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**nadir**, *n.* The point on the celestial sphere vertically below the observer, or 180° from the zenith.

**name**, *n.* The label of a numerical value, used particularly to refer to the N (north) or S (south) label of latitude and declination. When latitude and declination are both N or both S, they are said to be of same name, but if one is N and the other S, they are said to be of contrary name.

**nano-**. A prefix meaning one-billionth ( $10^{-9}$ ).

**nanosecond**, *n.* One-billionth of a second.

**Napier diagram**. A diagram on which compass deviation is plotted for various headings, and the points connected by a smooth curve, permitting deviation problems to be solved quickly without interpolation. It consists of a vertical line, usually in two parts, each part being graduated for 180° of heading, and two additional sets of lines at an angle of 60° to each other and to the vertical lines. See also DEVIATION TABLE.

**Napierian logarithm**. A logarithm to the base *e* (2.7182818). Also called NATURAL LOGARITHM. See also COMMON LOGARITHM.

**narrows**, *n.* A navigable narrow part of a bay, strait, river, etc.

**nashi, n'aschi**, *n.* A northeast wind which occurs in winter on the Iranian coast of the Persian Gulf, especially near the entrance to the gulf, and also on the Makran coast. It is probably associated with an outflow from the central Asiatic anticyclone which extends over the high land of Iran. It is similar in character but less severe than the BORA.

**National Geodetic Vertical Datum**. A fixed reference once adopted as a standard geodetic datum for heights in the United States. The geodetic datum now in use in the United States is the North American Vertical Datum of 1988. The geodetic datum is fixed and does not take into account the changing stands of sea level. Because there are many variables affecting sea level, and because the geodetic datum represents a best fit over a broad area, the relationship between the geodetic datum and local mean sea level is not consistent from one location to another in either time or space. For this reason the National Geodetic Vertical Datum should not be confused with MEAN SEA LEVEL.

**National Tidal Datum Epoch**. The specific 19-year cycle adopted by the National Ocean Survey as the official time segment over which tide observations are taken and reduced to obtain mean values (e.g., mean lower low water, etc.) for tidal datums. It is necessary for standardization because of apparent periodic and apparent secular trends in sea level. The present National Tidal Datum Epoch is 1960 through 1978.

**National Water Level Observation Network. (National Tidal Datum Control Network)**. A network composed of the primary control tide stations of the National Ocean Service. This network of coastal observation stations provides the basic tidal datums for coastal boundaries and chart datums of the United States. Tidal datums obtained at secondary control tide stations and tertiary tide stations are referenced to the Network.

**natural**, *adj.* 1. Occurring in nature; not artificial. 2. Not logarithmic-used with the name of a trigonometric function to distinguish it from its logarithm (called LOGARITHMIC TRIGONOMETRIC FUNCTION).

**natural frequency**. The lowest resonant frequency of a body or system.

**natural harbor**. A harbor where the configuration of the coast provides the necessary protection. See also ARTIFICIAL HARBOR.

**natural logarithm**. See NAPIERIAN LOGARITHM.

**natural magnet**. A magnet occurring in nature, as contrasted with an ARTIFICIAL MAGNET, produced by artificial means.

**natural period**. The period of the natural frequency of a body or system.

**natural range**. A range formed by natural objects such as rocks, peaks, etc. See also ARTIFICIAL RANGE.

**natural scale**. See REPRESENTATIVE FRACTION.

**natural tangent**. See under TANGENT, definition 1.

**natural trigonometric function**. See under TRIGONOMETRIC FUNCTIONS.

**natural year**. See TROPICAL YEAR.

**nature of the bottom**. See BOTTOM CHARACTERISTICS.

**nautical**, *adj.* Of or pertaining to ships, marine navigation, or seamen.

**nautical almanac**. 1. A periodical publication of astronomical data designed primarily for marine navigation. Such a publication designed primarily for air navigation is called an AIR ALMANAC. 2. *Nautical Almanac*; a joint annual publication of the U.S. Naval Observatory and the Nautical Almanac Office, Royal Greenwich Observatory listing the Greenwich hour angle and declination of various celestial bodies to a precision of 0.1' at hourly intervals; time of sunrise, sunset, moon rise, moonset; and other astronomical information useful to navigators.

