, everywhere 90° from the celestial poles; the intersection of the extended plane of the equator and the celestial sphere. Also called EQUINOCTIAL.

celestial equator system of coordinates. A set of celestial coordinates based on the celestial equator as the primary great circle. Also called EQUINOCTIAL SYSTEM OF COORDINATES.

celestial fix. A fix established by means of two or more celestial bodies.

celestial globe. See STAR GLOBE.

celestial horizon. That circle of the celestial sphere formed by the intersection of the celestial sphere and a plane through the center of the earth and perpendicular to the zenith-nadir line. Also called RATIONAL HORIZON. See also HORIZON.

celestial latitude. Angular distance north or south of the ecliptic; the arc of a circle of latitude between the ecliptic and a point on the celestial sphere, measured northward or southward from the ecliptic through 90°, and labeled N or S indicate the direction of measurement.

celestial line of position. A line of position determined by means of a celestial body.

celestial longitude. Angular distance east of the vernal equinox, along the ecliptic; the arc of the ecliptic or the angle at the ecliptic pole between the circle of latitude of the vernal equinox at the circle of latitude of a point on the celestial sphere, measured eastward from the circle of latitude of the vernal equinox, through 360°.

celestial mechanics. The study of the motions of celestial bodies under the influence of gravitational fields.

celestial meridian. A great circle of the celestial sphere, through the celestial poles and the zenith. The expression usually refers to the upper branch, that half from pole to pole which passes through the zenith; the other half being called the lower branch. The celestial meridian coincides with the hour circle through the zenith and the vertical circle through the elevated pole.

celestial navigation. Navigation by celestial bodies.

celestial observation. Observation of celestial phenomena. The expression is applied in navigation principally to the measurement of the altitude of a celestial body, and sometimes to measurement of azimuth, or to both altitude azimuth. The expression may also be applied to the data obtained by such measurement. Also called SIGHT in navigation usage.

celestial parallel. See PARALLEL OF DECLINATION.

celestial pole. Either of the two points of intersection section of the celestial sphere and the extended axis of the earth, labeled N or S to indicate whether the north celestial pole or the south celestial pole.

celestial sphere. An imaginary sphere of infinite radius concentric with the earth, on which all celestial bodies except the earth are imagined to be projected.

celestial triangle. A spherical triangle on the celestial sphere, especially the navigational triangle.

Celsius temperature. The designation given to the temperature measured on the International Practical Temperature Scale with the zero taken as 0.01° below the triple point of water. Normally called CENTIGRADE TEMPERATURE, but the Ninth General Conference of Weights and Measures, held in October 1948, adopted the name *Celsius* in preference to *centigrade*, to be consistent with naming other temperature scales after their inventors, and to avoid the use of different names in different countries. On the original Celsius scale, invented in 1742 by a Swedish astronomer named Andres Celsius, the numbering was the reverse of the modern scale, 0°C representing the boiling point of water, and 100° C its freezing point.

center frequency. See ASSIGNED FREQUENCY.

centering control. On a radar indicator, a control used to place the sweep origin at the center of the plan position indicator.

centering error. Error in an instrument due to inaccurate pivoting of a moving part, as the index arm of a marine sextant. Also called ECCENTRIC ERROR.

center line. 1. The locus of points equidistant from two reference points or lines. 2. *(Usually centerline)* The line separating the port and starboard sides of a vessel, center of buoyancy. The geometric center of the immersed portion of the hull and appendages of a floating vessel All buoyant forces may be resolved into one resultant force acting upwards at this point.

center of gravity. The point in any body at which the force of gravity may be considered to be concentrated. Same as CENTER OF MASS in a uniform gravitational field.

center of mass. The point at which all the given mass of a body or bodies may be regarded as being concentrated as far as motion is concerned. Commonly called CENTER OF GRAVITY.

centi-. A prefix meaning *one-hundredth.*

centibar, *n.* One-hundredth of a bar; 10 millibars.

centigrade temperature. See under CELSIUS TEMPERATURE.

centimeter, *n.* One-hundredth of a meter.

centimeter-gram-second system. A system of units based on the centimeter as the unit of length, the gram as the unit of mass, and the mean solar second as the unit of time. Its units with special names include the erg, the dyne, the gauss, and the oersted. See also INTERNATIONAL SYSTEM OF UNITS.

centimetric wave. A super high frequency radio wave, approximately 0.01 to 0.1 meter in length (3 to 30 gigahertz). See also ULTRA SHORT WAVE.

central force. A force which for purposes of computation can be considered to be concentrated at one central point with its intensity at any other point being a function of the distance from the central point. Gravitation is considered as a central force in celestial mechanics.

central force field. The spatial distribution of the influence of a central force.

central force orbit. The theoretical orbit achieved by a particle of negligible mass moving in the vicinity of a point mass with no other forces acting; an unperturbed orbit.

central processing unit (CPU). The computer chip which is the brain of a computer, which runs PROGRAMS and processes DATA; also the container in which the CPU is located, along with many other associated devices such as the power supply, disk drives, etc., distinct from the MONITOR and other peripherals.

central standard time. See STANDARD TIME.

centrifugal force. The force acting on a body or part of a body moving under constraint along a curved path, tending to force it outward from the center of revolution or rotation. The opposite is CENTRIPETAL FORCE.

centripetal force. The force directed toward the center of curvature, which constrains a body to move in a curved path. The opposite is CENTRIFUGAL FORCE.

chain, *n.* A group of associated stations of a radionavigation system. A Loran C chain consists of a master station and two to four secondary stations.

chains. The platform or station from which soundings are taken with a hand lead.

chain signature. See under GROUP REPETITION INTERVAL.

chalk, *n.* Soft earthy sandstone of marine origin, composed chiefly of minute shells. It is white, gray, or buff in color. Part of the ocean bed and shores and composed of chalk, notably the "white cliffs of Dover," England.

challenge, *n.* A signal transmitted by a interrogator.

challenge, *v. t.* To cause an interrogator to transmit a signal which puts a transponder into operation.

challenger, *n.* See INTERROGATOR.

chance error. See RANDOM ERROR.

change of the moon. The time of new moon. See also PHASES OF THE MOON.

change of tide. A reversal of the direction of motion (rising or falling) of a tide. The expression is also sometimes applied somewhat loosely to a reversal in the set of a tidal current. Also called TURN OF THE TIDE.

channel, *n.* 1. The part of a body of water deep enough for navigation through an area otherwise not suitable. It is usually marked by a single or double line of buoys and sometimes by ranges. 2. The deepest part of a stream, bay, or strait, through which the main current flows. 3. A name given to certain large straits, such as the English Channel. 4. A hollow bed through which water may run. 5. A band of radio frequencies within which a radio station must maintain its modulated carrier frequency to prevent interference with stations on adjacent channels. Also called FREQUENCY CHANNEL.

channel buoy. A buoy marking a channel.

channel light. A light either on a fixed support or on a buoy, marking the limit of a navigable channel. In French, the term FEU DE RIVE is commonly used for a channel light on a fixed support.

characteristic, *n.* 1. The color and shape of a daymark or buoy or the color and period of a light used for identifying the aid. See also CHARACTERISTIC COLOR, CHARACTERISTIC PHASE. 2. The identifying signal transmitted by a radiobeacon. 3. That part of a logarithm (base 10) to the left of the decimal point. That part of a logarithm (base 10) to the right of the decimal point is called the MANTISSA. 4. A quality, attribute, or distinguishing property of anything.

characteristic color. The unique identifying color of a light.

characteristic frequency. A frequency which can be easily identified and measured in a given emission.

characteristic phase. Of a light, the sequence and length of light and dark periods by which a navigational light is identified, i.e., whether fixed, flashing, interrupted quick flashing, etc. See also CAUTIONARY CHARACTERISTIC.

characteristics of a light. The sequence and length of light and dark periods and the color or colors by which a navigational light is identified.

character of the bottom. See BOTTOM CHARACTERISTICS.

chart, *n*. A map intended primarily for navigational use by aircraft or vessels.

chart amendment patch. See CHARTLET, definition 2.

chart catalog. A list or enumeration of navigational charts, sometimes with index charts indicating the extent of coverage of the various navigational charts.

chart classification by scale. 1. Charts are constructed on many different scales, ranging from about 1:2,500 to 1:14,000,000 (and even smaller for some world charts). Small-scale charts are used for voyage planning and offshore navigation. Charts of larger scale are used as the vessel approaches land. Several methods of classifying charts according to scale are in use in various nations. The following classifications of nautical charts are those used by the National Ocean Survey: Sailing charts are the smallest scale charts used for planning, fixing position at sea, and for plotting while proceeding on a long voyage. The scale is generally smaller than 1:600,000. The shoreline and topography are generalized and only offshore soundings, the principal navigational lights, outer buoys, and landmarks visible at considerable distances are shown. General charts are intended for coastwise navigation outside of outlying reefs and shoals. The scales range from about 1:150,000 to 1:600,000. Coast (coastal) charts are intended for inshore coastwise navigation where the course may lie inside outlying reefs and shoals, for entering or leaving bays and harbors of considerable width, and for navigating large inland waterways. The scales range from about 1:50,000 to 1:150,000. Harbor charts are intended for navigation and anchorage in harbors and small waterways. The scale is generally larger than 1:50,000. 2. The classification system used by the Defense Mapping Agency Hydrographic/Topographic Center differs from the system in definition 1 above in that the sailing charts are incorporated in the general charts classification (smaller than about 1:150,000); those coast charts especially useful for approaching more confined waters (bays, harbors) are classified as approach charts.

chart comparison unit. An optical device used to superimpose the plan position indicator radar picture on a navigational chart.

chart convergence. Convergence of the meridians as shown on a chart.

chart datum. See CHART SOUNDING DATUM.

chart desk. A flat surface on which charts are spread out, usually with stowage space for charts and other navigating equipment below the plotting surface. One without stowage space is called a CHART TABLE.

charted depth. The vertical distance from the chart sounding datum to the bottom.

charthouse. A room, usually adjacent to or on the bridge, where charts and other navigational equipment are stored, and where navigational computations, plots, etc., may be made. Also called CHARTROOM.

chartlet, *n*. 1. A corrected reproduction of a small area of a nautical chart which is pasted to the chart for which it is issued. These chartlets are disseminated in *Notice to Mariners* when the corrections are too numerous or of such detail as not to be feasible in printed form. Also called BLOCK, BLOCK CORRECTION, CHART AMENDMENT PATCH.

chart portfolio. A systematic grouping of nautical charts covering a specific geographical area.

chart projection. See MAP PROJECTION.

chart reading. Interpretation of the symbols, lines, abbreviations, and terms appearing on charts. May be called MAP READING when applied to maps generally.

chartroom, *n*. See CHARTHOUSE.

chart scale. The ratio between a distance on a chart and the corresponding distance represented as a ratio such as 1:80,000 (natural scale), or 30 miles to an inch (numerical scale). May be called MAP SCALE when applied to any map. See also REPRESENTATIVE FRACTION.

chart sounding datum. The tidal datum to which soundings and drying heights on a chart are referred. It is usually taken to correspond to a low water stage of the tide. Often shortened to CHART DATUM, especially when it is clear that reference is not being made to a horizontal datum.

chart symbol. A character, letter, or similar graphic representation used on a chart to indicate some object, characteristic, etc. May be called MAP SYMBOL when applied to any map.

chart table. A flat surface on which charts are spread out, particularly one without stowage space below the plotting surface. One provided with stowage space is usually called a CHART DESK.

Charybdis, *n*. See GALOFARO.

chasm, *n*. A deep breach in the earth's surface; an abyss; a gorge; a deep canyon.

check bearing. An additional bearing, using a charted object other than those used to fix the position, observed and plotted in order to insure that the fix is not the result of a blunder.

cheese antenna. An antenna consisting of a mirror in the shape of part of a parabolic cylinder bounded by two parallel plates normal to the cylinder axis, and of an antenna feed placed on or near the focal point.

