50

A

MILITARY AND NAVAL DICTIONARY

COMPILED BY

Major JOHN P. WISSER, *U. S. Army*

AND

H. C. GAUSS, Esq., *of the Navy Dept.*

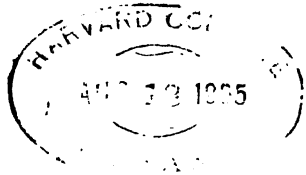
CONTAINING

AUTHENTIC AND PLAINLY-WORDED DEFINITIONS OF ALL TERMS USED IN THE MILITARY AND NAVAL SERVICES, AND BRIEF BUT COMPREHENSIVE DEFINITIONS OF THE POWERS APPERTAINING TO EACH DEPARTMENT OF THE U. S. GOVERNMENT, AND THE DUTIES OF ALL GOVERNMENT OFFICIALS.

L. R. HAMERSLY COMPANY

49 WALL STREET, NEW YORK CITY

1905



PREFACE.

A good *Military and Naval Dictionary* in the English language, up to date in all respects, is a great desideratum. To partially supply the want of such a work of reference the present work has been prepared.

There is at present no dictionary of *modern* military or naval terms in the English language. Wilhelm's is the latest, and that is practically obsolete in most respects.

Military literature has not only increased enormously in volume in the last quarter of a century, but has completely changed its vocabulary. The nomenclature of military material is entirely different, and even the forms of drill regulations, tactics and strategy have undergone transformations which require new expressions to define them.

In the present work *technical* forms of defining words have been avoided as much as possible, in order that the general student or reader may be able to comprehend them more easily.

To the military or naval officer the work will be found useful as a work of reference, in spite of the fact that much of the material is naturally familiar.

To the officers of the National Guard (or organized militia of the United States) and to the Naval Reserve, it will be found most useful, not only in supplying them with a new vocabulary of modern terms, but also in furnishing correct ideas of modern tactics.

To the general reader who desires to read understandingly any article relating to modern military matters, this little volume will be found quite essential. Any one who reads the reports of the war in the Far East will be greatly assisted by this handbook, and the accounts of the army maneuvers, of improvements in war material, of our own operations in the Philippines, or, indeed, of any military matters, will all assume a clearer aspect by its assistance.

Besides the ordinary service text-books, manuals and tactics,

both army and navy, the following works were consulted in its preparation:

Wörterbuch der Marine. Julius Heinz. Pola. 1900.
French-English Military Dictionary. Willcox. 1899.
Petit Dictionnaire Militaire. Stavenhagen. 1898.
Militaer-Lexikon. Frobenius. 1901.

The military and naval articles in the *New International Encyclopaedia* were also referred to, as they were written by military and naval authorities of the first order.

The work is condensed into a small handbook, constituting a handy volume of ready reference, and the words selected are clearly defined in ordinary language. In arranging and selecting the list of words to be defined the most recent military and naval dictionaries in foreign languages were used as types. The work should therefore commend itself to the navy, the army, the National Guard, the Naval Reserve and the general reader, or the citizen who is interested in military matters. No other work covering the same ground is available, in our language, and its subject matter includes the latest words introduced into our military or naval vocabulary.

JOHN P. WISSER,
Major U. S. Army.

Military and Naval Dictionary.

ABACK. When the sails of a square rigged vessel are filled by a wind so that their pressure tends to drive the vessel stern first, they are said to be taken aback. Sometimes also the condition as to the head sails of a fore and aft rigged vessel; the condition is generally brought about by an unexpected puff of wind, hence the expression "taken aback" denoting surprise.

ABAFT. A nautical term indicating the direction of the stern of a vessel.

ABATIS. A military obstacle in field fortification, made of large limbs of trees (or entire small trees), placed side by side, the branches toward the enemy.

ABEAM. The direction in line with the widest portion of a vessel, strictly on a line forming a right angle with the keel. An object is said to be abeam when it is opposite the main body of the ship, as contrasted with on the quarter when an object is opposite the after part of the ship, and on the bow when an object is opposite the forward part of the ship.

ABLE SEAMAN. Referred to in nautical literature as "A. B." One who is competent to take up any of the duties of a sailor; that of navigation excepted, being the duty of an officer. A rating on merchant sailing ships commanding higher pay than that of ordinary seamen. The old class of able seamen sailing in square rigged vessels is almost extinct, owing to the lack of opportunity for training and the passing of the demand for their especial skill.

ABSENCE WITHOUT LEAVE. An offence against naval discipline punishable by summary court martial. The act of leaving or failing to return to a ship. When the factor of intent to remain away permanently is added it becomes desertion.

ABSOLUTE FORCE OF GUNPOWDER. The pressure which the products of its explosion exert when the powder entirely fills the space in which it is fired: it has been determined to be about 6,400 atmospheres.

ACADEMIC BOARD. The heads of the departments of instruction at the United States Naval Academy, acting as a collective body on matters relating to the admission of candidates, etc.

ACADEMY, NAVAL. The training school for officers of the United States Navy. Situated at Annapolis, Md. Founded in 1845 by George Bancroft, the historian, then Secretary of the Navy. Appointments are made on nomination of members of Congress. The students are called midshipmen and agree to serve the United States for eight years. Four years are spent at school, two more as midshipmen at sea. The midshipmen are then commissioned as ensigns and must serve two years before having the option of resigning. The buildings of the Academy are (1904) in the process of remodelling and extension at the cost of fifteen millions of dollars.

ACHROMATIC. A name applied to an optical instrument which corrects in part the aberration or apparent movement of objects caused by the interruption of the direction of light rays, together with the abnormal color appearances caused thereby.

ACTING. A prefix to a title which indicates that the person so styled is filling a position temporarily or during the absence or incapacity of the actual official. Also used as a prefix for a temporary appointment which is to be made permanent after a term of probation. Acting appointments are given in the Navy in time of war to officers whose commissions are expected to be terminated with the close of hostilities and also to medical officers employed for a term of years but who are not of the permanent medical establishment.

ACTION. A military engagement or battle. Clear ship for action is to remove all appliances not needed in battle and which would be likely to fly as splinters from the impact of shot. Much of the portable property of a ship is thrown overboard on the eve of action on the chance of a later recovery.

ACTIVE. An officer who is regarded as a part of the personnel available for duty. Officers may be on the active list though temporarily disabled or granted leave of absence. They are removed to the retired list when it is certified that they are permanently disqualified for duty.

ADJUTANT. A military officer, whose duty it is to assist the commanding officer of a regiment, artillery district, battalion, squadron, garrisoned post or detachment of troops.

ADJUTANT-GENERAL. The assistant of a general officer, especially in publishing orders, keeping records and attending to military correspondence.

ADJUTANT-GENERAL'S DEPARTMENT. The corps of officers comprising the Adjutants-General: now designated the *Military Secretary's Department.*

ADMINISTRATION. The methods employed to insure the existence and well-being of the army, including all that relates to organization, instruction, supply, pay and discipline.

ADMINISTRATION, COUNCIL OF. A board of officers assembled to audit the funds of companies, posts or post exchanges.

ADMIRAL. The highest naval title. The former Lord High Admirals of England were great nobles who were not necessarily sea-commanders. Their prerogatives have for centuries, however, been placed under the control of boards of commissioners known as the Admiralty. The subordinate titles of seagoing admirals are admiral, vice-admiral and rear-admiral. The title of admiral in the United States Navy is only attained when especially conferred by Congress. The highest title attained by promotion in the American navy is rear-admiral of which there are two grades, senior and junior. A rear-admiral commands a fleet, squadron or important naval station.

ADMIRALTY COURTS. The district and circuit courts of the United States have jurisdiction over causes originating on the high seas, or on rivers and harbors communicating with the sea including the various civil causes which may arise out of mercantile transactions on shipboard, relations between masters of ships and their men, criminal acts on board ship, etc. Attorneys practicing in admiralty courts are called proctors in admiralty. United States subordinate courts hold independent sittings as admiralty courts when upon maritime business, and follow the procedure of English admiralty precedents.

ADRIFT. A vessel or boat broken from her moorings or fastenings, also any object aboard ship which has become loose so that it moves from its place with the swaying of the vessel.

ADVANCE. Money paid in anticipation of pay to be later earned to enable an officer to reach a foreign station or to a merchant sailor to enable him to pay debts, purchase an outfit, or as an inducement to ship.

ADVANCE GUARD. A portion of a body of troops, marching in front of the main column, to insure its safety against surprise: its main purpose is to give the column time to deploy.

AERONAUTICS, MILITARY. Military ballooning. All modern armies have special balloon corps and schools of instruction in aeronautics.

AETNA POWDER. An American dynamite, containing from 15 to 65 per cent. of nitroglycerine, together with wood pulp and nitrate of sodium.

AFT. An abbreviation of abaft and most commonly used to indicate the direction of the stern. Going aft, to go in the direction of the sternmost part of the ship.

AFTERGUARD. A term belonging to the sailing navy. The afterguard was generally composed of landsmen, who were not competent to engage in the work on the loftier sails. They handled the fore and aft sail and looked after the gear on the quarter deck and poop. Being in the part of the ship where visitors were most frequent they were expected to be trim and neat in their personal appearance.

AGUILLETTES. Gold cords terminating in points which are in some systems of uniforms the distinguishing marks of the

adjutant. Also worn when it is desired to make a showy uniform. These cords are said to have had their origin in the time of the Spanish attempts to subjugate Holland when the Beggars, so-called, wore a rope terminating in a nail looped around their necks in defiance of the Spanish threat to hang those who opposed their authority.

AHOY. The conventional nautical hailing cry. Literally it means stop but its current meaning is that of attracting attention. Is sometimes heard in the merchant service but is rather regarded as an affectation. The usual naval hailing call is "On board (whatever the vessel may be, calling by name if the name is known) there."

AID. A subordinate officer who has confidential relations with a commanding officer and is his personal representative in the conduct of official business and assists in social affairs. One who carries out detailed instructions as opposed to an executive officer who carries out general instructions and policies.

AID. A confidential officer selected by a general to assist him in his duties. Also called *Aid-de-camp.*

AIGUILLETTE. A gold cord worn by aids, adjutants and other staff officers: part of the full dress uniform.

AIMING DRILL. A military exercise (prescribed in *Small Arms Firing Regulations,* etc.), designed to teach men the proper method of pointing and aiming fire-arms; a training preliminary to target practice.

AIMING STAND. A rest for a small-arm, or rifle, used in teaching the theory of aiming.

ALARM. A summons to arms, generally made by sounding the *call to arms* on the bugle.

ALARM POST. A place to which troops are to repair in case of an alarm; the point of assembly previously designated in orders.

A LA SUITE. Attached as supernumerary to a regiment, etc.; also applied to officers attached to the personal staffs of princely personages.

ALDERSHOT CAMP. A permanent camp, about thirty-five miles southwest of London (formed in 1855) for the improvement of the British army in tactics, practical field exercise and maneuvers.

ALIGN. To form troops in line; or, the troops being on a general line, to form them *more accurately* in line, or to *dress* the line.

ALIGNMENT. The act of forming troops in line, or of adjusting such a line; the line of adjustment; the state of being adjusted. In the alignment of considerable bodies of troops, especially at ceremonies, men (called markers), carrying small flags (called marker's flags), are used to indicate the line.

ALL HANDS. The whole ship's company. The call for all

of the available personnel to come on deck, as "all hands to unmoor ship."

ALLOTMENT. An enlisted man of the Navy is allowed to allot or assign a portion of his pay for the support or assistance of his dependents. The allotment is made through the paymaster of the ship to which he is assigned and is paid to the beneficiary through the navy pay office nearest to the beneficiary's residence. An allotment is first paid out of a man's pay and is subject to stoppage when he has been sentenced to loss of pay.

ALOFT. A nautical term of direction indicating the top of the lower mast and above.

ALONGSHORE. The coast and the points situated thereon, harbors, etc. The water traffic of harbors and immediate vicinity of the coast. A 'longshoreman is one who works on the docks and about the water's edge.

ALOW. Below the lower mast head. Generally used in connection with "aloft" of which it is the opposite as "all drawing alow and aloft," meaning that the lower and upper sails are filled with wind.

ALPINI. The Alpine troops of Italy, specially trained, armed and equipped for mountain service. France has similar troops, called *Alpins.*

ALTITUDE. The height of a heavenly body with relation to the horizon, the angle of which is measured by an observer with a sextant in determining position at sea. The determination, when calculated with the declination or position of the heavenly body, north or south with reference to the equinoctial is a means of determining latitude.

AMBASSADOR. Extraordinary and Plenipotentiary. The highest rank of a diplomatic officer. Is held to represent directly the person of the ruler or chief executive officer of the country from which he comes. Is therefore entitled to communicate directly with the officer at the head of the foreign office or with the ruler or chief executive officer.

AMBERITE. A smokeless powder, composed of nitrocellulose, nitrate of barium and resin, granulated in the form of gray or rose-colored grains.

AMBULANCE. A hospital establishment, moving with an army in the field, for giving early aid to the wounded. In the United States, the wagon designed to transport the wounded.

AMBUSCADE. The act of lying in wait for the purpose of taking an enemy by surprise; a concealed place in which troops lie hid to attack an enemy unexpectedly; a body of troops lying in ambush. Also called *Ambush.*

AMERICAN POWDER. A white powder, composed of a mixture of potassium chlorate, potassium ferrocyanide and cane sugar.

AMIANTINE CLOTH. The material of cartridge bags (made from refuse silk), which is entirely consumed when the gun is fired. Krupp now manufactures a material for this purpose, which is entirely composed of smokeless powder woven into cloth.

AMIDE POWDER. A smokeless powder, composed of ammonium nitrate and charcoal (with or without potassium nitrate). Its slow combustion recommends it for use in guns and in coal mines. It has been adopted for the Austrian naval rapid-fire guns, and as a bursting charge for shells.

AMIDOGENE. A blasting powder used in Switzerland, composed of nitrate of ammonia, nitroglycerine, paraffin and charcoal. Called also *Ammonia Dynamite.*

AMIDSHIPS. The central part of a ship, either as respects length or width, or both. The central point of the flotation of any craft.

AMMONAL. A new explosive, used for the bursting charge in the Austrian field howitzer shell: it is composed of ammonium nitrate and aluminum.

AMMONIA GELATINE. A blasting powder, composed of nitrate of ammonia, blasting gelatine and charcoal.

AMMUNITION. Explosives and projectiles for charging guns of any sort. Fixed ammunition is that in which the explosive and projectile are united in one case.

AMMUNITION. The ordnance stores used in firing guns and small arms, including powder charge, projectile and primer. In small arms and in guns of less than 5-inch caliber, the powder, projectile and primer are combined in one piece, and such ammunition is designated *fixed ammunition.*

AMMUNITION CHEST. A chest or box in which the fixed ammunition for machine, mountain, field or siege guns is packed. It is transported on the limber or caisson in field and siege batteries, and on pack animals in machine gun or mountain batteries.

AMMUNITION HOIST. An arrangement for raising ammunition from the magazine to the loading platform (or the breech of the gun) in seacoast fortifications or on warships. The latest forms are electric chain hoists.

AMMUNITION HOIST. A power conveyor on vessels of war running from the handling room, which is situated outside the magazine, to the immediate vicinity of the breech of the gun to be served. In the larger calibers the hoists are so arranged as to deliver the ammunition directly at the loading point.

AMMUNITION TRUCK. An iron truck for carrying the projectile and powder charge of heavy guns from the magazine to the breech of the piece.

AMPLITUDE. A term used in operations for determining the variation of a compass. It is the distance, expressed in

degrees of a circle of a body which is on the horizon from the true east or west point. The magnetic amplitude is the distance measured from the east or west point, as indicated by the compass. The difference is the variation of the compass which is generally shown by a device imprinted on the chart of the location.

ANCHOR. A heavy instrument of iron used as a mooring device for floating craft, which may be easily recovered by traction on the mooring rope or chain. It is intended to be shaped so, that the transverse pull of the vessel will cause the prong to be more deeply imbedded in the bottom, while a vertical pull will cause it to break out from its hold. For a more permanent mooring a circular or mushroom anchor is frequently used which becomes entirely buried under the bottom.

ANCHOR-WATCH. A small number of men kept on deck at night, while a ship is in port, to attend to the safety of the ship and take precautions against sudden squalls, guard against theft, etc.

ANEMOMETER. An instrument for measuring the force of the wind. Generally in the form of a wheel carrying vanes or cups and registering the number of revolutions. Sailors estimate the force of the wind in terms representing the speed which may be attained by the average square rigged vessel, and by observing the effect of the wind on the surface of water.

ANEROID BAROMETER. The most usual form of a "weather glass" in nautical use. Is rated and compared with a mercurial barometer. A metal vessel from which the air has been nearly exhausted is affected by the greater or less pressure of the air according to the density of the atmosphere and gives motion to a hand which moves on a dial.

ANGLE. A plane angle is the amount of divergence of two straight lines lying in the same plane.

In small-arm or artillery fire various angles are designated in discussing or referring to the trajectory of the projectile.

See *Trajectory.*

The various angles of permanent and temporary fortifications have received many special names.

A *salient angle* is one which has its vertex toward the enemy, and being more exposed, in consequence of this form and position, must be strengthened at the expense of the adjacent *reentering angles,* which have their vertices pointing in the direction of the defense. A *bastion* has a salient angle; a *curtain* has a reëntering angle on each flank.

A *shoulder angle* is the angle between the face of a bastion and the adjacent flank of a curtain; it is a salient angle.

A *flanking angle* is one made by the flanks of the bastion on the curtain; it is reëntering and always obtuse.

An *angle of defense* is the angle made by the line of defense (the face of the bastion produced) and the opposite flank; it must be over 90° and less than 100°, so that the defense of the

flank will not fire into the opposite face, and yet the face be well flanked.

A *diminished angle* is one included between the line joining the salients of two adjacent bastions (exterior side) and the lines of defense; it is always quite small.

A *dead angle* is the angle including the section of ground in front of a crest which is not under its direct fire. It is of vital importance in war.

The *angle of the polygon* is the angle between two adjacent exterior sides of a fortification.

The *tenaille angle* is the angle between two lines of defense in front of the same curtain.

ANGLE OF DEPARTURE. See *Trajectory.*

ANGLE OF FALL. See *Trajectory.*

ANGLE OF IMPACT. See *Trajectory.*

ANGLE OF INCIDENCE. See *Trajectory.*

ANGLE, STRIKING. See *Trajectory.*

ANIMAL INDUSTRY, BUREAU OF. Under the Department of Agriculture. Investigates dangerous diseases among live stock which may spread and create losses, inspects food products from animals; inspects and certifies dairy products for export and seeks for methods of improving the animal industries. Supervises the manufacture of renovated butter.

ANNULAR. Resembling a ring. An annular eclipse takes place when the apparent diameter of the moon is less than that of the sun, when a ring of light appears about the shadow of the moon when central.

ANTI-CORROSIVE PAINT. A compound including a metallic base which is applied to the bottoms of steel vessels to prevent corrosion by the action of the sea water. A similar paint, though of differing composition, is used to prevent the adherence of marine growths and is called anti-fouling paint.

APAREJO. A kind of Mexican saddle, fastened on a pack animal in a peculiar way by means of a long rope, used extensively in army pack trains.

APEAK. On a perpendicular. An anchor is apeak when the cable is straight up and down.

APOMECOMETRY. The art of measuring distances by the number of paces (of known length), the rate of movement and the time: used in learning to judge distances accurately.

APPRENTICE, NAVAL. A boy enlisted in the navy for the purpose of thorough instruction in seamanship and naval duties. The most elaborate system of naval apprenticeship in the United States Navy was inaugurated in 1875. Boys were taken from the age of 15 years and given a common school education as well as instruction as above. Graduate apprentices were given especial consideration in awarding promotions. Doubt has been raised of the wisdom of taking boys at so early an age, especially as it has been found that good sailors

can be made by the landsman training system which gives full grown and competent men after a year's training. The abolition of the apprentice system is proposed. (1904).