**nautical astronomy**. See NAVIGATIONAL ASTRONOMY.

**nautical chart**. A representation of a portion of the navigable waters of the earth and adjacent coastal areas on a specified map projection, designed specifically to meet requirements of marine navigation.

**nautical day**. Until January 1, 1925, a day that began at noon, 12 hours earlier than the calendar day, or 24 hours earlier than the astronomical day of the same date.

**nautical mile**. A unit of distance used principally in navigation. For practical consideration it is usually considered the length of 1 minute of any great circle of the earth, the meridian being the great circle most commonly used. Because of various lengths of the nautical mile in use throughout the world, due to differences in definition and the assumed size and shape of the earth, the International Hydrographic Bureau in 1929 proposed a standard length of 1,852 meters, which is known as the International Nautical Mile. This has been adopted by nearly all maritime nations. The U.S. Departments of Defense and Commerce adopted this value on July 1, 1954. With the yard-meter relationship then in use, the International Nautical Mile was equivalent to 6076.10333 feet, approximately. Using the yard-meter conversion factor effective July 1, 1959, (1 yard = 0.9144 meter, exactly) the International Nautical Mile is equivalent to 6076.11549 feet, approximately. See also SEA MILE.

**nautical twilight**. The time of incomplete darkness which begins (morning) or ends (evening) when the center of the sun is 12° below the celestial horizon. The times of nautical twilight are tabulated in the *Nautical Almanac*; at the times given the horizon is generally not visible and it is too dark for marine sextant observations. See also FIRST LIGHT.

**nautophone**, *n.* A sound signal emitter comprising an electrically oscillated diaphragm. It emits a signal similar in power and tone to that of a REED HORN.

**Naval Vessel Lights Act**. Authorized departure from the rules of the road for character and position of navigation lights for certain naval ships. Such modifications are published in *Notice to Mariners*.

**NAVAREA**. A geographical subdivision of the Long Range Radio Broadcast Service.

**NAVAREA Warnings**. Broadcast messages containing information which may affect the safety of navigation on the high seas. In accordance with international obligations, the Defense Mapping Agency Hydrographic/Topographic Center is responsible for disseminating navigation information for ocean areas designated as NAVAREAS IV and XII of the World Wide Navigational Warning Service. NAVAREA IV broadcasts cover the waters contiguous to North America from the Atlantic coast eastward to 35°W and between latitudes 7°N and 67°N. NAVAREA XII broadcasts cover the waters contiguous to North America extending westward to the International Date Line and from 67°N to the equator east of 120°W, south to 3°25'S, thence east to the coast. Other countries are responsible for disseminating navigational information for the remaining NAVAREAS. NAVAREA Warnings may be superseded by a numbered paragraph in *Notice to Mariners*. The text of effective warnings for NAVAREAS IV and XII is available through NAVINFONET and is printed in the weekly *Notice to Mariners*.

**navigable**, *adj.* Affording passage to a craft; capable of being navigated.

**navigable semicircle (less dangerous semicircle)**. The half of a cyclonic storm area in which the rotary and forward motions of the storm tend to counteract each other and the winds are in such a direction as to tend to blow a vessel away from the storm track. In the North-