Chile Current. See under PERU CURRENT.

chimney, *n*. A label on a nautical chart which indicates a relatively small smokestack.

chip log. A historical speed measuring device consisting of a weighted wooden quadrant (quarter of a circle) attached to a bridle in such a manner that it will float in a vertical position, and a line with equally spaced knots, usually each 47 feet 3 inches apart. Speed is measured by casting the quadrant overboard and counting the number of knots paid out in a unit of time, usually 28 seconds.

chopped response. See CHOPPING.

chopping, *n*. The rapid and regular on and off switching of a transponder, for recognition purposes.

choppy, *adj*. description of short, breaking waves.

chord, *n*. A straight line connecting two points on a curve.

chromatic aberration. See under ABERRATION, definition 2.

chromosphere, *n*. A thin layer of relatively transparent gases above the photosphere of the sun.

chromospheric eruption. See SOLAR FLARE.

chronograph, *n*. An instrument for producing a graphical record of time as shown by a clock or other device. The chronograph produces a double record: the first is made by the associated clock and forms a continuous time scale with significant marks indicating periodic beats of the time keepers; the second is made by some external agency, human or mechanical, and records the occurrence of an event or a series of events. The time interval of such occurrences are read on the time scale made by the clock. See also BREAK-CIRCUIT CHRONOMETER.

chronogram, *n*. The record of a chronograph.

chronometer, *n*. A timepiece with a nearly constant rate. It is customarily used for comparison of watches and clocks to determine their errors. A chronometer is usually set approximately to Greenwich mean time and not reset as the craft changes time zones. A hack chronometer is one which has failed to meet the exacting requirements of a standard chronometer, and is used for timing observations of celestial bodies. Hack chronometers are seldom used in modern practice, any chronometer failing to meet the requirements being rejected. See also CHRONOMETER WATCH.

chronometer correction. The amount that must be added algebraically to the chronometer time to obtain the correct time. Chronometer correction is numerically equal to the chronometer error, but of opposite sign.

chronometer error. The amount by which chronometer time differs from the correct time to which it was set, usually Greenwich mean time. It is usually expressed to an accuracy of 1s and labeled fast (F) or slow (S) as the chronometer time is later or earlier, respectively, than the correct time. CHRONOMETER ERROR and CHRONOMETER CORRECTION are numerically the same, but of opposite sign. See also WATCH ERROR.

chronometer rate. The amount gained or lost by a chronometer in a unit of time. It is usually expressed in seconds per 24 hours, to an accuracy of 0.1s, and labeled gaining or losing, as appropriate, when it is sometimes called DAILY RATE.

chronometer time. The hour of the day as indicated by a chronometer. Shipboard chronometers are generally set to Greenwich mean time. Unless the chronometer has a 24-hour dial, chronometer time is usually expressed on a 12-hour cycle and labeled AM or PM.

chronometer watch. A small chronometer, especially one with an enlarged watch-type movement.

chubasco, *n*. A very violent wind and rain squall attended by thunder and vivid lightning often encountered during the rainy season along the west coast of Central America.

churada, *n*. A severe rain squall in the Mariana Islands during the northeast monsoon. They occur from November to April or May, especially from January through March.

cierzo, *n*. See MISTRAL.

cinders, *n., pl*. See SCORIAE.

circle, *n*. 1. A plane closed curve all points of which are equidistant from a point within, called the center. A great circle is the intersection of a sphere and a plane through its center; it is the largest circle that can be drawn on a sphere. A small circle is the intersection of a sphere and a plane which does not pass through its center. See also PARALLEL OF ALTITUDE, PARALLEL OF DECLINATION, PARALLEL OF LATITUDE; AZIMUTH CIRCLE, BEARING CIRCLE, DIURNAL CIRCLE, EQUATOR, HOUR CIRCLE, PARASELENIC CIRCLES, POSITION CIRCLE, SPEED CIRCLE, VERTICAL CIRCLE. 2. A section of a plane, bounded by a curve all points of which are equidistant from a point within, called the center.

circle of declination. See HOUR CIRCLE.

circle of equal altitude. A circle on the surface of the earth, on every point of which the altitude of a given celestial body is the same at a given instant. The center of this circle is the geographical position of the body, and the great circle distance from this pole to the circle is the zenith distance of the body. See PARALLEL OF ALTITUDE.

circle of equal declination. See PARALLEL OF DECLINATION.

circle of equivalent probability. A circle with the same center as an error ellipse of specified probability and of such radius that the probability of being located within the circle is the same as the probability of being located within the ellipse. See also CIRCULAR ERROR PROBABLE.

circle of latitude. A great circle of the celestial sphere through the ecliptic poles and along which celestial latitude is measured.

circle of longitude. See PARALLEL OF LATITUDE, definition 2.

circle of perpetual apparition. The circle of the celestial sphere, centered on the polar axis and having a polar distance from the elevated pole approximately equal to the latitude of the observer, within which celestial bodies do not set. The circle within which bodies do not rise is called the CIRCLE OF PERPETUAL OCCULTATION.

circle of perpetual occultation. The circle of the celestial sphere, centered on the polar axis and having a polar distance from the depressed pole approximately equal to the latitude of the observer, within which celestial bodies do not rise. The circle within which bodies do not set Is called the CIRCLE OF PERPETUAL APPARITION.

circle of position. A circular line of position. The expression is most frequently used with reference to the circle of equal altitude surrounding the geographical position of a celestial body. Also called POSITION CIRCLE.

circle of right ascension. See HOUR CIRCLE.

circle of uncertainty. A circle having as its center a given position and as its radius the maximum likely error of the position—a circle within which a vessel is considered to be located. See also CIRCLE OF EQUAL PROBABILITY, CIRCLE OF POSITION, POSITION CIRCLE.

circle of visibility. The circle surrounding an aid to navigation in which the aid is visible. See also VISUAL RANGE (OF A LIGHT).

circle sheet. A chart with curves enabling a graphical solution of the three-point problem rather than using a three-arm protractor. Also called SEXTANT CHART, STANDARD CIRCLE SHEET.

circuit, *n*. 1. An electrical path between two or more points. 2. Conductors connected together for the purpose of carrying an electric current. 3. A connected assemblage of electrical components, such as resistors, capacitors, and inductors.

circular error probable. 1. In a circular normal distribution (the magnitudes of the two one-dimensional input errors are equal and the angle of cut is 90°), the radius of the circle containing 50 percent of the individual measurements being made, or the radius of the circle inside of which there is a 50 percent probability of being located. 2. The radius of a circle inside of which there is a 50 percent probability of being located even though the actual error figure is an ellipse. That is, it is the radius of a circle of equivalent probability when the probability is specified as 50 percent. See also ERROR ELLIPSE, CIRCLE OF EQUIVALENT PROBABILITY. Also called CIRCULAR PROBABLE ERROR.

circular fix. The designation of any one of the erroneous fix positions obtained with a revolver or swinger.

circularly polarized wave. An electromagnetic wave which can be resolved into two plane polarized waves which are perpendicular to each other and which propagate in the same direction. The amplitudes of the two waves are equal and in time-phase quadrature. The tip of the component of the electric field vector in the plane normal to the direction of propagation describes a circle. See also ELLIPTICALLY POLARIZED WAVE.

circular normal distribution. A two-dimensional error distribution defined by two equal single axis normal distributions, the axes being perpendicular. The error figure is a circle.

circular probable error. See CIRCULAR ERROR PROBABLE.

circular radiobeacon. See under RADIOBEACON.

circular velocity. The magnitude of the velocity required of a body at a given point in a gravitational field which will result in the body following a circular orbital path about the center of the field. With respect to circular velocities characteristic of the major bodies of the solar system, this is defined for a circular orbit at the surface of the body in question. Circular velocity equals escape velocity divided by the square root of 2.

circumference, *n*. 1. The boundary line of a circle or other closed plane curve or the outer limits of a sphere or other round body. 2. The length of the boundary line of a circle or closed plane curve or of the outer limits of a sphere or other rounded body. The circumference of a sphere is the circumference of any great circle on the sphere.

circumlunar, *adj*. Around the moon, generally applied to trajectories.

circummeridian altitude. See EX-MERIDIAN ALTITUDE.

circumpolar, *adj*. Revolving about the elevated pole without setting. A celestial body is circumpolar when its polar distance is approximately equal to or less than the latitude of the observer. The actual limit is extended somewhat by the combined effect of refraction, semidiameter parallax, and the height of the observer's eye above the horizon.

circumscribed halo. A halo formed by the junction of the upper and lower tangent arcs of the halo of 22°.

circumzenithal arc. A brilliant rainbow-colored arc of about a quarter of a circle with its center at the zenith and about 46° above the sun. It is produced by refraction and dispersion of the sun's light striking the top of prismatic ice crystals in the atmosphere. It usually lasts for only a few minutes. See also HALO.

cirriform, *adj*. Like cirrus; more generally, descriptive of clouds composed of small particles, mostly ice crystals, which are fairly widely dispersed, usually resulting in relative transparency and whiteness, and often producing halo phenomena not observed with other cloud forms. Irisation may also be observed. Cirriform clouds are high clouds. As a result, when near the horizon, their reflected light traverses a sufficient thickness of air to cause them often to take on a yellow or orange tint even during the midday period. On the other hand, cirriform clouds near the zenith always appear whiter than any other clouds in that part of the sky. With the sun on the horizon, this type of cloud is whitish, while other clouds may be tinted with yellow or orange; when the sun sets a little below the horizon, cirriform clouds become yellow, then pink or red- and when the sun is well below the horizon, they are gray. All species and varieties of cirrus, cirrocumulus, and cirrostratus clouds are cirriform in nature. See also CUMULIFORM, STRATIFORM.

cirro-. A prefix used in cloud classification to indicate the highest of three levels generally recognized. See also ALTO-.

cirrocumulus, *n*. A principal cloud type (cloud genus), appearing as a thin, white patch of cloud without shadows, composed of very small elements in the form of grains, ripples, etc. The elements may be merged or separate, and more or less regularly arranged; they subtend an angle of less than 1° when observed at an angle of more than 30° above the horizon. Holes or rifts often occur in a sheet of cirrocumulus. Cirrocumulus may be composed of highly super cooled water droplets, as well as small ice crystals, or a mixture of both; usually, the droplets are rapidly replaced by ice crystals. Sometimes corona or irisation may be observed. Mamma may appear. Small virga may fall, particularly from cirrocumulus castellanus and floccus. Cirrocumulus, as well as altocumulus, often forms in a layer of cirrus and/or cirrostratus. In middle and high latitudes, cirrocumulus is usually associated in space and time with cirrus and/or cirrostratus; this association occurs less often in low latitudes. Cirrocumulus differs from these other cirriform clouds in that it is not on the whole fibrous, or both silky and smooth; rather, it is rippled and subdivided into little cloudlets. Cirrocumulus is most often confused with altocumulus. It differs primarily in that its constituent elements are very small and are without shadows. The term *cirrocumulus* is not used for incompletely developed small elements such as those on the margin of a sheet of altocumulus, or in separate patches at that level. See also CIRRIFORM, CLOUD CLASSIFICATION.

