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Jacob's staff. See CROSS-STAFF.

jamming, n. Intentional transmission or re-radiation of radio signals in such a way as to interfere with reception of desired signals by the intended receiver.

Janus configuration. A term describing orientations of the beams of acoustic or electromagnetic energy employed with doppler navigation systems. The Janus configuration normally used with doppler sonar speed logs, navigators, and docking aids employs four beams of ultrasonic energy, displaced laterally 90° from each other, and each directed obliquely (30° from the vertical) from the ship's bottom, to obtain true ground speed in the fore and aft and athwartship directions. These speeds are measured as doppler frequency shifts in the reflected beams. Certain errors in data extracted from one beam tend to cancel the errors associated with the oppositely directed beam.

Japan Current. See KUROSHIO.

jetsam, n. Articles that sink when thrown overboard, particularly those jettisoned for the purpose of lightening a vessel in distress. See also FLOTSAM, JETTISON, LAGAN.

jet stream. Relatively strong winds (50 knots or greater) concentrated in a narrow stream in the atmosphere. It usually refers only to a quasi-horizontal stream of maximum winds imbedded in the middle latitude westerlies, and concentrated in the high troposphere.

jettison, n. To throw objects overboard, especially to lighten a craft in distress. Jettisoned objects that float are termed FLOTSAM; those that sink JETSAM; and heavy articles that are buoyed for future recovery, LAGAN. See also DERELICT.

jetty, n. A structure built out into the water to restrain or direct currents, usually to protect a river mouth or harbor entrance from silting, etc. See also GROIN; MOLE, definition 1.

jitter, n. A term used to describe the short-time instability of a signal. The instability may be in amplitude, phase, or both. The term is applied especially to signals reproduced on the screen of a cathode-ray tube.

joule, n. A derived unit of energy of work in the International System of Units; it is the work done when the point of application of 1 newton (that force which gives to a mass of 1 kilogram an acceleration of 1 meter per second, per second) moves a distance of 1 meter in the direction of the force.

Julian calendar. A revision of the ancient calendar of the city of Rome, instituted in the Roman Empire by Julius Caesar in 46 B.C., which reached its final form in about 8 A.D. It consisted of years of 365 days, with an intercalary day every fourth year. The current Gregorian calendar is the same as the Julian calendar except that October 5, 1582, of the Julian calendar became October 15, 1582 of the Gregorian calendar and of the centurial years, only those divisible by 400 are leap years.

Julian day. The number of each day, as reckoned consecutively since the beginning of the present Julian period on January 1, 4713 BC. It is used primarily by astronomers to avoid confusion due to the use of different calendars at different times and places. The Julian day begins at noon, 12 hours later than the corresponding civil day. The day beginning at noon January 1, 1968, was Julian day 2,439,857.

junction buoy. A buoy which, when viewed from a vessel approaching from the open sea or in the same direction as the main stream of flood current, or in the direction established by appropriate authority, indicates the place at which two channels meet. See also BIFURCATION BUOY.

junction mark. A navigation mark which, when viewed from a vessel approaching from the open sea or in the same direction as the main stream of flood current, or in the direction established by appropriate authority, indicates the place at which two channels meet. See also BIFURCATION MARK.

June solstice. Summer solstice in the Northern Hemisphere.

Jupiter, n. The navigational planet whose orbit lies between those of Mars and Saturn. Largest of the known planets.

Jutland Current. A narrow and localized nontidal current off the coast of Denmark between longitudes 8°30'E and 10°30'E. It originates partly from the resultant counterclockwise flow in the tidal North Sea.

The main cause, however, appears to be the winds which prevail from south through west to northwest over 50 percent of the time throughout the year and the transverse flows from the English coast toward the Skaggerak. The current retains the characteristics of a major nontidal current and flows northeastward along the northwest coast of Denmark at speeds ranging between 1.5 to 2.0 knots 75 to 100 percent of the time.

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Kaléma, n. A very heavy surf breaking on the Guinea coast during the winter, even when there is no wind.

Kalman filtering. A statistical method for estimating the parameters of a dynamic system, using recursive techniques of estimation, measurement, weighting, and correction. Weighting is based on variances of the measurements and of the estimates. The filter acts to reduce the variance of the estimate with each measurement cycle. In navigation, the technique is used to refine the positions given by one or more electronic systems.

katabatic wind. Any wind blowing down an incline. If the wind is warm, it is called a foehn; if cold, a fall wind. An ANABATIC WIND blows up an incline. Also called GRAVITY WIND.

kaver, n. See CAVER.

kay, n. See CAY.

K-band. A radio-frequency band of 10,900 to 36,000 megahertz. See also FREQUENCY, FREQUENCY BAND.

kegde, v., t. To move a vessel by carrying out an anchor, letting it go, and winching the ship to the anchor. See also WARP.

keeper, n. A piece of magnetic material placed across the poles of a permanent magnet to assist in the maintenance of magnetic strength.

kelp, n. 1. A family of seaweed found in cool to cold waters along rocky coasts, characterized by its extreme length. 2. Any large seaweed. 3. The ashes of seaweed.

kelvin, n. The base unit of thermodynamic temperature in the International System of Units; it is the fraction 1/273.16 of the thermodynamic temperature of the triple point of water, which is -273.16K°.

Kelvin temperature. Temperature based upon a thermodynamic scale with its zero point at absolute zero (-273.16°C) and using Celsius degrees. Rankine temperature is based upon the Rankine scale starting at absolute zero (-459.69° F) and using Fahrenheit degrees.

Kennelly-Heaviside layer. See under KENNELLY-HEAVISIDE REGION.

Kennelly-Heaviside region. The region of the ionosphere, extending from approximately 40 to 250 miles above the earth's surface within which ionized layers form which may affect radio wave propagation. The E-layer, which is the lowest useful layer from the standpoint of wave propagation, is sometimes called KENNELLY-HEAVISIDE LAYER or, in some instances, simply the HEAVISIDE LAYER.

Kepler's laws. The three empirical laws describing the motions of the planets in their orbits. These are: (1) The orbits of the planets are ellipses, with the sun at a common focus; (2) As a planet moves in its orbit, the line joining the planet and sun sweeps over equal areas in equal intervals of time; (3) The squares of the periods of revolution of any two planets are proportional to the cubes of their mean distances from the sun. Also called KEPLER'S PLANETARY LAWS.