APPROACHES. The system of works employed in the methodical siege of any fortified place, comprising *parallels* (vast trenches parallel to the front to be attacked), *zig-zags* (trenches connecting the parallels, leading to the point of attack), *batteries* and *countermines.*

APPROPRIATION. A sum of money set aside by Congress for a definite purpose. The legislation is generally contained in a general appropriation bill prepared, with certain exceptions by the Appropriations Committee of the House of Representatives. Among the exceptions are the military appropriation bills, including that for the navy and the river and harbor improvement bills. Appropriations are generally made available for the following fiscal year and unexpended balances at its close are covered into the Treasury, unless specific legislation is effected for other disposition.

APRON. Plates of iron, or steel, covering the superior slope in coast forts to prevent the effects of the blast on firing.

AQUA FORTIS. A common term first applied by the alchemists to nitric acid, and so called on account of its strong corrosive action on many animal, vegetable and mineral subtances. See *Nitric Acid.*

ARDOIS SIGNALS. A system of signalling in which a set of electric lanterns arranged vertically on the forestay of a vessel is used to send alphabetical signals. The globes of the lanterns are half red and half white and the letters are formed by the different combinations of red and white.

ARMAMENT. The arms and equipments of troops, the war material of a nation, or the artillery of a fortification.

ARMAMENT. Generally applied to the batteries of a ship. These include the main battery, or turret guns of 12 or 13-inch caliber; the secondary battery of six, seven or eight-inch guns mounted on the broadside in casemates or other protection, and the quick and rapid fire guns from three inches in diameter to small caliber automatic guns.

ARMAMENT CHEST. A chest containing the tools for the different parts of the breech-block of a coast gun.

ARM-CHEST. A box or chest, used in the transportation of small arms.

ARMISTICE. A truce, or suspension of hostilities between two armies.

ARMOR. A metallic covering for guns, ships or fortifications, to serve as a protection against small-arm or artillery fire. Modern battleships have twelve inches of Krupp steel at the belt, and armored cruisers six inches. The coast fortifications at Antwerp are Gruson chilled-iron turrets 27.56 inches thick.

ARMOR. The protection of a heavy ship of war against

the gunfire of an adversary. It consists of hardened steel plates fastened to the structure of the ship. It is divided into two classes, hull armor and gun protection. The former consists of plates along the water line above and below the surface and affording protection as well to the engines and boilers, which are further protected by the location of the coal bunkers. This armor is thickest along the middle portion of the length and tapers to the ends. Gun protection consists of shields, turrets and side plates designed to protect gun crew from injury. A protective deck of a less thickness of armor to protect the vulnerable interior of the ship from the effects of plunging fire is also worked into some types of war vessels.

ARMORED CRUISER. The second type in size of the modern war vessel. It differs from the battleship in that it has greater engine power and speed and smaller guns and thinner armor. It is intended to take advantage of the tactical superiority of speed over heavy armament. The penalizing effect in the matter of weights which must be carried for each extra knot of speed has, however, somewhat discredited the armored cruiser idea, and the tendency is setting strongly in favor of the battleship of the highest speed consistent with great offensive and defensive powers.

ARMORER. An enlisted man of the ordnance branch of a military service who has care and repair of rifles and revolvers.

ARMORY. A place or building in which arms are stored, and in which military organizations meet, and have their drills and other exercises.

ARM-RACK. A frame for holding small arms.

ARMSTRONG GUN. A British rifled gun, constructed on the built-up system of tubes shrunk one upon another, originally of wrought-iron, later of steel. The largest made was seventeen inches in caliber, firing a projectile weighing 2,100 pounds. A number of 4.7 inch rapid-fire guns are mounted in the forts of the United States.

ARMY. In the most general sense, the organized land forces of a nation, including its war material; in a limited sense, any portion of its forces of strength greater than a division and acting independently.

The world's principal armies have the following strength on a peace and a war footing:

	Peace.	War.
Germany	472,000	3,200,000
France	557,000	4,370,000
Russia	1,300,000	4,000,000
Italy	258,000	3,170,000
Austro-Hungary	335,000	1,147,000
Great Britain: Home	219,800	917,000
India	300,000	
Japan	43,000	387,000
United States	80,000	8,200,000

ARMY CORPS. One of the primary sub-divisions of an army, the basis of its organization, its strategic unit. Its strength varies in time of war from 30,000 to 35,000 men, and it is usually composed of two or three divisions of infantry, a brigade of cavalry, the corps artillery, a battalion of engineers, the train, telegraphers and signalers and the field hospital.

ARMY LIST. An official publication issued by the British War Office, containing the names and dates of commission of all the officers of the army.

ARMY MEDICAL SCHOOL. A school, located at Washington, D. C., for recently appointed medical officers. The course is four months, and comprises the duties of medical officers in war and peace, military surgery and hygiene, first aid, hospital administration, etc.

ARMY REGISTER. An annual register, published by the War Department, containing the names of all the army officers, their relative rank, etc.

ARMY REGULATIONS. A volume published by the War Department, containing all regulations and standing orders in force in the United States Army. The latest was issued in 1904.

ARMY SERVICE CORPS. The *train* troops of Great Britain, comprising forty-two companies, their duties including, besides transportation, the supply of food, forage, wood, etc., and the care of barracks.

ARMY WAR COLLEGE. See *War College.*

ARREST. The apprehension of officers or enlisted men, or their confinement while awaiting trial.

ARREST. An officer or enlisted man is put under arrest when he is restrained from the liberty of going about within the usual limits of discipline, even though not confined in a place of imprisonment. An army officer is generally restricted to his quarters and a naval officer to his room and the general mess or ward room. They are suspended from their functions during the time they are under arrest and until they are formally restored to duty.

ARSENAL. An establishment in which war material is manufactured or stored. In the United States the principal arsenals are: Watervliet (West Troy, N. Y.), Springfield (Mass.), Frankford (Philadelphia), Rock Island (Ill.), and Dover (N. J.).

ARTICLES for the government of the navy. The fundamental law of the naval service. They prescribe the conduct of the personnel as regards submission to discipline, in case of war and battle, etc. They are read aloud at muster on the first Sunday of each month in fine weather.

ARTICLES OF WAR. An act of Congress, approved April 10, 1806, to establish rules for the government of the United States Army. They form part of the Army Regulations.

ARTIFICIAL VENTILATION With the increase in the size of modern war vessels and the necessity for enclosing a

large part of the decks, has come an elaborate system of artificial ventilation by means of rotary fans and trunks, ducts and pipes which penetrate every portion of the hull and frequently change the atmosphere and at the same time drying and preserving the construction of the vessel.

ARTILLERY. A branch of the army, with its proper personnel, or the war material peculiar to this branch of the army. It comprises coast, fortification, siege, field, horse and mountain artillery.

ARTILLERY CORPS. The body of officers and men of the artillery branch of the army.

ARTILLERY DISTRICT. A tactical unit in the artillery defense of a coast; a geographical section of coast, comprising the forts tactically related to one another.

ARTILLERY PARK. The formation of a collection of field or siege guns when not in immediate use; also the *train* for the artillery of an army.

ARTILLERY SCHOOL. A school of application for officers of the artillery branch of the army. In the United States the principal ones are located at Fort Monroe (Va.) and Fort Riley (Kan.); the most noted in Europe are at Woolwich and Shoeburyness (Eng.), Fontainbleu (Fr.), Charlottenberg (Ger.), and Vienna and Felixdorf (Aus.).

ARTILLERY WAGON. A four-wheeled, canvas-covered store wagon added to the outfit of a field battery in the United States in 1890; its interior capacity is 227 cubic feet, giving space for 120 knapsacks; it also contains spare parts, intrenching tools, etc., with a 25-gallon water keg attached in the rear.

ASH-WHIP. A hoisting device fitted in ships to bring ashes from the fire room to the level of the deck where they may be blown overboard. A recent device does away with this system and blows the ashes out of an aperture in the ship's side by means of a stream of water.

ASSAULT. A sudden and vigorous attack on an enemy's troops or position; or the attack made on a fortified place after the artillery has opened a breach or demoralized the enemy. The first is usually also *prepared* by artillery fire. It is the culminating point of every infantry attack.

ASSEMBLY. A trumpet (or drum) signal for troops to assemble and form in ranks for drills, ceremonies, etc. There are usually two trumpet calls, a *first call,* followed, at an interval of from five to fifteen minutes, by a *second call,* or *assembly.*

The term is also applied to the act of troops gathering and forming in this way.

ASSISTANT SECRETARY OF WAR. A cabinet officer, assistant to the Secretary of War. He receives a salute of fifteen guns.

ASTAY. An anchor cable is said to be astay when it forms an acute angle with the water, as when the ship is in the

usual position at anchor at some distance down the wind or current from the location of the anchor.

ASTERN. A nautical term of direction indicating distance from the ship in the line of the stern.

ASTROLABE. A brass ring with a movable arm formerly used to determine the altitude of planets and stars to determine position at sea. It was used by Columbus and other early navigators with surprisingly good results in navigation.

ATAUNTO. A nautical expression denoting well set up masts and rigging. Indicates smartness and excellent appearance.

ATHWART. A nautical expression for across. The direction across the width of a floating craft.

ATLAS POWDER. A blasting powder, containing nitroglycerine, sodium and magnesium carbonates, and wood-fibre.

ATRIP. Any object just clear of its fastenings and ready to be hoisted or lowered. An anchor is atrip when it is just clear of the bottom.

ATTACHE. See *Military Attache.*

ATTACHE. A subordinate official of a legation, generally army or naval officer charged with securing information as to the strength and military methods of the country to which he is sent.

ATTACK. The act of attacking a position, a convoy, a defile, etc. An attack on a fortified place may be carried out in several different ways: by *surprise,* by direct *assault* with troops, by *bombardment,* by *blockade* and by *regular siege.*

The *attack* of an enemy in position usually comprises a series of operations:

1. *Reconnaissance,* with a view to determining the enemy's defensive measures, the strength of his position, etc., from the results of which the *point* of attack is selected. This duty is usually performed by the cavalry, and may require *forced* reconnaissances at some points.

2. *Preparation* for the attack proper, a duty which falls to the artillery. The latter takes as its first target the enemy's artillery; when that is silenced, the *point of attack* becomes the target.

3. The *Attack* proper, which falls to the infantry; even in this, however, the other two arms assist at every point where opportunity offers. The infantry constantly attempts to outflank the enemy's line, since a purely frontal attack gives little promise of success to-day. The attack culminates in the *assault,* or final effort to take the enemy's position.

AUDITORS OF THE DEPARTMENTS. Officials of the Treasury Department who have charge of the examination of the accounts of the departments to which they are respectively assigned. They determine the correctness of the accounts and settle all balances, subject to the decision of the Comptroller of the Treasury on disputed points.

AUXILIARY. The screw propeller was applied in the navy in the period of and immediately following the civil war as an auxiliary to the sail power. It was fitted so that it could be hoisted and was used in case of calm, head winds, in making port, etc., while the sails were depended on in cruising. The gasoline engine and allied powers are now largely fitted in yachts and other small craft as an auxiliary to sail power. It has been found that the idea that the propeller would retard the vessel when not in use was erroneous.

AVAST. Stop or cease. "Avast heaving," to stop heaving around on the capstan.

AVERAGE. The contribution made by those interested in a ship or cargo in proportion to their interest to an expense incurred or a loss sustained for the general safety of the ship. When goods are thrown overboard in case of peril to save the ship, the owner is reimbursed for all but his share of the general average.

AWASH. An object lying nearly parallel with the surface of the water so that it is submerged at intervals in whole or part by the motion of the waves.

AWEIGH. The position of an anchor after it has broken from its hold and may be moved by the motion of the ship.

AYE-AYE. The reply of a sailor to an officer indicating that an order has been understood and will be carried out.

AZIMUTH. The arc of the horizon intercepted between the meridian of the place and a vertical circle passing through the center of any body.

AZIMUTH. In coast artillery the horizontal angle between the horizontal direction of a target from a gun or position finder, and a north and south line through that gun or position finder.

AZIMUTH CIRCLE. A graduated circle on the gun platform, indicating the azimuth of the piece in any position.

BACKBOARD. A board often bearing a carved or painted name or device which is placed in the after part of a small boat for passengers to lean against.

BACKING. Wooden construction behind iron plates, the whole forming a combination of wood and iron which formed compound armor of old style, the iron design to afford impenetrability and the wood to take up a part of the shattering effect of the impact of a shot.

BACKSTAYS. Stationary or standing ropes or rigging fitted over the heads of the topmasts of a vessel and led to the vessel's side to offset the strain on the masts from the action of the wind on the sails.

BAG. In order to economize room for stowage the clothing of a sailor is kept in a bolster-shaped bag. He is supposed to keep all his belongings in this bag and in a small square

box called a ditty box. Any clothing left lying around is put into a general bag called the lucky bag and under the charge of the master at arms. If the careless one claims the article or is identified he is punished by being given extra duty. Articles not claimed may be sold at auction. The bag of a sail is that part of the canvas that is not hauled taut when the sail is hoisted. It was formerly supposed that the bag in a sail held wind and gave greater speed. Modern sails are cut to set as flat as possible.

BAGGAGE. The effects carried by an army in the field, including tents, clothing, utensils, stores and ammunition.

BAGGAGE TRAIN. A wagon train, carrying the baggage of an army.

BAIL. To empty water out of a ship or boat by dipping with buckets or similar articles.

BALANCE. To reduce the size of a fore and aft sail by rolling up a portion of the sail on the side toward the mast, thus relieving the pressure on the mast; the necessity for this, however, is generally met by having several rows of reef points, the upper one of which, reducing the sail to its smallest size is called the balance reef.

BALLAHOU. Spelled "ballyhoo" in nautical literature. A West Indian schooner in which the foremast inclines forward and the mainmast aft. This irregularity is regarded with contempt by the Anglo-Saxon sailor, who calls an old or dirty ship a ballyhoo.

BALLAST. Articles of considerable specific gravity, such as iron, lead and stone carried in the hold of a vessel to increase her stability. The action of a vessel whether under sail or steam and in a sea way depends to a great degree on the location of the center of her weight. Ballast which may be of articles such as named above, or water contained in tanks is so located as to give the vessel the best possible position in the water to obviate rolling and to increase speed. The location of ballast in naval construction is largely a matter of calculation of weights, corrected by experience. Provision is made for removing water ballast from the tanks at one side or the other of a steam vessel, to keep her on an even keel as coal is used from the bunkers.

BALLAST-MASTER. An official maintained in some ports, but whose duties are assumed by all harbor masters or captains of ports. Merchant vessels, when not carrying cargoes, must take aboard a certain amount of temporary ballast for a trip. This is often in the form of soil, small stones from beaches, etc. Regulations are in force in ports which will prevent such ballast being thrown overboard into channels, when a vessel in ballast desires to take cargo on board, as such action would soon seriously decrease the depth of water in channels. Vessels are generally required to lighter their ballast to some point where filling is permitted or desired.

BALLISTIC MACHINE. An instrument for determining the initial or muzzle velocity of the projectile by experiment.

BALLISTICS. The science which treats of the motion of projectiles fired from cannon or small arms.

BALLISTICS. The art of throwing projectiles by other than hand. Technically, the science of determining the power of a gun and the speed, range and striking force of a projectile.

BALLISTITE. A smokeless powder, adopted in Italy, composed of equal parts of nitroglycerine and gun-cotton, with a little diphenylamine.

BALLOON, MILITARY. See *Aeronautics.*

BAN. A levy of troops; the most effective part of the population of a country liable to military duty, which may be called out for war service.

BAND. It has been found that the contentment and enjoyment of sailors is materially increased by the presence of a band of musicians aboard ship. Formerly, on account of the low pay, bandsmen were generally foreigners, but the "all-American" band has come to be a feature, owing to the efforts to train enlisted musicians. The United States Marine Corps has a band stationed at Washington, and the navy enlists a band for each flag-ship, first-rate ship and training ship. On smaller ships musicians to form a band are enlisted as mess attendants, etc., and sometimes voluntary organizations of musically inclined enlisted men are formed. These latter are called "squegee bands."

BANK. A shoal of considerable extent at a distance from the coast. An ocean plateau generally resorted to for fishing on a commercial scale. The banks of Newfoundland are a notable instance. A vessel going to the banks to fish is a banker. A seat or bench, for a rower or rowers, in a vessel propelled by oars was a bank.

BANQUETTE. A raised bank of earth, running along the inside of a parapet, on which guns or men are placed to fire on the enemy.

BANYAN DAY. A term in sailors' lingo indicating originally a day on which no meat is served. Derived from the banyan or Indian fig tree, under which a religious sect of non-meat eaters held their observances. Has come to mean a day on which the food served is meagre or not particularly tasteful; a forecastle growl will be, "Too many banyan days on this bloody hooker."

BAR. A deposit of sand, shingle or gravel formed by the action of the sea at the mouth of a river or of a harbor from which a strong current flows, so that ingress is prevented of ships which might be accommodated by the depth of water inside the bar. There is generally an opening of greater depth of water than that on the bar, but still less than the waters which it connects. Many of the most difficult problems of

river and harbor improvement are to obtain and retain a channel through a bar, as the characteristics of the formation are constantly changing and improvements as made bring new complications.

BARBETTE. A platform on the inner side of a parapet, on which a heavy gun is mounted so as to fire over the crest of the parapet.

BARBETTE. A naval barbette is an armored protection for the loading position of a gun which is fired over the top of the barbette. The gun is inclined to load and returned to an approximately horizontal position to fire. With the improvement of rapid-fire guns the protection of the crew of a barbette gun has developed the hood or shield of the barbette, so that it has become an armored structure. The turretted barbette and the barbetted turret are practically the same construction.

BARBETTE CARRIAGE. A gun-carriage, for mounting guns in barbette.

BARBETTE GUN. A gun mounted in barbette.

BARE POLES. The condition of a sailing vessel when it has been necessary on account of the force of the wind to furl all sails and heave to or run before the storm.

BARGE. A vessel of state; a passenger vessel not propelled by sail or steam but towed; a kind of a cargo boat. In naval use the flag officer's barge is a large pulling boat of mahogany finish, elaborately fitted up and used to pay official calls. As an especial mark of esteem an admiral on leaving a station is sometimes rowed to the shore, from his flagship, by a crew composed of his captains and other subordinate officers in full uniform.

BARKENTINE. A three-masted vessel, with square sails on the foremast and fore and aft sails on the main and mizzenmasts.

BARNACLE. A crustacean which attaches itself to rocks, to vessels' bottoms, etc. One of the means of fouling of vessels' bottoms guarded against by the use of copper, special paints and other devices. It consists of a cone-shaped shell fastened by a fleshy foot having considerable power of suction. Can be removed only by crushing or scraping, though the shell fish dies in fresh or brackish water, and the growth may be easily removed.

BAROMETER. An instrument for measuring the weight or pressure of the atmosphere, from the variation of the indicator of which predictions may be made as to probable weather conditions. The old form was based on the variation of the height of a column of mercury in a vacuum, but the most usual form at the present time is the aneroid barometer, depending for its readings on the variation of a strip of metal.

This has a circular indicator, as against the vertical indicator of the mercury barometer.

BARQUE. A three-masted vessel, with square sails on the fore and main masts and fore and aft sails on the mizzen.

BARRACKS. A permanent structure for quartering or housing troops.

BARRATRY. The illegal act, with fraudulent intent, of the master of a ship with relation to the vessel, her owners, the cargo and its owners. Such as running away with the ship, scuttling her, embezzling cargo, etc.

BARREL. The metallic tube of a small arm or gun of small caliber.

BARRICADE. A defensive work to obstruct an enemy in a narrow passage: a street, a road or a building.

BAR-SHOT. Two shot or half shot fastened together by an iron bar. Formerly used in naval warfare for cutting the sails and rigging of the enemy.

BASE. A general term including all kinds of strong lines or zones of country on which the army relies for strength and support: a base of operations, a base of supply, etc.