cirrostratus, *n*. A principal cloud type (cloud genus), appearing as a whitish veil, usually fibrous but sometimes smooth, which may totally cover the sky, and which often produces halo phenomena, either partial or complete. Sometimes a banded aspect may appear, but the intervals between the bands are filled with thinner cloud veil. The edge of a veil of cirrostratus may be straight and clear-cut, but more often it is irregular and fringed with cirrus. Some of the ice crystals which comprise the cloud are large enough to fall, and thereby produce a fibrous aspect. Cirrostratus occasionally may be so thin and transparent as to render it nearly indiscernible, especially through haze or at night. At such times, the existence of a halo may be the only revealing feature. The angle of incidence of illumination upon a cirrostratus layer is an important consideration in evaluating the identifying characteristics. When the sun is high (generally above 50° altitude), cirrostratus never prevents the casting of shadows by terrestrial objects, and a halo might be completely circular. At progressively lower altitudes of the sun, halos become fragmentary and light intensity noticeably decreases. Cirrostratus may be produced by the merging of elements of cirrus; from cirrocumulus; from the thinning of altostratus; or from the anvil of cumulonimbus. Since cirrostratus and altostratus form from each other, it frequently is difficult to delineate between the two. In general, altostratus does not cause halo phenomena, is thicker than cirrostratus, appears to move more rapidly, and has a more even optical thickness. When near the horizon, cirrostratus may be impossible to distinguish from cirrus. See also CIRRIFORM, CLOUD CLASSIFICATION.

cirrus, *n*. A principal cloud type (cloud genus) composed of detached cirriform elements in the form of delicate filaments or white (or mostly white) patches, or of narrow bands. These clouds have a fibrous aspect and/or a silky sheen. Many of the ice crystal particles of cirrus are sufficiently large to acquire an appreciable speed of fall; therefore, the cloud elements have a considerable vertical extent. Wind shear and variations in particle size usually cause these fibrous trails to be slanted or irregularly curved. For this reason, cirrus does not usually tend, as do other clouds, to appear horizontal when near the horizon. Because cirrus elements are too narrow, they do not produce a complete circular halo. Cirrus often evolves from virga of cirrocumulus or altocumulus, or from the upper part of cumulonimbus. Cirrus may also result from the transformation of cirrostratus of uneven optical thickness, the thinner parts of which dissipate. It may be difficult at times to distinguish cirrus from cirrostratus (often impossible when near the horizon); cirrostratus has a much more continuous structure, and if subdivided, its bands are wider. Thick cirrus (usually cirrus spissatus) is differentiated from patches of altostratus by its lesser extension and white color. The term *cirrus* is frequently used for all types of cirriform clouds. See also CIRRIFORM, CLOUD CLASSIFICATION.

cirrus spissatus. See FALSE CIRRUS.

cislunar, *adj*. Of or pertaining to phenomena, projects, or activity in the space between the earth and moon, or between the earth and the moon's orbit.

civil day. A mean solar day beginning at midnight. See also CALENDAR DAY.

civil noon. United States terminology from 1925 through 1952. See MEAN NOON.

civil time. United States terminology from 1925 through 1952. See MEAN TIME.

civil twilight. The period of incomplete darkness when the upper limb of the sun is below the visible horizon, and the center of the sun is not more than 6° below the celestial horizon.

civil year. A year of the Gregorian calendar of 365 days in common years, or 366 days in leap years.

clamp screw. A screw for holding a moving part in place, as during an observation or reading, particularly such a device used in connection with the tangent screw of a marine sextant.

clamp screw sextant. A marine sextant having a clamp screw for controlling the position of the tangent screw.

clapper, *n*. A heavy pendulum suspended inside a bell which sounds the bell by striking it.

Clarke ellipsoid of 1866. The reference ellipsoid adopted by the U.S. Coast and Geodetic Survey in 1880 for charting North America. This ellipsoid is not to be confused with the Clarke ellipsoid of 1880, which was the estimate of the size and shape of the earth at that time by the English geodesist A. R. Clarke. For the Clarke ellipsoid of 1866, the semimajor axis is 6,378,206.4 meters, the semiminor axis is 6,356,583.8 meters, and the flattening or ellipticity is 1/294.98. Also called CLARKE SPHEROID OF 1866.

Clarke ellipsoid of 1880. The reference ellipsoid of which the semimajor axis is 6,378,249.145 meters, the semiminor axis is 6,356,514.870 meters and the flattening or ellipticity is 1/293.65. This ellipsoid should not be confused with the CLARKE ELLIPSOID OF 1866. Also called CLARKE SPHEROID OF 1880.

Clarke spheroid of 1866. See CLARKE ELLIPSOID OF 1866.

Clarke spheroid of 1880. See CLARKE ELLIPSOID OF 1880.

classification of radar echoes. When observing a radarscope having a stabilized relative motion display, the echoes (targets) may be classified as follows as an aid in rapid predictions of effects of evasive action on the compass direction of relative movement: an up-the-scope echo is an echo whose direction of relative movement differs by less than 90° from own ship's heading; a down-the-scope echo is an echo whose direction of relative movement differs by more than 90° from own ship's heading; an across-the scope (limbo) echo is an echo whose direction of relative movement differs by 90° from own ship's heading, i.e., the echo's tail is perpendicular to own ship's heading flasher.

clay, *n*. See under MUD.

clean, *adj*. Free from obstructions, unevenness, imperfections, as a clean anchorage.

clear, *v., t*. To leave port or pass safely by an obstruction.

clearance, *n*. The clear space between two objects, such as the nearest approach of a vessel to a navigational light, hazard to navigation, or other vessel.

clear berth. A berth in which a vessel may swing at anchor without striking or fouling another vessel or an obstruction. See also FOUL BERTH.

cliff, *n*. Land arising abruptly for a considerable distance above water or surrounding land. See also BLUFF.

climate, *n*. The prevalent or characteristic meteorological conditions of a place or region, in contrast with weather, the state of the atmosphere at any time. A marine climate is characteristic of coastal areas, islands, and the oceans, the distinctive features being small annual and daily temperature range and high relative humidity, in contrast with continental climate, which is characteristic of the interior of a large land mass, and the distinctive features of which are large annual and daily temperature range and dry air with few clouds.

climatology, *n*. 1. The study of climate. 2. An account of the climate of a particular place or region.

clinometer, *n*. An instrument for indicating the degree of the angle of heel, roll, or pitch of a vessel; may be of the pivot arm or bubble type, usually indicating in whole degrees.

clock, *n.* A timepiece not meant to be carried on the person. See also CHRONOMETER.

clock speed. The speed with which a computer performs operations, commonly measured in magehertz.

clockwise, *adv*. In the direction of rotation of the hands of a clock.

close, *v., i.* To move or appear to move together. An order is sometimes given by a flagship for a vessel to close to yards, or miles. When a craft moves onto a range, the objects forming the range appear to move closer together or close. The opposite is OPEN.

close aboard. Very near.

closed, *adj*. Said of a manned aid to navigation that has been temporarily discontinued for the winter season. See also COMMISSIONED, WITHDRAWN.

closed sea. 1. A part of the ocean enclosed by headlands, within narrow straits, etc. 2. A part of the ocean within the territorial jurisdiction of a country. The opposite is OPEN SEA. See also HIGH SEAS, INLAND SEA.

close pack ice. Pack ice in which the concentration is 7/10 to 8/10, composed of floes mostly in contact.

closest approach. 1. The event that occurs when two planets or other bodies are nearest to each other as they orbit about the primary body. 2. The place or time of the event in definition 1. 3. The time or place where an orbiting earth satellite is closest to the observer. Also called CLOSEST POINT OF APPROACH.

cloud, *n.* 1. A hydrometeor consisting of a visible aggregate of minute water and/or ice particles in the atmosphere above the earth's surface. Cloud differs from fog only in that the latter is, by definition, in contact with the earth's surface. Clouds form in the free atmosphere as a result of condensation of water vapor in rising currents of air, or by the evaporation of the lowest stratum of fog. For condensation to occur at the point of saturation or a low degree of supersaturation, there must be an abundance of condensation nuclei for water clouds, or ice nuclei for ice-crystal clouds. The size of cloud drops varies from one cloud to another, and within any given cloud there always exists a finite range of sizes. In general, cloud drops range between 1 and 100 microns in diameter and hence are very much smaller than rain drops. See also CLOUD CLASSIFICATION. 2. Any collection of particulate matter in the atmosphere dense enough to be perceptible to the eye, such as a dust cloud or smoke cloud.

cloud bank. A fairly well defined mass of clouds observed at a distance; it covers an appreciable portion of the horizon sky, but does not extend overhead.

cloud base. For a given cloud or cloud layer, that lowest level in the atmosphere at which the air contains a perceptible quantity of cloud particles.

cloudburst, *n.* In popular terminology, any sudden and heavy fall of rain. An unofficial criterion sometimes used specifies a rate of fall equal to or greater than 100 millimeters (3.94 inches) per hour. Also called RAIN GUSH, RAIN GUST.

cloud classification. 1. A scheme of distinguishing and grouping clouds according to their appearance and, where possible, to their process of formation. The one in general use, based on a classification system introduced by Luke Howard in 1803, is that adopted by the World Meteorological Organization and published in the International Cloud Atlas (1956). This classification is based on the determination of (a) genera, the main characteristic forms of clouds; (b) species, the peculiarities in shape and differences in internal structure of clouds; (c) varieties, special characteristics of arrangement and transparency of clouds; (d) supplementary features and accessory clouds, appended and associated minor clouds forms; and (e) mother-clouds, the origin of clouds if formed from other clouds. The ten cloud genera are cirrus, cirrocumulus, cirrostratus, altocumulus, altostratus, nimbostratus, stratocumulus, stratus, cumulus, and cumulonimbus. The fourteen cloud species are fibratus, uncinus, spissatus, castellanus, floccus, stratiformis, nebulous, lenticularis, fractus, humilis, mediocris, congestus, calvus, and capillatus. The nine cloud varieties are intortus, vertebratus, undulatus, radiatus, lacunosis, duplicatus, translucidus, perlucidus, and opacus. The nine supplementary features and accessory clouds are inclus, mamma, virga, praecipitatio, arcus, tuba, pileus, velum, and pannus. Note that although these are Latin words, it is proper convention to use only the singular endings, e.g., more than one cirrus cloud are, collectively, cirrus, not cirri. 2. A scheme of classifying clouds according to their usual altitudes. Three classes are distinguished: high, middle, and low. High clouds include cirrus, cirrocumulus, cirrostratus, occasionally altostratus and the tops of cumulonimbus. The middle clouds are altocumulus, altostratus, nimbostratus, and portions of cumulus and cumulonimbus. The low clouds are stratocumulus, stratus, most cumulus and cumulonimbus bases, and sometimes nimbostratus. 3. A scheme of classifying clouds according to their particulate composition; namely water clouds, ice-crystal clouds, and mixed clouds. The first are composed entirely of water droplets (ordinary and/or super cooled), the second entirely of ice crystals, and the third a combination of the first two. Of the cloud genera, only cirrostratus and cirrus are always ice-crystal clouds; cirrocumulus can also be mixed; and only cumulonimbus is always mixed. Altostratus nearly always is mixed, but occasionally can be ice crystal. All the rest of the genera are usually water clouds, occasionally mixed: altocumulus, cumulus, nimbostratus and stratocumulus.

cloud cover. That portion of the sky cover which is attributed to clouds, usually measured in tenths of sky covered.

cloud deck. The upper surface of a cloud.

cloud height. In weather observations, the height of the cloud base above local terrain.

cloud layer. An array of clouds, not necessarily all of the same type, whose bases are at approximately the same level. It may be either continuous or composed of detached elements.

club, *v., i.* To drift in a current with an anchor dragging to provide control. Usually used with the word down, ie. club down.

clutter, *n*. Unwanted radar echoes reflected from heavy rain, snow, waves, etc., which may obscure relatively large areas on the radarscope. See also RAIN CLUTTER, SEA RETURN.

co-. A prefix meaning 90° minus the value with which it is used. Thus, if the latitude is 30° the colatitude is 90° - 30° = 60°. The cofunction of an angle is the function of its complement.

coalsack, *n*. Any of several dark areas in the Milky Way, especially, when capitalized, a prominent one near the Southern Cross.

coaltitude, *n*. Ninety degrees minus the altitude. The term has significance only when used in connection with altitude measured from the celestial horizon, when it is synonymous with ZENITH DISTANCE.

coast, *n*. The general region of indefinite width that extends from the sea inland to the first major change in terrain features. Sometimes called SEACOAST. See also SEABOARD.

coastal aid. See COASTAL MARK.

coastal area. The land and sea area bordering the shoreline.

coastal boundary. A general term for the boundary defined as the line (or measured from the line or points thereon) used to depict the intersection of the ocean surface and the land at an elevation of a particular datum, excluding one established by treaty or by the U.S. Congress.

coastal chart. See under CHART CLASSIFICATION BY SCALE.

coastal current. An ocean current flowing roughly parallel to a coast, outside the surf zone. See also LONGSHORE CURRENT.

coastal mark. A navigation mark placed on the coast to assist coastal navigation. Particularly used with reference to marks placed on a long straight coastline devoid of many natural landmarks. Also called COASTAL AID.

coastal marsh. An area of salt-tolerant vegetation in brackish and/or saltwater habitats subject to tidal inundation.

coastal plain. Any plain which has its margin on the shore of a large body of water, particularly the sea, and generally represents a strip of recently emerged sea bottom.

coastal refraction. The bending of the wave front of a radio wave traveling parallel to a coastline or crossing it at an acute angle due to the differences in the conducting and reflective properties of the land and water over which the wave travels. This refraction affects the accuracy of medium frequency radio direction finding systems. Also called COAST REFRACTION.