Kepler's planetary laws. See KEPLER'S LAWS.

key, n. See CAY.

kick, n. 1. The distance a ship moves sidewise from the original course away from the direction of turn after the rudder is first put over. 2. The swirl of water toward the inside of the turn when the rudder is put over to begin the turn.

kilo- A prefix meaning one thousand(10³).

kilobyte. One thousand bytes of information in a computer.

kilocycle, n. One thousand cycles, the term is often used as the equivalent of one thousand cycles per second.

kilogram, n. 1. The base unit of mass in the International System of Units; it is equal to the mass of the international prototype of the kilogram, which is made of platinum-iridium and kept at the International Bureau of Weights and Measures. 2. One thousand grams exactly, or 2.204623 pounds, approximately.

kilometer, *n.* One thousand meters; about 0.54 nautical mile, 0.62 U.S. Survey mile, or 3,281 feet.

kinetic energy. Energy possessed by a body by virtue of its motion, in contrast with POTENTIAL ENERGY, that possessed by virtue of its position.

klaxon, *n.* A diaphragm horn similar to a nautophone, but smaller, and sometimes operated by hand.

knik wind. A strong southeast wind in the vicinity of Palmer, Alaska, most frequent in the winter.

knoll, *n.* 1. On the sea floor, an elevation rising generally more than 500 meters and less than 1,000 meters and of limited extent across the summit. 2. A small rounded hill.

knot, *n.* A unit of speed equal to 1 nautical mile per hour.

kona storm. A storm over the Hawaiian Islands, characterized by strong southerly or southwesterly winds and heavy rains.

Krassowski ellipsoid of 1938. A reference ellipsoid of which the semi-major axis is 6,378,245 meters and the flattening of ellipticity equals 1/298.3.

Kuroshio, *n.* A North Pacific Ocean current flowing northeastward from Taiwan to the Ryukyu Islands and close to the coast of Japan. The Kuroshio is the northward flowing part of the Pacific North Equatorial Current (which divides east of the Philippines). The Kuroshio divides near Yaku Shima, the weaker branch flowing northward through the Korea Strait and the stronger branch flowing through Tokara Kaikyo and then along the south coast of Shikoku. There are light seasonal variations in speed; the Kuroshio is usually strongest in summer, weakens in autumn, strengthens in winter, and weakens in spring. Strong winds can accelerate or retard the current but seldom change its direction. Beyond latitude 35°N on the east coast of Japan, the current turns east-northeastward to form the transitional KUROSHIO EXTENSION. The Kuroshio is part of the KUROSHIO SYSTEM. Also called JAPAN CURRENT.

Kuroshio Extension. The transitional, eastward flowing ocean current that connects the Kuroshio and the North Pacific Current.

Kuroshio System. A system of ocean currents which includes part of the Pacific North Equatorial Current, the Tsushima Current, the Kuroshio, and the Kuroshio Extension.

kymatology, *n.* The science of waves and wave motion.

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labor, *v., i.* To pitch and roll heavily under conditions which subject the ship to unusually heavy stresses caused by confused or turbulent seas or unstable stowage of cargo.

Labrador Current. Originating from cold arctic water flowing southeastward through Davis Strait at speeds of 0.2 to 0.5 knot and from a westward branching of the warmer West Greenland Current, the Labrador Current flows south eastward along the shelf of the Canadian coast. Part of the current flows into Hudson Strait along its north shore. The outflow of fresh water along the south shore of the strait augments the part of the current flowing along the Labrador coast. The current also appears to be influenced by surface outflow from inlets and fjords along the Labrador coast. The mean speed is about 0.5 knot, but current speed at times may reach 1.5 to 2.0 knots.

Labrador Current Extension. A name sometimes given to the nontidal current flowing southwestward along the northeast coast of the United States. This coastal current originates from part of the Labrador Current flowing clockwise around the southeastern tip of Newfoundland. Its speeds are fairly constant throughout the year and average about 0.6 knot. The greatest seasonal fluctuation appears to be in the width of the current. The current is widest during winter between Newfoundland and Cape Cod. Southwest of Cape Cod to Cape Hatteras the current shows very little seasonal change. The current narrows considerably during summer and flows closest to shore in the vicinity of Cape Sable, Nova Scotia and between Cape Cod and Long Island in July and August. The current in some places encroaches on tidal regions.

lagan, *n.* A heavy object thrown overboard and buoyed to mark its location for future recovery. See also JETTISON.

lag error. Error in the reading of an instrument due to lag.

lagging of tide. The periodic retardation in the time of occurrence of high and low water due to changes in the relative positions of the moon and the sun. See also PRIMING OF TIDE.

lagoon, *n.* 1. A shallow sound, pond, or lake generally separated from the open sea. 2. A body of water enclosed by the reefs and islands of an atoll.

Lagrangian current measurement. The direct observation of the current speed or direction, or both, by a recording device such as a parachute drogoue which follows the movement of a water mass through the ocean. See also EULERIAN CURRENT MEASUREMENT.

lake, *n.* 1. A standing body of inland water, generally of considerable size. There are exceptions such as the lakes in Louisiana which are open to or connect with the Gulf of Mexico. Occasionally a lake is called a SEA, especially if very large and composed of salt water. 2. An expanded part of a river.

lake ice. Ice formed on a lake.

Lambert conformal chart. A chart on the Lambert conformal projection. See also CONIC CHART WITH TWO STANDARD PARALLELS, MODIFIED LAMBERT CONFORMAL CHART.

Lambert conformal map projection. A conformal map projection of the conic type, on which all geographic meridians are represented by straight lines which meet in a common point outside the limits of the map, and the geographic parallels are represented by a series of arcs of circles having this common point for a center. Meridians and parallels intersect at right angles, and angles on the earth are correctly represented on the projection. This projection may have one standard parallel along which the scale is held exact; or there may be two such standard parallels, both maintaining exact scale. At any point on the map, the scale is the same in every direction. The scale changes along the meridians and is constant along each parallel. Where there are two standard parallels, the scale between those parallels is too small; beyond them, too large. Also called LAMBERT CONFORMAL MAP PROJECTION. See also MODIFIED LAMBERT CONFORMAL MAP PROJECTION.

laminar flow. See under STREAMLINE FLOW.

land, *v., t. & i.* To bring a vessel to a landing.

land breeze. A breeze blowing from the land to the sea. It usually blows by night, when the sea is warmer than the land, and alternates with a SEA BREEZE, which blows in the opposite direction by day. See also OFFSHORE WIND.

landfall, *n.* The first sighting of land when approached from seaward. By extension, the term is sometimes used to refer to the first contact with land by any means, as by radar.

landfall buoy. See SEA BUOY.

landfall light. See PRIMARY SEACOAST LIGHT.

landing, *n.* 1. A place where boats receive or discharge passengers, freight, etc. See also LANDING STAGE, WHARF. 2. Bringing of a vessel to a landing.

landing compass. A compass taken ashore so as to be unaffected by deviation. If reciprocal bearings of the landing compass and the magnetic compass on board are observed, the deviation of the latter can be determined.

landing stage. A platform attached to the shore for landing or embarking passengers or cargo. In some cases the outer end of the landing stage is floating. Ships can moor alongside larger landing stages.

landmark, *n.* A conspicuous artificial feature on land, other than an established aid to navigation, which can be used as an aid to navigation. See also SEA MARK.

land mile. See U.S. SURVEY MILE.

land sky. Dark streaks or patches or a grayness on the underside of extensive cloud areas, due to the absence of reflected light from bare ground. Land sky is not as dark as WATER SKY. The clouds above ice or snow covered surfaces have a white or yellowish white glare called ICE BLINK. See also SKY MAP.

lane, *n.* In any continuous wave phase comparison system, the distance between two successive equiphase lines, taken as 0°–360°, in a system of hyperbolic or circular coordinates.