- ern Hemisphere this is to the left of the storm center and in the Southern Hemisphere it is to the right. The opposite is DANGEROUS SEMICIRCLE.
- navigable waters.** Waters usable, with or without improvements, as routes for commerce in the customary means of travel on water.
- navigating sextant.** A sextant designed and used for observing the altitudes of celestial bodies, as opposed to a hydrographic sextant.
- navigation, n.** The process of planning, recording, and controlling the movement of a craft or vehicle from one place to another. The word navigate is from the Latin *navigatus*, the past participle of the verb *navigere*, which is derived from the words *navis*, meaning "ship," and *agere* meaning "to move" or "to direct." Navigation of water craft is called marine navigation to distinguish it from navigation of aircraft, called air navigation. Navigation of a vessel on the surface is sometimes called surface navigation to distinguish it from navigation of a submarine. Navigation of vehicles across land or ice is called land navigation. The expression polar navigation refers to navigation in the regions near the geographical poles of the earth, where special techniques are employed.
- navigational aid.** An instrument, device, chart, method, etc., intended to assist in the navigation of a craft. This expression is not the same as AID TO NAVIGATION, which refers to devices external to a craft such as lights and buoys.
- navigational astronomy.** Astronomy of direct use to a navigator, comprising principally celestial coordinates, time, and the apparent motions of celestial bodies. Also called NAUTICAL ASTRONOMY.
- navigational planets.** The four planets commonly used for celestial observations: Venus, Mars Jupiter, and Saturn.
- navigational plot.** A graphic plot of the movements of a craft. A dead reckoning plot is the graphic plot of the dead reckoning, suitably labeled with respect to time, direction, and speed; a geographical plot is one relative to the surface of the earth.
- navigational triangle.** The spherical triangle solved in computing altitude and azimuth and great circle sailing problems. The celestial triangle is formed on the celestial sphere by the great circles connecting the elevated pole, zenith of the assumed position of the observer, and a celestial body. The terrestrial triangle is formed on the earth by the great circles connecting the pole and two places on the earth; the assumed position of the observer and geographical position of the body for celestial observations, and the point of departure and destination for great circle sailing problems. The expression astronomical triangle applies to either the celestial or terrestrial triangle used for solving celestial observations.
- navigation, head of.** A transshipment point at the end of a waterway where loads are transferred between water carriers and land carriers; also the point at which a river is no longer navigable due to rapids or falls.
- navigation lights.** Statutory, required lights shown by vessels during the hours between sunset and sunrise, in accordance with international agreements.
- navigation mark.** See MARK.
- navigation/positioning system.** A system capable of being used primarily for navigation or position fixing. It includes the equipment, its operators, the rules and procedures governing their actions and, to some extent, the environment which affects the craft or vehicle being navigated.
- navigation satellite.** An artificial satellite used in a system which determines positions based upon signals received from the satellite.
- Navigation Sensor System Interface (NAVSSI).** The U.S. Naval version of the electronic chart display and information system (ECDIS). It is integrated with command and control, weapons, and other systems.
- Navigation Tables for Mariners and Aviators.** See H.O. PUB. NO. 208.
- navigator, n.** 1. A person who navigates or is directly responsible for the navigation of a craft. 2. A book of instructions on navigation, such as the *The American Practical Navigator (Bowditch)*.
- NAVSTAR Global Positioning System.** A satellite navigation system developed by the Department of Defense. The system provides highly accurate position and velocity information in three dimensions and precise time and time interval on a global basis continuously, to an unlimited number of users. It is unaffected by weather and provides a worldwide common grid reference system. The objective of the program is to provide very precise position information for a wide spectrum of military missions. In addition, current policy calls for civil availability with a slight degradation in system accuracy required to protect U.S. national security interests.
- NAVTEX.** A medium frequency radiocommunications system intended for the broadcast of navigational information up to 200 miles at sea, which uses narrow band direct printing technology to print out MSI and safety messages aboard vessels, without operator monitoring.
- Navy Navigation Satellite System.** A satellite navigation system of the United States conceived and developed by the Applied Physics Laboratory of the Johns Hopkins University. It is an all-weather, worldwide, and passive system which provides two-dimensional positioning from low-altitude satellites in near-polar orbits. The Transit launch program ended in 1988, and the system is scheduled for termination in 1996, replaced by GPS.
- neaped, adj.** Left aground following a spring high tide. Also called BENEAPED.
- neap high water.** See under NEAP TIDES.
- neap low water.** See under NEAP TIDES.
- neap range.** See under NEAP TIDES.
- neap rise.** The height of neap high water above the elevation of reference or datum of chart.
- neap tidal currents.** Tidal currents of decreased speed occurring semi-monthly as the result of the moon being in quadrature. See also NEAP TIDES.
- neap tides.** Tides of decreased range occurring semimonthly as the result of the moon being in quadrature. The neap range of the tide is the average semidiurnal range occurring at the time of neap tides and is most conveniently computed from the harmonic constants. It is smaller than the mean range where the type of tide is either semidiurnal or mixed and is of no practical significance where the type of tide is diurnal. The average height of the high waters of the neap tides is called neap high water or high water neaps and the average height of the corresponding low waters is called neap low water or low water neaps.
- nearest approach.** The least distance between two objects having relative motion with respect to each other.
- near gale.** Wind of force 8 (28 to 33 knots or 32 to 38 miles per hour) on the Beaufort wind scale. See also GALE.
- nearshore current system.** The current system caused by wave action in or near the surf zone. The nearshore current system consists of four parts: the shoreward mass transport of water; longshore currents; rip currents; the longshore movement of expanding heads of rip currents.
- near vane.** That instrument sighting vane on the same side of the instrument as the observer's eye. The opposite is FAR VANE.
- neatline, n.** That border line which indicates the limit of the body of a map or chart. Also called SHEET LINE.
- nebula (pl. *nebulae*), n.** 1. An aggregation of matter outside the solar system, large enough to occupy a perceptible area but which has not been resolved into individual stars. One within our galaxy is called a galactic nebula and one beyond is called an extragalactic nebula. If a nebula is resolved into numerous individual stars, it is called a STAR CLUSTER. 2. A galaxy.
- necessary bandwidth.** As defined by the International Telecommunication Union (ITU) for a given class of emission, the minimum value of the occupied bandwidth sufficient to ensure the transmission of information at the rate and with the quality required for the system employed, under specified conditions. Emissions useful for the good functioning of the receiving equipment as, for example, the emission corresponding to the carrier of reduced carrier systems, shall be included in the necessary bandwidth.
- neck, n.** 1. A narrow isthmus, cape or promontory. 2. The land areas between streams flowing into a sound or bay. 3. A narrow strip of land which connects a peninsula with the mainland. 4. A narrow body of water between two larger bodies; a strait.
- negative altitude.** Angular distance below the horizon. Also called DEPRESSION.
- Network Coordinating Station.** An INMARSAT COAST EARTH STATION (CES) equipped to process messages in the EGC SafetyNET system.
- neutral occlusion.** See under OCCLUDED FRONT.
- new ice.** A general term for recently formed ice which includes frazil ice, grease ice, slush, and shuga. These types of ice are composed of ice crystals which are only weakly frozen together (if at all) and have definite form only while they are afloat.