Coast and Geodetic Survey. Mapping, charting, and surveying arm of the National Ocean Service (NOS), a component of the National Oceanic and Atmospheric Administration (NOAA). The organization was known as: The Survey of the Coast from its founding in 1807 to 1836, Coast Survey from 1836 to 1878, and Coast and Geodetic Survey from 1878 to 1970, when it became the Office of Charting and Geodetic Services under the newly formed NOAA. In 1991 the name Coast and Geodetic Survey was reinstated.

Coast Earth Station (CES). A station which receives communications from an earth orbiting satellite for retransmission via landlines, and vice versa.

coast chart. See under CHART CLASSIFICATION BY SCALE.

coasting, *n.* Proceeding approximately parallel to a coastline (headland to headland) in sight of land, or sufficiently often in sight of land to fix the ship's position by observations of land features.

coasting lead. A light deep sea lead (30 to 50 pounds), used for sounding in water 20 to 60 fathoms.

coastline, *n.* The configuration made by the meeting of land and sea.

Coast Pilot. See UNITED STATES COAST PILOT.

coast refraction. See COASTAL REFRACTION.

coastwise, *adv*. & *adj.* By way of the coast; moving along the coast. coastwise navigation. Navigation in the vicinity of a coast, in contrast with OFFSHORE NAVIGATION at a distance from a coast. See also COASTING.

coaxial cable. A transmission cable consisting of two concentric conductors insulated from each other.

cobble, *n*. A stone particle between 64 and 256 millimeters (about 2.5 to 10 inches) in diameter. See also STONE.

cocked hat. Error triangle formed by lines of position which do not cross at a common point.

cockeyed bob. A colloquial term in western Australia for a squall, associated with thunder, on the northwest coast in Southern Hemisphere summer.

code beacon. A beacon that flashes a characteristic signal by which it may be recognized.

codeclination, *n*. Ninety degrees minus the declination. When the declination and latitude are of the same name, codeclination is the same as POLAR DISTANCE measured from the elevated pole.

coding delay. An arbitrary time delay in the transmission of pulse signals. In hyperbolic radionavigation systems of the pulse type, the coding delay is inserted between the transmission of the master and slave (or secondary) signals to prevent zero or small readings, and thus aid in distinguishing between master and slave (or secondary) station signals.

coefficient, *n*. 1. A number indicating the amount of some change under certain specified conditions, often expressed as a ratio. For example, the coefficient of linear expansion of a substance is the ratio of its change in length to the original length for a unit change of temperature, from a standard. 2. A constant in an algebraic equation. 3. One of several parts which combine to make a whole, as the maximum deviation produced by each of several causes. See also APPROXIMATE COEFFICIENTS.

coefficient A. A component of magnetic compass deviation of constant value with compass heading resulting from mistakes in calculations, compass and pelorus misalignment, and unsymmetrical arrangements of horizontal soft iron. See also APPROXIMATE COEFFICIENTS.

coefficient B. A component of magnetic compass deviation, varying with the sine function of the compass heading, resulting from the fore-and-aft component of the craft's permanent magnetic field and induced magnetism in unsymmetrical vertical iron forward or abaft the compass. See also APPROXIMATE COEFFICIENTS.

coefficient C. A component of magnetic compass deviation, varying with the cosine function of the compass heading, resulting from the athwartship component of the craft's permanent magnetic field and induced magnetism in unsymmetrical vertical iron port or starboard of the compass. See also APPROXIMATE COEFFICIENTS.

coefficient D. A component of magnetic compass deviation, varying with the sine function of twice the compass heading, resulting from induced magnetism in all symmetrical arrangements of the craft's horizontal soft iron. See also APPROXIMATE COEFFICIENTS.

coefficient E. A component of magnetic compass deviation varying with the cosine function of twice the compass heading, resulting from induced magnetism in all unsymmetrical arrangements of the craft's horizontal soft iron. See also APPROXIMATE COEFFICIENTS.

coefficient J. A change in magnetic compass deviation, varying with the cosine function of the compass heading for a given value of J, where J is the change of deviation for a heel of 1° on compass heading 000°. See also APPROXIMATE COEFFICIENTS.

coercive force. The opposing magnetic intensity that must be applied to a magnetic substance to remove the residual magnetism.

COGARD, *n.* Acronym for U.S. Coast Guard usually used in radio messages.

coherence, *n.* The state of there being correlation between the phases of two or more waves, as is necessary in making phase comparisons in radionavigation.

coincidence, *n.* The condition of occupying the same position as regards location, time, etc.

col, *n.* 1. A neck of relative low pressure between two anticyclones. 2. A depression in the summit line of a mountain range. Also called PASS.

colatitude, *n*. Ninety degrees minus the latitude, the angle between the polar axis and the radius vector locating a point.

cold air mass. An air mass that is colder than surrounding air. The expression implies that the air mass is colder than the surface over which it is moving.

cold front. Any non-occluded front, or portion thereof, that moves so that the colder air replaces the warmer air, i.e., the leading edge of a relatively cold air mass. While some occluded fronts exhibit this characteristic, they are more properly called COLD OCCLUSIONS.

cold occlusion. See under OCCLUDED FRONT.

cold wave. Unseasonably low temperatures extending over a period of a day or longer, particularly during the cold season of the year.

collada, *n.* A strong wind (35 to 50 miles per hour or stronger) blowing from the north or northwest in the northern part of the Gulf of California and from the northeast in the southern part of the Gulf of California.

collimate, *v., t.* 1. To render parallel, as rays of light. 2. To adjust the line of sight of an optical instrument, such as a theodolite, in proper relation to other parts of the instrument.

collimation error. The angle by which the line of sight of an optical instrument differs from its collimation axis. Also called ERROR OF COLLIMATION.

collimator, *n.* An optical device which renders rays of light parallel. One of the principal navigational uses of a collimator is to determine the index error of a bubble sextant.

collision bearing. A constant bearing maintained while the distance between two craft is decreasing.

collision course. A course which, if followed, will bring two craft together.

cologarithm, *n*. The logarithm of the reciprocal of a number, or the negative logarithm. The sum of the logarithm and cologarithm of the same number is zero. The addition of a cologarithm accomplishes the same result as the subtraction of a logarithm.

colored light. An aid to navigation exhibiting a light of a color other than white.

color gradients. See HYPSOMETRIC TINTING.

COLREGS, *n.* Acronym for International Regulations for Prevention of Collisions at Sea.

COLREGS Demarcation Lines. Lines delineating the waters upon which mariners must comply with the International Regulations for Preventing Collisions at Sea 1972 (72 COLREGS) and those waters upon which mariners must comply with the Navigation Rules for Harbors, Rivers, and Inland Waters (Inland Rules). The waters outside the lines are COLREGS waters. For specifics concerning COLREGS Demarcation Lines see U.S. Code of Federal Regulations, Title 33, Navigation and Navigable Waters; Part 82, COLREGS Demarcation Lines.

column, *n*. A vertical line of anything, such as a column of air, a column of figures in a table, etc.

colure, *n.* A great circle of the celestial sphere through the celestial poles and either the equinoxes or solstices, called, respectively, the equinoctial colure or the solstitial colure.

coma, *n.* The foggy envelope surrounding the nucleus of a comet.

combat chart. A special-purpose chart of a land-sea area using the characteristics of a map to represent the land area and a chart to represent the sea area, with special features to make the chart useful in naval operations, particularly amphibious operations. Also called MAP CHART.

comber, *n*. A deep water wave whose crest is pushed forward by a strong wind and is much larger than a whitecap. A long spilling breaker. See ROLLER.

comet, *n*. A luminous member of the solar system composed of a head or coma, at the center of which a nucleus of many small solid particles is sometimes situated, and often with a spectacular gaseous tail extending a great distance from the head. The orbits of comets are highly elliptical and present no regularity as to their angle to the plane of the ecliptic.

command and control. The facilities, equipment, communications, procedures, and personnel essential to a commander for planning, locating, directing, and controlling operations of assigned forces pursuant to the missions assigned. In many cases, a locating or position fixing capability exists in, or as a by-product to, command and control systems.

commissioned, *adj.* Officially placed in operation. In navigation, most commonly used to describe seasonal aids to navigation, which are *decommissioned* in the fall or winter, *commissioned* in spring.

common establishment. See under ESTABLISHMENT OF THE PORT.

common logarithm. A logarithm to the base 10. Also called BRIGGSIAN LOGARITHM.

common-user, *adj*. Having the characteristics of being planned, operated or used to provide services for both military and civil applications. The availability of a system having such characteristics is not dependent on tactical military operations or use.

common year. A calendar year of 365 days. One of 366 days is called a LEAP YEAR.

communication, *n*. The transfer of intelligence between points. If by wire, radio, or other electromagnetic means, it may be called telecommunication; if by radio, radiocommunication.

commutation, *n.* A method by means of which the transmissions from a number of stations of a radionavigation system are time shared on the same frequency.

compact disk. A type of computer storage media which records data using bubbles melted into the surface of a disk. It cannot be erased and is therefore called Read Only Memory (ROM).

compacted ice edge. A close, clearcut ice edge compacted by wind or current. It is usually on the windward side of an area of pack ice.

compacting, *adj*. Pieces of sea ice are said to be compacting when they are subjected to a converging motion, which increases ice concentration and/or produces stresses which may result in ice deformations.

compact pack ice. Pack ice in which the concentration is 10/10 and no water is visible.

comparing watch. A watch used for timing observations of celestial bodies. Generally its error is determined by comparison with a chronometer, hence its name. A comparing watch normally has a large sweep second hand to facilitate reading time to the nearest second. Sometimes called HACK WATCH. See also SPLIT-SECOND TIMER.

comparison frequency. In the Decca Navigator System, the common frequency to which the incoming signals are converted in order that their phase relationships may be compared.

comparison of simultaneous observations. A reduction process in which a short series of tide or tidal current observations at any place is compared with simultaneous observations at a control station where tidal or tidal current constants have previously been determined from a long series of observations. For tides, it is usually used to adjust constants from a subordinate station to the equivalent of that which would be obtained from a 19-year series.

compass, *adj*. Of or pertaining to a compass or related to compass north.