BASE LINE. A carefully measured line between two fixed stations, used in observing and plotting the firing of heavy guns, as well as in surveys and triangulation. Such a base line joining two observing stations, each of which has an azimuth instrument which gives the azimuth of the target, is also used to determine the range and azimuth of a target in coast artillery firing. See *Horizontal-Base System.*

BASE OF OPERATIONS. That part of a country from which an army moves out for *offensive* operations, and to which it falls back, in case of a reverse; or which serves as a point or line of support in *defensive* operations. Its continued possession insures the regular arrival of reinforcements and supplies, and its loss is usually fatal to an army, unless a new one can be promptly established.

BASE OF SUPPLY. The zone of country from which an army draws its supplies of food, arms and material. To-day it is nothing more or less than the entire national territory. Primary depôts are established at various points in the home country; secondary depôts, supplied by the primary, are established at fixed distances behind the front of operations, and from the latter the convoys, or trains, of the troops are supplied.

BASE RING. A steel ring, several feet in diameter, set in concrete, on which the carriage of a heavy gun rests.

BASIN. A wet-dock, provided with flood-gates, in which vessels may be kept afloat at all times. Owing to the greater corrosive action of salt water on steel and iron, fresh water basins are desirable for war ships lying out of use.

BASTION. The salient part of a fortification, consisting of

two *faces* meeting at an angle, prolonged by two *flanks* making salient angles with the faces; the flanks of two adjacent bastions are connected by a straight line of parapet called a *curtain.*

BATHYMETRY. The science of measuring the depth of the sea. See also Hydrography and Oceanography.

BATILLAGE. A term formerly used for boat-hire; an expense understood as legitimate for communication between a vessel and the shore when the vessel's own boats are not at the time available.

BATTALION. A unit of organization of infantry or field artillery, the *tactical* unit of infantry in battle. A modern infantry battalion consists of four companies, while the artillery battalion comprises from two to four field batteries.

BATTEN. Strips of wood, used for stiffening construction, also to confine the edges of canvas covers. Batten down the hatches: to pull tarpaulins or tarred canvas over the covers of openings in the deck of a ship and fasten them by nailing strips of wood along the edges.

BATTERY. In naval use the word battery is applied collectively to all the guns on one side of the ship, as starboard battery, port battery. The armament of the ship is divided into a main battery consisting of the heavy guns of high power and long range, and a secondary battery consisting of quick and rapid-fire guns.

BATTERY. A unit of organization of field artillery, its *unit of combat,* consisting of four pieces, with the proper number of caissons. Batteries are divided into machine guns, mountain, field, horse, siege, fortification and coast batteries.

BATTERY. A fortification in which several guns are mounted behind a parapet. Batteries of this kind are classified as siege, fortification or coast batteries, and the last again as gun or mortar batteries; or, they are designated barbette, rapid-fire, enfilading, breaching, etc.

BATTERY FORGE. A carriage, forming an essential part of a field or siege battery, and containing a forge and anvil, implements, horseshoes, spare parts, etc. In the United States a *combined forge and battery wagon* is used.

BATTERY OFFICER. The officer at the guns of a coast battery, assisting the battery commander.

BATTERY WAGON. A carriage, forming an essential part of a field or siege battery, and containing tools, stores and implements. In the United States a *combined forge and battery wagon* is used.

BATTLE. A combat between opposing military forces, on land or at sea. Battles are distinguished as rencontre, offensive, defensive, defensive offensive, or mere demonstrations.

BATTLEGAFF. A steel gaff to be hoisted on a military mast of a war vessel on which the ensign is displayed in action.

BATTLE COMMANDER. In coast forts, the officer who commands, for tactical purposes only, the personnel of his *battle command,* consisting of one or more fire commands tactically related.

BATTLE-LANTERN. A lantern was formerly hung at each gun on the vessels of the old sailing navy to give light in case of a night engagement.

BATTLEORDER TRANSMITTER. A communicating device on war vessels made in the simplest possible form and with protected communications which has a set of definite orders on corresponding indicators. One simple form secures the necessary indication by the use of the galvanometer.

BATTLESHIP. The largest and most powerful type of naval construction, a heavily armored vessel with the most powerful batteries devised at the time of her construction. The typical battleship of the immediate time (1904) is about 16,000 tons in displacement, with armor of from 9 to 12 inches, four 12 or 13-inch guns in two turrets, and broadside batteries of twelve to sixteen 6 or 7-inch guns, with, in some cases, midship turrets carrying pairs of 8-inch guns. The battleship of the immediate future will probably be nearly 20,000 tons in displacement, with a battery of six or more 12-inch guns.

BAY. The forward part of a ship between decks. The hospital of a man-of-war was formerly located in the most forward portion of the berth deck, hence the name "sick-bay." The most strenuous objections have been made to former conditions for the care of the sick among the enlisted men aboard naval vessels, and in modern ships radical improvements have been made.

BAYMAN. An enlisted man of the navy who acts as a nurse and attendant among the sick of the ship. The enlisted men attached to the medical corps are enlisted as hospital apprentices and may be rated up to hospital steward and apothecary. They are under similar discipline to other enlisted men, but are under the direction of the medical officers.

BAYONET. A thrusting weapon attached to the muzzle of a small arm. When not in use it is detached from the rifle and carried in a *scabbard.*

BEACH. The shelving slope between the water's edge and the upland. Also a slang term for the shore itself. To go on the beach is to go ashore. To beach a man is to land him with the intention not to let him return to the vessel. A beachcomber is a sailor who idles about the shore and will not ship except from dire necessity.

BEACON. A stationary construction, erected on a rock or shoal as a mark for navigators. It is set up when the obstruction is so near the surface as to admit of economical construction, and consists of a wooden or iron spindle bearing a sphere, triangle or other device at its upper end. Beacons were formerly constructed of

oblong blocks of granite laid up in cobhouse fashion into pyramids and topped with a spindle. Beacons set up ashore are also called range marks. Beacons of ancient date are fitted with cressets or iron baskets, which were filled with brands and served the purpose of lighthouses or to indicate the times of navigation at points navigable at or near high water.

BEACONAGE. A port charge, levied for the purpose of maintaining beacons and other aids to navigation.

BEAK. Ancient galleys were fitted with a beak or metal construction on the prow to pierce the side of an enemy's ship. During the Civil War, in the United States, and in subsequent naval construction, the idea of an armed prow and its usefulness in damaging an adversary has been exploited, and the under-water construction of many warships is such as to make an advanced beak or ram. The increasing difficulty of getting into close quarters, owing to modern gun fire, gives the idea of the ram less importance than in former years.

BEAM, OR BREADTH OF BEAM. The width of a ship. On the beam ends, when a vessel heels over so that the ends of her beams or transverse deck timbers are under water; when, for any cause, a vessel lies over on her side.

BEAR. A nautical term with various shades of application, the principal one of which is as a synonym for the word direction. To bear down on an object is to go toward it in a straight course, to bring to bear is to bring into a straight line with an object. To bear a hand, however, is to assist in a piece of work, also an order to undertake a piece of work at once.

BEAT. To make progress on a laid-out course against a head wind. Based on the ability of a vessel to sail on an acute angle with the wind so that on each reach or "leg," a position is secured farther in the direction from which the wind is blowing, though the vessel has at no time been able to head directly for her destination. See *Tacking.*

BECALM. To shut the wind from a sail by interposing another sail or by running behind a headland, etc. In contests of sailing speed it is a point to be able to go just far enough to windward to becalm or "blanket" an opponent's sails.

BECKET. A small loop of rope, secured so that another rope may be readily fastened to and unfastened from it; a loop of rope fastened to a movable object to be used as a handle.

BEETLE. A heavy mallet, used by shipwrights. A maul.

BEFORE THE MAST. The part of the ship forward of the mainmast in which the crew live and do most of their work. In the merchant service a sailor ships "before the mast." Men on sailing ships are not to come aft of the mast unless ordered, but in steamers, the engine-room hatch or door generally opens aft of the mast and the men get farther aft on the port side. The commanding officer receives complaints and administers the discipline of the ship "at the mast," that is, on the dividing line.

BEFORE THE WIND. A vessel having the wind blowing over her stern is before the wind. A square-rigged vessel has her yards at right angles with the length of the ship and the main course furled, as it becalms the foresail. A fore and aft rigged vessel runs "wing and wing" with the mainsail out to the shrouds on one side, and the foresail out to the other. The booms are lashed to the shrouds if the wind is light and there is much motion. The mizzen is furled.

BELAY. To take turns of a rope round a pin or cleat, so that it will be fastened without tying a knot and may be quickly cast off.

BELL-BUOY. A floating apparatus, now made of iron or steel, on the apex of which a bell is hung which is rung by the motion of the buoy on the waves to warn mariners of the location of a rock or shoal. See *Buoy.*

BELLIGERENT. One who is engaged in war. In international law an independent government or governmental organization, whose right to wage war is recognized, and who is entitled to the full benefit of the privileges accorded to nations engaged in war by neutral nations. Insurrections and revolutions are not entitled to rights as belligerents until they have shown ability to maintain an apparently independent government. Any act of comity extended to such before recognition as belligerents is regarded by the mother country as an unfriendly act.

BELLITE. A Swedish smokeless powder, made by fusing together dinitrobenzene and ammonium nitrate. It is safe against friction, blow, heat or the explosion of gunpowder.

BELLS. The nautical method of dividing time. The twenty-four hours is divided into six parts, beginning at twelve o'clock midnight. In each division are eight half hours which are numbered by the successively increasing strokes of the ship's bell. Eight bells are struck at twelve, four and eight o'clock respectively. One bell is half-past twelve, four and eight, and so on.

BELOW. The opposite of on deck in nautical terms, the part of the ship below the open deck.

BEND. To fasten a rope to an object, or to fasten an object by successive lashings of rope. To bend on an anchor cable is to fasten it to the ring of the anchor. To bend on a sail is to fasten it in its appropriate place.

BERGMANN PISTOL. An automatic pistol (model 1901), loading by the pressure of the gas, carrying four cartridges, caliber 0.30 (other calibers are also manufactured), rate of fire forty-five rounds in thirty seconds.

BERTH. The place where a ship lies either at anchor or in a dock. A box-like structure, fastened to a partition, used as a sleeping place in staterooms and in the sleeping saloons of passenger steamers. The particular place in which a sailor hangs his hammock. See also *Bunk* and *Billet.*

BERTH DECK. The space occupied as sleeping quarters on

a vessel of war. In the old sailing ships it was the deck below the lowest gun deck.

BERTHIER CARBINE. The French carbine, model 1890, 0.32 inch bore, sight graduated up to 2,400 yards.

BERTHON BOAT. A folding boat (first used by the English in the Zulu War), supplied to the cavalry in Germany for bridge building: a wooden frame-work, covered with sail-cloth.

BEST BOWER. The largest anchor. Formerly the anchor carried on the starboard bow was the largest and had this name. Now both bower anchors are of a size. The bower anchors are those that are carried on the bows for customary use in anchoring. Smaller anchors for special purposes are carried below.

BETWEEN DECKS. The space between any two whole decks in a vessel.

BETWIXT WIND AND WATER. To receive a shot in the vicinity of the water line of a vessel which is out of water to receive the full effect of the shot, and then goes under water so that the sea flows in and possibly deepens the trim so that it is difficult to get at the hole is to receive a shot between wind and water, from which the expression is used to indicate a blow in a vulnerable part.

BIBLE. A small piece of sandstone, used by sailors to scrub corners of the deck which cannot be got at by the holystone, or larger piece, used to scrub the longitudinal planks.

BIGHT. The loop of a rope. A bend of the coast, forming a wide-mouthed bay.

BILBO. A cutlass or sword, from the city Bilboa, where fine cutlery was made. Also bilboes, irons or shackles from the same derivation.

BILGE. The rounding part of a ship's bottom. The curve with which the modelling of the side turns to run into the keel. The portion on which a vessel rests when she runs aground and heels over. When damaged at this point she is bilged. To fail in a nautical examination is to bilge. The water which accumulates in the hold of a vessel is called bilge water, and special pumps and devices are used to keep the ship free from it, as it rapidly creates offensive smells and is a source of disease.

BILLET. The particular place at which an enlisted man in a vessel of war must hang his hammock. The position or duty to which a man or petty officer is assigned. A memorandum of a seaman's duties and stations.

BILL OF HEALTH. A ship passed by a quarantine officer as free from disease is said to have a clean bill of health. The certificate of a consular officer or other official that the port from which the ship has come is free from epidemic disease.

BILLOW. A wave of the sea. A term used in poetry and literature, but seldom heard afloat except in jest.

BINNACLE. The case which contains the compass. For-

merly a wooden box with a lamp on each side to light the compass card at night; it is now generally a brass receptacle mounted on a pedestal and with various devices for adjustment and to secure accuracy.

BINOCULARS. Double-barreled telescopes, which have, to a great degree, superseded the single-barrelled "spy glass." A recent invention merges the double image of the old binoculars into a single field.

BIOLOGICAL SURVEY, DIVISION OF. Of the Department of Agriculture. Studies the economic relations of birds and animals to human life, maps the natural zones of life of birds and animals, recommends measures for the protection of the desirable and for the destruction of injurious species of birds and mammals.

BITTS. Vertical timbers projecting above the ship's deck for the purpose of fastening cable in anchoring, mooring at a dock or towing, or iron posts securely fastened to the framework of the vessel for the same purpose. A bitter is any turn of a cable about the bitts, and the bitter end is the last section of the rope that must be retained on board ship and made fast or all lost.

BIVOUAC. An encampment of troops in the open-air, without tents. Bivouacs are preferably established in dry places, near wood, water and forage.

BLADE. The cutting part of a sword or cutlass. The part of the arm of an anchor prepared to receive the palm or triangular holding face. The projecting arm of a screw propeller. The part of an oar immersed in water when rowing.

BLANKET BOAT. A boat made by stretching the soldier's rubber blanket over a crib made of round sticks: it is used in building pontoon bridges, or to construct rafts for transporting troops.

BLAST OF GUNS. A side or rear air pressure, not in the direct line of the discharge of a great gun, but caused by the tremendous disturbance of the air from the powers developed in modern ordnance. A considerable factor in the designing of modern war vessels, since it prevents the working of other guns placed within the radius of its power.

BLASTING GELATINE. See *Explosive Gelatine.*

BLINK. The reflection from an ice field in the atmosphere above.

BLOAT. To cure fish by smoke.

BLOCK. The nautical name for a pulley.

BLOCKADE. The closing up of a port, harbor or coast, by hostile ships or troops, so as to stop all ingress or egress, and to hinder the introduction of provisions, war material or reinforcements.

BLOCKADE. The closing of a port by an armed force, generally by a naval force. To be effective, there must be such disposition of the blockading vessels that an attempt to enter is at

an actual risk of capture. There must, at least, be a sufficient naval force in the vicinity to make an effective demonstration and actual patrol. Proclamations of blockade not so supported are generally ignored.

BLOCKHOUSE. A structure of hewn timber, supplied with loopholes for musketry or with embrasures for cannon. Used extensively in the Civil War, and more recently in South Africa.

BLOW. Nautical for a storm, as "They had a heavy blow on the coast." The act of a sea animal in ejecting vapor from its nostrils, thus the whaling cry, "There she blows."

BLUBBER. The layer of fat in sea animals, from which oil is extracted for commercial use.

BLUEJACKETS. A name for the enlisted men of the navy to distinguish them from the enlisted men of the marine corps.

BLUE PETER. A flag, with a blue ground and white center. When hoisted at the fore it indicates that the ship is ready to sail.

B. N. POWDER. The French smokeless powder, consisting of gun-cotton, barium and potassium nitrates and sodium carbonate.

BOARD. A term of location, with reference to a vessel. To board is to go upon a vessel's deck. Inboard is within the vessel, outboard is without; overboard is in the water. A board is also a commission of officers convened for a specific purpose.

BOARDING. To visit a vessel officially, for the purpose of securing information or compliance with laws and regulations. A book in which the particulars obtained by a naval officer boarding a vessel, not his own, is kept on board war vessels. A manœuver in bygone methods of sea fighting, in which it was sought to subdue an enemy by hand-to-hand fighting on board the enemy's ship. Boarding nettings were rope or wire obstructions designed to prevent an enemy from boarding.

BOARD OF SURVEY. A board of officers (usually three) appointed to inquire into and to fix the responsibility of officers or soldiers for government property. Recently replaced by the *Survey Officer.*

BOATSWAIN. A warrant officer in the navy, who has charge of the work of the seamen, the general oversight of the cleanliness of the ship, and of the work pertaining to the boats, spars, rigging, etc., anchoring and mooring and unmooring ship. Pronounced "bosun."

BOATSWAIN'S MATE. A petty officer in the navy, who is under the direction of the boatswain, or when a warrant officer is not attached to the ship, has charge of the work coming within a boatswain's duties.

BOBSTAY. A rope or chain, extending from the end of the bowsprit of a vessel to the cutwater. It counteracts the strain of the headstays which stiffen the foremast.

BOLD. As applied to a shore, is a conformation by which the water deepens rapidly within a short distance, so that vessels may approach closely.

BOLLARD. An upright timber in a whale boat, around which a turn of line may be taken to equalize the strain when line is running out after a whale has been struck.

BOLSTER. A small cushion or piece of soft wood covered with canvas, placed so as to reduce the friction of cables or running or standing rigging.

BOLT SYSTEM. A system of breech-mechanism for small arms, in which the breech is closed or opened by a bolt, resembling an ordinary door bolt. Nearly all modern rifles use this svstem.

BOMBARDMENT. A continuous attack with shot and shell upon a town, fort or military position. Among the most noted in history are: Vera Cruz, 1847; Fort Sumpter, 1861 and 1863; Strassburg, 1870; Paris, 1871; Alexandria, 1882; Santiago, 1898, and Port Arthur, 1904.

BOMB KETCH. A small, heavily-built vessel, constructed to carry a mortar to fire shells.

BOMB-PROOF. A military structure to resist the penetration of shell, constructed of metal or of concrete and earth, to protect magazines or stores, or to shelter troops.

BONNET. An additional part, which may be laced to the foot of a jib, or other fore and aft sail, in order to increase its size for light winds.

BOOBY HATCH. A removable wooden covering with a sliding top, designed to cover the smaller hatches or openings in the deck of a vessel.

BOOM. The spar, on which a fore and aft sail is fastened on the lower edge. Also a spar extending out from a vessel's side at anchor to which boats are fastened. Also a floating construction of logs fastened with chains, intended to form an obstruction.

BOOT-LICK. To flatter, with the expectation of securing favors.

BOOTY. Property which is taken from the enemy, and which is not passed upon by a prize court. While the distribution of booty was formerly one of the incentives to engage in warfare, it is now regarded as disgraceful to seize upon valuable portable articles of private ownership, which formerly constituted the bulk of the booty so distributed.

BORCHARDT-LUGER PISTOL. An automatic pistol, made in Germany, adopted by the army of Switzerland, caliber 0.30, rate of fire 100 rounds in thirty seconds. It is loaded by utilizing the recoil, and has a *short recoil* tube.

BORE. The cavity of a piece of ordnance. The sudden and rapid inflow of tide into some inlets of the sea.

BOTTOMRY. A form of contract, in which the vessel and her fittings are mortgaged to secure the repayment of money to be used in prosecuting a voyage.

BOUILLI. Preserved beef in cans, called by the sailors "bully." A standard article in the ration of enlisted men.

BOULENGE CHRONOGRAPH. An instrument by means of which the initial or muzzle velocity of a projectile is determined: it is the principal instrument now in use for that purpose.

BOUND. The place or intention of destination. As "Where are you bound?"—a usual hail at sea.

BOUNTY. An additional payment over and above wages offered as an inducement to secure sailors for war service. Also see *Prize Money.*

'BOUT-SHIP. To change the course of a vessel by steering her up in the direction of the wind and then allowing her to fall off until she is on the opposite angle to the direction of the wind to the former position.