- new moon.** The moon at conjunction, when little or none of it is visible to an observer on the earth because the illuminated side is away from him. Also called CHANGE OF THE MOON. See also PHASES OF THE MOON.
- new ridge.** A newly formed ice ridge with sharp peaks, the slope of the sides usually being about 40°. Fragments are visible from the air at low altitude.
- newton, *n.*** The special name for the derived unit of force in the International System of Units; it is that force which gives to a mass of 1 kilogram an acceleration of 1 meter per second, per second.
- Newtonian telescope.** A reflecting telescope in which a small plane mirror reflects the convergent beam from the speculum to an eyepiece at one side of the telescope. After the second reflection the rays travel approximately perpendicular to the longitudinal axis of the telescope. See also CASSEGRAINIAN TELESCOPE.
- newton per square meter.** The derived unit of pressure in the International System of Units. See also PASCAL.
- Newton's laws of motion.** Universal laws governing all motion, formulated by Isaac Newton. These are: (1) Every body continues in a state of rest or of uniform motion in a straight line unless acted upon by a force; (2) When a body is acted upon by a force, its acceleration is directly proportional to the force and inversely proportional to the mass of the body, and the acceleration takes place in the direction in which the force acts; (3) To every action there is always an equal and opposite reaction; or, the mutual actions of two bodies are always equal and oppositely directed.
- Ney's chart.** See MODIFIED LAMBERT CONFORMAL CHART.
- Ney's map projection.** See MODIFIED LAMBERT CONFORMAL MAP PROJECTION.
- night, *n.*** The part of the solar day when the sun is below the visible horizon, especially the period between dusk and dawn.
- night effect.** See under POLARIZATION ERROR.
- night error.** See under POLARIZATION ERROR.
- night order book.** A notebook in which the commanding officer of a ship writes orders with respect to courses and speeds, any special precautions concerning the speed and navigation of the ship, and all other orders for the night for the officer of the deck.
- nilas, *n.*** A thin elastic crust of ice, easily bending on waves and swell and under pressure, thrusting in a pattern of interlocking "fingers." Nilas has a matte surface and is up to 10 centimeters in thickness. It may be subdivided into DARK NILAS and LIGHT NILAS. See also FINGER RAFTING.
- nimbostratus, *n.*** A dark, low shapeless cloud layer (mean upper level below 6,500 ft.) usually nearly uniform; the typical rain cloud. When precipitation falls from nimbostratus, it is in the form of continuous or intermittent rain or snow, as contrasted with the showery precipitation of cumulonimbus.
- nimbus, *n.*** A characteristic rain cloud. The term is not used in the international cloud classification except as a combining term, as cumulonimbus.
- nipped, *adj.*** Beset in the ice with the surrounding ice forcibly pressing against the hull.
- nipping, *n.*** The forcible closing of ice around a vessel such that it is held fast by ice under pressure. See also BESET, ICE-BOUND.
- no-bottom sounding.** A sounding in which the bottom is not reached.
- nocturnal, *n.*** An old navigation instrument which consisted of two arms pivoted at the center of a disk graduated for date, time and arc. The nocturnal was used for determining time during the night and for obtaining a correction to be applied to an altitude observation of Polaris for finding latitude.
- nodal, *adj.*** Related to or located at or near a node or nodes.
- nodal line.** A line in an oscillating body of water along which there is a minimum or no rise and fall of the tide.
- nodal point.** 1. See NODE, definition 1. 2. The no-tide point in an amphidromic region.
- node, *n.*** 1. One of the two points of intersection of the orbit of a planet, planetoid, or comet with the ecliptic, or of the orbit of a satellite with the plane of the orbit of its primary. That point at which the body crosses to the north side of the reference plane is called the ascending node; the other, the descending node. The line connecting the nodes is called LINE OF NODES. Also called NODAL POINT. See also REGRESSION OF THE NODES. 2. A zero point in any stationary wave system.