- lane count.** An automatic method of counting and totaling the number of hyperbolic or circular lanes traversed by a moving vessel.
- language.** A set of characters and rules which allow human interface with the computer, allowing PROGRAMS to be written.
- lapse rate.** The rate of decrease of temperature in the atmosphere with height, or, sometimes, the rate of change of any meteorological element with height.
- large fracture.** See under FRACTURE.
- large iceberg.** For reports to the International Ice Patrol, an iceberg that extends more than 150 feet (45 meters) above the sea surface and which has a length of more than 400 feet (122 meters). See also SMALL ICEBERG, MEDIUM ICEBERG.
- large ice field.** See under ICE FIELD.
- large navigational buoy (LNB).** A large buoy designed to take the place of a lightship where construction of an offshore light station is not feasible. These buoys may show secondary lights from heights of about 30–40 feet above the water. In addition to the light, they may mount a radiobeacon and provide sound signals. A station buoy may be moored nearby.
- large scale.** A scale involving a relatively small reduction in size. A large-scale chart is one covering a small area. The opposite is SMALL SCALE. See also REPRESENTATIVE FRACTION.
- large-scale chart.** See under CHART. See also LARGE SCALE.
- last quarter.** The phase of the moon when it is near west quadrature, when the eastern half of it is visible to an observer on the earth. See also PHASES OF THE MOON.
- latent heat of fusion.** See under FUSION.
- latent heat of vaporization.** See under EVAPORATION.
- lateral, *adj.*** Of or pertaining to the side, such as lateral motion.
- lateral drifting.** See SWAY.
- lateral mark.** A navigation aid intended to mark the sides of a channel or waterway. See CARDINAL MARKS.
- lateral sensitivity.** The property of a range which determines the rapidity with which the two lights of the range open up as a vessel moves laterally from the range line, indicating to the mariner that he is off the center line.
- lateral system.** A system of aids to navigation in which the shape, color, and number are assigned in accordance with their location relative to navigable waters. When used to mark a channel, they are assigned colors to indicate the side they mark and numbers to indicate their sequence along the channel. In the CARDINAL SYSTEM the aids are assigned shape, color, and number distinction in accordance with location relative to obstructions.
- latitude, *n.*** Angular distance from a primary great circle or plane. Terrestrial latitude is angular distance from the equator, measured northward or southward through 90° and labeled N or S to indicate the direction of measurement; astronomical latitude at a station is angular distance between the plumb line and the plane of the celestial equator; geodetic or topographical latitude at a station is angular distance between the plane of the geodetic equator and a normal to the ellipsoid; geocentric latitude is the angle at the center of the reference ellipsoid between the celestial equator and a radius vector to a point on the ellipsoid. Geodetic and sometimes astronomical latitude are also called geographic latitude. Geodetic latitude is used for charts. Assumed (or chosen) latitude is the latitude at which an observer is assumed to be located for an observation or computation. Observed latitude is determined by one or more lines of position extending in a generally east-west direction. Fictitious latitude is angular distance from a fictitious equator. Grid latitude is angular distance from a grid equator. Transverse or inverse latitude is angular distance from a transverse equator. Oblique latitude is angular distance from an oblique equator. Middle or mid latitude is the latitude at which the arc length of the parallel separating the meridians passing through two specific points is exactly equal to the departure in proceeding from one point to the other by middle-latitude sailing. Mean latitude is half the arithmetical sum of the latitude of two places on the same side of the equator. The mean latitude is usually used in middle-latitude sailing for want of a practical means of determining middle latitude. Difference of latitude is the shorter arc of any meridian between the parallels of two places, expressed in angular measure. Magnetic latitude, magnetic inclination, or magnetic dip is angular distance between the horizontal and the direction of a line of force of the earth's magnetic field at any point. Geomagnetic latitude is angular distance from the geomagnetic equator. A parallel of latitude is a circle (or approximation of a circle) of the earth, parallel to the equator, and connecting points of equal latitude—or a circle of the celestial sphere, parallel to the ecliptic. Celestial latitude is angular distance north or south of the ecliptic. See also VARIATION OF LATITUDE.
- latitude factor.** The change in latitude along a celestial line of position per 1' change in longitude. The change in longitude for a 1' change in latitude is called LONGITUDE FACTOR.
- latitude line.** A line of position extending in a generally east-west direction. Sometimes called OBSERVED LATITUDE. See also LONGITUDE LINE; COURSE LINE, definition 2; SPEED LINE.
- lattice, *n.*** A pattern formed by two or more families of intersecting lines, such as that pattern formed by two or more families of hyperbolas representing, for example, curves of equal time difference associated with a hyperbolic radionavigation system. Sometimes the term pattern is used to indicate curves of equal time difference, with the term lattice being used to indicate its representation on the chart. See also PATTERN, definition 2.
- lattice beacon.** A beacon or daymark in the form of a lattice. See also BEACON TOWER, REFUGE BEACON.
- laurence, *n.*** A shimmering seen over a hot surface on a calm, cloudless day, caused by the unequal refraction of light by innumerable convective air columns of different temperatures and densities.
- lava, *n.*** Rock in the fluid state, or such material after it has solidified. Lava is formed at very high temperature and issues from the earth through volcanoes. Part of the ocean bed is composed of lava.
- law of equal areas.** Kepler's second law.
- layer tints.** See HYPSONOMETRIC TINTING.
- L-band.** A radio-frequency band of 390 to 1,550 megahertz. See also FREQUENCY, FREQUENCY BAND.
- lead, *n.*** A fracture or passage-way through ice which is navigable by surface vessels.
- lead, *n.*** A weight attached to a line. A sounding lead is used for determining depth of water. A hand lead is a light sounding lead (7 to 14 pounds), usually having a line of not more than 25 fathoms. A deep sea lead is a heavy sounding lead (about 30 to 100 pounds), usually having a line 100 fathoms or more in length. A light deep sea lead (30 to 50 pounds), used for sounding depths of 20 to 60 fathoms is called a coasting lead. A type of sounding lead used without removal from the water between soundings is called a fish lead. A drift lead is one placed on the bottom to indicate movement of a vessel.
- leader cable.** A cable carrying an electric current, signals from or the magnetic influence of which indicates the path to be followed by a craft equipped with suitable instruments.
- leading lights.** See RANGE LIGHTS.
- leading line.** On a nautical chart, a straight line, drawn through leading marks. A ship moving along such line will clear certain dangers or remain in the best channel. See also CLEARING LINE, RANGE, definition 1.
- leading marks.** See RANGE, *n.* definition 1.
- lead line.** A line, graduated with attached marks and fastened to a sounding lead, used for determining the depth of water when making soundings by hand. The lead line is usually used in depths of less than 25 fathoms. Also called SOUNDING LINE.
- leadsman, *n.*** A person using a sounding lead to determine depth of water.
- leap second.** A step adjustment to Coordinated Universal Time (UTC) to maintain it within 0.95^s of UT1. The 1 second adjustments, when necessary, are normally made at the end of June or December. Because of the variations in the rate of rotation of the earth, the occurrences of the leap second adjustments are not predictable in detail.
- leap year.** A calendar year having 366 days as opposed to the COMMON YEAR having 365 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.
- least squares adjustment.** A statistical method of adjusting observations in which the sum of the squares of all the deviations or residuals derived in fitting the observations to a mathematical model is made a minimum.