compass, *n*. An instrument for indicating a horizontal reference direction relative to the earth. Compasses used for navigation are equipped with a graduated compass card for direct indication of any horizontal direction. A magnetic compass depends for its directive force upon the attraction of the magnetism of the earth for a magnet free to turn in any horizontal direction. A compass having one or more gyroscopes as the directive element, and tending to indicate true north is called a gyrocompass. A compass intended primarily for use in observing bearings is called a bearing compass; one intended primarily for measuring amplitudes, an amplitude compass. A directional gyro is a gyroscopic device used to indicate a selected horizontal direction for a limited time. A remote-indicating compass is equipped with one or more indicators, called compass repeaters, to repeat at a distance the readings of a master compass. A compass designated as the standard for a vessel is called a standard compass; one by which a craft is steered is called a steering compass. A liquid, wet, or spirit compass is a magnetic compass having a bowl completely filled with liquid; a magnetic compass without liquid is called a dry compass. An aperiodic or deadbeat compass, after being deflected, returns by one direct movement to its proper reading, without oscillation. A small compass mounted in a box for convenient use in small water craft is called a boat compass. A pelorus is sometimes called a dumb compass. A radio direction finder was formerly called a radio compass.

compass adjustment. The process of neutralizing undesired magnetic effects on a magnetic compass. Permanent magnets and soft iron correctors are arranged about the binnacle so that their effects are about equal and opposite to the magnetic material in the craft, thus reducing the deviations and eliminating the sectors of sluggishness and unsteadiness. See also COMPASS COMPENSATION.

compass adjustment buoy. See SWINGING BUOY.

compass amplitude. Amplitude relative to compass east or west.

compass azimuth. Azimuth relative to compass north.

compass bearing. Bearing relative to compass north.

compass bowl. The housing in which the compass card is mounted, usually filled with liquid.

compass card. 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. A similar card on a pelorus is called a PELORUS CARD.

compass card axis. The line joining 0° and 180° on a compass card. Extended, this line is sometimes called COMPASS MERIDIAN.

compass compensation. The process of neutralizing the effects of degaussing currents on a marine magnetic compass. The process of neutralizing the magnetic effects the vessel itself exerts on a magnetic compass is properly called COMPASS ADJUSTMENT, but the expression COMPASS COMPENSATION is often used for this process, too.

compass course. Course relative to compass north.

compass direction. Horizontal direction expressed as angular distance from compass north.

compass error. The angle by which a compass direction differs from the true direction; the algebraic sum of variation and deviation; the angle between the true meridian and the axis of the compass card, expressed in degrees east or west to indicate the direction of compass north with respect to true north. See also ACCELERATION ERROR, GAUSSIN ERROR, GYRO ERROR, HEELING ERROR, LUBBER'S LINE ERROR, QUADRANTAL ERROR, RETENTIVE ERROR, SWIRL ERROR.

compasses, *n.* An instrument for drawing circles. In its most common form it consists of two legs joined by a pivot, one leg carrying a pen or pencil and the other leg being pointed. An instrument for drawing circles of large diameter, usually consisting of a bar with sliding holders for points, pencils, or pens is called beam compasses. If both legs are pointed, the instrument is called DIVIDERS and is used principally for measuring distances or coordinates.

compass heading. Heading relative to compass north.

compass meridian. A line through the north-south points of a magnetic compass. The COMPASS CARD AXIS lies in the compass meridian.

compass north. The direction north as indicated by a magnetic compass; the reference direction for measurement of compass directions.

compass points. The 32 divisions of a compass, at intervals of 11 1/4°. Each division is further divided into quarter points. Stating in order the names of the points (and sometimes the half and quarter points) is called BOXING THE COMPASS.

compass prime vertical. The vertical circle through the compass east and west points of the horizon.

compass repeater. That part of a remote-indicating compass system which repeats at a distance the indications of the master compass. One used primarily for observing bearings may be called a bearing repeater. Also called REPEATER COMPASS. See also GYRO REPEATER.

compass rose. A circle graduated in degrees, clockwise from 0° at the reference direction to 360°, and sometimes also in compass points. Compass roses are placed at convenient locations on the Mercator chart or plotting sheet to facilitate measurement of direction. See also PROTRACTOR.

compass track. The direction of the track relative to compass north.

compass transmitter. The part of a remote-indicating compass system which sends the direction indications to the repeaters.

compensate, *v., t.* To counteract an error; to counterbalance.

compensated loop radio direction finder. A loop antenna radio direction finder for bearing determination, which incorporates a second antenna system designed to reduce the effect of polarization and radiation error.

compensating coils. The coils placed near a magnetic compass to neutralize the effect of the vessel's degaussing system on the compass. See also COMPASS COMPENSATION.

compensating error. An error that tends to offset a companion error and thus obscure or reduce the effect of each.

compensator, *n.* 1. A corrector used in the compensation of a magnetic compass. 2. The part of a radio direction finder which applies all or part of the necessary correction to the direction indication.

compile. To assemble various elements of a system into a whole.

compiler. 1. One who compiles. 2. Computer software which translates programs into machine language which a computer can use.

complement, *n.* An angle equal to 90° minus a given angle. See also EXPLEMENT, SUPPLEMENT.

complementary angles. Two angles whose sum is 90°.

component, *n.* 1. See CONSTITUENT. 2. The part of a tidal force of tidal current velocity which, by resolution into orthogonal vectors, is found to act in a specified direction. 3. One of the parts into which a vector quantity can be divided. For example, the earth's magnetic force at any point can be divided into *horizontal* and *vertical components*.

composite, *adj.* Composed of two or more separate parts.

composite group flashing light. A light similar to a group flashing light except that successive groups in a single period have different numbers of flashes.

composite group occulting light. A group occulting light in which the occultations are combined in successive groups of different numbers of occultations.

composite sailing. A modification of great-circle sailing used when it is desired to limit the highest latitude. The composite track consists of a great circle from the point of departure and tangent to the limiting parallel, a course line along the parallel, and a great circle tangent to the limiting parallel to the destination. Composite sailing applies only when the vertex lies between the point of departure and destination.

composite track. A modified great-circle track consisting of an initial great circle track from the point of departure with its vertex on a limiting parallel of latitude, a parallel-sailing track from this vertex along the limiting parallel to the vertex of a final great-circle track to the destination.

composition of vectors. See VECTOR ADDITION.

compound harmonic motion. The projection of two or more uniform circular motions on a diameter of the circle of such motion. The projection of a simple uniform circular motion is called SIMPLE HARMONIC MOTION.

compound tide. A tidal constituent with a speed equal to the sum or difference of the speeds of two or more elementary constituents. Compound tides are usually the result of shallow water.

compressed-air horn. See DIAPHRAGM HORN.

compression, *n.* See FLATTENING.

computed altitude. 1. Tabulated altitude interpolated for increments of latitude, declination, or hour angle. If no interpolation is required, the tabulated altitude and computed altitude are identical. 2. Altitude determined by computation, table, mechanical computer, or graphics, particularly such an altitude of the center of a celestial body measured as an arc on a vertical circle of the celestial sphere from the celestial horizon. Also called CALCULATED ALTITUDE.

computed azimuth. Azimuth determined by computation, table, mechanical device, or graphics for a given place and time. See also TABULATED AZIMUTH.

computed azimuth angle. Azimuth angle determined by computation, table, mechanical device, or graphics for a given place and time. See also TABULATED AZIMUTH ANGLE.

computed point. In the construction of the line of position by the Marcq St. Hilaire method, the foot of the perpendicular from the assumed position to the line of position. Also called SUMNER POINT.

concave, *adj.* Curving and hollow, such as the inside of a circle or sphere. The opposite is CONVEX.

concave, *n.* A concave line or surface.

concentration, *n.* The ratio, expressed in tenths, of the sea surface actually covered by ice to the total area of sea surface, both ice-covered and ice-free, at a specific location or over a defined area.

concentration boundary. The transition between two areas of pack ice with distinctly different concentrations.

concentric, *adj.* Having the same center. The opposite is ECCENTRIC.

concurrent line. A line on a map or chart passing through places having the same current hour.

condensation, *n.* The physical process by which a vapor becomes a liquid or solid. The opposite is EVAPORATION.

conduction, *n.* Transmission of electricity, heat, or other form of energy from one point to another along a conductor, or transference of heat from particle to particle through a substance, such as air, without any obvious motion. Heat is also transferred by CONVECTION and RADIATION.

conductivity, *n.* The ability to transmit, as electricity, heat, sound, etc. Conductivity is the opposite of RESISTIVITY.

conductor, *n.* A substance which transmits electricity, heat, sound, etc.

cone, *n.* 1. A solid having a plane base bounded by a closed curve and a surface formed by lines from every point on the circumference of the base to a common point or APEX. 2. A surface generated by a straight line of indefinite length, one point of which is fixed and another point of which follows a fixed curve. Also called a CONICAL SURFACE.

configuration, *n.* 1. The position or disposition of various parts, or the figure or pattern so formed. 2. A geometric figure, usually consisting principally of points and connecting lines.

conformal, *adj.* Having correct angular representation.

conformal chart. A chart using a conformal projection; also called orthomorphic chart.

conformal map projection. A map projection in which all angles around any point are correctly represented, In such a projection the scale is the same in all directions about any point. Very small shapes are correctly represented, resulting in an orthomorphic projection. The terms *conformal* and *orthomorphic* are used synonymously since neither characteristic can exist without the other.

confusion region. The region surrounding a radar target within which the radar echo from the target cannot be distinguished from other echoes.

conic, *adj.* Pertaining to a cone.

conical buoy. See NUN BUOY.

conical surface. See CONE, definition 2.

conic chart. A chart on a conic projection.

conic chart with two standard parallels. A chart on the conic projection with two standard parallels. Also called SECANT CONIC CHART. See also LAMBERT CONFORMAL CHART.

conic map projection. A map projection in which the surface of a sphere or spheroid, such as the earth, is conceived as projected onto a tangent or secant cone which is then developed into a plane. In a simple conic map projection the cone is tangent to the sphere or spheroid, in a conic map projection with two standard parallels the cone intersects the sphere or spheroid along two chosen parallels, and in a polyconic map projection a series of cones are tangent to the sphere or spheroid. See also LAMBERT CONFORMAL CONIC MAP PROJECTION, MODIFIED LAMBERT CONFORMAL MAP PROJECTION.

conic map projection with two standard parallels. A conic map projection in which the surface of a sphere or spheroid is conceived as developed on a cone which intersects the sphere or spheroid along two standard parallels, the cone being spread out to form a plane. The Lambert conformal map projection is an example. Also called SECANT CONIC MAP PROJECTION.

conic section. Any plane curve which is the locus of a point which moves so that the ratio of its distance from a fixed point to its distance from a fixed line is constant. The ratio is called the eccentricity; the fixed point is the focus; the fixed line is the directrix. When the eccentricity is equal to unity, the conic section is a parabola; when less than unity an ellipse; and when greater than unity, a hyperbola. They are so called because they are formed by the intersection of a plane and a right circular cone.

conjunction, *n*. The situation of two celestial bodies having either the same celestial longitude or the same sidereal hour angle. A planet is at superior conjunction if the sun is between it and the earth; at inferior conjunction if it is between the sun and the earth. The situation of two celestial bodies having either celestial longitudes or sidereal hour angles differing by 180° is called OPPOSITION.

conn, *v., t.* 1. To direct the course and speed of a vessel. The person giving orders to the helmsman (not just relaying orders) is said to have the conn or to be conning the ship. 2. *n*. Control of the maneuvering of a ship.

Consol, *n*. A long range, obsolete azimuthal radionavigation system of low accuracy operated primarily for air navigation.

console, *n*. The housing of the main operating unit of electronic equipment, in which indicators and general controls are located. The term is popularly limited to large housings resting directly on the deck, as contrasted with smaller cabinets such as rack or bracket- mounted units.

consolidated pack ice. Pack ice in which the concentration is 10/10 and the floes are frozen together.

consolidated ridge. A ridge (a line or wall of ice forced up by pressure) in which the base has frozen together.