- node cycle.** The period of approximately 18.61 Julian years required for the regression of the moon's nodes to complete a circuit of 360° of longitude. It is accompanied by a corresponding cycle of changing inclination of the moon's orbit relative to the plane of the earth's equator, with resulting inequalities in the rise and fall of the tide and speed of the tidal current.
- node factor.** A factor depending upon the longitude of the moon's node which, when applied to the mean coefficient of a tidal constituent, will adapt the same to a particular year for which predictions are to be made.
- nodical, *adj.*** Of or pertaining to astronomical nodes; measured from node to node.
- nodical month.** The average period of revolution of the moon about the earth with respect to the moon's ascending node, a period of 27 days, 5 hours, 5 minutes, 35.8 seconds.
- nodical period.** The interval between two successive passes of a satellite through the ascending node. See also ORBITAL PERIOD.
- nominal orbit.** The true or ideal orbit in which an artificial satellite is expected to travel. See also NORMAL ORBIT.
- nominal range.** See under VISUAL RANGE (OF A LIGHT).
- nomogram, *n.*** A diagram showing, to scale, the relationship between several variables in such manner that the value of one which corresponds to known values of the others can be determined graphically. Also called NOMOGRAPH.
- nomograph, *n.*** See NOMOGRAM.
- non-dangerous wreck.** A term used to describe a wreck having more than 20 meters of water over it. This term excludes a FOUL GROUND, which is frequently covered by the remains of a wreck and is a hazard only for anchoring, taking the ground, or bottom fishing.
- nongravitational perturbations.** Perturbations caused by surface forces due to mechanical drag of the atmosphere (in case of low flying satellites), electromagnetism, and solar radiation pressure.
- nonharmonic constants.** Tidal constants such as lunital intervals, ranges, and inequalities which may be derived directly from high and low water observations without regard to the harmonic constituents of the tide. Also applicable to tidal currents.
- non-standard buoys.** The general classification of all lighted and unlighted buoys built to specifications other than modern standard designs.
- non-tidal basin.** An enclosed basin separated from tidal waters by a caisson or flood gates. Ships are moved into the dock near high tide. The dock is closed when the tide begins to fall. If necessary, ships are kept afloat by pumping water into the dock to maintain the desired level. Also called WET DOCK. See also BASIN, definition 2.
- nontidal current.** See under CURRENT.
- noon, *n.*** The instant at which a time reference is over the upper branch of the reference meridian. Noon may be solar or sidereal as the sun or vernal equinox is over the upper branch of the reference meridian. Solar noon may be further classified as mean or apparent as the mean or apparent sun is the reference. Noon may also be classified according to the reference meridian, either the local or Greenwich meridian or additionally in the case of mean noon, a designated zone meridian. Standard, daylight saving or summer noon are variations of zone noon. The instant the sun is over the upper branch of any meridian of the moon is called lunar noon. Local apparent noon may also be called high noon.
- noon constant.** A predetermined value added to a meridian or ex-meridian sextant altitude to determine the latitude.
- noon interval.** The predicted time interval between a given instant, usually the time of a morning observation, and local apparent noon. This is used to predict the time for observing the sun on the celestial meridian.
- noon sight.** Measurement of the altitude of the sun at local apparent noon, or the altitude so measured.
- normal, *adj.*** Perpendicular. A line is normal to another line or a plane when it is perpendicular to it. A line is normal to a curve or curved surface when it is perpendicular to the tangent line or plane at the point of tangency.
- normal, *n.*** 1. A straight line perpendicular to a surface or to another line. 2. In geodesy, the straight line perpendicular to the surface of the reference ellipsoid. 3. The average, regular, or expected value of a quantity.
- normal curve.** Short for NORMAL DISTRIBUTION CURVE.
- normal distribution.** A mathematical law which predicts the probability that the random error of any given observation of a series of observations of a certain quantity will lie within certain bounds. The law