- ledge**, *n.* On the sea floor, a rocky, projection or datum outcrop, commonly linear and near shore.
- lee**, *adj.* Referring to the downwind, or sheltered side of an object.
- lee**, *n.* The sheltered area on the downwind side of an object.
- lee shore**. As observed from a ship, the shore towards which the wind is blowing. See also WEATHER SHORE.
- lee side**. That side of a craft which is away from the wind and therefore sheltered.
- lee tide**. See LEEWARD TIDAL CURRENT.
- leeward**, *adj. & adv.* Toward the lee, or in the general direction toward which the wind is blowing. The opposite is WINDWARD.
- leeward**, *n.* The lee side. The opposite is WINDWARD.
- leeward tidal current**. A tidal current setting in the same direction as that in which the wind is blowing. Also called LEE TIDE, LEEWARD TIDE.
- leeward tide**. See LEEWARD TIDAL CURRENT.
- leeway**, *n.* The leeward motion of a vessel due to wind. See also LEEWAY ANGLE.
- leeway angle**. The angular difference between a vessel's course and the track due to the effect of wind in moving a vessel bodily to leeward. See also DRIFT ANGLE, definition 2.
- left bank**. The bank of a stream or river on the left of an observer facing downstream.
- leg**, *n.* A part of a ship's track line that can be represented by a single course line.
- legend**, *n.* A title or explanation on a chart, diagram, illustration, etc.
- lens**, *n.* A piece of glass or transparent material with plane, convex, or concave surfaces adapted for changing the direction of light rays to enlarge or reduce the apparent size of objects. See also EYEPIECE; FIELD LENS MENISCUS, definition 2, OBJECTIVE.
- lenticular**, **lenticularis**, *adj.* In the shape of a lens, used to refer to an apparently stationary cloud resembling a lens, being broad in its middle and tapering at the ends and having a smooth appearance. Actually, the cloud continually forms to windward and dissipates to leeward.
- lesser ebb**. See under EBB CURRENT.
- lesser flood**. See under FLOOD CURRENT.
- leste**, *n.* A hot, dry, easterly wind of the Madeira and Canary Islands.
- levanter**, *n.* A strong easterly wind of the Mediterranean, especially in the Strait of Gibraltar, attended by cloudy, foggy, and sometimes rainy weather especially in winter.
- levantera**, *n.* A persistent east wind of the Adriatic, usually accompanied by cloudy weather.
- levanto**, *n.* A hot southeasterly wind which blows over the Canary Islands.
- leveche**, *n.* A warm wind in Spain, either a foehn or a hot southerly wind in advance of a low pressure area moving from the Sahara Desert. Called a SIROCCO in other parts of the Mediterranean area.
- levee**, *n.* 1. An artificial bank confining a stream channel or limiting adjacent areas subject to flooding. 2. on the sea floor, an embankment bordering a canyon, valley, or sea channel.
- level ice**. Sea ice which is unaffected by deformation.
- leveling**, *n.* A survey operation in which heights of objects are determined relative to a specified datum.
- libration**, *n.* A real or apparent oscillatory motion, particularly the apparent oscillation of the moon, which results in more than half of the moon's surface being revealed to an observer on the earth, even though the same side of the moon is always toward the earth because of the moon's periods of rotation and revolution are the same.
- light**, *adj.* 1. Of or pertaining to low speed, such as light air, force 1 (1-3 miles per hour or 1-3 knots) on the Beaufort scale or light breeze, force 2 (4-7 miles per hour or 4-6 knots) on the Beaufort scale. 2. Of or pertaining to low intensity, as light rain, light fog, etc.
- light**, *n.* 1. Luminous energy. 2. An apparatus emitting light of distinctive character for use as an aid to navigation.
- light air**. Wind of force 1 (1 to 3 knots or 1 to 3 miles per hour) on the Beaufort wind scale.
- light attendant station**. A shore unit established for the purpose of servicing minor aids to navigation within an assigned area.
- light-beacon**, *n.* See LIGHTED BEACON.
- light breeze**. Wind of force 2 (4 to 6 knots or 4 to 7 miles per hour) on the Beaufort wind scale.
- lighted beacon**. A beacon exhibiting a light. Also called LIGHT-BEACON.
- lighted buoy**. A buoy exhibiting a light.
- lighted sound buoy**. See under SOUND BUOY.
- lightering area**. An area designated for handling ship's cargo by barge or lighter.
- light-float**, *n.* A buoy having a boat-shaped body. Light-floats are usually unmanned and are used instead of smaller lighted buoys in waters where strong currents are experienced.
- lighthouse**, *n.* A distinctive structure exhibiting a major navigation light.
- light list**. 1. A publication giving detailed information regarding lighted navigational aids and fog signals. In the United States, light lists are published by the U.S. Coast Guard as USCG Light Lists and by the Defense Mapping Agency Hydrographic/Topographic Center as List of Lights.
- light list number**. The sequential number used to identify a navigational light in the light list. This may or may not be the same as the INTERNATIONAL NUMBER, which is an identifying number assigned by the International Hydrographic Organization. The international number is in italic type and is located under the light list number in the list.
- light nilas**. Nilas which is more than 5 centimeters in thickness and somewhat lighter in color than dark nilas.
- light sector**. As defined by bearings from seaward, the sector in which a navigational light is visible or in which it has a distinctive color different from that of adjoining sectors, or in which it is obscured. See also SECTOR LIGHT.
- lightship**, *n.* A distinctively marked vessel providing aids to navigation services similar to a light station, i.e., a light of high intensity and reliability, sound signal, and radiobeacon, and moored at a station where erection of a fixed structure is not feasible. Most lightships are anchored to a very long scope of chain and, as a result, the radius of their swinging circle is considerable. The chart symbol represents the approximate location of the anchor. Also called LIGHT VESSEL. See also LIGHT-FLOAT.
- lights in line**. Two or more lights so situated that when observed in transit they define the alignment of a submarine cable, the limit of an area, an alignment for use in anchoring, etc. Not to be confused with RANGE LIGHTS which mark a direction to be followed. See also RANGE, definition 1.
- light station**. A manned station providing a light usually of high intensity and reliability. It may also provide sound signal and radiobeacon services.
- light valve**. See SUN VALVE.
- light vessel**. See LIGHTSHIP.
- light-year**, *n.* A unit of length equal to the distance light travels in 1 year, equal to about 5.88×10^{12} miles. This unit is used as a measure of stellar distances.
- liman**, *n.* A shallow coastal lagoon or embayment with a muddy bottom; also a region of mud or slime deposited near a stream mouth.
- Liman Current**. Formed by part of the Tsushima Current and river discharge in Tatar Strait, the coastal Liman Current flows southward in the western part of the Sea of Japan. During winter, it may reach as far south as 35°N. See also under TSUSHIMA CURRENT.
- limb**, *n.* 1. The graduated curved part of an instrument for measuring angles, such as the part of a marine sextant carrying the altitude scale, or ARC. 2. The circular outer edge of a celestial body, usually referred to with the designation upper or lower.
- limbo echo**. See CLASSIFICATION OF RADAR ECHOES.
- line**, *n.* 1. A series of related points, the path of a moving point. A line has only one dimension; length. 2. A row of letters, numbers, etc. 3. A mark of division or demarcation, as a *boundary line*.
- linear**, *adj.* 1. Of or pertaining to a line. 2. Having a relation such that a change in one quantity is accompanied by an exactly proportional change in a related quantity.
- linear interpolation**. Interpolation in which changes of tabulated values are assumed to be proportional to changes in entering arguments.
- linear light**. A luminous signal having perceptible length, as contrasted with a POINT LIGHT, which does not have perceptible length.