BOW. The forward portion of a ship, the section from the cutwater to the fore shrouds.

BOWLINE. A rope attached to that edge of a square sail which is toward the direction of the wind, so that the edge is kept steady and the vessel is enabled to sail closer to the wind. The attachment is made by means of bridles or diverging smaller ropes attached to apertures in the sail, the bowline being carried forward to hold all tight. On a taut bowline is to sail as close as possible to the wind. A bowline knot is used in making a loop in the end of a rope, hence such a loop is frequently called a bowline.

BOWSE. To haul upon a rope or tackle. To make extra efforts to hoist a sail to its fullest extent.

BOWSPRIT. The main spar, projecting from the bow of a vessel. It supports the booms on which the outer jibs are spread and serves to fasten the stays which stiffen the masts. It is in turn stiffened by stays which run to the cutwater.

BOX THE COMPASS. To repeat the names of the points of the compass in regular order, beginning with the first point east and returning in reverse order.

BRACE. A rope attached to the end of a yard in a square-rigged vessel by which the yard and sail are moved to secure the propulsive effect of the wind.

BRACE PENDANT. The braces of a yard run through pulleys which are attached to the yards by a short piece of rope or chain called a brace pendant.

BRAIL. A rope fitted to a sail, so that the sail may be hauled up into a bunch preparatory to rolling or furling.

BRANCH. The certificate of a pilot, showing him to be competent to navigate certain waters.

BRASSARD. Any insignia worn on the arm. The personnel of the Medical Department in the field wears the Geneva brassard (white, with a red cross). Umpires at maneuvers wear brassards of different colors, usually white.

BREACH. To jump out of the water, as is done by whales and other sea animals. When waves roll heavily over a vessel. If without breaking, it is a clear breach; if masts, etc., have been swept away, it is a clean breach.

BREACH. An opening made by breaking down a portion of the parapet of a fortification: this was formerly effected by means of breaching batteries on the glacis, but must be made to-day by cannon farther back, in the second parallel of the approaches.

BREAK. The point at which the partial decks of a vessel, such as the forecastle and poop decks, end, is called the break.

BREAKER. A small water cask. Also a wave which has grounded at its foot and which tumbles, accompanied by noise and foam.

BREAK OUT. To unfurl, as a sail or flag. To open a closed compartment or a box to remove its contents.

BREAKWATER. A construction at the mouth of a harbor or inlet to break the force of incoming waves and to improve the qualities of the harbor as a refuge from rough weather.

BREECH. The solid mass of metal behind the bore of a small arm or cannon.

BREECH. The portion of a gun in which the charge is placed. A breechloader is a gun in which the charge is introduced from the rear. By improvements in breech mechanisms in recent years, the breech plug is quickly removed and replaced, so that the rate of fire has been materially increased.

BREECH-BLOCK. A movable piece at the breech of a breech-loading gun, which is withdrawn for the insertion of the charge, and closed again to resist the recoil and confine the gases.

BREECH MECHANISM. The mechanical devices comprised in the various parts of the breech of a breech-loading arm. There are three principal systems: the wedge, the interrupted screw and the piston methods (the last for small arms).

BREECH MECHANISM. An important section of modern ordnance work is devoted to the development of devices for closing the breech and firing heavy guns, the improvement in ordnance in the past quarter of a century depending on the solution of the problem of a breech-loading gun. The breech mechanism consists of a plug for closing the bore of the gun, and the devices for speedily opening and closing the aperture. Included in the breech plug are the firing mechanisms and the devices for preventing the backward escape of

powder gases. In the smaller calibers, the various motions have been combined so that a single motion of a lever or a wheel opens or closes the entire mechanism.

BRENNAN TORPEDO. A torpedo used in England in shore torpedo batteries, containing a charge of 220 pounds explosive gelatine. It is projected by means of a steam engine, and moves under water with a velocity of twenty miles an hour.

BREVET. A commission granted to officers for length of service, acts of conspicuous gallantry or for other special reasons. Brevets give no additional pay, and do not confer the right to command, unless the President assigns an officer on his brevet rank.

BRIDGE. A platform elevated at a convenient distance above the rail of a steam vessel to enable the officers to have a clear view. The chart and wheel houses are connected with it. In some vessels a lighter construction is provided at a higher altitude, called a flying bridge.

BRIDGE-HEAD. A defensive work, covering the end of a bridge toward the enemy.

BRIDGE, MILITARY. See *Military Bridge.*

BRIDGE-TRAIN. A sub-division of the army, carrying the materials required for the passage of troops across a river.

BRIDLE. A length of rope or chain, both ends of which are fastened, the power being applied at a point midway between the ends.

BRIG. A two-masted vessel with square sails on both masts. A hermaphrodite brig has square sails on the foremast only. Also the prison on a ship of war.

BRIGADE. A unit of organization in modern armies, comprising usually two regiments.

BRIGADIER-GENERAL. A general officer commanding a brigade, and ranking next below a major-general. He receives a salute of eleven guns.

BRIGANTINE. It is a nautical moot point as to the exact rig of a brigantine, which is a small two-masted vessel with square sails on the foremast and a different rig on the main, from a brig which carries a square mainsail and a small try sail in place of a spanker. Some define a brigantine as a brig which has a fore and aft mainsail instead of a square sail, and with square topsails. Others claim that a brigantine and hermaphrodite brig are identical. As the type has practically disappeared, the question is one of curiosity, mainly.

BRIGHT WORK. The metal work about a ship that is kept polished. Bright woodwork consists of wooden surfaces kept scraped or scrubbed, or which is finished in the natural grain by oiling or varnishing.

BRING TO. To bring a ship to is to lie or heave to, or to force another ship to stop.

BRING UP. To stop, in its general significance, to stop suddenly.

BROACH. To pierce a cask, with the purpose to draw off the contents. To open.

BROACH-TO. When a ship is suddenly brought broadside to a heavy wind, so that she is in danger of being dismasted. It sometimes occurs when an accident or carelessness occurs in connection with the steering when running before the wind.

BROADSIDE. The whole side of a vessel above the waterline. The simultaneous discharge of all the guns on one side of a vessel of war.

BROWN POWDER. The explosive formerly used in great guns. It is a charcoal powder of superior quality, and compressed in hexagonal prisms pierced through the centre to admit of an even rate of burning. The Spanish-American war was probably the last armed conflict in which brown powder will ever be used.

BROWN POWDER. A gunpowder in which the charcoal ingredient is carbonized in a special manner. Dupont Brown Powder contains carbo-hydrates added to the usual ingredients. It is remarkable for giving high velocities with low pressures. Called also *Cocoa Powder.*

BROWN WIRE SEGMENTAL GUN. A coast gun, containing in its tube an internal layer of thin plates, placed radially and bent into epicycloidal forms by a wrapping of wire; the latter is wrapped under high tension; a steel jacket connects the trunnions to the breech-block. Wire-wound guns are cheaper than built-up guns, and the material is less liable to have serious defects (blow-holes, etc.).

BROWNING PISTOL. An automatic pistol, loading by gas pressure, caliber 0.35, carrying six cartridges, rate of fire forty-five rounds in thirty seconds. Called also *Colt-Browning* or simply *Colt Pistol.*

BUCCANEERS. Originally settlers on West Indian islands, who gained a livelihood by raising cattle and drying the beef. They were driven to acts of retaliation by repression and gradually took up piracy as a trade.

BUCKLE. When a mast, boom, or yard bends noticeably under the pressure of the wind it is said to buckle. The elasticity of the wood may recover from a momentary buckling, but any considerable amount results in the distortion of the shape of the spar.

BUFFER. A machine for deadening shock: in gun-carriages it is a species of recoil-check, and consists of a piston moving in a cylinder. In modern carriages, the latter is filled with a neutral oil, and the piston head is pierced with holes to permit the liquid to pass from one side to the other.

BUFFINGTON-CROZIER DISAPPEARING CARRIAGE. The United States disappearing carriage for coast guns, in which the gun is mounted, with its trunnions, at the ends of two lever arms (pivoted at their middle points), the lower ends of

which carry a heavy counterweight of lead. When the gun recoils, after firing, the counterweight is thereby raised, and is held in place by a pawl and ratchet, thus holding the gun in the loading position. When the gun is loaded, the pawl is forced out of the ratchet by a lever, the counterweight falls, and the gun is thereby raised to the firing position.

BULK. When cargo is carried in a mass without being enclosed in packages, it is carried in bulk. To begin to unload, it is to break bulk.

BULKHEAD. A partition in a vessel. Also sometimes applied to a wharf whose greater dimension is parallel to the shore.

BULL ROPE. A hauling tackle of short radius, used to secure a spar in a vertical position. The bull rope hauls the top of the top gallantmast close to the shrouds when sent down.

BULL'S-EYE. It may be best described as a pulley without the revolving wheel or sheave. A bull's-eye is used to hold the turns of standing rigging which, after it has been once tightened or set up, is rarely disturbed. Several turns of small rope are run through the bull's-eye to secure the tensile strength that would otherwise have to be attained by the use of an unwieldly cable. The centre of a target. A thick, circular light of glass inserted in decks, portlids, etc.

BULWARKS. The rail of a vessel, when built in solidly, so that water can enter only over the top.

BUMBOAT. A harbor trader's boat, engaged in carrying food, etc., to vessels for sale to the crews.

BUMPKIN, OR BOOMKIN. A short timber extending from the side of the vessel to which brace blocks or other gear is attached.

BUNK. A bed place, built of boards and attached to a partition or bulkhead. A berth, the distinction being that a passenger sleeps in a berth while a merchant sailor has a bunk in the forecastle.

BUNKER. The place in which coal is stowed aboard ship. Bunkers are arranged with a view to convenience in coaling and to securing the best trim for the ship. In vessels of war they are also designed to serve as a protection for boilers and engines.

BUNT. The middle part of a sail. That part which makes a roll of considerable size when the sail is furled.

BUNTING. The thin woolen material of which flags are made.

BUNTLINES. Ropes attached to the foot of a square sail, so that it may be hauled close up to the yard for furling.

BUOY. A floating body, anchored or moored to mark a particular spot or object. A permanent mooring, or anchor, which has been left down is marked by a buoy, generally a small cask or iron can hermetically sealed. Shoals or rocks are marked by spar buoys, can buoys (of iron), bell buoys and gas buoys, the latter containing a chamber of compressed illuminating gas which

gives light for a certain time when another buoy is substituted, the first being removed for recharging. A whistling buoy has a whistle blown by compressed air as it moves up and down on the waves. Channel buoys are anchored seriatim on the edges of a channel to mark navigable water.

BUOYS, SIGNIFICANCE OF. In approaching a channel from seaward red buoys with even numbers are found on the starboard, or right-hand-side of the channel. The vessel steers to the left of these, leaving them on the starboard hand. Black buoys with odd numbers are found on the port side, which are avoided by steering to the right, leaving them on the left or port hand. Buoys painted with red and black horizontal stripes may be left on either hand.

BURGEE. A flag with a cleft or swallow-tail. In the merchant service it generally carries the vessel's name. Also used as a house flag by shipping firms and as a distinctive mark by aquatic clubs.

BURSTING CHARGE. A quantity of explosive placed in a projectile in order that it may burst at or near the point of impact and effect more damage.

BURTON. A tackle used for swaying topsails, supporting yards, etc. Part of the running rigging of a square-rigged vessel.

BUTT. The end of a plank or timber. A wine measure of 126 gallons, hence a cask of about that capacity. The end of the stock of a small arm.

BY. By the wind, as near the direction of the wind as possible. By the board when an object, such as a mast, goes over the side.

CABIN. The living space in the after part of a vessel, used by officers and passengers. It is generally divided into a large dining and lounging apartment, particularly called the cabin, and into small staterooms. The division of the cabin space on a war vessel is the subject of careful regulations.

CABLE. The rope or chain attached to an anchor; little rope is used for that purpose at present except in small vessels. Cable rope is usually given an extra twist to keep out the water. Cable chain is made with unusual care, the requirements for that of the navy being higher than for commercial uses.

CABOOSE. A small galley or cooking place on a vessel.

CADET. A student at a military school (a military or naval academy), where young men are in training for commissions in the army or navy.

CADUCEUS. A vertical staff with two snakes twined round it, surmounted by the wings of mercury: the present insignia of the Medical Department.

CAISSON. An ammunition wagon for field artillery. In modern field batteries there are three caissons to each piece.

CAISSON CORPORAL. The corporal in charge of a caisson: he superintends the issue of ammunition from the latter.

CALIBER. The diameter of the bore of a gun or of a projectile.

CALIBER. The diameter of the bore of a gun or a small arm.

CALK. To drive oakum into the seams between the planks in the sides and decks of a vessel to make them water-tight.

CALL. The signals made aboard war vessels for the performance of a particular duty are termed calls. They are made either by the bugle or the boatswain's whistle. The former blows the signals which apply to the general routine, and the latter those relating to the work of the enlisted men.

CAMP. The position in the field occupied by an army quartered in tents, or the tents themselves, collectively. An *intrenched camp* is a fortified position of large extent. A *camp of instruction* is a permanent camp, to which troops are sent periodically for instruction in field duty, like that at Aldershot (England), Châlons-sur-Marne (France), Bruck (Austria), and Krasnoeselo (Russia).

CAMP AND GARRISON EQUIPAGE. Articles, other than clothing, required in camp and garrison, such as flags, spades, axes, etc.

CAMPAIGN. The military operations of an army in a particular section of country, or in a single season, or for a special purpose.

CANISTER. A hollow tin cylinder (closed at the ends by iron plates), filled with iron or leaden balls packed in sawdust. In field guns it is effective up to 400 yards.

CANNON. An artillery piece for throwing projectiles by the force of an explosive. Cannon are classified, according to the service for which they are intended, into machine, mountain, field, siege, fortification and coast guns; and, according to their form and construction, into guns, mortars and howitzers.

The cannon in use in the United States army are:

Machine Guns.

Gatling. Small arm caliber.

Mountain Guns.

1.65-inch and 3-inch. Hotchkiss.

Field Pieces.

3.2-inch and 3.6-inch guns and 3.6-inch mortar.
A new 3-inch rapid-fire piece has just been adopted.

Siege Pieces.

5-inch gun, 7-inch howitzer, 7-inch mortar.

Coast Pieces.

6 and 15-pounder rapid-fire; 5-inch, 6-inch, 8-inch, 10-inch, 12-inch and 16-inch guns; 12-inch mortar.

CANNONEER. An artilleryman assigned to the service of the guns.

CANTEEN. A small vessel, which each soldier carries for holding water; it is made of tin, flat disk-shaped, covered with cloth. See also *Post Exchange.*

CANTONMENT. Temporary quarters for a body of troops.

CANVAS CLOTHING. Canvas fatigue clothing of brown cotton duck, consisting of coat and trousers, issued to enlisted men and worn as a working dress on fatigue duty.

CAP COMPOSITION. An explosive, sensitive to percussion, usually containing mercury fulminate and potassium chlorate, with or without the addition of antimony sulphide and a little ground glass.

CAPONNIERE. A casemated structure or parapet placed in the ditch of a modern European fortification, opposite the curtain.

CAPSIZE. To upset or overturn, as to capsize a ship.

CAP-SQUARE. A strong plate of steel fitting over a trunnion of a gun, to secure the latter on its carriage.

CAPSTAN. A mechanism for applying power on shipboard, consisting of a vertical cylinder, moved either by gear from a steam engine or by men pushing against bars moving in a circle in a horizontal plane. One or more turns of a rope being taken around a capstan, power may be applied in any desired direction by the interposition of pulleys. An improvement on the windlass, in which power is applied in a vertical direction by up and down motion.

CAPTAIN. A military term denoting, in the army, the officer (ranking next below a major) who commands a company, battery or troop; in the navy, the officer (ranking next below rear-admiral) who commands a ship.

CAPTAIN'S CLERK. The commanding officer of a vessel of war was formerly allowed a civilian clerk who was frequently a male member of his own family. This has been abolished in the United States Navy, and a junior officer acts in the capacity.

CAPTAIN OF THE YARD. An officer of a navy yard next in authority to the commandant and commanding in the latter's absence. He has charge of the order and discipline of the yard and acts as executive officer to the commandant.

CARABINIERI. A corps of gendarme troops of the Italian army, partly mounted, partly dismounted, composed of specially-selected men.

CARBINE. A short rifle used by mounted troops. The new United States rifle is short enough to be used as a carbine, so that it will be both the infantry and the cavalry weapon.

CARBO-DYNAMITE. A blasting powder, composed of nitroglycerine, carbonized cork and a little ammonium carbonate. When used under water the nitroglycerine will not exude.

CARBONITE. A blasting powder used in coal mines, composed of nitroglycerine, nitre, rye flour and a little barium

nitrate, oak bark and sodium carbonate. It is one of the safest explosives for this use, as it will not readily explode the marsh gas mixture in the mine.

CARDINAL POINTS. The main points of the compass—north, east, south and west.

CAREEN. To cause a vessel to lie over on her side either by the force of the wind on the sails, by shifting ballast and other heavy movables, or by easing her down on one side on a beach. The latter was frequently done with smaller vessels before dry docks became common in order to cover the underwater planks with tar or pitch.

CARGO. The merchandise with which a vessel is freighted. When it consists of long articles, such as lumber, timbers, etc., which will not go through the hatchways, openings called cargo ports are cut at convenient points. These are carefully fastened and calked when the vessel is ready to sail.

CARLINGS. Additional beams placed between the deck frames of a vessel to support the deck and for the attachment of interior fittings.

CARONADE. A short naval gun of large caliber effective at short range, formerly carried on the poop and forecastle in the ships of the old navy.

CARPENTER. A warrant officer in the United States Navy, who has charge of the repairs to boats, spars, woodwork, etc., on board ship. It is his duty to see that all ports and openings which may admit water are closed when the ship is under way and in rough water, and also to see that the ship is kept clear of water. The most important duties of warrant carpenters in the Navy, however, are in connection with construction and repair at the various navy yards where he is charged with executive duties in connection with the woodworking shops.

CARPENTER'S MATE. A petty officer's rating in the navy. An assistant to the carpenter and assuming the duties of a carpenter when a vessel is too small to rate a warrant officer.

CARRIER PIGEON. A pigeon (of certain particular breeds) trained to convey from one place to another written messages tied to its leg, wing or neck. The Belgian breed is the one commonly used. The rate of travel is from thirty to sixty miles an hour, and a distance of 806 miles has been covered. Nearly all European armies have introduced pigeon stations and the carrier service.

CARRIER RING. A steel ring, carrying the breech-block of a modern field or siege piece. It is set into the breech, and has hinge-lugs for the hinge on which the breech-block swings in opening or closing the breech.

CARTEL-SHIP. A vessel chartered to carry prisoners or impressed to carry prisoners taken by a vessel of war to the nearest port; also, formerly a vessel which carried proposals between belligerent powers. A chartered cartel must carry no

arms, and is liable to seizure by the enemy if she attempts to trade.

CARTRIDGE. The powder charge for a gun or small arm. In modern small arms and rapid-fire guns the charge is enclosed in a brass cartridge case, in larger guns the covering is silk or serge, or more recently a material made of woven gun-cotton.

CARTRIDGE (Obsolete, Cartouch). A case, containing the powder for the charge of a gun. For small arms and the smaller sizes of cannon the case is of sheet metal, a primer is attached at one end and the projectile is fixed at the open end of the case. For great guns the cartridge is a bag, one or more of such bags forming the powder charge.

CARTRIDGE-BELT. A belt worn about the waist, with pockets or loops, for the cartridges of small arms.

CARTRIDGE BELT. A belt of woven fiber, treated to prevent shrinkage, having loops into which ammunition for small arms may be thrust bullet down. It took the place of the cartridge box in the equipment of a soldier.

CARVEL JOINT. A flush joint in boat-building, giving the craft a smooth side as contrasted with clinker-built, in which the planks overlap.

CASCO. A scow or lighter. A heavily-built craft, used for transporting heavy burdens short distances.