can be derived from the following properties of random errors: (1) positive and negative errors of the same magnitude are about equal in number, (2) small errors occur more frequently than large errors, and (3) extremely large errors rarely occur. One immediate consequence of these properties is that the average or mean value of a large number of observations of a given quantity is zero. Also called GAUSSIAN DISTRIBUTION. See also SINGLE-AXIS NORMAL DISTRIBUTION, CIRCULAR NORMAL DISTRIBUTION, STANDARD DEVIATION.

**normal distribution curve.** The graph of the normal distribution. Often shortened to NORMAL CURVE.

**normal orbit.** The orbit of a spherical satellite about a spherical primary during which there are no disturbing elements present due to other celestial bodies, or to some physical phenomena. Also called UNPERTURBED ORBIT, UNDISTURBED ORBIT.

**normal section line.** A line on the surface of a reference ellipsoid, connecting two points on that surface, and traced by a plane containing the normal at one point and passing through the other point.

**normal tide.** A non technical term synonymous with tide, i.e., the rise and fall of the ocean due to the gravitational interactions of the sun, moon, and earth alone.

**norte, n.** A strong cold northeasterly wind which blows in Mexico and on the shores of the Gulf of Mexico. It results from an outbreak of cold air from the north. It is the Mexican extension of a norther.

**north, n.** The primary reference direction relative to the earth; the direction indicated by 000° in any system other than relative. True north is the direction of the north geographical pole; magnetic north the direction north as determined by the earth's magnetic compass; grid north an arbitrary reference direction used with grid navigation. See also CARDINAL POINT.

**North Africa Coast Current.** A nontidal current in the Mediterranean Sea that flows eastward along the African coast from the Strait of Gibraltar to the Strait of Sicily. It is the most permanent current in the Mediterranean Sea. The stability of the current is indicated by the proportion of no current observations, which averages less than 1 percent. The current is most constant just after it passes through the Strait of Gibraltar; in this region, west of longitude 3°W, 65 percent of all observations show an eastward set, with a mean speed of 1.1 knots and a mean maximum speed of 3.5 knots. Although the current is weaker between longitudes 3°W and 11°E, it remains constant, the speed averaging 0.7 knot through its length and its maximum speed being about 2.5 knots.