- linearly polarized wave.** A transverse electromagnetic wave the electric field vector of which lies along a fixed line at all times.
- linear scale.** A scale graduated at uniform intervals.
- linear speed.** Rate of motion in a straight line. See also ANGULAR RATE.
- linear sweep.** Short for LINEAR TIME BASE SWEEP.
- linear time base.** A time base having a constant speed, particularly a linear time base sweep.
- linear time base sweep.** A sweep having a constant sweep speed before retrace. Usually shortened to LINEAR SWEEP, and sometimes to LINEAR TIME BASE.
- line blow.** A strong wind on the equator side of an anticyclone, probably so called because there is little shifting of wind direction during the blow, as contrasted with the marked shifting which occurs with a cyclonic windstorm.
- line of apsides.** The line connecting the two points of an orbit that are nearest and farthest from the center of attraction, such as the perigee and apogee of the moon or the perihelion and aphelion of a planet. Also called APSE LINE.
- line of force.** A line indicating the direction in which a force acts, as in a magnetic field.
- line of nodes.** The straight line connecting the two points of intersection of the orbit of a planet, planetoid, or comet and the ecliptic; or the line of intersection of the planes of the orbits of a satellite and the equator of its primary.
- line of position.** A plotted line on which a vessel is located, determined by observation or measurement. Also called POSITION LINE.
- line of sight.** The straight line between two points, which does not follow the curvature of the earth.
- line of soundings.** A series of soundings obtained by a vessel underway, usually at regular intervals. In piloting, this information may be used to determine an estimated position, by recording the soundings at appropriate intervals (to the scale of the chart) along a line drawn on transparent paper or plastic, to represent the track, and then fitting the plot to the chart, by trial and error. A vessel obtaining soundings along a course line, for use in making or improving a chart, is said to run a *line of soundings*.
- line of total force.** The direction of a freely suspended magnetic needle when acted upon by the earth's magnetic field alone.
- line squall.** A squall that occurs along a squall line.
- lipper, n.** 1. Slight ruffling or roughness on a water surface. 2. Light spray from small waves.
- liquid compass.** A magnetic compass of which the bowl mounting the compass card is completely filled with liquid. Nearly all modern magnetic compasses are of this type. An older liquid compass using a solution of alcohol and water is sometimes called a SPIRIT COMPASS. Also called WET COMPASS. See also DRY COMPASS.
- list, n.** Inclination to one side. LIST generally implies equilibrium in an inclined condition caused by uneven distribution of mass aboard the vessel itself, while HEEL implies either a continuing or momentary inclination caused by an outside force, such as the wind. The term ROLL refers to the oscillatory motion of a vessel rather than its inclined condition.
- list, v., t. & i.** To incline or be inclined to one side.
- lithometeor, n.** The general term for dry atmospheric suspensoids, including dust, haze, smoke, and sand. See also HYDROMETEOR.
- little brother.** A secondary tropical cyclone sometimes following a more severe disturbance.
- littoral, adj. & n.** 1. A littoral region. 2. The marine environment influenced by a land mass. 3. Of or pertaining to a shore, especially a seashore. See also SEABOARD.
- load line marks.** Markings stamped and painted amidships on the side of a vessel, to indicate the minimum permissible freeboard. Also called PLIMSOLL MARKS. See also DRAFT MARKS.
- lobe, n.** 1. The portion of the overall radiation pattern of a directional antenna which is contained within a region bounded by adjacent minima. The main beam is the beam in the lobe containing the direction of maximum radiation (main lobe) lying within specified values of field strength relative to the maximum field strength. See also BACK LOBE, SIDE LOBE, BEAM WIDTH 2. The radiation within the region of definition 1.
- local apparent noon.** Twelve o'clock local apparent time, or the instant the apparent sun is over the upper branch of the local meridian. Local apparent noon at the Greenwich meridian is called Greenwich apparent noon. Sometimes called HIGH NOON.
- local apparent time.** The arc of the celestial equator, or the angle at the celestial pole, between the lower branch of the local celestial meridian and the hour circle of the apparent or true sun, measured westward from the lower branch of the local celestial meridian through 24 hours; local hour angle of the apparent or true sun, expressed in time units, plus 12 hours. Local apparent time at the Greenwich meridian is called Greenwich apparent time.
- local attraction.** See LOCAL MAGNETIC DISTURBANCE.
- local civil noon.** *United States terminology from 1925 through 1952.* See LOCAL MEAN NOON.
- local civil time.** *United States terminology from 1925 through 1952.* See LOCAL MEAN TIME.
- local hour angle (LHA).** Angular distance west of the local celestial meridian; the arc of the celestial equator, or the angle at the celestial pole, between the upper branch of the local celestial meridian and the hour circle of a point on the celestial sphere, measured westward from the local celestial meridian through 360°. The local hour angle at longitude 0° is called Greenwich hour angle.
- local knowledge.** The term applied to specialized, detailed knowledge of a port, harbor, or other navigable water considered necessary for safe navigation. Local knowledge extends beyond that available in charts and publications, being more detailed, intimate, and current.
- local lunar time.** The arc of the celestial equator, or the angle at the celestial pole, between the lower branch of the local celestial meridian and the hour circle of the moon, measured westward from the lower branch of the local celestial meridian through 24 hours; local hour angle of the moon, expressed in time units, plus 12 hours. Local lunar time at the Greenwich meridian is called Greenwich lunar time.
- local magnetic disturbance.** An anomaly of the magnetic field of the earth, extending over a relatively small area, due to local magnetic influences. Also called LOCAL ATTRACTION, MAGNETIC ANOMALY.
- local mean noon.** Twelve o'clock local mean time, or the instant the mean sun is over the upper branch of the local meridian. Local mean noon at the Greenwich meridian is called Greenwich mean noon.
- local mean time.** The arc of the celestial equator, or the angle at the celestial pole, between the lower branch of the local celestial meridian and the hour circle of the mean sun, measured westward from the lower branch of the local celestial meridian through 24 hours; local hour angle of the mean sun, expressed in time units, plus 12 hours. Local mean time at the Greenwich meridian is called Greenwich mean time, or Universal Time.
- local meridian.** The meridian through any particular place of observer, serving as the reference for local time, in contrast with GREENWICH MERIDIAN.
- local noon.** Noon at the local meridian.
- Local Notice to Mariners.** A notice issued by each U.S. Coast Guard District to disseminate important information affecting navigational safety within the District. The *Local Notice* reports changes to and deficiencies in aids to navigation maintained by and under the authority of the U.S. Coast Guard. Other information includes channel depths, new charts, naval operations, regattas, etc. Since temporary information, known or expected to be of short duration, is not included in the weekly *Notice to Mariners* published by the Defense Mapping Agency Hydrographic/Topographic Center, the appropriate *Local Notice to Mariners* may be the only source of such information. Much of the information contained in the *Local Notice to Mariners* is included in the weekly *Notice to Mariners*. The *Local Notice to Mariners* is published as often as required; usually weekly. It may be obtained, free of charge, the appropriate Coast Guard District Commander.
- local oscillator.** An oscillator used to drive an intermediate frequency by beating with the signal carrying frequency in superheterodyne reception.
- local sidereal noon.** Zero hours local sidereal time, or the instant the vernal equinox is over the upper branch of the local meridian. Local sidereal noon at the Greenwich meridian is called Greenwich sidereal noon.