CASEMATE. A bomb-proof vault in a fort, built in the parapet or contained in the gun turret (in European armored turrets), designed for quartering the cannoneers or garrison, or merely for their protection. They are usually loop-holed for infantry or artillery fire.

CASEMENT. An armored section of the superstructure of a vessel of war in which a gun of the broadside battery is mounted. It is protected by armor up to a thickness of six inches, and is intended to be isolated from the remainder of the deck for the protection of the gun crew from shell and splinters.

CASTELLANOS POWDER. A blasting powder, composed either of nitroglycerine with nitrobenzene (to render it less liable to freeze and slower in explosion), with Kieselguhr and fibrous material; or of nitroglycerine, with some picrate, sulphur, charcoal, sodium nitrate, and (to render it safer), an insoluble silicate or carbonate.

CASTRAMETATION. The act or art of pitching tents, or laying out a camp.

CASUALTY. The element in determining military promotion dependent on deaths incident to service.

CAT. A tackle, used to hoist the anchor from below the level of the hawse-hole to its place on the bows. A timber projecting over the bows to facilitate this operation is called the cat-head.

CATAMARAN. A boat having two narrow hulls connected

by a platform carrying the sails, cockpit, etc. Its model is based on a sort of raft used in Brazil and the East Indies.

CATBOAT. A boat of American design of little draught and carrying a centreboard. There is but one mast and one sail, a large mainsail. They are most common in the southern New England waters, and are the characteristic boat of Nantucket.

CATCHING A CRAB. The act of accidentally engaging an oar in the water so that it jams in the rowlock.

CATERER. As officers of the navy are compelled to furnish their own subsistence, messes are formed by the officers below the commanding officer. One officer is elected to oversee the provision of food, audit accounts, etc., and collect the amounts due from other members of the mess. The caterer sits at the foot of the table, the senior officer sitting at the head.

CAT O' NINE TAILS. The instrument formerly used for flogging at sea. It consisted of nine pieces of cord with three knots in each, the whole attached to a short piece of thick rope as a handle. The flogging was done on the bare back.

CAT'S-PAW. A light air, which ruffles the surface of the sea at intervals, making irregular spaces of darker water in the midst of a calm. Generally the precursor of a steadier breeze. Also a peculiar hitch made with the bight of a rope.

CAVALRY. A class of troops which serves mounted on horseback: one of the three great arms of the service.

CAVALRY BRIGADE. A brigade of cavalry, generally two regiments.

CAVALRY DIVISION. See *Division.*

CAVALRY SCHOOLS. Schools for the instruction of officers and men of the cavalry branch. In the United States the principal cavalry school is at Fort Riley, Kan. The most noted in Europe are at Saumur (France) and Hanover (Germany).

CELLULOSE. A substance manufactured from the pith of corn stalks which has had a considerable vogue in naval construction as a supposed safeguard against leaks caused by shot holes. The theory was generally accepted that when a hole was made on the water line by a shot, the entrance of the water would sufficiently swell the cellulose in the protective belt to stop the hole. The theory was based on the assumption that small projectiles from quickfiring guns were to create the greater part of the damage to war vessels. It is not felt that the substance has met expectations, and the day of heavy gunfire has probably made the cellulose protection belt obsolete.

CENSUS BUREAU. The organization which took the decennial census of 1900 was made permanent as a bureau under the Department of Commerce and Labor. It was charged with the compilation of the Philippine census, and with making a census of manufactures in 1905.

CENTERING CONE. The portion of the powder chamber

connecting the main chamber with the forcing cone: it serves to bring the axis of the projectile to the axis of the bore.

CHAMBER. The seat of the charge in a cannon or small arm. The bore is slightly enlarged at the chamber, and the latter is connected with the former by a conical surface.

CHANCELLERY. The office of a diplomatic legation, in which the business of the legation is transacted. It is regarded as a part of the territory of the nation represented, and is subject to the laws of that nation. Acts effected therein are binding on the soil of the nation of which it constitutes a part.

CHANNEL. The known and marked out route by which vessels should move in navigation in harbors and inland waters.

CHANNELS. Ledges of plank fixed to the side of a vessel, to which the shrouds are affixed, and which give greater purchase for the support of the masts. Also called the chains.

CHANTY. A song sung by sailors, in order that all may pull or heave in unison. The verse is sung by a leader or chanty man, and the chorus or refrain by the whole number. The rhythm varies with the work to be done, and each kind has a traditional chanty that goes with it. The refrain is always the same, but good chanty men make up the verses as they go along. The unison and extra spirit from a good song lightens the labor of a sailing ship materially.

CHARGE. The quantity of powder required by a small arm or cannon to propel its projectile. The term is also used to designate the *bursting* charge of a projectile or torpedo.

CHARGE. The final act of an *assault.* The cavalry attack is generallv a *charge,* and the infantry attack generally terminates in one. The cavalry advances to the charge at a gallop, and at the order to *charge* moves at the full speed of the slower horses. The infantry advances to the charge in double time, and at the command charge quickens the pace, and advances at charge bayonets.

CHARGE AS FORAGERS. The charge of cavalry troops in line, with intervals of three yards between troopers.

CHARGE D' AFFAIRES. The officer of a diplomatic legation who is in charge of the affairs of his country during the absence of his accredited chief. Generally the first secretary.

CHARLEY NOBLE. The smoke pipe of the galley stove. When filled with soot, it is the custom in the navy to clear it by discharging a pistol up the flue. The usual form is for the cook to request permission to shoot Charley Noble.

CHART. A representation on a plane surface of a part of the waters of the globe with the adjacent shores. Small figures represent depth of water, in fathoms off shore and in feet within inlets. Lights, buoys and other aids to navigation are noted, and by plotting the knots made, as shown either by the log or by celestial observations, the navigator is able to maintain a true course.

CHARTER, OR CHARTER PARTY. A contract by which

the owner of a vessel rents her as a whole for the carriage of freight or passengers, receiving a sum for her services during a given time.

CHASE. The part of a gun from the trunnions to the muzzle.

CHASE. The part of a gun between the reinforcing hoops and the swell of the muzzle.

CHASSIS. The two steel side frames or check-pieces of the lower carriage of a modern coast gun or mortar.

CHEST. The old name for a treasury. The chest of Chatham was a fund maintained by levy on naval seamen's pay and devoted to the relief of sick and wounded sailors of the fleet. A merchant sailor was accustomed to keep his belongings in a sea-chest.

CHEVAUX-DE-FRISE. An accessory defense or obstacle, consisting of a long piece of timber in which are inserted iron rods in rows, pointed towards the enemy. It is used to impede the advance of cavalry.

CHEVRON. A stripe of cloth or gold lace, worn on the sleeve, V-shaped, indicating the rank of non-commissioned officers. *Service* chevrons are half-chevrons, worn below the elbow, to indicate length of service of soldiers.

CHIEF CLERK. Each department in Washington has a chief clerk who has charge of the administration of the clerical force, the general oversight of expenditures from the appropriations and of the routine business of the department. Each bureau and division has a chief clerk who is responsible for the clerical work and detail of routine matters in his bureau or division.

CHIEF COMMISSARY OF SUBSISTENCE. An officer of the Commissary Department assigned to a Military Department to superintend the purchase of subsistence in that Department.

CHIEF MEDICAL PURVEYOR. The chief purchasing and disbursing medical officer of a Military Department in the infantry and artillery.

CHIEF MUSICIAN. A grade of rank of the United States Army next above a first sergeant.

CHIEF OF ARTILLERY. A brigadier-general of artillery assigned to duty at army headquarters. He is responsible for the efficiency of all artillery troops and material.

CHIEF OF ENGINEERS. A brigadier-general of engineers commanding the Corps of Engineers.

CHIEF OF ORDNANCE. A brigadier-general commanding the Ordnance Department.

CHIEF OF STAFF. The chief of the *General Staff:* in the United States, commanding general of the army.

CHIEF PAYMASTER. An officer of the Pay Department assigned to duty as the chief paymaster of a Military Department.

CHIEF SIGNAL OFFICER. A brigadier-general, head of the Signal Corps.

CHIEF TRUMPETER. A grade of rank in the cavalry of the United States Army next above first sergeant.

CHIPS. The nickname for the carpenter aboard ship.

CHIT. A promise to pay small sums. Also a note of recommendation. It is a mess custom to sign memorandums for small articles, payment being made at the end of the month. The name comes from the Asiatic station where chit signing is universal among Europeans afloat and ashore, the silver currency making cash payments inconvenient.

CHLORATE GROUP OF EXPLOSIVES. Explosives resembling gunpowder, but containing chlorate of potash, in place of nitre, or in addition thereto, and consequently sensitive to blows or friction. They are principally used in fuse compositions and primers.

CHOCK. A small piece of wood, used to secure a larger object or to make a good fit. A wedge.

CHOCKS. Timbers of wedge-shape, placed under the bilges or boats to retain them in an upright position, when they are hoisted inboard on a vessel.

CHOP. A rough, broken sea, in which the wind is opposed to a swell caused by a former wind or is blowing against the direction of the tide or a current. Its irregular motion makes a choppy sea difficult, and sometimes dangerous, for small boating. Also the junction of a channel with the sea, as West Chop, at Martha's Vineyard.

CHOW, OR CHOW-CHOW. Something to eat. A meal. A pigeon-English derivative.

CHRONOGRAPH. An instrument for measuring the velocity of projectiles. The principal modern ones are Bashforth's, Bonlengé's, and Crehore and Squier's. Also called *Chronoscope.*

CHRONOMETER. A carefully constructed timepiece with a balance which compensates for temperature. The chronometer is set with the time of the prime meridian, and its "rate" or daily ratio of gain or loss being ascertained by careful comparison with standard time in port, its difference from the moment observed as high noon gives the basis from which the longitude of the ship's position is calculated. Naval vessels are furnished with three chronometers, which are carefully located and handled to secure the least possible margin or error.

CHRONOSCOPE. See *Chronograph.*

CIRCUIT COURTS OF THE UNITED STATES. Nine in number, each presided over by a member of the Supreme Court and having two or more circuit judges. For the trial of causes arising out of the business of the government and from the operations of Federal laws.

CITS. Suits of citizen's clothing. When possible, the naval personnel, officers or enlisted men wear non-uniform for go-ashore clothes. Enlisted men, when lying for a time in a port, secure

dressing-room privileges ashore; the Y. M. C. A. buildings for sailors, recently established, affording such opportunities. Citizen's clothes for enlisted men are not, of course, allowed aboard ship.

CIVIL LORD. The junior member of the English Admiralty, a commission which exercises the powers of the Lord High Admirals of England.

CIVIL SERVICE COMMISSION. Charged with administering the laws of the United States requiring competitive examination as a test for appointment to clerical positions, and eliminating political consideration in such appointments. Located at Washington, and consists of three commissioners, not more than two of whom shall be of one political party. Has similar administration in respect to the civil service in Porto Rico and Hawaii, and conducts the examinations in the United States for the Philippine civil service. Has subordinate examining officials in all parts of the United States, and by request of the Navy Department conducts the first examination of the year for entrance to the Naval Academy.

CLAIMS, COURT OF. A tribunal established in Washington to, in part, obviate the condition arising from the fact that the United States cannot be sued. Claims, except for pensions, may be presented to the court, and on a finding for the claimant are certified for payment out of the public treasury. Claims may also be referred to the court by the departments when the question is one which would affect future procedure. Claims for losses incurred by certain societies and individuals in the Civil War, French spoliation claims and Indian depredation claims have been referred to the court for investigation and report to Congress of the just amounts due. The court consists of five judges who sit together. The concurrence of three is necessary for a decision.

CLAW OFF. To work to windward from a lee shore under difficult conditions.

CLEARANCE. A certificate from a Custom House that a vessel has complied with all regulations and is at liberty to sail.

CLEAT. A piece of wood or iron, bolted to a vessel's deck with undercut ends, so that a rope may be wound around it for purposes of fastening.

CLEW. The diverging small ropes, by which a hammock is spread. The lower corners of a square sail or the lower after corner of a fore and aft sail.

CLINKER-BUILT. A method of building boats and small vessels, in which edges of the planks overlap for the purpose of making a tight seam. Also called lapstreak.

CLIPPER. A fast sailing vessel. Before the days of steam ocean travel, lines of smart, able sailing ships carried on the transatlantic traffic. The Baltimore clippers were famous examples.

CLOSE-HAULED. When a sailing vessel is pointed as nearly in the direction of the wind as she will go and keep her sails from fluttering, she is said to be close-hauled.

CLOTH. One of the breadths of which a sail is composed. The breadth of a sail is sometimes estimated in the number of cloths of known width it contains.

CLOVE HITCH. A knot used aboard ship, consisting of two half hitches, in which the end parts come out parallel with and opposite to each other.

CLOVE-HOOK. Also called a clip-hook. A metal fastening, consisting of two hooks, which, when superimposed and fastened by a ropeyarn or mousing, constitute a metal loop which will not separate until the mousing is removed.

CLUB-HAUL. To put a ship about when in a dangerous position, and ordinary means fail, by throwing out an anchor and turning the ship by pulling on the cable. The manœuver necessitates the cutting of the cable and the loss of the anchor.

COALING. The speedy and proper loading of the bunkers of a steam vessel with coal for her own consumption has become a matter of much importance, especially to war vessels. The coal has to be arranged or trimmed to give the vessel her best speed balance. The danger of spontaneous combustion in bunkers also has to be guarded against. The large amounts of coal used by vessels of war renders it impossible for them to keep the sea continuously for considerable periods without recoaling, and several devices in the nature of cableways have been proposed for coaling at sea from colliers. The question still (1904) has probably not reached a wholly satisfactory solution.

COALING. The process of filling the bunkers of a steam vessel. One of the chief of the problems of naval administration. Owing to the location of the bunkers of a war vessel coaling by hand is frequently necessary, and it is the object of the different navies to reduce the time of coaling to its lowest limits. The coaling of ships at sea when it is difficult or impossible for lighters to lie alongside is one of the naval problems not yet solved.

COAL PASSER. One who brings coal from the bunkers of a steam vessel to the engine room and removes the ashes. It is the lowest rating of the engine room force of a war vessel. Coal passers may be rated up to be firemen, oilers, water tenders and machinists.

COAMINGS. The pieces in the framing of hatchways and scuttles on vessels which run fore and aft. The pieces which run crossways of the vessel are called head ledges.

COAST AND GEODETIC SURVEY. A bureau of the Department of Commerce and Labor. Makes surveys and prepares charts of the coasts of the United States and all territory under its jurisdiction, including rivers to the head of ship navigation. Makes observations to establish points of reference for state surveys and investigations, with maps on the subject of terrestrial magnetism. Publishes charts of domestic coasts, coast pilots and directions to mariners.

COAST ARTILLERY. 1. A branch of the artillery arm of

the service, comprising the artillery troops assigned to the coast forts. The United States has 126 companies of coast artillery.

2. The armament of coast forts. See *Cannon.*

COAST DEFENSE. The defense of a sea-coast, comprising the navy as the first line, and the coast forts as the second line. The latter are necessary to secure bases for the navy and to protect harbors and naval establishments, as well as important coast towns.

COAST GUARD. A body of troops designed for guarding a stretch of unfortified coast line, where the enemy is liable to effect a landing. The term is also applied to the small vessels used in patroling a coast.

COAST GUARD. An organization of Great Britain, originally instituted as a guard against smuggling, but which now has the added character of a lifesaving and signal service and of a naval reserve.

COASTING. Plying a maritime trade within the limits of one country. Vessels owned in the United States and engaged in the coastwise trade have special privileges in the way of fees, etc. Owing to the protection afforded all the vessels plying a coastwise trade in the United States are of American register.

COB-DOCK. A structure made of piling and logs or timbers laid up in the form of a cob-house and filled in with stone. The name of an important part of the New York Navy Yard.

COCK-BILL. To cock-bill the yards of a ship is to depress one end so that the yard is at an angle with the deck. It is a symbol of mourning, now seldom seen. It is also done when a vessel is lying at a berth and her yards would otherwise strike a building, etc. To cock-bill an anchor is to suspend it at the cat-head preparatory to letting go.

COCKPIT. An apartment below the water line in sailing vessels of war in which the wounded were treated during an engagement. In ordinary use it was used as a storeroom and for rooms for warrant officers. From its location it was inevitably an unsanitary portion of the ship, and was sometimes a place of horror. The short duration and high tension of modern naval engagements will prevent a repetition of old cockpit scenes, and many naval surgeons advocate the non-removal of the wounded during a battle from the sheltered positions of the superstructure.

COCOA POWDER. See *Brown Powder.*

COEHORN. A small mortar, throwing a shell of from 12 to 24 pounds weight. Named from a celebrated Dutch engineer. The range of modern explosive projectiles has made the mortar battery entirely obsolete.

COFFER DAM. As an additional protection in case of collision, from shot, etc., and to increase the flotation of modern war vessels of the first class, coffer dams are worked from the level of the protective deck to that of the berth deck. They are about 30 inches wide and are subdivided into water-tight compartments.

COIL. A quantity of rope wound into a ring or series of rings; each turn of the rope is called a fake, and several of these fakes, one within the other, are called a sheave or tier. A Flemish coil has but one sheave, laid flat on the deck with the hauling part in the center.

COIR. The fibrous husk of a cocoanut, which is sometimes made into ropes or cables. These have the quality of floating on the water but they are stiff and harsh to handle.

COLLIER. A vessel engaged in the transportation of coal. A very large part of the coastwise traffic of the United States is of coal-carrying vessels, sail and steam. The colliers of a modern navy form an important adjunct to the fleet. Those of the United States are at present officered and manned by civilians, but it is the intention to have naval crews as soon as possible. In the session of Congress 1903-4 two specially-built colliers for naval service were authorized.

COLLISION BULKHEADS. Two bulkheads, one forward and one aft, of extra stiffness and strength of construction, placed in vessels of considerable size, and especially war vessels to take the force of a collision either head on or astern and prevent the crumpling of the midship construction.

COLLISION MAT. A construction of canvas, made waterproof and stuffed with cork which is used to draw over a break in the side of a vessel. The lower edge is sunk with weights, and the pressure of the water through a rent forces the mat into the hole and checks further entrance of water.

COLOGNE-ROTTWEILER SAFETY POWDER. A blasting powder, composed of ammonium and barium nitrates, and oil of sulphur.

COLONEL. An officer (ranking next below a brigadier-general) who commands a regiment.

COLORS. The ceremony of hoisting the national flag on the staff on the poop of a war vessel at 8 a. m. and of lowering it at sunset. All those on deck stand at attention while the flag is hoisted or lowered with a slow regular motion, the bugler sounds a call or the band plays a patriotic air, and at the conclusion all salute. The senior vessel present establishes the time of hauling down the colors and the ceremony begins and closes the official day.

COLT. A short piece of rope with a knot on one end formerly used to start skulkers about their work.

COLT-BROWNING PISTOL. See *Browning Pistol.*

COLT PISTOL. See *Browning Pistol.*

COLT REVOLVER. The present United States army revolver, carrying six cartridges in the chamber, caliber 0.38 inch.

COLUMBIAD. A gun of American invention, first used in the war of 1812, suitable for firing shell with approximately the range, direction, etc., of a cannon firing solid shot.

COLUMN. A formation of troops in which the elements are placed one behind another. It is the formation for the *march,* but not for the *attack.*

COMBAT. An engagement between forces of smaller strength than those of an important battle. The phases of a battle in different parts of the battlefield are also designated *combats.*

COMITY. The courtesy extended between nations in matters of diplomatic procedure. It relates to the inviolability of the persons and official domiciles of diplomatic agents, to mutual representation by high diplomatic officers of equal rank; to care of hostile interests by neutral powers in event of hostilities, and to the relation of diplomatic representatives to the governments to which they are assigned.

COMMAND. To be the senior officer present. A command rank is one which requires the holder to be given the command of a vessel and debars him from subordinate duties except on a staff.