Consol station. A short baseline directional antenna system used to generate Consol signals.

constant, *n*. A fixed quantity; one that does not change.

constant bearing, decreasing range. See STEADY BEARING.

constant deviation. Deviation which is the same on any heading, as that which may result from certain arrangements of asymmetrical horizontal soft iron.

constant error. A systematic error of unchanging magnitude and sign throughout a given series of observations. Also called BIAS ERROR.

constant of aberration. The measure of the maximum angle between the true direction and the apparent direction of a celestial body as observed from earth due to aberration. It has a value of 20.496 seconds of arc. The aberration angle depends upon the ratio of the velocity of the earth in its orbit and the velocity of light in addition to the angle between the direction of the light and the direction of motion of the observing telescope. The maximum value is obtained when the celestial body is at the pole of the ecliptic. Also called ABERRATION CONSTANT.

constant of the cone. The chart convergence factor for a conic projection. See also CONVERGENCE FACTOR.

constant-pressure chart. The synoptic chart for any constant-pressure surface, usually containing plotted data and analyses of the distribution of, e.g., height of the surface, wind, temperature, and humidity. Constant-pressure charts are most commonly known by their pressure value; for example the *1000-millibar chart*. Also called ISOBARIC CHART.

constant-pressure surface. In meteorology, an imaginary surface along which the atmospheric pressure is everywhere equal at a given instant. Also called ISOBARIC SURFACE.

constellation, *n*. A group of stars which appear close together, regardless of actual distances, particularly if the group forms a striking configuration. Among astronomers a constellation is now considered a region of the sky having precise boundaries so arranged that all of the sky is covered, without overlap. The ancient Greeks recognized 48 constellations covering only certain groups of stars. Modern astronomers recognize 88 constellations.

constituent, *n*. One of the harmonic elements in a mathematical expression for the tide-producing force and in corresponding formulas for the tide or tidal current. Each constituent represents a periodic change or variation in the relative positions of the earth, moon, and sun. Also called HARMONIC CONSTITUENT, TIDAL CONSTITUENT, COMPONENT.

constituent day. The duration of one rotation of the earth on its axis, with respect to an astre fictif, a fictitious star representing one of the periodic elements in tidal forces. It approximates the length of a lunar or solar day. The expression is not applicable to a long period.

constituent, constituent hour. One twenty-fourth part of a constituent day.

contact, *n*. Any echo detected on the radarscope and not evaluated as clutter or as a false echo. Although the term *contact is* often used interchangeably with *target*, the latter term specifically indicates that the echo is from an object about which information is being sought.

conterminous. U.S. Forty-eight states and the District of Columbia, i.e., the United States before January 3, 1959 (excluding Alaska and Hawaii).

contiguous zone. The band of water outside or beyond the territorial sea in which a coastal nation may exercise customs control and enforce public health and other regulations.

continent, *n*. An expanse of continuous land constituting one of the major divisions of the land surface of the earth.

continental borderland. A region adjacent to a continent, normally occupied by or bordering a shelf, that is highly irregular with depths well in excess of those typical of a shelf. See also INSULAR BORDERLAND.

continental climate. The type of climate characteristic of the interior of a large land mass, the distinctive features of which are large annual and daily temperature range and dry air with few clouds, in contrast with MARINE CLIMATE.

continental polar air. See under AIR-MASS CLASSIFICATION.

continental rise. A gentle slope rising from oceanic depths toward the foot of a continental slope.

continental shelf. A zone adjacent to a continent that extends from the low water line to a depth at which there is usually a marked increase of slope towards oceanic depths. See also INSULAR SHELF.

continental tropical air. See under AIR-MASS CLASSIFICATION.

Continental United States. United States territory, including the adjacent territorial waters, located within the North American continent between Canada and Mexico. See also CONTERMINOUS U.S.

continuous carrier radiobeacon. A radiobeacon whose carrier wave is unbroken but which is modulated with the identification signal. The continuous carrier wave signal is not audible to the operator of an aural null direction finder not having a beat frequency oscillator. The use of the continuous carrier wave improves the performance of automatic direction finders. The marine radiobeacons on the Atlantic and Pacific coasts of the U.S. are of this type. See also DUAL CARRIER RADIOBEACON.

continuous quick light. A quick flashing light (flashing 50-80 times per minute) which operates continuously with no eclipses.

continuous system. A classification of a navigation system with respect to availability. A continuous system gives the capability to determine position at any time.

continuous ultra quick light. An ultra quick light (flashing not less than 160 flashes per minute) with no eclipses.

continuous very quick light. A very quick light (flashing 80-160 times per minute) with no eclipses.

continuous wave. 1. Electromagnetic radiation of a constant amplitude and frequency. 2. Radio waves, the successive sinusoidal oscillations of which are identical under steady-state conditions.

contour, *n*. The imaginary line on the ground, all points of which are at the same elevation above or below a specified datum.

contour interval. The difference in elevation between two adjacent contours.

contour line. A line connecting points of equal elevation or equal depth. One connecting points of equal depth is usually called a depth contour, but if depth is expressed in fathoms, it may be called a fathom curve or fathom line. See also FORM LINES.

contour map. A topographic map showing relief by means of contour lines.

contrary name. A name opposite or contrary to that possessed by something else, as declination has a name *contrary* to that of latitude if one is north and the other south. If both are north or both are south, they are said to be of SAME NAME.

contrastes, *n., pl.* Winds a short distance apart blowing from opposite quadrants, frequent in the spring and fall in the western Mediterranean.

contrast threshold. The minimum contrast at the eye of a given observer at which an object can be detected. The contrast threshold is a property of the eye of the individual observer. See METEOROLOGICAL VISIBILITY, VISUAL RANGE.

control, *n.* 1. The coordinated and correlated dimensional data used in geodesy and cartography to determine the positions and elevations of points on the earth's surface or on a cartographic representation of that surface. 2. A collective term for a system of marks or objects on the earth or on a map or a photograph, whose positions and/or elevations have been or will be determined.

control current station. A current station at which continuous velocity observations have been made over a minimum of 29 days. Its purpose is to provide data for computing accepted values of the harmonic and nonharmonic constants essential to tidal current predictions and circulatory studies. The data series from this station serves as the control for the reduction of relatively short series from subordinate current stations through the method of comparison of simultaneous observations. See also CURRENT STATION, SUBORDINATE CURRENT STATION.

controlled air space. An airspace of defined dimensions within which air traffic control service is provided.

controlling depth. 1. The least depth in the approach or channel to an area, such as a port or anchorage, governing the maximum draft of vessels that can enter. 2. The least depth within the limits of a channel; it restricts the safe use of the channel to drafts of less than that depth. The centerline controlling depth of a channel applies only to the channel centerline; lesser depths may exist in the remainder of the channel. The mid-channel controlling depth of a channel is the controlling depth of only the middle half of the channel. See also FEDERAL PROJECT DEPTH.

control station. See PRIMARY CONTROL TIDE STATION, SECONDARY CONTROL TIDE STATION, CONTROL CURRENT STATION.

convection, *n.* Circulation in a fluid of nonuniform temperature, due to the differences in density and the action of gravity. In the atmosphere, convection takes place on a large scale. It is essential to the formation of many clouds, especially those of the cumulus type. Heat is transferred by CONVECTION and also by ADVECTION, CONDUCTION, and RADIATION.

convention, *n.* A body of regulations adopted by the IMO which regulate one aspect of maritime affairs. See also GEOGRAPHIC SIGN CONVENTIONS.

conventional direction of buoyage. 1. The general direction taken by the mariner when approaching a harbor, river, estuary or other waterway from seaward, or 2. The direction determined by the proper authority. In general it follows a clockwise direction around land masses.

converge, *v., i.* To tend to come together.

converged beam. See under FAN BEAM.

convergence constant. The angle at a given latitude between meridians 1° apart. Sometimes loosely called CONVERGENCY. On a map or chart having a convergence constant of 1.0, the true direction of a straight line on the map or chart changes 1° for each 1° of longitude that the line crosses; the true direction of a straight line on a map or chart having a convergence constant of 0.785 changes 0.785° for each 1° of longitude the line crosses. Also called CONVERGENCE FACTOR. See also CONVERGENCE OF MERIDIANS.

convergence factor. See CONVERGENCE CONSTANT.

convergence of meridians. The angular drawing together of the geographic meridians in passing from the Equator to the poles, At the Equator all meridians are mutually parallel; passing from the Equator, they converge until they meet at the poles, intersecting at angles that are equal to their differences of longitude. See also CONVERGENCE CONSTANT.

convergency, *n.* See under CONVERGENCE CONSTANT.

conversion, *n.* Determination of the rhumb line direction of one point from another when the initial great circle direction is known, or vice versa. The difference between the two directions is the conversion angle, and is used in great circle sailing.

conversion angle. The angle between the rhumb line and the great circle between two points. Also called ARC TO CHORD CORRECTION. See also HALF-CONVERGENCY.

conversion scale. A scale for the conversion of units of one measurement to equivalent units of another measurement. See NOMOGRAM.

conversion table. A table for the conversion of units of one measurement to equivalent units of another measurement. See NOMOGRAM.

convex, *adj.* Curving away from, such as the outside of a circle or sphere. The opposite is CONCAVE.

convex, *n.* A convex line or surface.

coordinate, *n.* One of a set of magnitudes defining a point in space. If the point is known to be on a given line, only one coordinate is needed; if on a surface, two are required; if in space, three. Cartesian coordinates define a point relative to two intersecting lines, called AXES. If the axes are perpendicular, the coordinates are rectangular; if not perpendicular, they are oblique coordinates. A three-dimensional system of Cartesian coordinates is called space coordinates. Polar coordinates define a point by its distance and direction from a fixed point called the POLE. Direction is given as the angle between a reference radius vector and a radius vector to the point. If three dimensions are involved, two angles are used to locate the radius vector. Space-polar coordinates define a point on the surface of a sphere by (1) its distance from a fixed point at the center, called the POLE (2) the COLATITUDE or angle between the POLAR AXIS (a reference line through the pole) and the RADIUS VECTOR (a straight line connecting the pole and the point)- and (3) the LONGITUDE or angle between a reference plane through the polar axis and a plane through the radius vector and the polar axis. Spherical coordinates define a point on a sphere or spheroid by its angular distances from a primary great circle and from a reference secondary great circle. Geographical or terrestrial coordinates define a point on the surface of the earth. Celestial coordinates define a point on the celestial sphere. The horizon, celestial equator and the ecliptic systems of celestial coordinates are based on the celestial horizon, celestial equator, and the ecliptic, respectively, as the primary great circle.

coordinate conversion. Changing the coordinate values from one system to those of another.

Coordinated Universal Time (UTC). The time scale that is available from most broadcast time signals. It differs from International Atomic Time (TAI) by an integral number of seconds. UTC is maintained within 1 second of UT1 by the introduction of 1-second steps (leap seconds) when necessary, normally at the end of December. DUT1, an approximation to the difference UT1 minus UTC, is transmitted in code on broadcast time signals.

coordinate paper. Paper ruled with lines to aid in the plotting of coordinates. In its most common form, it has two sets of parallel lines, usually at right angles to each other, when it is also called CROSS-SECTION PAPER. A type ruled with two sets of mutually-perpendicular, parallel lines spaced according to the logarithms of consecutive numbers is called logarithmic coordinate papa or semilogarithmic coordinate paper as both or only one set of lines is spaced logarithmically. A type ruled with concentric circles and radial lines from the common center is called polar coordinate paper. Also called GRAPH PAPER.

coplanar, *adj.* Lying in the same plane.

coprocessor. A microprocessor chip which performs numerical functions for the CPU, freeing it for other tasks.

coral, *n.* The hard skeleton of certain tiny sea animals; or the stony, solidified mass of a number of such skeletons.

coral head. A large mushroom or pillar shaped coral growth.

coral reef. A reef made up of coral, fragments of coral and other organisms, and the limestone resulting from their consolidation. Coral may constitute less than half of the reef material.

corange line. A line passing through places of equal tidal range.

cordillera, *n.* On the sea floor, an entire mountain system including all the subordinate ranges, interior plateaus, and basins.

cordonazo, *n.* The "Lash of St. Francis." Name applied locally to southerly hurricane winds along the west coast of Mexico. The cordonazo is associated with tropical cyclones in the southeastern North Pacific Ocean. These storms may occur from May to November, but ordinarily affect the coastal areas most severely near or after the Feast of St. Francis, October 4.