- local sidereal time.** Local hour angle of the vernal equinox, expressed in time units; the arc of the celestial equator, or the angle at the celestial pole, between the upper branch of the local celestial meridian and the hour circle of the vernal equinox, measured westward from the upper branch of the local celestial meridian through 24 hours. Local sidereal time at the Greenwich meridian is called Greenwich sidereal time.
- local time.** 1. Time based upon the local meridian as reference, as contrasted with that based upon a standard meridian. Local time was in general use in the United States until 1883, when standard time was adopted. 2. Any time kept locally.
- local vertical.** The direction of the acceleration of gravity as opposed to the normal to the reference ellipsoid. It is in the direction of the resultant of the gravitational and centrifugal accelerations of the earth at the location of the observer. Also called PLUMB-BOB VERTICAL. See also MASS ATTRACTION VERTICAL.
- loch, n.** 1. A lake. 2. An arm of the sea, especially when nearly landlocked.
- lock, n.** 1. A basin in a waterway with caissons or gates at each end by means of which vessels are passed from one water level to another.
- lock, v. t.** To pass through a lock, referred to as *locking through*.
- lock on.** To identify and begin to continuously track a target in one or more coordinates (e.g., range, bearing, elevation).
- locus, n.** All possible positions of a point or curve satisfying stated conditions.
- log, n.** 1. An instrument for measuring the speed or distance or both traveled by a vessel. A chip log (ancient) consists essentially 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. A mechanical means of determining speed or distance is called a patent log. A harpoon log consists essentially of a combined rotator and distance registering device towed through the water. This has been largely replaced by the taffrail log, a somewhat similar device but with the registering unit secured at the taffrail. A Pitometer log consists essentially of a Pitot tube projecting into the water, and suitable registering devices. An electromagnetic log consists of suitable registering devices and an electromagnetic sensing element, extended below the hull of a vessel, which produces a voltage directly proportional to speed through the water. A Forbes log consists of a small rotator in a tube projecting below the bottom of the vessel, and suitable registering devices. A Dutchman's log is a buoyant object thrown overboard, the speed of a vessel being determined by noting the time required for a known length of the vessel to pass the object. 2. A written record of the movements of a craft, with regard to courses, speeds, positions, and other information of interest to navigators, and of important happenings aboard the craft. The book in which the log is kept is called a LOG BOOK. Also called DECK LOG. See also NIGHT ORDER BOOK 3. A written record of specific related information, as that concerning performance of an instrument. See GYRO LOG.
- logarithm, n.** The power to which a fixed number, called the base, usually 10 or e (2.7182818), must be raised to produce the value to which the logarithm corresponds. A logarithm (base 10) consists of two parts: the characteristic is that part to the left of the decimal point and the mantissa is that part to the right of the decimal point. An ANTILOGARITHM or INVERSE LOGARITHM is the value corresponding to a given logarithm. Logarithms are used to multiply or divide numbers, the sum or difference of the logarithms of two numbers being the logarithm of the product or quotient, respectively, of the two numbers. A COLOGARITHM is the logarithm of the reciprocal of a number. Logarithms to the base 10 are called common or Briggsian and those to the base e are called natural or Napierian logarithms.
- logarithmic, adj.** Having to do with a logarithm, used with the name of a trigonometric function to indicate that the value given is the logarithm of that function, rather than the function itself which is called the natural trigonometric function.
- logarithmic coordinate paper.** Paper ruled with two sets of mutually-perpendicular, parallel lines spaced according to the logarithms of consecutive numbers, rather than the numbers themselves. On SEMILOGARITHMIC COORDINATE PAPER one set of lines is spaced logarithmically and the other set at uniform intervals.
- logarithmic scale.** A scale graduated in the logarithms of uniformly-spaced consecutive numbers.
- logarithmic tangent.** See under TANGENT, definition 1.
- logarithmic trigonometric function.** See under TRIGONOMETRIC FUNCTIONS.
- log book.** See LOG, definition 2.
- log chip.** The wooden quadrant forming part of a chip log. Also called LOG SHIP.
- log glass.** A small hour glass used to time a chip log. The period most frequently used is 28 seconds.
- log line.** 1. A graduated line used to measure the speed of a vessel through the water or to measure the speed of a current, the line may be called a CURRENT LINE. 2. The line secured to a log.
- long flashing light.** A navigation light with a duration of flash of not less than 2 seconds.
- longitude, n.** Angular distance, along a primary great circle, from the adopted reference point. Terrestrial longitude is the arc of a parallel, or the angle at the pole, between the prime meridian and the meridian of a point on the earth measured eastward or westward from the prime meridian through 180°, and labeled E or W to indicate the direction of measurement. Astronomical longitude is the angle between the plane of the prime meridian and the plane of the celestial meridian; geodetic longitude is the angle between the plane of the geodetic meridian and a station and the plane of the geodetic meridian at Greenwich. Geodetic and sometimes astronomical longitude are also called geographic longitude. Geodetic longitude is used in charting. Assumed longitude is the longitude at which an observer is assumed to be located for an observation or computation. Observed longitude is determined by one or more lines of position extending in a generally north-south direction. Difference of longitude is the smaller angle at the pole or the shorter arc of a parallel between the meridians of two places, expressed in angular measure. Fictitious longitude is the arc of the fictitious equator between the prime fictitious meridian and any given fictitious meridian. Grid longitude is angular distance between a prime grid meridian and any given grid meridian. Oblique longitude is angular distance between a prime oblique meridian and any given oblique meridian. Transverse or inverse longitude is angular distance between a prime transverse meridian and any given meridian. Celestial longitude is angular distance east of the vernal equinox, along the ecliptic.
- longitude factor.** The change in longitude along a celestial line of position per 1' change in latitude. The change in latitude for a 1' change in longitude is called LATITUDE FACTOR.
- longitude line.** A line of position extending in a generally north-south direction. Sometimes called OBSERVED LONGITUDE. See also LATITUDE LINE; COURSE LINE, definition 2; SPEED LINE.
- longitude method.** The establishing of a line of position from the observation of the latitude of a celestial body by assuming a latitude (or longitude), and calculating the longitude (or latitude) through which the line of position passes, and the azimuth. The line of position is drawn through the point thus found, perpendicular to the azimuth. See also ST. HILAIRE METHOD, SUMNER METHOD, HIGH ALTITUDE METHOD.
- longitude of Greenwich at time of perigee.** See RIGHT ASCENSION OF GREENWICH AT TIME OF PERIGEE.
- longitude of pericenter.** An orbital element that specifies the orientation of an orbit; it is a broken angle consisting of the angular distance in the ecliptic from the vernal equinox to the ascending node of the orbit plus the angular distance in the orbital plane from the ascending node to the pericenter, i.e. the sum of the longitude of the ascending node and the argument of pericenter.
- longitude of the ascending node.** 1. The angular distance in the ecliptic from the vernal equinox to the ascending node of the orbit. See also LONGITUDE OF PERICENTER, RIGHT ASCENSION OF THE ASCENDING NODE. 2. The angular distance, always measured eastward, in the plane of the celestial equator from Greenwich through 360°.
- longitude of the moon's nodes.** The angular distance along the ecliptic of the moon's nodes from the vernal equinox; the nodes have a retrograde motion, and complete a cycle of 360° in approximately 19 years.