COMMAND. The power or authority exercised in the military service, within the limits prescribed by law, conferred by military rank. It is exercised by virtue of office and the special assignment of officers holding military rank who are eligible by law to exercise it.

COMMANDANT. The officer in command of a navy yard or station. He has charge under the direction of the Department of all work done in the yard. The executive officer of the United States Naval Academy is called Commandant of Midshipmen. The commanding officer of the Marine Corps is the Brigadier General Commandant. An officer in command of a ship signs himself as commanding, not commandant.

COMMANDANT. The commander of an important or special post, garrison or force: thus, the Artillery School, the War College, the Staff College, and the Cavalry and Light Artillery School, have each a commandant. At West Point, N. Y., the entire post is under the command of the *Superintendent* of the Military Academy, but the Corps of Cadets is commanded by a *Commandant* (who is subordinate to the Superintendent).

COMMANDER-IN-CHIEF. The President of the United States is the commander-in-chief of all armed forces, but the title is given to a rear-admiral in command of a fleet or squadron at sea. He has general power over the movements of the vessels under his command, and when on a foreign station is given the power of ordering court martials and a general administrative discretion.

COMMANDING OFFICER. The senior officer of a post, detachment or unit of organization.

COMMERCE DESTROYER. A type of fast armed vessel with great engine power and consequent high speed intended to overtake and capture or destroy the merchant vessels of an enemy. They have comparatively light batteries and no armor.

The ocean liners of subsidized steamship companies are constructed with a view of being turned into commerce destroyers in case of war.

COMMERCE AND LABOR, DEPARTMENT OF. The latest established of the National departments, having been established in 1903. Is charged with the work of promoting the commerce of the United States and the investigation of conditions relating to corporations. Various bureaus formerly under other Departments which relate in their work to the promotion of commerce and the dissemination of information on commercial conditions were transferred to constitute the new department.

COMMISSARY. An officer of the Subsistence Department of the army.

COMMISSARY-GENERAL. Of the army. Provides subsistence for the army and articles authorized for sale to officers and enlisted men.

COMMISSARY SERGEANT. A sergeant of the Subsistence Department of the army, or a sergeant appointed in an infantry or cavalry regiment to act as *Regimental Commissary Sergeant.*

COMMUTATION. The conversion of certain allowances (such as rations and quarters) into a money allowance, permitted only under certain special circumstances. Rations are commuted at rates varying (according to the circumstances) from $0.25 to $1.50 per day; quarters for officers are commuted at the rate of $12.00 per room allowed (a rate established over thirty years ago, and no longer adequate).

COMPANION. The covering of an opening from the deck to the living compartments of a vessel. It may be covered with a glass skylight or by a wooden hood with movable slides and doors by which access may be gained to the deck by a ladder. The shaft leading to the opening is called a companion way, the ladder a companion ladder.

COMPANY. A unit of organization of infantry, coast artillery, engineers, etc., the *tactical* unit of infantry in our service. Its strength (on a war footing) varies in different armies from about 100 to 250 men. It is commanded by a captain, who is assisted by one or more first and second lieutenants, and it is divided for drill and field exercises into two or three platoons, which are again subdivided into sections and squads. In barracks, the company is divided into squads, each under a non-commissioned officer.

COMPARISON. The setting of a timepiece, used in taking an observation to determine longitude with the chronometer. The watch or other timepiece is compared before and after the observation.

COMPARTMENTS. The cellular divisions into which modern construction divides the hull of a ship. As many compartments as may be arranged for in view of the use to which the vessel is

intended are isolated by water-tight partitions, and all communications are closed by water-tight doors, so that in case of injury to one section of the ship the compartment or compartments may be isolated and sufficient flotation preserved to keep the vessel from sinking.

COMPASS. The mariner's compass, depends on the property of a magnetized needle to point to the north. Layers of steel, magnetized as heavily as possible, are superimposed to form a needle, which is supported by a delicate pivot and attached to a card which is in part supported by devices which allow it to move with the least possible amount of friction. The card is divided into thirty-two points, the points being divided into half and quarter points. The whole being delicately swung in a compass box with a device which allows it to retain a horizontal position, the north point of the compass points approximately north, deviating according to the position of a given point on the earth's surface and being in error because of defects of construction or local influences. The former difference is marked on the chart of the location, and the error is either corrected by delicate adjustment of the compass and the fittings of the binnacle, or is noted by careful comparison. The United States maintains an office in the Navy Department in Washington for the care and adjustment of compasses and instruction in compass work, and skilled compass adjusters serve the merchant marine at various ports.

COMPLEMENT. The number of men composing a vessel's crew. Tables are made by the Navy Department of the number of men of the several ratings to be allowed each ship, according to her size, and additions are not allowed except for exceptional reasons.

COMPOSITE. A ship built with an iron or steel frame and wooden skin or planking. An intermediate stage in naval construction between the wooden vessel and the steel ship.

COMPRADOR. The purveyor from shore in a foreign port, who furnishes the vessel with fresh meat, provisions, etc.; also sometimes playfully applied to the paymaster of a ship.

COMPTROLLER OF THE CURRENCY. Has the supervision of the national banks and is charged with the inspection to determine their continued solvency. In case of failure the affairs of the bank are wound up under his direction.

COMPTROLLER OF THE TREASURY. Is the authority as to the legality of payments under appropriation acts, settles questions in dispute between the auditors and the departments to which they are assigned, directs the form of keeping accounts and collects debts certified by the auditors to be due the United States.

CON. To direct the course of a ship. In close navigation the officer of the deck gives directions for the movement of the wheel to the quartermaster. In ordinary sailing the quartermaster cons her on a compass course. A conning tower is an armored structure, circular or hemispherical, in which the captain and navi-

gating officer stand and give directions for the movements of the ship and fighting the batteries while in action.

CONDEMN. To officially declare a vessel or stores unfit for use. A decision rendering a captured vessel fair prize.

CONNING TOWER. A circular armored structure, containing the instruments of communication with the different sections of a war vessel and intended for the occupancy of the commanding and navigating officers and helmsman during the progress of an engagement.

CONSTRUCTION AND REPAIR, BUREAU OF. Has charge of repairs to hulls, turrets, steering and ventilating apparatus of vessels, designs new vessels and has charge of new construction in navy yards. Has charge of docking of ships and of certain electrical machinery not controlled by the Bureau of Equipment.

CONSUL. A representative of any country living abroad for the purpose of facilitating the commercial intercourse of the country he represents with the country to which he is sent. He is a commercial officer only, and has no diplomatic powers, although he frequently acts as an assistant to the diplomatic representative. He conducts business with the officials having the administration of the details of commerce only, and in diplomatic matters must make representations through the accredited diplomatic representative. The order of importance of consular officers is: Consul-general, consul, commercial agent and consular-agent.

CONTINUOUS SERVICE CERTIFICATE. A paper given in lieu of a discharge in the United States Navy on which the details of various enlistments are noted, and which entitles the holder to extra pay and consideration.

CONTRABAND OF WAR. Articles which are likely to be of use to an enemy in prosecuting armed conflict are generally declared contraband of war, and are subject to seizure when in or likely to come into the enemy's possession. Coal, from the fact that it is essential to the use of warships, has been declared contraband of war.

CONTRABAND OF WAR. A term applied to articles such as a belligerent has, by the law of nations, a right to prevent a neutral from furnishing to the enemy. The articles thus liable to seizure are either defined by treaty, or may be announced during the progress of the war.

CONTRACT SURGEON. A civilian physician or dental surgeon employed for army service, by a contract made for a specified time, but which may be annulled at any time.

CONVOY. A vessel or fleet of merchant vessels protected by an armed vessel or vessels on their voyage between ports. Also the convoying force. The capture of one or more vessels of a convoy was formerly one of the chief objects of maritime warfare. Convoy is more often granted at the present time when shipping interests are threatened at some given port.

CORDITE. The smokeless powder of the British army,

composed of nitroglycerine, gun-cotton and vaseline, pressed into the form of cords of various sizes, cut into proper lengths.

CORDITE. A form of so-called smokeless powder resulting from the further treatment of gun cotton with nitro-glycerine. It is said to develop less muzzle velocity than gun cotton powder made with ether, and to damage the bore of the gun by rapid erosion.

CORDITE M. D. The latest form of cordite, having a lower percentage of nitroglycerine, consequently developing less heat, and corroding the bore less than the older form.

COPPER. To cover the bottom of a ship with sheets of copper or some alloy to prevent fouling by marine growths. To copper fasten is to use bolts and nails of iron in the portion of a ship which may be reached by the water. Vessels so built are more durable, as iron bolts corrode quickly, especially from galvanic action when the ship is coppered. A ship's coppers are large kettles used for cooking.

CORPORAL. A non-commissioned officer of the army, ranking next below a sergeant.

CORPORATIONS, BUREAU OF. Under the Department of Commerce and Labor. Investigates the organization, conduct and management of corporations and joint stock companies with a view to giving public information about the same, and to making suggestions to Congress as to legislation needed for the regulation of such organizations.

CORPOSANT. An electrical phenomenon in the form of a luminous mass or ball which plays about the ends of the spars of a ship.

CORPS. A military organization of officers and men (such as the Artillery Corps, the Corps of Engineers or the Signal Corps), or of officers alone. Sometimes applied to an army corps.

CORPS OF CADETS. The body of cadets at the Military Academy.

CORSAIR. A pirate. From the vessels of Algiers, Tunis and Tripoli, which formerly exacted a tribute from European nations and the United States on pain of capture of their vessels and seamen.

CORVETTE. A vessel of the old French sailing navy. It was next in size below a frigate and had a covered battery with guns on the forecastle and quarter-deck. The larger among the American sloops of war answered to the corvette.

COSSACK. The native cavalry of southern Russia, forming an integral part of the Russian army. There are (in peace) fifty-three regiments and twenty-six batteries of Cossacks, and in time of war the Cossacks furnish, in all, 155 regiments and fifty-six batteries.

COSSACK POST. A group of four men substituted for the picket and its sentinels in the ordinary outpost system. Each

post has one man on the watch, posted only a few yards out in front. The system is more economical of men and less fatiguing than the ordinary system.

COTTON POWDER. A blasting powder of various composition: No. 1 is a mixture of pulverulent gun-cotton and barium nitrate; No. 2 contains gun-cotton, a nitrate and charcoal; and No. 3 consists of metadinitrobenze, gun-cotton, a nitrate and chalk.

COUNTER. The portion of the stern of a vessel from the water line until the knuckle or full outward swell of the contour of the stern is reached. The recessed part under the overhang of the stern.

COUNTERSCARP. The front side of the ditch or moat in fortifications toward the enemy.

COUNTERSIGN. A watchword (usually the name of a *battle*) used by troops as a precaution against the entrance of dangerous or unauthorized persons into a camp, fort or post. It is given to the guard or outposts and such officers of the camp and other persons as the commanding officer may designate.

COUNTRY, WARDROOM. The common space in the wardroom of a vessel of war between the staterooms with which it is bordered and which open out of it.

COURSE. The angle which a ship's track makes with the meridians, this angle being referred either to the true meridian or to the position of the magnetic needle by which the ship is steered. The former is the true course and the latter the compass course.

COURSES. The lowest square sails on a square-rigged ship. The fore, main and mizzensails are referred to as the courses.

COURT-MARTIAL. A military court for administering military law, and enforcing order and discipline in an army or navy. The different kinds are the General Court-martial, the Summary Court, the Regimental Court and the Garrison Court.

COURT-MARTIAL. Naval courts martial are of two sorts, the summary court-martial convened by the commanding officer of a vessel and consisting of a detail of the officers on board, and the general court-martial, which may be ordered by the President, the Secretary of the Navy or the commander-in-chief of a fleet or squadron on a foreign station. The former has jurisdiction over petty offences with a maximum sentence of thirty days' imprisonment with three months' loss of pay; the latter must be approved by the Secretary. General courts martial have jurisdiction over all other military offences subject to the review of the convening officer, but sentences of dismissal must be approved by the President.

COURT OF INQUIRY. A military court, ordered by the President, or (when demanded by the officer or soldier concerned) by any commanding officer, to examine into the nature

of any transaction of, or accusation or imputation against any officer or soldier, and usually consists of three members.

COVE. A small inlet or recess in the coast, or in a bay or harbor which would serve as a shelter for small craft.

COVENTRY. Midshipmen at the United States Naval Academy are sometimes "sent to Coventry" as a punishment for unmanly behavior. Other midshipmen are forbidden to speak or communicate with them, and they are compelled to take their meals alone and under guard.

COVERED WAY. A passage in a fortification which is covered from the enemy's fire, usually under ground. In land forts the passage specially so designated lies between the counterscarp and the glacis.

COWL. One of the large hoods of sheet iron or steel erected over the ventilating shafts of a steam vessel, and geared so that they may be turned to face the prevailing wind.

COX'S TRAVERSE. To escape duty by being apparently busy or on an errand, or by taking a route to avoid being called on. Shirking duty on shipboard adds to the burdens of others, and a shirker is justly an object of contempt.

COXSWAIN. An enlisted man, who has charge of the crew of a boat of a vessel of war. He must see that his boat is kept in order, and generally steers. Otherwise he pulls the stroke oar. The space between the backboard and the stern where the coxswain sits when steering is called the coxswain's box.

CRACK. Of superior excellence, as a crack executive officer. Also to carry or crack on sail in a heavy breeze.

CRADLE. A supporting structure, which is fitted to the bottom of a vessel and carries her in launching, or in being hauled out for repairs. Also the frame in which a boat rests on shipboard.

CRADLE. Timbers shaped to the form of the bottom of a boat, and intended to receive the boat when removed from the water.

CRAMPIT. The piece of metal on the tip of a sword scabbard.

CRANE. A hoist for raising projectiles, usually an iron swing crane, which is attached to the gun-carriage, or to some part of the gun emplacement.

CRANKY. A vessel which lacks stability and heels dangerously when under sail is said to be cranky. The lack of ballast, placing of cargo weights too high or lack of beam may be the causes. Vessels whose sides make a sharp angle with the keel to above the water line are likely to be cranky unless the keel is heavily weighted.

CREEK. A narrow inlet of the sea, which has the appearance of an ocean-flowing stream.

CREW. In law the personnel of the ship, including the officers. In common usage, the enlisted or foremast hands only. Also the sub-divisions of the whole force, as a boat's crew, gunner's crew, etc.

CRIMP. A man who makes his living by enticing seamen on board undesirable ships on which they would not ordinarily ship.

CRINGLE. An eyelet hole in a sail, to which ropes may be fastened to manipulate the sail. It is generally worked with a metal thimble fastened in with loops of thread, which cover the whole surface of the metal, but the edges of the hole may be worked with thread only in light canvas.

CROSS BAR SHOT. A projectile which, when fired from a cannon, expanded into crossed arms with a quarter ball on each. Formerly used for cutting rigging and sails.

CROSS JACK. The lower yard on the mizzenmast of a square-rigged vessel.

CROSS-TREES. The wooden construction which extends out at right angles to the mast of a vessel to spread the shrouds and give them an effective bearing.

CROW-FOOT. A number of small lines run from a common center, used to keep the middle part of an awning from sagging.

CROWN. When a deck rises higher at the center than at the sides, so that the water will run off readily, it is said to crown. To crown a knot is to lay the strands of the rope over and under so that they will bind and keep the knot from unlaying.

CROW'S-NEST. A station placed at the lower masthead of a vessel for lookout purposes. It is an enclosed space, barrel shaped, and is most used by whalers and seine fishermen.

CROZIER DISAPPEARING CARRIAGE. See *Buffington-Crozier Disappearing Carriage.*

CRUISE. A voyage or the duration of a voyage. The term of sea duty in the navy, supposed to be three years, at the expiration of which an officer expects a shore assignment.

CRUISER. Generally an unarmored war vessel, capable of making long voyages, and which is utilized for the ordinary duties of a navy in time of peace. Is upward of 2,000 tons displacement and fully armed. A protected cruiser has an armored deck for the protection of the engines, etc. An armored cruiser is only different from a battleship in that provision is made for greater speed, the greater weight of the motive power being deducted from armor and armament.

CRUTCH. A stanchion of wood or iron, having a fork in its upper end in which to rest a spar. A movable support for a similar purpose, having two legs, which may be closed or spread scissors-fashion.

CUDDY. A cabin or covered place in a small vessel or boat.

CULCH. Stones, shells, etc. Also a miscellaneous assortment of articles out of place. Waste matter.

CURTAIN. See *Bastion.*

CURVED FIRE. The fire from guns, loaded with charges less than service charges, or the fire from howitzers and mor-

tars, at angles of elevation up to 15°. In case of guns and field howitzers also called *Indirect Fire.*

CUTLASS. The short heavy sword, with which sailors were formerly armed, in addition to the pistol or revolver. It had an enclosed hilt and guard of metal. Blue jackets are now organized as infantry and provided with regular infantry equipments for landing parties, and are exercised with small arms and in target practice.

CUTTER. A sharp-built, single-masted vessel, in which the jib hoists on its halliards instead of on a stay. One of the types of boats of the navy. The steam launches used in the navy are called steam cutters. The small steamers used in the revenue service are called revenue cutters, from the former use of the fast sailing craft above desribed.

CUTTING OUT. The exploit of capturing or destroying a vessel protected by the guns of a fort.

CUTWATER. The forward part of the stem of a vessel which divides the column of water through which the vessel passes.

DASHER BLOCK. A block with two or more sheaves attached to the end of the gaff of a vessel, on which the ensign and signals may be hoisted.

DASHIELL GUN. A gun in use by the United States navy, the block having an action similar to that of the Vickers-Maxim gun.

DATUM POINT. A pile (or other object) in a bay or the open ocean, the distance to which, from a Position Finder, has been accurately determined: it is used to adjust the Position Finder.

DAVITS. Iron or wooden posts, to which the tackles for hoisting and lowering boats are attached. Iron davits are made to turn in and outboard so that the boats may be secured inside the line of the davits or allowed to rest on cradles.

DAVY JONES. The evil genius of the sea, who seeks to bring about marine casualties. To drown is to go to Davy Jones' locker.

DEAD EYE. A piece of wood, having the form of a block or pulley but without a wheel or sheave used to hold the loop of rigging which is not necessary to haul back and forth. Also a small circular window with a fixed light of heavy glass.

DEAD-HORSE. Working out the time covered by advanced wages is called working out dead horse. From which comes the general term for unremunerated toil.

DEAD-LIGHTS. Strong wooden shutters, which were formerly substituted for cabin vessels' ports in rough weather. Made obsolete by modern port light construction.

DEAD-RECKONING. A method of estimating position at sea by adding up the total number of miles sailed or steamed, and making deductions for currents, leeway, etc. Navigation on the great lakes is almost wholly by pilotage and dead-reckoning.

DEAD WATER. The stagnant water in an eddy. The passage of a ship through the water forms an eddy with its characteristic phenomena under a vessel's counter.

DECK. The planking placed on the horizontal frames of a vessel making a continuous platform fore and forecastle and poop decks are raised platforms at the bow and stern respectively. When there is none, the vessel is flush decked. The spar deck is the main, open deck of the vessel. The berth deck in modern war vessels is generally next below. The orlop deck is the deck just over the timbers of the vessel. Sailing war vessels had one, two or three gun decks on which the batteries were mounfed. Merchant vessels have main deck, 'tween deck and lower deck, or various modifications according to the class of cargo carried.

DECK CIRCLE. A circular track of metal laid in a deck, on which a gun or other object may be swung in an arc by means of rollers.

DECLARATION OF WAR. The formal notice that hostilities between nations have begun. It is held that an overt act and the declaration of war may be simultaneous, or that the act may precede the declaration. It is the duty of a naval force to be prepared at all times to meet and if possible defeat action intended to be followed by a declaration that a condition of war exists.