Coriolis acceleration. An acceleration of a body in motion in a relative (moving) coordinate system. The total acceleration of the body, as measured in an inertial coordinate system, may be expressed as the sum of the acceleration within the relative system, the acceleration of the relative system itself, and the Coriolis acceleration. In the case of the earth, moving with angular velocity Ω, a body moving relative to the earth with velocity V has the Coriolis acceleration $2V \times \Omega$. If Newton's laws are to be applied in the relative system, the Coriolis acceleration and the acceleration of the relative system must be treated as forces. See also CORIOLIS FORCE.

Coriolis correction. 1. A correction applied to an assumed position, celestial line of position, celestial fix, or to a computed or observed altitude to allow for Coriolis acceleration. 2. In inertial navigation equipment, an acceleration correction which must be applied to measurements of acceleration with respect to a coordinate system in translation to compensate for the effect of any angular motion of the coordinate system with respect to inertial space.

Coriolis force. An inertial force acting on a body in motion, due to rotation of the earth, causing deflection to the right in the Northern Hemisphere and to the left in the Southern Hemisphere. It affects air (wind), water (current), etc. and introduces an error in bubble sextant observations made from a moving craft due to the liquid in the bubble being deflected, the effect increasing with higher latitude and greater speed of the craft.

corner reflector. A radar reflector consisting of three mutually perpendicular flat reflecting surfaces designed to return incident electromagnetic radiation toward its source. The reflector is used to render objects such as buoys and sailboats more conspicuous to radar observations. Since maximum effectiveness is obtained when the incident beam coincides with the axis of symmetry of the reflector, clusters of reflectors are sometimes used to insure that the object will be a good reflector in all directions. See also RADAR REFLECTOR. Also called TRIHEDRAL REFLECTOR.

coromell, *n.* A night land breeze prevailing from November to May at La Paz, near the southern extremity of the Gulf of California.

corona, *n.* 1. The luminous envelope surrounding the sun but visible only during a total eclipse. 2. A luminous discharge due to ionization of the air surrounding an electric conductor. 3. A set of one or more rainbow-colored rings of small radii surrounding the sun, moon, or other source of light covered by a thin cloud veil. It is caused by diffraction of the light by tiny droplets in the atmosphere, and hence the colors are in the reverse order to those of a HALO caused by refraction. 4. A circle of light occasionally formed by the apparent convergency of the beams of the aurora.

corona discharge. Luminous and often audible discharge of electricity intermediate between a spark and a point discharge. See ST. ELMO'S FIRE.

corposant, *n.* See CORONA DISCHARGE, ST. ELMO'S FIRE.

corrasion, *n.* The wearing away of the earth's surface by the abrasive action of material transported by glacier, water, or air; a process of erosion.

corrected compass course. Compass course with deviation applied; magnetic course.

corrected compass heading. Compass heading with deviation applied; magnetic heading.

corrected current. A relatively short series of current observations from a subordinate station to which a factor is applied to adjust the current to a more representative value, based on a relatively long series from a nearby control station. See also CURRENT, definition l; TOTAL CURRENT.

corrected establishment. See under ESTABLISHMENT OF THE PORT.

corrected sextant altitude. Sextant altitude corrected for index error, height of eye, parallax, refraction, etc. Also called OBSERVED ALTITUDE, TRUE ALTITUDE.

correcting, *n.* The process of applying corrections, particularly the process of converting compass to magnetic direction, or compass, magnetic, or gyro to true direction. The opposite is UNCORRECTING.

correction, *n.* That which is added to or subtracted from a reading, as of an instrument, to eliminate the effect of an error, or to reduce an observation to an arbitrary standard.

correction of soundings. The adjustment of soundings for any departure from true depth because of the method of sounding or any fault in the measuring apparatus. See also REDUCTION OF SOUNDINGS.

corrector, *n.* A magnet, piece of soft iron, or device used in the adjustment of a magnetic compass. See also FLINDERS BAR, HEELING MAGNET, QUADRANTAL CORRECTORS.

corrosion, *n.* The wearing or wasting away by chemical action, usually by oxidation. A distinction is usually made between CORROSION and EROSION, the latter referring to the wearing away of the earth's surface primarily by non-chemical action. See also CORRASION.

cosecant, *n.* The ratio of the hypotenuse of a plane right triangle to the side opposite one of the acute angles of the triangle, equal to l/sin. The expression NATURAL COSECANT is sometimes used to distinguish the cosecant from its logarithm (called LOGARITHMIC COSECANT).

cosine, *n.* The ratio of the side adjacent to an acute angle of a plane right triangle to the hypotenuse. The expression NATURAL COSINE is sometimes used to distinguish the cosine from its logarithm (called LOGARITHMIC COSINE).

COSPAS/SARSAT. A cooperative search and rescue satellite system operated by the U.S. and Russia which provides worldwide coverage by sensing the signals of Emergency Position Indicating Radiobeacons (EPIRB's).

cotangent, *n.* The ratio of the shorter side adjacent to an acute angle of a plane right triangle to the side opposite the same angle, equal to l/tan. The expression NATURAL COTANGENT is sometimes used to distinguish the cotangent from its logarithm (called LOGARITHMIC COTANGENT).

cotidal, *adj*. Having tides occurring at the same time.

cotidal chart. A chart showing cotidal lines.

cotidal hour. The average interval between the moon's transit over the meridian of Greenwich and the time of the following high water at any place, expressed in either mean solar or lunar time units. When expressed in solar time, it is the same as the Greenwich high water interval. When expressed in lunar time, it is equal to the Greenwich high water interval multiplied by the factor 0.966.

cotidal line. A line on a map or chart passing through places having the same cotidal hour.

coulomb, *n.* A derived unit of quantity of electricity in the International System of Units; it is the quantity of electricity carried in 1 second by a current of 1 ampere.

counterclockwise, *adv*. In a direction of rotation opposite to that of the hands of a clock.

countercurrent, *n.* A current usually setting in a direction opposite to that of a main current.

counterglow, *n.* See GEGENSCHEIN.

countertrades, *n., pl*. See ANTITRADES.

coupler, *n.* See as ANTENNA COUPLER.

course, *n.* The direction in which a vessel is steered or intended to be steered, expressed as angular distance from north, usually from 000° at north, clockwise through 360°. Strictly, the term applies to direction through the water, not the direction intended to be made good over the ground. The course is often designated as true, magnetic, compass, or grid as the reference direction is true, magnetic compass, or grid north, respectively. TRACK MADE GOOD is the single resultant direction from the point of departure to point of arrival at any given time. The use of this term to indicate a single resultant direction is preferred to the use of the misnomer course made good. A course line is a line, as drawn on a chart, extending in the direction of a course. See also COURSE ANGLE, COURSE OF ADVANCE, COURSE OVER GROUND. HEADING. TRACK.

course angle. Course measured from 0° at the reference direction clockwise or counterclockwise through 90° or 180°. It is labeled with the reference direction as a prefix and the direction of measurement from the reference direction as a suffix.

course beacon. A directional radiobeacon which gives an "on course" signal in the receiver of a vessel which is on, or in close proximity to, the prescribed course line and "off course" signals in sectors adjacent to this line.

course board. A board located on the navigation bridge used to display the course to steer, track, drift angle, leeway angle, compass error, etc.

course line. 1. The graphic representation of a ship's course, usually with respect to true north. 2. A line of position approximately parallel to the course line (definition 1), thus providing a check as to deviating left or right of the track. See also SPEED LINE.

course made good. A misnomer indicating the resultant direction from a point of departure to a point of arrival at any given time. See also COURSE, COURSE OVER GROUND, TRACK MADE GOOD.

course of advance. An expression sometimes used to indicate the direction intended to be made good over the ground. The preferred term is TRACK, definition 1. This is a misnomer in that courses are directions steered or intended to be steered through the water with respect to a reference meridian. See also COURSE, COURSE OVER GROUND.

course over ground. The direction of the path over the ground actually followed by a vessel. The preferred term is TRACK, definition 1. It is normally a somewhat irregular line. This is a misnomer in that courses are directions steered or intended to be steered through the water with respect to a reference meridian. See also COURSE, COURSE MADE GOOD.

course recorder. A device which makes an automatic graphic record of the headings of a vessel vs. time. See also DEAD RECKONING TRACER.

course up. See BASE COURSE UP.

cove, *n*. A small sheltered recess or indentation in a shore or coast, generally inside a larger embayment.

coverage diagram. A chart which depicts the area serviced by a radionavigation system.

crab, *v., t*. To drift sideways while in forward motion.

crack line, *n*. Any fracture (in ice) which has not parted.

creek, *n.* 1. A stream of less volume than a river but larger than a brook. 2. A small tidal channel through a coastal marsh. 3. A wide arm of a river or bay, as used locally in Maryland and Virginia.

crepuscular rays. Literally, "twilight rays," alternating lighter and darker bands (rays and shadows) which appear to diverge in fan-like array from the sun's position at about twilight. This term is applied to two quite different phenomena: a. It refers to shadows cast across the purple light, a true twilight phenomenon, by cloud tops that are high enough and far enough away from the observer to intercept some of the sunlight that would ordinarily produce the purple light. b. A more common occurrence is that of shadows and rays made visible by haze in the lower atmosphere. Towering clouds produce this effect also, but they may be fairly close to the observer and the sun need not be below the horizon. The apparent divergence of crepuscular rays is merely a perspective effect. When they continue across the sky to the antisolar point, these extensions are called ANTICREPUSCULAR RAYS. Also called SHADOW BANDS.

crescent, *adj*. Bounded by a convex and a concave curve. Originally, the term applied only to the "increasing" moon, from which the word was derived. By extension, it is now generally applied to the moon between last quarter and new as well as between new and first quarter, and to any other celestial body presenting a similar appearance, or any similarly shaped object. See also PHASES OF THE MOON.

crest, *n*. The highest part of a wave or swell; or terrestrially, a hill or ridge.

crest cloud. A type of cloud over a mountain ridge, similar to a cap cloud over an isolated peak. The cloud is apparently stationary, but actually is continually being formed to windward and dissipated to leeward.

crevasse, *n*. A deep fissure or rift in a glacier.

critical angle. 1. The maximum angle at which a radio wave may be emitted from an antenna, in respect to the plane of the earth, and still be returned to the earth by refraction or reflection by an ionospheric layer. 2. The angle at which radiation, about to pass from a medium of greater density into one of lesser density, is refracted along the surface of the denser medium.

critical table. A single entering argument table in which values of the quantity to be found are tabulated for limiting values of the entering argument. In such a table interpolation is avoided through dividing the argument into intervals so chosen that successive intervals correspond to successive values of the required quantity, called the respondent. For any value of the argument within these intervals, the respondent can be extracted from the table without interpolation. The lower and upper limits (critical values) of the argument correspond to half-way values of the respondent and, by convention, are chosen so that when the argument is equal to one of the critical values, the respondent corresponding to the preceding (upper) interval is to be used.

critical temperature. The temperature above which a substance cannot exist in the liquid state, regardless of pressure.

cross-band Racon. A Racon which transmits at a frequency not within the marine radar frequency band. To be able to use this type of Racon, the ship's radar receiver must be capable of being tuned to the frequency of the crossband Racon or special accessory equipment is required. In either case, normal radar echoes will not be painted on the radarscope. This is an experimental type of Racon. See also IN-BAND RACON.

cross-band transponder. A transponder which responds on a frequency different from that of the interrogating signal.

cross bearings. Two or more bearings used as intersecting lines of position for fixing the position of a craft.