- longitudinal axis.** The fore-and-aft line through the center of gravity of a craft, around which it rolls.
- longitudinal wave.** A wave in which the vibration is in the direction of propagation, as in sound waves. This is in contrast with a TRANSVERSE WAVE, in which the vibration is perpendicular to the direction of propagation.
- long path interference.** See under MULTIPATH ERROR.
- long period constituent.** A tidal or tidal current constituent with a period that is independent of the rotation of the earth but which depends upon the orbital movement of the moon or of the earth. The principal lunar long period constituents have periods approximating the month and half-month, and the principal solar long period constituents have periods approximating the year and half-year.
- long period perturbations.** Periodic eccentricities in the orbit of a planet or satellite which require more than one orbital period to execute one complete periodic variation.
- long range systems.** Radionavigation systems providing positioning capability on the high seas. Loran C is an example. See also SHORT RANGE SYSTEMS.
- longshore current.** A current paralleling the shore largely within the surf zone. It is caused by the excess water brought to the zone by the small net mass transport of wind waves. Longshore currents feed into rip currents.
- look angles.** The elevation and azimuth at which a particular satellite is predicted to be found at a specified time.
- lookout station.** A label on a nautical chart which indicates a tower surmounted by a small house from which a watch is kept regularly.
- loom, n.** The diffused glow observed from a light below the horizon, due to atmospheric scattering.
- looming, n.** 1. An apparent elevation of distant terrestrial objects by abnormal atmospheric refraction. Because of looming, objects below the horizon are sometimes visible. The opposite is SINKING. 2. The appearance indistinctly of an object during a period of low visibility.
- loop antenna.** A closed circuit antenna in the form of a loop, lying in the same plane, or of several loops lying in parallel planes.
- loop of stationary wave.** See under STATIONARY WAVE.
- Loran, n.** The general designation of a type of radionavigation system by which a hyperbolic line of position is determined through measuring the difference in the times of reception of synchronized signals from two fixed transmitters. The name Loran is derived from the words long range navigation.
- Loran A, n.** A long range medium frequency (1850 to 1950 kHz) radionavigation system by which a hyperbolic line of position of medium accuracy was obtained. System operation in U.S. waters was terminated on 31 December 1980. See also LORAN, HYPERBOLIC NAVIGATION.
- Loran C, n.** A long range, low frequency (90-110 kHz) radionavigation system by which a hyperbolic line of position of high accuracy is obtained by measuring the difference in the times of arrival of signals radiated by a pair of synchronized transmitters (master station and secondary station) which are separated by several hundred miles. See also LORAN, HYPERBOLIC NAVIGATION.
- Loran C plotting chart.** See under Plotting CHART.
- Loran C reliability diagram.** One of a series of charts which depict the following data for the area covered: (1) for each station of the chain, predicted maximum usable groundwave signal limits for signal-to-noise ratios of 1:3 and 1:10, and (2) contours which indicate the regions within which positions can be fixed with repeatable accuracies of 500, 750, or 1500 feet or better on a 95 percent probability basis. See also COVERAGE DIAGRAM.
- Loran C Table.** See PUB. 221. LORAN C TABLE.
- Loran rate.** See RATE, definition 2.
- Lorhumb line.** A line along which the rates of change of the values of two families of hyperbolae are constants.
- lost motion.** Mechanical motion which is not transmitted to connected or related parts, due to loose fit. See also BACKLASH.
- low, n.** Short for area of low pressure. Since a low is, on a synoptic chart, always associated with cyclonic circulation, the term is used interchangeably with CYCLONE. See also HIGH.
- low clouds.** Types of clouds the mean level of which is between the surface and 6,500 feet. The principal clouds in this group are stratocumulus, stratus, and nimbostratus.
- lower branch.** The half of a meridian or celestial meridian from pole to pole which passes through the antipode or nadir of a place. See also UPPER BRANCH.
- lower culmination.** See LOWER TRANSIT.
- lower high water.** The lower of the two high waters of any tidal day.
- lower high water interval.** See under LUNITIDAL INTERVAL.
- lower limb.** The lower edge (closest to the horizon) of a celestial body having measurable diameter; opposite is the UPPER LIMB, or the upper edge.
- lower low water.** The lower of the two low waters of any tidal day.
- lower low water datum.** An approximation of mean lower low water that has been adopted as a standard reference for a limited area, and is retained for an indefinite period regardless of the fact that it may differ slightly from a better determination of mean lower low water from a subsequent series of observations. Used primarily for river and harbor engineering purposes. Columbia River lower low water datum is an example.
- lower low water interval.** See under LUNITIDAL INTERVAL.
- lower transit.** Transit of the lower branch of the celestial meridian. Transit of the upper branch is called UPPER TRANSIT. Also called INFERIOR TRANSIT, LOWER CULMINATION.
- low frequency.** Radio frequency of 30 to 300 kilohertz.
- low light.** See FRONT LIGHT.
- low tide.** See under LOW WATER.
- low water.** The minimum height reached by a falling tide. The height may be due solely to the periodic tidal forces or it may have superimposed upon it the effects of meteorological conditions.
- low water datum.** 1. The dynamic elevation for each of the Great Lakes, Lake St. Clair, and the corresponding sloping surfaces of the St. Marys, St. Clair, Detroit, Niagara, and St. Lawrence Rivers to which are referred the depths shown on the navigation charts and the authorized depths for navigation improvement projects. Elevations of these planes are referred to International Great Lakes Datum (1955) and are: Lake Superior - 600.0 feet, Lakes Michigan and Huron - 576.8 feet, Lake St. Clair - 571.7 feet, Lake Erie - 568.6 feet, and Lake Ontario - 242.8 feet. 2. An approximation of mean low water that has been adopted as a standard reference for a limited area and is retained for an indefinite period regardless of the fact that it may differ slightly from a better determination of mean low water from a subsequent series of observations. Used primarily for river and harbor engineering purposes.
- low water equinoctial springs.** Low water spring tides near the times of the equinoxes. Expressed in terms of the harmonic constituents, it is an elevation depressed below mean sea level by an amount equal to the sum of the amplitudes of certain constituents as given in the *Tide and Current Glossary* published by the National Ocean Survey.
- low water inequality.** See under DIURNAL INEQUALITY.
- low water interval.** See under LUNITIDAL INTERVAL.
- low water line.** The intersection of the land with the water surface at an elevation of low water.
- low water neaps.** See under NEAP TIDES.
- low water springs.** Short for MEAN LOW WATER SPRINGS.
- low water stand.** The condition at low water when there is no sensible change in the height of the tide. A similar condition at high water is called HIGH WATER STAND. See also STAND.
- loxodrome, n.** See RHUMB LINE. See also ORTHODROME.
- loxodromic curve.** See RHUMB LINE.
- lubber's line.** A reference line on a compass marking the reading which coincides with the heading.
- lubber's line error.** The angular difference between the heading as indicated by a lubber's line, and the actual heading; the horizontal angle, at the center of an instrument, between a line through the lubber's line and one parallel to the keel.
- lull, n.** A momentary decrease in the speed of the wind.
- lumen, n.** The derived unit of luminous flux in the International System of Units; it is the luminous flux emitted within unit solid angle (1 steradian) by a point source having a uniform luminous intensity of 1 candela.