DEEP SEA SOUNDING. The vessels of the navies of the world have spent much time determining the depth of various parts of the ocean which cannot be sounded by ordinary devices. Devices which are sunk by heavy weights which are left at the bottom of the sea permit the distance to the bottom to be registered and samples of the ocean bottom to be brought to the surface. Dredges for use at great depths have also been devised. The deepest point at which a sounding has been made is 5,269 fathoms, 66 feet less than six miles near the island of Guam.

DEFENSE. The resistance to an attack, usually made (by land forces) in a position previously selected and prepared. *Coast Defense* comprises the military and naval dispositions and operations necessary to resist a naval attack.

DEFILADE. To protect the interior of a fortified work against direct fire or enfilade. Modern high-angle fire makes defilading very difficult.

DELIVERY TABLE. In coast forts the table on which ammunition is delivered from a hoist.

DEMONSTRATION. A military attack intended to deceive the enemy, with a view to inducing him to divide his forces, while the real attack is made elsewhere. Also called a *Feint.*

DEPARTMENT. A military geographical sub-division of the country, all the troops within its limits being commanded by the *Department Commander* (a brigadier-general). There are at present twelve departments in the United States: Luzon, Visayas and Mindanao, in the Philippines; California and Columbia, on the Pacific Coast; Colorado, Dakota, the Lakes, the

Missouri and Texas, in the Interior, and the East and the Gulf, on the Atlantic and Gulf Coasts.

DEPARTURE, ANGLE OF. The angle between the prolongation of the axis of the gun at the instant the projectile leaves the bore and the line of sight (the straight line passing through the sights of the piece and the point aimed at).

DEPLOYMENT. The development of a *line* from a *column* formation.

DEPRESSION POSITION FINDER. An instrument used in coast artillery to determine the position (range and azimuth) of a target (warship).

DERELICT. Anything which has been abandoned at sea, as derelict vessels. These latter constitute serious dangers to navigation, as they are frequently sunk to the level of the waves. It is the duty of naval vessels to destroy them by burning or gunfire.

DESERTER. A soldier who abandons the service with the intention of not returning to it. The maximum penalty for this offense in time of war is death, in time of peace dishonorable discharge and confinement at hard labor for five years.

DESERTION. The offense of leaving military service with the intention not to return. It is punishable in time of war by death, and in time of peace by imprisonment and dishonorable discharge. Upon conviction of desertion, a citizen becomes disfranchised and perpetually debarred from the suffrage or from holding office.

DETACHED WORKS. Fortification works so far advanced beyond the main works as to receive no direct support from the latter, and which must, therefore, have a certain amount of self-dependence.

DETACHMENT. A body of troops detached from the main body, not as large as a *division* and not as small as an *officer's patrol.* A detachment usually has a specific object or purpose.

DETONATOR. An explosive producing an explosion of the first order (sudden and violent). Some of the high explosives can only be detonated by means of another explosive (a detonator). Detonators are put up in metallic capsules, and contain mercury fulminate in one end, a mixture of sulphur and ground glass at the other, with gun-cotton between.

DEVIATION. The departure of a projectile from the mean position determined from a large number of shots: it may be measured laterally, vertically or in the direction of the range, and is different for different guns, and also at different ranges.

DEVIL'S CLAW. A claw-shaped device, made of iron or steel, intended to catch over the links of a chain cable and used in connection with the deck stopper.

DINGHY. A small boat, rowed by one or two men, used for light boating about a vessel.

DIRECT FIRE. The fire from guns with service charges at

angles of elevation up to 15°, not aimed over any intervening object which obscures the target.

DIRECTOR OF THE MINT. Has general supervision of mints and of the assay offices where the value of precious metals is determined. While not actually in charge of the several establishments, he prescribes rules for their conduct, carries out examinations as required, and all changes are subject to his approval.

DISBURSING OFFICER. An officer who disburses public moneys, such as a paymaster, quartermaster, commissary, post-treasurer, etc.

DISCHARGE. The dismissal of an officer or soldier from the service (usually applied only to the latter). An enlisted man is discharged when he has completed his term of enlistment, but he may also be discharged by order of the President, by sentence of a General Court-martial, etc. His *discharge* is presented to him in writing.

DISCIPLINE. That element in an army which insures prompt obedience to orders, regulations and the will of the commander.

DISPATCH AGENT. The Department of State maintains a dispatch agent each in New York, San Francisco and London. Their duties are to insure the safe and speedy transportation of official communications between the government and its representatives abroad.

DISTANCE. Space in the direction of depth; that is, from front to rear of any formation.

DISTRESS SIGNALS. When a vessel is in danger or needs help of any description, such as of men, provisions or water, she flies her ensign upside down, fires guns, sends up rockets and takes other means to attract attention.

DITCH. A trench in front of the parapet of a fortification, designed as an obstacle to the enemy's advance.

DITTY BOX. A small box of uniform pattern supplied to enlisted men in the navy to hold small articles of personal use and value. Formerly a bag, made of dittis, a Manchester-made fabric was used.

DIVING. One of the important parts of the education of a modern man-of-warsman is instruction in diving with the diving suit. It forms a part of the instruction at the torpedo school at Newport. Diving is in frequent use in the navy as a means of ascertaining the condition of the bottom of a vessel, for recovering lost articles, etc.

DIVISION. A unit of organization, usually comprising two brigades of infantry, a regiment of cavalry and a battalion of artillery, besides engineers, hospital corps detachment and train. A *cavalry division* comprises two or three cavalry regiments with a battalion of horse artillery and the necessary train.

DIVISION. A geographical sub-division of the country, comprising two or more departments: it is commanded by a Major-General. There are five divisions in the United States: Atlantic, Northern, Southwestern, Pacific and Philippines.

DIVISION. The crew of a naval vessel are divided into divisions, each one of which is in charge of a watch officer. The messmen, cooks, musicians and other idlers are drawn upon to form a powder division, which is in charge of the paymaster. Each division is assigned to fight a section of the ship, and drills and exercises as a body. The engineer force constitutes a division under the officer assigned as chief engineer.

DOCK. An artificial basin for the reception of shipping. Commercial docks generally consist of dredged spaces bordered on one or more sides by piers. Where the rise and fall of the tide are considerable, gates are sometimes fitted to the entrance of the docks to keep the vessels afloat by retaining the water. Dry docks are either constructions of stone, wood or concrete, made water-tight, so that they may be pumped dry after the ship is admitted, or are floating, or hydraulic docks, by which ships may be raised above the level of the water. Floating docks, which may be submerged to take in a vessel and then raised by pumping out the pontoons, are coming into wider use with the improvement in steel construction. Marine railways, formerly used to draw vessels out of the water to the upland, are now in disuse, except for tugs, yachts, etc., owing to the growth in size of commercial vessels. Dry docks are used mainly for repairing, as vessels may be more economically built on inclined ways, which allow of their being launched.

DOCK YARDS. The English term for the depots of naval provision, places of repair, etc., answering to the navy yards and stations of the United States.

DOG WATCH. Two half watches between 4 and 6, and 6 and 8 in the evening of the maritime day. The day is thus divided into seven watches instead of six, as the latter number would give the more arduous time of duty continuously to one section of the crew. By the device of the dog watch the duty is divided equally in the course of every two days.

DOLPHIN. A pile or group of piles bound together, placed in the water area, and used in coast artillery as a datum point for adjusting the reading of the position finder.

DORMUS PISTOL. An automatic pistol, loading by gas pressure.

DORY. A small boat, used by the fishermen of New England. It has a narrow, flat bottom with sides that spread outward as they rise and tapering nearly as much at the stern as at the bow. No better seaboat was ever devised, and properly handled will live in any sea if they can be kept free from the accumulation of spray.

DOTTER. A device for securing target practice with guns

of large caliber without the expenditure of ammunition, which has been largely instrumental in improving the marksmanship of the navy of the United States. It is based on the invention of Captain Scott, of the British Navy, and consists of a small card, which is given an up and down motion in a frame by means of a handle moved by a member of the crew. The gun pointer follows the motion of the card, which resembles that of a vessel at sea, and by pressing the usual electric contact which fires the gun, causes successive pencil dots to be made on the card. The possibility of immediately noting errors in aiming and following the course of the pencil representing shots made trains men in the continuous aiming, which is the basis of modern gun practice, and in which the gun pointer is at no time required to remove his eye from the sight piece, the loading and making ready of the piece being done by other members of the gun's crew.

DOUBLE BOTTOM. In the development of the cellular system of marine construction much importance has been given to the structure by which the outer shell of the vessel is reenforced and protected by a second bottom worked throughout the length of the ship and supporting the outer bottom by a series of frames. The construction adds to the stiffness of the vessel, as well as to her safety from loss by grounding. Recent developments in the construction of naval vessels indicates the probable considerable extension of this idea, so as to guard against damage by torpedoes and submarine mines.

DOUBLE OR TWIN GUNS. Heavy guns, mounted in pairs on a single carriage, but with separate recoil cylinders, so that they may be fired together or separately, at the same or different elevations.

DOUBLE THE TUB. An old offense in the navy at the time grog was served. It consisted in an enlisted man taking his place in line a second time to get a double allowance.

DOWN-HAUL. A rope secured to the head of a light sail to assist in lowering it when its make will not bring it down with a run.

DRESS PARADE. A ceremony prescribed by the drill regulations, the troops parading in *dress* uniform.

DRIFT. The deviation of a projectile from the plane of fire, due to the resistance of the air combined with the motions of the projectile: it is also affected by the direction and velocity of the wind.

DRIFT. The lateral curve described by a projectile, on account of the rotatory motion given it by the rifling of the gun from which it is fired. In some types of ordnance a figure equivalent to an elongated spiral is described in the path of the projectile.

DRIGGS-SCHROEDER GUN. A 6-pounder or smaller gun in use by the United States navy, and a 4-inch rapid-fire and 6-

pounder of the United States army: the block drops to clear its upper end from the housing of the breech, then revolves to the rear about a horizontal axis.

DRIGGS-SEABURY. 15-pounder and 6-pounder guns and mounts (carriages) used by the United States army and navy. The guns are provided with a drop-block, cylindrical interrupted-screw type of breech-mechanism. The guns for army use have casemate, rampart or masking parapet mounts of special design.

DRILL REGULATIONS. The official publications prescribing the drill for the various arms of the service.

DRIVER. Formerly a square sail set like a studding sail on the spanker boom. Latterly the building of schooners with more than three masts has created a demand for the extension of the terms. The practice has not been settled by long use, but the fourth mast is generally called a spanker, the fifth the jigger, the sixth the driver, and there are a number of suggestions, such as "pusher," etc., for the seventh mast. It is probable that in actual, every-day use, the masts of a seven-masted vessel will each come to be called by number, beginning forward.

DRUM-MAJOR. A non-commissioned officer in a military band, ranking with a first sergeant. He precedes the band at parades and other ceremonies.

DUALIN. A dynamite, composed of nitroglycerine, nitre and sawdust.

DUCTS. The smaller pipes of the drainage and ventilating systems on vessels of war, which follow the construction to all portions of the hull and superstructure.

DUNNAGE. Loose wood and substances of small intrinsic value that may be carried as cargo, but used to stow under casks and other packages of commodities to prevent their moving.

DUNNITE. An explosive used for filling shell for coast guns (invented by Captain B. W. Dunn, Ordnance Department). It resembles maximite in composition and action, and is probably the most effective and reliable explosive now known for use as a bursting charge for shell.

DUPONT BROWN POWDER. A brown powder, used in the United States army, composed of nitre, sulphur and baked wood (of proper composition and texture), with carbohydrates specially added.

DURANA METAL. An iron bronze, weldable when warm, prepared at the Düren Works (Germany), and used for cartridge cases (including the heaviest calibers). A *Durana Manganese Bronze,* also weldable when warm, is prepared by the same company in five grades of hardness.

DYNAMITE. An explosive, consisting essentially of liquid nitroglycerine absorbed by some porous *solid,* to facilitate handling. Kieselguhr (a siliceous earth) is generally used, but

carbonized cork, sawdust, black gunpowder and other porous solids are used.

EARING. The small line attached to the corners of a sail, by which it is hauled out to the end of the boom and made fast. The regular fastening used is called the head-earing. When a sail is reefed an additional earing must be used, called the reef-earing. To fasten the reef-earing is the post of honor in reefing a sail.

EARTHWORK. A temporary field fortification, of various forms, the essential parts being shelter trenches, covered by a parapet, and protected against enfilade.

ECHELON. A formation of troops, in a kind of step-like arrangement, the units separated by a certain distance perpendicular to the front, but each successive one placed to one flank of the preceding unit.

E. C. POWDER. A smokeless powder, manufactured in England, and composed of nitrocellulose and nitre, with or without the addition of a little camphor: it is granulated, and gray, yellow or orange in color.

ECRASITE. An Austrian explosive, made by treating trinitrocresol with ammonium hydrate. It is used by the cavalry and the engineers for effecting demolitions, and also as a bursting charge for heavy (siege and seacoast) shells.

EDUCATION, COMMISSIONER OF. A bureau official of the Interior Department, who has charge of the collection and dissemination of information in relation to education. Also has charge of the education of children in Alaska, and of the endowment fund for the aid of agricultural and mechanical colleges.

EFFICIENCY REPORTS. Reports rendered annually by post and department commanders, setting forth the general qualifications and military records of all their officers. An individual service report is rendered annually by each officer of the army, through the regimental or corps commander.

EHRHARDT GUN. A rapid-fire field gun, adopted in England. It has the Nordenfelt eccentric screw breech-block and a long tubular extension trail; and fires about seven aimed shots a minute (with occasional changes of trail).

ELECTRIC APPLIANCES. The use of electricity in pursuits ashore has scarcely excelled the general nature of its application on board ship. Nearly all auxiliary services, such as hoisting, the moving of turrets, handling of ammunition, etc., are performed by electric motors in modern ships, power being supplied by large generating sets.

ELECTRIC FUSE COMPOSITION. The fuses to be fired electrically contain at one end a mixture of mercury fulminate, potassium chlorate and antimony sulphide; at the other, a mixture of sulphur and ground glass, with a layer of gun-cotton

between, surrounding the wire, whose fusion is to ignite the fuse.

ELECTRICIAN SERGEANT. A sergeant (ranking next below a regimental quartermaster sergeant), who has charge of the electrical plant and appliances at a coast artillery post. The number in the army is limited to 100.

ELEVATING ARC. A metal arc on a gun-carriage, on which is indicated the elevation of the gun.

ELEVATING SCREW. A screw under the breech of a field piece for giving the gun the proper elevation. A combination of levers, called lazy-tongs, is used in the 3.2-inch field gun, but in the new 3-inch piece the double-screw is used.

ELEVATION. The inclination of the axis of a gun or small arm to the horizontal: it is measured by the angle of elevation. (See *Trajectory.*)

ELEVATION CIRCLE. A brass circle, attached to a gun-carriage, on which the elevation of the gun is indicated.

ELEVATION SCALE. A scale on a gun-carriage indicating the elevation of the gun.

EMBARGO. An order issued by a government forbidding the sailing of shipping from its ports. An obsolete form of retaliation between nations. Used by President Jefferson as a protest against the interference of England and France with the shipping of the United States to inflict punishment by loss of trade.

EMBRASURE. In fortification, the openings through which the artillery is to fire.

EMERGENCY CABIN. A stateroom, provided on large vessels of war near the chart house, and intended for the occupancy of the commanding officer at such times as he may anticipate that his presence on the bridge may be needed.

EMERGENCY RATION. A ration issued to troops operating for short periods under circumstances which require them to depend upon supplies carried upon their persons. It is resorted to only when the use of the regular ration is impracticable, and only for short periods.

EMMENSITE. A blasting powder, made by fusing very pure picric acid, and dissolving in it some sodium or ammonium nitrate.

EMPLACEMENT. That part of a battery pertaining to the position, protection and service of one gun or mortar, or a group of mortars.

EMPLACEMENT OFFICER. The officer of a mortar battery in charge of each emplacement.

ENCAMPMENT. A camp or camping. Troops are encamped, as a rule, when on active operations in the field.

ENCEINTE. The principal encircling parapet of a fortified place, or closed fort.

ENFILADE. Fire directed from the flanks of a position so as to sweep the length of a line of troops, a battery or a trench.

ENGAGEMENT. An action of less importance than a battle, usually between comparatively small forces. Engagements may be complete in themselves, or they may be preliminary to, or form parts of, a general battle.

ENGINEER. A soldier of a branch of the service, whose duty it is to construct permanent forts, and in the field to assist the advance of the army by building bridges, clearing and preparing roads, and constructing field works. Called *Pioneers* in some armies.

ENGINEER SCHOOL. A school for engineer troops. In the United States a school in submarine mining and military engineering, for officers and men of the engineers, until recently located at Willet's Point, N. Y., but now at Washington Barracks, D. C.

ENGINEERS, CHIEF OF. Of the army, has supervision of the work of the corps of engineers, regular army officers permanently detailed to engineering work. Carry out construction and repair of fortifications, military roads and bridges. Have charge of river and harbor improvements and surveys of the Great Lakes. Of the navy is chief of the Bureau of Steam Engineering, which has control of machinery moved by steam on vessels of war. Engineers afloat in the navy are regular line officers, and do not constitute a separate corps. Civil engineers ashore of the navy are a staff corps, under the Bureau of Yards and Docks.

ENGINEERS, CORPS OF. The officers and enlisted men of the engineer branch of the service in the United States army. The engineer troops in the United States now comprise three battalions of four companies each.

ENGINE ROOM TELEGRAPH. A device for transmitting orders from the wheel house of a vessel to the engine room. It is not a telegraph in the ordinary sense, but consists of direct transmission by a chain or other device, by which the pulling of a handle on the bridge sets a dial and rings a gong in the engine room.

ENGRAVING AND PRINTING, BUREAU OF. At Washington, prints all money, securities and stamps of the United States. Also prepares all checks, drafts, commissions and pension and patent certificates used by the Government. Prepares engraved portraits authorized by law.

ENLISTMENT. The act of entering the service of the army or navy. The term is three years.

ENLISTMENT. The contract between the Government and a man who binds himself to serve in the army or navy for a term of years. The navy enlistment is for a term of four years, that in the Marine Corps is for five years. An apprentice in the navy and a music apprentice in the Marine Corps enlists to

serve until he is twenty-one. If re-enlistment is effected in the navy within four months from the date of discharge a bonus of four months' pay is given. Continuous service certificates are given in lieu of successive re-enlistments, which entitle the holders to special privileges and extra pay.

ENTANGLEMENT, WIRE. A form of obstruction in field fortification, now replacing most other forms. No particular method is followed, the object being to obstruct the advance of troops of all arms as much as possible.

ENTOMOLOGY, DIVISION OF. Of the Department of Agriculture. Investigates nature and habits of insects injurious to agriculture and the function of insects beneficial to plant life. Studies the causes and seeks to provide remedies for damages to crops caused by insect life.

ENTRENCHMENT. The construction of a line or lines of earthworks, or shelter trenches, for the protection of troops in the field, and to strengthen a position against attack.

EPAULET. A shoulder ornament in the United States army, now worn only by general officers.

EPAULEMENT. A parapet thrown up for the protection of troops, now usually applied to the parapet covering a battery of field or siege guns.

EQUALIZING PIPE. A copper pipe connecting the two recoil cylinders in coast artillery carriages, its purpose being to equalize the amount of oil in each, thus equalizing the resistance.

EQUIPAGE. The articles necessary to properly equip a command, not including arms and clothing. (See *Camp and Garrison Equipage.*)

EQUIPMENT. The articles (other than arms or clothing) necessary to equip a soldier (including his horse, when mounted).

EQUIPMENT, BUREAU OF. Provides sails, rigging, anchors, books, stationery and navigating instruments for the vessels of the navy, together with a large amount of miscellaneous equipment, and has jurisdiction over electrical appliances, including wireless telegraphy. Has direction of the Hydrographic Office, which is charged with investigations to promote safety of travel by sea.

EVAPORATORS. The modern steam vessel is almost independent of fresh water supply from shore, securing its supply of fresh water for the use of personnel and a considerable amount of water for making up feed for the boilers by evaporating salt water, the evaporator being used in connection with the ice machine for securing water for drinking purposes.