**North American Datum of 1927.** The geodetic datum the origin of which is located at Meades Ranch, Kansas. Based on the Clarke spheroid of 1866, the geodetic position of triangulation station Meades Ranch and azimuth from that station to station Waldo are as follows: Latitude of Meades Ranch: 39° 13' 25.686"N; Longitude of Meades Ranch: 98° 32' 30.506"W Azimuth to Waldo: 75° 28' 09.64" The geoidal height at Meades Ranch is assumed to be zero.

**North American Datum of 1983.** The modern geodetic datum for North America; it is the functional equivalent of the World Geodetic System (WGS). It is based on the GRS 80 ellipsoid, which fits the size and shape of the earth more closely, and has its origin at the earth's center of mass.

**North Atlantic Current.** An ocean current which results from extensions of the Gulf Stream and the Labrador Current near the edge of the Grand Banks of Newfoundland. As the current fans outward and widens in a northeastward through eastward flow, it decreases sharply in speed and persistence. Some influence of the Gulf Stream is noticeable near the extreme southwestern boundary of the current. The North Atlantic Current is a sluggish, slow-moving flow that can easily be influenced by opposing or augmenting winds. There is some evidence that the weaker North Atlantic Current may consist of separate eddies or branches which are frequently masked by a shallow, wind-driven surface now called the NORTH ATLANTIC DRIFT. A branch of the North Atlantic Current flows along the west coasts of the British Isles at speeds up to 0.6 knot and enters the Norwegian Sea as the NORWAY CURRENT mainly through the east side of the Faeroe-Shetland Channel. A small portion of this current to the west of the Faeroe Islands mixes with part of the southeastward flow from the north coast of Iceland; these two water masses join and form a clockwise circulation around the Faeroe Islands. The very weak nontidal current in the Irish Sea, which averages only about 0.1 knot, depends on the wind. The part

of the North Atlantic Current that flows eastward into the western approaches to the English Channel tends to increase or decrease the speed of the reversing tidal currents. The southern branch of the North Atlantic Current turns southward near the Azores to become the CANARY CURRENT.

**North Atlantic Drift.** See under NORTH ATLANTIC CURRENT.

**northbound node.** See ASCENDING NODE.

**North Brazil Current.** See GUIANA CURRENT.

**North Cape Current.** An Arctic Ocean current flowing northeastward and eastward around northern Norway, and curving northeastward into the Barents Sea. The North Cape Current is the continuation of the northeastern branch of the NORWAY CURRENT.

**northeaster, nor'easter, n.** A northeast wind, particularly a strong wind or gale associated with cold rainy weather. In the U.S., nor'easters generally occur on the north side of late-season low pressure systems which pass off the Atlantic seaboard, bringing onshore gales to the region north of the low. Combined with high tides, they can be very destructive.

**northeast monsoon.** See under MONSOON.

**north equatorial current.** See ATLANTIC NORTH EQUATORIAL CURRENT, PACIFIC NORTH EQUATORIAL CURRENT.

**norther, n.** A northerly wind. In the southern United States, especially in Texas (Texas norther) in the Gulf of Mexico, in the Gulf of Panama away from the coast, and in central America (the norte), the norther is a strong cold wind from the northeast to northwest. It occurs between November and April, freshening during the afternoon and decreasing at night. It is a cold air outbreak associated with the southward movement of a cold anticyclone. It is usually preceded by a warm and cloudy or rainy spell with southerly winds. The norther comes as a rushing blast and brings a sudden drop of temperature of as much as 25°F in 1 hour or 50°F in 3 hours in winter. The California norther is a strong, very dry, dusty, northerly wind which blows in late spring, summer and early fall in the valley of California or on the west coast when pressure is high over the mountains to the north. It lasts from 1 to 4 days. The dryness is due to adiabatic warming during descent. In summer it is very hot. The Portuguese norther is the beginning of the trade wind west of Portugal. The term is used for a strong north wind on the coast of Chile which blows occasionally in summer. In southeast Australia, a hot dry wind from the desert is called a norther.