cross hair. A hair, thread, or wire constituting part of a reticle.

cross sea. A series of waves imposed across the prevailing waves. It is called CROSS SWELL when the imposed waves are the longer swell waves.

cross-section paper. Paper ruled with two sets of parallel lines, useful as an aid in plotting Cartesian coordinates. Usually, the two sets are mutually perpendicular. See also COORDINATE PAPER.

cross-staff, *n*. A forerunner of the modern sextant used for measuring altitudes of celestial bodies, consisting of a wooden rod with one or more perpendicular cross pieces free to slide along the main rod. Also called FORESTAFF, JACOB'S STAFF.

cross swell. See under CROSS SEA.

cross tide. A tidal current setting in a direction approximately 90° from the course of a vessel One setting in a direction approximately 90° from the heading is called a BEAM TIDE. In common usage these two expressions are usually used synonymously. One setting from ahead is called a HEAD TIDE. One setting from aft is called a FAIR TIDE.

cross wind. See under BEAM WIND.

cruising radius. The distance a craft can travel at cruising speed without refueling. Also called CRUISING RANGE.

cruising range. See CRUISING RADIUS.

cryogenics, *n*. 1. The study of the methods of producing very low temperatures. 2. The study of the behavior of materials and processes at cryogenic temperatures.

cryogenic temperature. In general, a temperature range below the boiling point of nitrogen (-195°C); more particularly, temperatures within a few degrees of absolute zero.

crystal, *n*. A crystalline substance which allows electric current to pass in only one direction.

crystal clock. See QUARTZ CRYSTAL CLOCK.

cube, *n*. 1. A solid bounded by six equal square sides. 2. The third power of a quantity.

cubic meter. The derived unit of volume in the International System of Units.

cul-de-sac, *n*. An inlet with a single small opening.

culmination, *n*. See MERIDIAN TRANSIT.

culture, *n*. 1. The man-made features of a map or chart, including roads, rails, cables, etc.; boundary lines, latitude and longitude lines, isogonic lines, etc. are also properly classified as culture.

cumuliform, *adj*. Like cumulus; generally descriptive of all clouds, the principal characteristic of which is vertical development in the form of rising mounds, domes, or towers. This is the contrasting form to the horizontally extended STRATIFORM types. See also CIRRIFORM.

cumulonimbus, *n*. An exceptionally dense cloud of great vertical development, occurring either as an isolated cloud or one of a line or wall of clouds with separated upper portions. These clouds appear as mountains or huge towers, at least a part of the upper portions of which are usually smooth, fibrous, striated, and almost flattened. This part often spreads out in the form of an anvil or plume. Under the base of cumulonimbus, which often is very dark, there frequently exists virga, precipitation, and low, ragged clouds, either merged with it or not. Its precipitation is often heavy and always of a showery nature. The usual occurrence of lightning and thunder within or from this cloud leads to its being popularly called THUNDERCLOUD and THUNDERHEAD. The latter term usually refers to only the upper portion of the cloud. See also CLOUD CLASSIFICATION.

cumulus, *n*. A cloud type in the form of individual, detached elements which are generally dense and possess sharp non-fibrous outlines. These elements develop vertically, appearing as rising mounds, domes, or towers, the upper parts of which often resemble a cauliflower. The sunlit parts of these clouds are mostly brilliant white; their bases are relatively dark and nearly horizontal. Near the horizon the vertical development of cumulus often causes the individual clouds to appear merged. If precipitation occurs, it is usually of a showery nature. Various effects of wind, illumination, etc. may modify many of the above characteristics. Strong winds may shred the clouds, often tearing away the cumulus tops to form the species *fractus.* See also CLOUD CLASSIFICATION.

cupola, *n*. A label on a nautical chart which indicates a small dome-shaped tower or turret rising from a building.

current, *n*. 1. A horizontal movement of water. Currents may be classified as tidal and nontidal. Tidal currents are caused by gravitational interactions between the sun, moon, and earth and are a part of the same general movement of the sea that is manifested in the vertical rise and fall, called TIDE. Tidal currents are periodic with a net velocity of zero over the tidal cycle. Nontidal currents include the permanent currents in the general circulatory systems of the sea as well as temporary currents arising from more pronounced meteorological variability. The SET of a current is the direction toward which it flows; the DRIFT is its speed. In British usage, tidal current is called TIDAL STREAM, and nontidal current is called CURRENT.

current chart. A chart on which current data are graphically depicted. See also TlDAL CURRENT CHARTS.

current constants. Tidal current relations that remain practically constant for any particular locality. Current constants are classified as **harmonic** and **nonharmonic**. The harmonic constants consist of the amplitudes and epochs of the harmonic constituents, and the nonharmonic constants include the velocities and intervals derived directly from the current observations.

current curve. A graphic representation of the flow of the current. In the reversing type of tidal current, the curve is referred to rectangular coordinates with time represented by the abscissas and the speed of the current by the ordinates, the flood speeds being considered as positive' and the ebb speeds as negative. In general, the current curve for a reversing tidal current approximates a cosine curve.

current cycle. A complete set of tidal current conditions, as those occurring during a tidal day, lunar month, or Metonic cycle.

current diagram. A graphic table showing the speeds of the flood and ebb currents and the times of slack and strength over a considerable stretch of the channel of a tidal waterway, the times being referred to tide or tidal current phases at some reference station.

current difference. The difference between the time of slack water (or minimum current) or strength of current in any locality and the time of the corresponding phase of the tidal current at a reference station, for which predictions are given in the *Tidal Current Tables*.

current direction. The direction toward which a current is flowing, called the SET of the current.

current ellipse. A graphic representation of a rotary current in which the velocity of the current at different hours of the tidal cycle is represented by radius vectors and vectorial angles. A line joining the extremities of the radius vectors will form a curve roughly approximating an ellipse. The cycle is completed in one half tidal day or in a whole tidal day according to whether the tidal current is of the semidiurnal or the diurnal type. A current of the mixed type will give a curve of two unequal loops each tidal day.

current hour. The mean interval between the transit of the moon over the meridian of Greenwich and the time of strength of flood, modified by the times of slack water (or minimum current) and strength of ebb. In computing the mean current hour an average is obtained of the intervals for the following phases: flood strength, slack (or minimum) before flood increased by 3.10 hours (one-fourth of tidal cycle), slack (or minimum) after flood decreased by 3.10 hours, and ebb strength increased or decreased by 6.21 hours (one-half of tidal cycle). Before taking the average, the four phases are made comparable by the addition or rejection of such multiples of 12.42 hours as may be necessary. The current hour is usually expressed in solar time, but if the use of lunar time is desired the solar hour should be multiplied by the factor 0.966.

current line. A graduated line attached to a CURRENT POLE, used in measuring the velocity of the current. The line is marked so that the speed of the current, expressed in knots and tenths, is indicated directly by the length of line carried out by the current pole in a specified interval of time. When marked for a 60 second run, the principal divisions for the whole knots are spaced 101.33 feet and the subdivisions for tenths of knots are spaced at 10.13 feet. Also called LOG LINE.

current meter. An instrument for measuring the speed and direction or just speed of a current. The measurements are usually Eulerian since the meter is most often fixed or moored at a specific location.

current pole. A pole used in observing the velocity of the current. In use, the pole, which is weighted at one end so as to float upright, is attached to the current line but separated from the graduated portion by an ungraduated section of approximately 100 feet, known as the *stray line*. As the pole is carried out from an observing vessel by the current, the amount of line passing from the vessel during a specific time interval indicates the speed of the current. The set is obtained from a bearing from the vessel to the pole.

current rips. See RIPS.

current sailing. The process of allowing for current when predicting the track to be made good or of determining the effect of a current on the direction of motion of a vessel. The expression is better avoided, as the process is not strictly a sailing.

current station. The geographic location at which current observations are conducted. Also, the facilities used to make current observations. These may include a buoy, ground tackle, current meters, recording mechanism, and radio transmitter. See also CONTROL CURRENT STATION, SUBORDINATE CURRENT STATION.

current tables. See TIDAL CURRENT TABLES.

cursor, *n*. A device used with an instrument to provide a moveable reference. A symbol indicating the location in a file of the data entry point of a computer.

curve of constant bearing. See CURVE OF EQUAL BEARING.

curve of equal bearing. A curve connecting all points at which the great-circle bearing of a given point is the same. Also called CURVE OF CONSTANT BEARING.

curvilinear, *adj*. Consisting of or bounded by a curve.

curvilinear triangle. A closed figure having three curves as sides.

cusp, *n*. One of the horns or pointed ends of the crescent moon or other luminary.

cut, *n*. 1. A notch or depression produced by excavation or erosion. 2. The intersection of lines of position, constituting a fix, with particular reference to the angle of intersection.

cut in. To observe and plot lines of position locating an object or craft, particularly by bearings.

cut-off, *n*. 1. A new and relatively short channel formed when a stream cuts through the neck of an oxbow or horseshoe bend. 2. An artificial straightening or short-cut in a channel.

Cyclan, *n*. The designation of Loran C in its earliest stage of development but later superseded by the term CYTAC.

cycle, *n*. One complete train of events or phenomena that recur sequentially. When used in connection with sound or radio the term refers to one complete wave, or to a frequency of one wave per second. See also KILOCYCLE, MEGACYCLE, CALLIPPIC CYCLE, CURRENT CYCLE, DUTY CYCLE, LUNAR CYCLE, METONIC CYCLE, TIDAL CYCLE.

cycle match. In Loran C, the comparison, in time difference, between corresponding carrier cycles contained in the rise times of a master and secondary station pulse. The comparison is refined to a determination of the phase difference between these two cycles. See also ENVELOPE MATCH.

cyclic, *adj*. Of or pertaining to a cycle or cycles.

cyclogenesis, *n*. A development or strengthening of cyclonic circulation in the atmosphere. The opposite is CYCLOLYSIS. The term is applied to the development of cyclonic circulation where previously it did not exist, as well as to the intensification of existing cyclonic flow. While cyclogenesis usually occurs with a deepening (a decrease in atmospheric pressure), the two terms should not be used synonymously.

cyclolysis, *n*. Any weakening of cyclonic circulation in the atmosphere. The opposite is CYCLOGENESIS. While cyclolysis usually occurs with a filling (an increase in atmospheric pressure), the two terms should not be used synonymously.

cyclone, *n*. 1. A meteorological phenomena characterized by relatively low atmospheric pressure and winds which blow counterclockwise around the center in the Northern Hemisphere and clockwise in the Southern Hemisphere. 2. The name by which a tropical storm having winds of 34 knots or greater is known in the South Indian Ocean. See TROPICAL CYCLONE.

cyclonic storm. See under TROPICAL CYCLONE.

cyclonic winds. The winds associated with a low pressure area and constituting part of a cyclone.

cylinder, *n*. 1. A solid figure having two parallel plane bases bounded by closed congruent curves, and a surface formed by parallel lines connecting similar points on the two curves. 2. A surface formed by a straight line moving parallel to itself and constantly intersecting a curve. Also called CYLINDRICAL SURFACE.

cylindrical, *adj*. Of or pertaining to a cylinder.

cylindrical buoy. See CAN BUOY.

cylindrical chart. A chart on a cylindrical map projection.

cylindrical map projection. A map projection in which the surface of a sphere or spheroid, such as the earth, is conceived as developed on a tangent cylinder, which is then spread out to form a plane. See also MERCATOR MAP PROJECTION, RECTANGULAR MAP PROJECTION, EQUATORIAL MAP PROJECTION, OBLIQUE MAP PROJECTION, OBLIQUE MERCATOR MAP PROJECTION, TRANSVERSE MAP PROJECTION.

cylindrical surface. A surface formed by a straight line moving parallel to itself and constantly intersecting a curve. Also called a CYLINDER.

Cytac, *n*. The designation of Loran C in an earlier stage of development. See also CYCLAN.