- luminance**, *n.* In a given direction, at a point on the surface of a source or receptor, or at a point on the path of a beam, the quotient of the luminous flux leaving, arriving at, or passing through an element of surface at this point and propagated in directions defined by an elementary cone containing the given directions, by the product of the solid angle of the cone and the area of the orthogonal projection of the element of surface on a plane perpendicular to the given direction. The derived unit of luminance in the International System of Units is the CANDELA PER SQUARE METER.
- luminescence**, *n.* Emission of light other than incandescence, as in bioluminescence; emission as a result of and only during absorption of radiation from some other source is called FLUORESCENCE; continued emission after absorption of radiation has ceased is called PHOSPHORESCENCE.
- luminous**, *adj.* Emitting or reflecting light.
- luminous flux**. The quantity characteristic of radiant flux which expresses its capacity to produce a luminous sensation, evaluated according to the values of spectral luminous efficiency. Unless otherwise indicated, the luminous flux relates to photopic vision, and is connected with the radiant flux in accordance with the formula adopted in 1948 by the International Commission on Illumination. The derived unit of luminous flux in the International System of Units is the LUMEN.
- luminous range**. See under VISUAL RANGE (OF A LIGHT).
- luminous Range Diagram**. A diagram used to convert the nominal range of a light to its luminous range under existing conditions.
- lunar**, *adj.* Of or pertaining to the moon.
- lunar cycle**. An ambiguous expression which has been applied to various cycles associated with the moon's motion, including CALLIPPIC CYCLE, METONIC CYCLE, NODE CYCLE, SYNODICAL MONTH or LUNATION.
- lunar day**. 1. The duration of one rotation of the earth on its axis, with respect to the moon. Its average length is about 24^h 50^m of mean solar time. Also called TIDAL DAY. 2. The duration of one rotation of the moon on its axis, with respect to the sun.
- lunar distance**. The angle, at an observer on the earth, between the moon and another celestial body. This was the basis of a method formerly used to determine longitude at sea.
- lunar eclipse**. An eclipse of the moon. When the moon enters the shadow of the earth, it appears eclipsed to an observer on the earth. A lunar eclipse is penumbral when it enters only the penumbra of the earth's shadow, partial when part of its surface enters the umbra of the earth's shadow, and total if its entire surface is obscured by the umbra.
- lunar inequality**. 1. Variation in the moon's motion in its orbit, due to attraction by other bodies of the solar system. See also EVECTION, PERTURBATIONS. 2. A minute fluctuation of a magnetic needle from its mean position, caused by the moon.
- lunar interval**. The difference in time between the transit of the moon over the Greenwich meridian and a local meridian. The lunar interval equals the difference between the Greenwich and local intervals of a tide or current phase.
- lunar month**. The period of revolution of the moon about the earth, especially a synodical month.
- lunar node**. A node of the moon's orbit. See also LINE OF NODES.
- lunar noon**. The instant at which the sun is over the upper branch of any meridian of the moon.
- lunar parallax**. Parallax of the moon.
- lunar rainbow**. See MOON BOW.
- lunar tide**. That part of the tide due solely to the tide-producing force of the moon. That part due to the tide-producing force of the sun is called SOLAR TIDE.
- lunar time**. Time based upon the rotation of the earth relative to the moon. Lunar time may be designated as local or Greenwich according to whether the local or Greenwich meridian is used as the reference.
- lunation**, *n.* See SYNODICAL MONTH.
- lune**, *n.* The part of the surface of a sphere bounded by halves of two great circles.
- lunirecurrent interval**. The interval between the moon's transit (upper or lower) over the local or Greenwich meridian and a specified phase of the tidal current following the transit. Examples are strength of flood interval and strength of ebb interval, which may be abbreviated to flood interval and ebb interval, respectively. The interval is described as local or Greenwich according to whether the reference is to the moon's transit over the local or Greenwich meridian. When not otherwise specified, the reference is assumed to be local. See also LUNITIDAL INTERVAL.
- lunisolar effect**. Gravitational effects caused by the attractions of the moon and of the sun.
- lunisolar perturbation**. Perturbations of the orbits of artificial earth satellites due to the attractions of the sun and the moon. The most important effects are secular variations in the mean anomaly, in the right ascension of the ascending node, and in the argument of perigee.
- lunisolar precession**. That component of general precession caused by the combined effect of the sun and moon on the equatorial protuberance of the earth, producing a westward motion of the equinoxes along the ecliptic. See also PRECESSION OF THE EQUINOXES.
- lunitidal interval**. The interval between the moon's transit (upper or lower) over the local or Greenwich meridian and the following high or low water. The average of all high water intervals for all phases of the moon is known as mean high water lunitidal interval and is abbreviated to high water interval. Similarly the mean low water lunitidal interval is abbreviated to low water interval. The interval is described as local or Greenwich according to whether the reference is to the transit over the local or Greenwich meridian. When not otherwise specified, the reference is assumed to be local. When there is considerable diurnal inequality in the tide separate intervals may be obtained for the higher high waters, the lower high waters, the higher low waters and the lower low waters. These are designated respectively as higher high water interval, lower high water interval higher low water interval, and lower low water interval. In such cases, and also when the tide is diurnal, it is necessary to distinguish between the upper and lower transit of the moon with reference to its declination.
- lux**, *n.* The derived unit of illuminance in the International System of Units; it is equal to 1 lumen per square meter.