**northern lights.** See AURORA BOREALIS.

**north frigid zone.** That part of the earth north of the Arctic Circle.

**north geographical pole.** The geographical pole in the Northern Hemisphere, at lat. 90°N.

**north geomagnetic pole.** The geomagnetic pole in the Northern Hemisphere. This term should not be confused with NORTH MAGNETIC POLE. See also GEOMAGNETIC POLE.

**northing, n.** The distance a craft makes good to the north. The opposite is SOUTHING.

**north magnetic pole.** The magnetic pole in the Northern Hemisphere. This term should not be confused with NORTH GEOMAGNETIC POLE. See also GEOMAGNETIC POLE.

**North Pacific Current.** Flowing eastward from the eastern limit of the Kuroshio Extension (about longitude 170° E), the North Pacific Current forms the northern part of the general clockwise oceanic circulation of the North Pacific Ocean.

**north polar circle.** See ARCTIC CIRCLE.

**North Pole.** 1. The north geographical pole. See also MAGNETIC POLE GEOMAGNETIC POLE. 2. The north-seeking end of a magnet. See also RED MAGNETISM.

**north temperate zone.** That part of the earth between the Tropic of Cancer and the Arctic Circle.

**north up, north upward.** One of the three basic orientations of display of relative or true motion on a radarscope or electronic chart. In the NORTH UP orientation, the presentation is in true (gyrocompass) directions from own ship, north being maintained UP or at the top of the radarscope. See also HEAD UP, BASE COURSE UP.

**northwester, nor'wester, n.** A northwesterly wind.

**Norway Coastal Current.** Originating mainly from Oslofjord outflow, counterclockwise return flow of the Jutland Current within the Skaggeak, and outflow from the Kattegat, the Norway Coastal Current begins at about latitude 59°N, longitude 10°E and follows the coast of Norway, and is about 20 miles in width. Speeds are strongest off the southeast coast of Norway, where they frequently range between 1 and 2 knots. Along the remainder of the coast the current

gradually weakens. It may widen to almost 30 miles at about latitude 63°N, where it joins the NORWAY CURRENT. South of latitude 62°N the current speed usually ranges between 0.4 and 0.9 knots. Speeds are generally stronger in spring and summer, when the flow is augmented by increased discharge from fjords.

**Norway Current.** An Atlantic Ocean current flowing northeastward along the northwest coast of Norway, and gradually branching and continuing as the SPITZBERGEN ATLANTIC CURRENT and the NORTH CAPE CURRENT. The Norway Current is the continuation of part of the northern branch of the North Atlantic Current. Also called NORWEGIAN CURRENT.

**Norwegian Current.** See NORWAY CURRENT.

**notch filter.** An arrangement of electronic components designed to attenuate or reject a specific frequency band with a sharp cut-off at either end.

**notice board.** A signboard used to indicate speed restrictions, cable landings, etc.

**notice to mariners.** A periodic publication used by the navigator to correct charts and publications.

**Notice to Mariners.** A weekly publication of the Defense Mapping Agency Hydrographic/Topographic Center prepared jointly with the National Ocean Survey and the U.S. Coast Guard giving information

on changes in aids to navigation, dangers to navigation, selected items from the *Local Notice to Mariners*, important new soundings, changes in channels, harbor construction, radionavigation information, new and revised charts and publications, special warnings and notices, pertinent HYDROLANT, HYDROPAC, NAVAREA IV and XII messages and corrections to charts, manuals, catalogs, sailing directions (pilots), etc. The *Notice to Mariners* should be used routinely for updating the latest editions of nautical charts and related publications.

**nova** (*pl. novae*), *n.* A star which suddenly becomes many times brighter than previously, and then gradually fades. Novae are believed to be exploding stars.

**nucleus**, *n.* The central, massive part of anything, such as an atom or comet.

**numerical scale.** A statement of that distance on the earth shown in one unit (usually an inch) on the chart, or vice versa. See also REPRESENTATIVE FRACTION.

**nun buoy.** An unlighted buoy of which the upper part of the body (above the waterline), or the larger part of the superstructure, has a cone shape with vertex upwards.

**nutations**, *n.* Irregularities in the precessional motion of the equinoxes due chiefly to regression of the nodes.