EXCHANGE, POST. A store established at a military post for the convenience of the garrison. The profits of the Post Exchange go to the improvement of the company messes.

EXPLOSIVE. A substance capable of a sudden and great

increase of volume, usually accompanied by a physical change of state from solid or liquid to gas, and by chemical action resulting in the production of heat.

EXPLOSIVE D. See *Dunnite.*

EXPLOSIVE GELATINE. A form of explosive, in which the sensitiveness of the primary nitro compounds is sought to be reduced. Nitro-cotton compounds are treated with nitroglycerine in accordance with various formulas. The gelatinous explosive resulting has been exploited under different names as a bursting charge for shells.

EXPLOSIVES. The general subject of explosives is, at the present date (1904), undergoing exhaustive review and readjustment. The primary explosive, gunpowder, made by the mechanical union of nitre, sulphur and charcoal, has been almost entirely superseded by chemical compounds. Chemical explosives are derived from the detonating mixtures originally devised to set the explosion of gunpowder in course from the compound nitroglycerine and from the reaction of chemicals on vegetable fibre, of which gun-cotton is a type. Explosives are divided into two principal classes, the detonators, which are transformed into gases instantaneously and without the presence of exterior pressure and those other compounds which require to be burned in a confined space in order to develop their force.

EXTERIOR BALLISTICS. That branch of *Ballistics* relating to the phenomena of motion of the projectile of a fire-arm or gun outside the bore of the piece.

EXTRA POWDER. A variety of *giant powder,* containing nitrate of ammonia and crude vaseline.

EXTRACTOR. A device, generally in the form of a bar working under the flange of a cartridge case, which throws the empty case from the chamber or bore of the gun after firing and automatically on the opening of the breech.

FACING DISTANCE. The difference between the *front* of a man in ranks (including his interval) and his *depth:* 14 inches.

FAIRLEADER. A wooden ring or thimble, through which running rigging is rove in order to secure the desired direction of the rope and keep it from fouling.

FAIR-WAY. The middle of a navigable strait, channel or harbor. The proper course through a channel.

FASCINE. A bundle of twigs, small branches or rods, about eighteen feet long and nine inches in diameter, tied together with wire or rope, used in field fortification to face the interior of a parapet.

FATHOM. A nautical unit of measure equivalent to six feet. Roughly expressed by the span of the outstretched arms of a man of medium height and over.

FATIGUE DUTY. Duty at a post or in camp, other than guard or strictly military duty, such as making repairs to roads and grounds, cleaning up the grounds, or any work of that kind.

FEATHER AN OAR. To turn the blade of an oar so that the edge is presented to the air in the direction in which the boat is going. The movement is effected by a slight turn of the wrist, and the oar is sometimes allowed to skip lightly along the surface of the water, striking up a jet of spray as it is turned for another stroke.

FEINT. See *Demonstration.*

FEND. To keep or shove a vessel or boat from the shore, ship, or wharf. A fender is a log or rope construction intended to prevent chafing.

FID. A wedge-shaped piece of wood or iron, used to make the heel of a topmast of a vessel secure in its fastening. Two fids are generally used and arranged to distribute the bearing surface of the pressure from the topmast over a wider area. A fid is also a pointed piece of hard wood used to open the strands of a piece of rope in splicing or otherwise working it. An iron fid of this description is a marlinspike.

FIDDLE. A rack used on the mess table of a vessel to keep the dishes from sliding off in rough weather. It generally has adjustable apertures. Tables are sometimes built having holes into which pins may be placed to surround the dishes.

FIELD ARTILLERY. The troops of a special branch of the artillery (designed to accompany the field army) or their armament. The United States army has thirty field batteries at present. The new rapid-fire field gun is the modern arm of field artillery: it is generally of 3-inch caliber, with recoil cylinders and steel shields, capable of great accuracy and rapidity of fire. Field howitzers and mortars are also included in the term *Field Artillery,* and are in use by most nations to-day.

FIELD BATTERY. A battery of field artillery, comprising (in the most recent organization) four pieces and twelve caissons, the cannoneers riding on the chests of the limbers and caissons.

FIELD FORTIFICATION. Temporary fortifications erected in the field, including open, closed or half-closed earthworks (for the protection of important points), siege works and hasty intrenchments.

FIELD GUN. The armament of field artillery. The new United States field gun is a 3-inch piece, weighing 832 pounds, firing a projectile weighing fifteen pounds, with a maximum range of 7,500 yards. A battery carries 1,432 rounds of ammunition, or 358 rounds per gun.

FIELD HOSPITAL. The organized establishment, with personnel and material, for the treatment of the sick and wounded in war. Field hospitals are located under cover, beyond small arm rifle range, in rear of the line, and receive the severely wounded from the field ambulance and send them to the relay hospitals in rear.

FIELD HOWITZER. The armament of a howitzer battery.

Howitzers (or mortars) have been found necessary in order to reach troops behind intrenchments. The French army has a 4.7-inch, the German army a 5.9-inch field howitzer.

FIELD MORTAR. The armament of a field mortar battery. The United States has a 3.6-inch and Russia a 6-inch field mortar.

FIELD OFFICER. An officer above the rank of captain and below that of general, hence, a major, lieutenant-colonel or colonel.

FIFE-RAIL. A rail about the mast of a ship fitted with pins, around which the ropes of the running rigging are fastened.

FILE. Two men; a front-rank man and his rear-rank man. Or, when in single rank, an individual man. In double rank the front-rank man is the *file leader.*

FILE CLOSERS. Officers and men posted in rear of the line.

FILITE. The Italian smokeless powder, made by dissolving diphenylamine in nitroglycerine and mixing with soluble gun-cotton. It is pressed into cords or granulated in cubes.

FINAL STATEMENTS. A written document, containing a correct statement of the money due a soldier on his discharge from the service.

FIRE-ARM. A military weapon for propelling a projectile by means of powder. The term includes, in a general sense, small arms and cannon of all kinds and calibers, but is usually limited to small arms.

FIRE-ARM, AUTOMATIC. A fire-arm (machine gun, rifle or pistol), in which the opening, ejecting, cocking, loading and firing are automatically performed by the mechanical utilization of the pressure of the powder gases, or the force of the recoil.

FIRE COMMAND. In coast artillery, a group of two, three or four batteries, tactically related, covering the same water area, and capable of being effectively commanded in action by one man.

FIRE COMMANDER. The senior artillery officer of a fire command, usually a field officer.

FIRE CONTROL. The act of controlling the fire of a firing line or of a battery or group of batteries. In coast artillery, the exercise of the functions of a fire commander at drill or target practice, or in actual war.

FIRE DIRECTION. The act of directing the fire of a firing line or of the guns of a battery. In coast artillery, the exercise of the functions of a battery commander, in simulated or actual firing.

FIRE DISCIPLINE. The discipline, developed by instruction and training, which enables the commander of a firing line to control the fire effectually.

FIRING MECHANISMS. A large number of firing mechanisms have been devised for use with modern ordnance. In a considerable variety of the smaller and moderate calibers a pistol grip and trigger are fitted with a spring for percussion firing. In the larger calibers percussion firing is done by the pull of a lanyard, but electric firing is generally used in which a primer is fired by an electric spark caused by one of several forms of contact devices.

FIRING REGULATIONS. The printed official regulations prescribing the course of instruction in, and the methods of conducting the firing of, small arms or field guns preparatory to and at target practice.

FIRMINY PROJECTILE. An armor-piercing projectile of chromium-steel, made in England by the Firminy process.

FIRST LIEUTENANT. An officer of the army ranking next below captain: in a company he is the captain's principal assistant.

FIRST SERGEANT. A non-commissioned officer of a company, ranking next above sergeant. He is appointed by the company commander, and has charge of the enlisted men of the company, calls the rolls and makes the details.

FISH. A piece of wood or iron, used to cover the damaged place in a broken spar. It is wound to the spar with closely placed turns of line called fishing, if of wood. An iron fish would be applied with screws. A fished spar made of two short pieces is sometimes used in an emergency to supply a missing spar of greater length.

FISHERIES, BUREAU OF. Of the Department of Commerce and Labor. Propagates food fishes and conducts studies designed to benefit fisheries along the coast and in rivers and lakes. Conducts hatcheries for eggs of fishes and seeks to restock exhausted fishing grounds.

FIXED AMMUNITION. Ammunition, in which the cartridge case and projectile are permanently fixed together. Used in small arms, machine guns and small caliber rapid-fire guns.

FLAG. An ensign, made of bunting or silk, hoisted daily at every post or permanent camp, or carried by the troops. At posts in the United States three sizes of flags (bunting) are used: Garrison (36 feet long), post (20 feet long) and storm (8 feet long). The flags carried by regiments or battalions are made of silk, and are called *colors* or *standards.*

FLAG. In naval terms, the insignia of the commander of a fleet or squadron. With the exception of the specially-bestowed rank of admiral, the only flag rank in the navy of the United States is that of rear-admiral. "The flag" is used in a general way to indicate the powers and attributes of the fleet or squadron commander. The flag or fleet captain is the commanding officer of the flagship. The flag-lieutenant is the aid to the admiral, who also has on his staff the general supervisory staff officers, as fleet engineer, paymaster and surgeon. The flag ranks are admiral, vice-admiral, rear-admiral and commodore.

FLANK. The right or left of a command in line or in columns. Also the element (company, battalion, etc.), on the right and left of a line. In speaking of the enemy, "his right (or left) flank" signifies the flank that he would so designate.

FLANK ATTACK. A movement made against the enemy's flank.

FLANKER. A member of an advance guard or patrol sent out on either flank. Flankers are usually in pairs or small groups.

FLANK GUARD. A sub-division of a column on the march, similar in composition to an advance guard, to protect that flank of the column on which the enemy is expected to approach.

FLANK MARCH. A movement, whatever the formation, by which troops move along the front of the enemy's position.

FLARE BACK. A condition met with in great gun firing in the navy in which a blast of flame shoots from the breech when it is opened after a shot is fired. It is supposed to be caused by the ignition of inflammable gases left in the gun and set in flame by the addition of oxygen. The danger is remedied by the use of a strong blast of air which sweeps the bore of the gun after every discharge.

FLEMISH. A flat coil of rope, each turn of which lies on the deck and closely pressed to the preceding.

FLOTSAM. Goods found floating on the sea as opposed to jetsam, which are goods thrown over board and sink, and ligan, which refers to sunken goods which are buoyed. Flotsam and jetsam form the subject of much of the maritime law. Formerly rights in them were vested in the finder or the sovereign. They are now subject to payment of salvage when recovered.

FLUSH DECK. Strictly a deck which is clear of houses and runs clear fore and aft, except as it is broken by skylights. Applied also to the portion of the main deck of a vessel of war which is flush with the rail fore and aft of the superstructure.

FLY. A small, quick-sailing boat, formerly used for river and harbor transportation of passengers.

FLYING BRIDGE. The second or higher bridge of a steam vessel. In a vessel of war it is made of light construction and placed above the main bridge or conning tower. It is constructed so that it may be shot away without serious damage to the controlling mechanism of the ship.

FLYING COLUMN. A detachment of considerable strength, organized for rapidity of movement, and usually composed of all arms, complete in equipment and supplies, independent of the base of operations, and capable of fighting a decisive battle with the enemy it is intended to meet.

FLYING DUTCHMAN. A mythical spectre ship, supposed to be constantly trying to weather the Cape of Good Hope, and to be commanded by a Dutchman who had sworn to weather the

cape in spite of God or man and manned by a crew of skulkers and other maritime outcasts.

FOOT-ROPE. A rope which runs below and along the length of a boom or yard to give foothold to sailors while reefing. furling, etc. Also the rope which runs along the foot of a sail.

FORCING CONE. The conical surface in the bore of a gun, immediately in front of the centering cone, designed to force to rotating band of the projectile over the lands of the rifling.

FORCITE. A blasting powder, composed of blasting gelatine, and a low explosive base (a mixture of sodium nitrate, sulphur, wood-tar and wood-pulp). Also called *Gelatine Dynamite.*

FORE AND AFT. Running the length of a vessel. Sails which are fastened to a mast or stay without yards.

FORECASTLE. The portion of the open deck of a ship from the fore shrouds forward. Also the living space of the crew. The elevated platform level with the rail at the bows of a vessel is the topgallant forecastle. Ancient ships were built with fore and after castles as fighting strongholds.

FOREMAST-HAND. A sailor in the merchant service.

FORESTRY, BUREAU OF. Gives practical demonstrations in the culture of forests, assists and seeks to educate in the preservation and renewal of forests; tests the strength of wood for practical purposes.

FORGE LIMBER AND BATTERY WAGON. A vehicle, forming an essential part of a field battery: the new United States combined wagon weighs 3,800 pounds. The forge limber contains farriers' tools and supplies, the wagon body wood-workers' and saddlers' tools, material for repairs and spare parts.

FORT. An inclosed work in field or permanent fortification. The modern system of fortifying an important place consists in surrounding it by a girdle of forts. In coast defense a fort is an artillery administrative unit; when a military post includes a coast artillery fort, the command of the latter devolves on the senior artillery officer.

FORTIFICATION. The art of designing and constructing temporary or permanent defenses for the protection of troops under fire, comprising field, land and seacoast fortifications.

FORTIFICATION ARTILLERY. The artillery (personnel or material) of permanent land fortifications. In the United States the only permanent fortifications are seacoast forts, hence the troops and material pertaining to their forts are designated *Coast* Artillery; but on the continent of Europe the forts are mainly located on the land borders, hence the artillery in them is called *Fortification* Artillery.

FOUL. The general nautical term for undesirable conditions. Foul weather includes heavy winds, fog, snow and rain. A rope or anchor chain is foul when it is tangled or engaged with another

rope; vessels run foul in collision. A vessel's bottom is foul when it is encrusted with marine growths. The foul anchor, an anchor with a length of cable twisted about it is the general navy insignia, and is the especial collar device of the midshipman.

FREEBOARD. The portion of the hull of a vessel above the water line. A high freeboard, when it does not raise the metacentric point unduly, is desirable, especially in the case of war vessels, generally because it makes them more comfortable in a seaway and specifically in the case of war vessels because it gives a higher gun platform.

FRENCH SPOLIATION CLAIMS. A class of claims against the government growing out of the seizure of commercial vessels belonging to citizens of the United States during the French Revolution, and the government of Napoleon as first Consul in France. Hostile orders were issued for the purpose of preventing intercourse with England and her allies, and numerous seizures of American vessels were made for alleged infraction of these orders. In consideration of advantages secured by treaty, the United States undertook the payment of these claims, many of which are still pending. On certification by the Court of Claims of amounts justly due, appropriations for the payment of the claims are included in "omnibus" bills passed by Congress.

FRIGATE. An old rating for a fighting ship, meaning approximately the second largest class of ships, carrying from twenty to sixty guns on two gun decks. The steam frigates of the American Civil War were of about 4,000 tons displacement, carrying fifty guns.

FRONT. The space, in width, occupied by a command, either in line or column. *Front* also denotes in the direction of the enemy.

FULMINATE. A metallic salt of fulminic acid: the fulminates explode violently when heated or struck. The only fulminates of practical use are those of mercury and silver, which are used in cap composition, detonators, fuzes and toy fireworks.

FURL. To roll up and bind a sail to its yard or boom.

FURLOUGH. A leave of absence granted to an enlisted man.

FUSE. A device intended to cause the bursting charge of a shell to explode at the proper moment. It was formerly a section of tape or rope so constructed that it would burn in a definite ratio, so that the time of explosion could be determined by the length of the fuse. In the modern conical shell, however, it is a delicately adjusted mechanism, containing a portion of a detonating compound. Upon impact the devise is automatically released so that the detonator is fired and the bursting charge ignited. In armor-piercing shell the fuse is so adjusted that the operation is started by the jar when the shell first strikes the armor, but is delayed so that the moment of explosion comes after the shell has pierced the armor.

FUTTOCK SHROUDS. Short pieces of rigging running from the tops of square-rigged ships to the lower masts to take the strain of the topmast shrouds. They are provided with cross-pieces of rope, so as to form a ladder, by which the seaman climbs into the top. The landlubber crawls through a hole left in the floor of the top for the passage of the lower shrouds and named in his honor instead of essaying the outward climb over the edge.

FUZE. A device for firing explosives in mines, in blasting or in shells. Fuzes for projectiles are metal cylinders containing a plunger, a primer and a time train of powder: they are either percussion, time or combination (percussion and time) fuzes. The first bursts on impact, the second at the end of the time for which it is set, the third at the end of the time for which it is set; or, if the time fuze fails, on impact.

FUZE COMPOSITION. Usually compressed powder in fuzes for projectiles, but for use in blasting or for firing torpedoes special fuzes are used, for example: A mixture of potassium chlorate, cane sugar and nut galls (ignited by means of sulphuric acid); or, a mixture of potassium chlorate, amorphous phosphorus and carbon (ignited by frictional electricity). (See *Electric Fuse Composition.*)

GABION. A portable hollow cylinder of wicker-work or strap iron, used in the construction of earthworks. Its usual size is two feet in diameter, and nearly three feet long, but it is often larger.

GAFF. A spar, used to extend the top or head of a lower fore and aft sail. A gaff topsail is a fore and aft topsail which is hauled out to the peak of the gaff as opposed to a club topsail, which is set on its own small boom. A gaff is also a hook set in the end of a pole for landing fish.

GALLEON. The type of vessel generally in use in the epoch of Spanish sea power. Galleons had several decks with high poops and forecastles and square sails. They constituted the Spanish treasure ships, and the modification of their build and rig continued in war vessels until the steam period.

GALLERY. A covered passage, sunk or cut into the earth, used in fortifications for simple communications, or (when loop-holed at one side) for defense, or in laying mines in the attack or defense of fortifications. In coast forts a passage-way, covered overhead and at the sides.

GALLEY. The cooking place aboard ship. The favorite gathering place of the idle and hungry. Hence galley yarns for idle gossip. The centre of the distribution of ship gossip. Also a vessel propelled by oars. A part of the French navy until the middle of the eighteenth century. Criminals were condemned to row in the galleys, and the horror of the life was almost indescribable.

GAMMONING. The device, either of rope or of iron bands and bolts, which fastens the bowsprit to the stem of a vessel.

GANGWAY. Formerly a walk between the fore and after

raised parts of a deep-waisted ship, now the spaces between the deck houses in the waist and the rail or any passageway. Also the openings in the rail by which entrance to the deck is secured. The starboard gangway is for the officers and their visitors, the port gangway for the crew.

GARRISON. A military post, or the troops occupying it.

GARRISON COURT-MARTIAL. A military court, composed of three officers and a judge-advocate, for the trial of enlisted men for offenses not capital. It has been largely superseded by the Summary Court-martial.

GARRISON FLAG. A national flag, of bunting, 36 feet long, furnished to posts designated from headquarters of the army, and hoisted only on holidays and important occasions.

GARRISON PRISONER. Enlisted men serving sentences of confinement, not involving dishonorable discharge.

GAS CHECK. A pad of leather, ring of copper or other device attached to the moving breech of ordnance to make a close fit, so that gases from the burning powder may not be forced back through the breech.

GAS-CHECK. That part of an obturator which prevents the passage of powder gases. The word is sometimes used in a general sense to include the entire device used to prevent the escape of the powder gases.

GATLING GUN. A machine gun, composed of a number of barrels revolving about a central axis. Its caliber has varied from 1 inch to 0.3 inch, but the latest form uses the ammunition of the service rifle, and has a muzzle velocity of 2,300 foot-seconds; and a new electric feed, operated by a small electric motor, enables the gun to fire 2,500 shots a minute.

GELATINE DYNAMITE. See *Forcite.*

GENERAL. In general, an officer of the army, ranking next above a colonel, including brigadier, major and lieutenant-generals, and generals proper. Specifically (in the United States army) an officer of the highest rank, excepting the President, (who is commander-in-chief of the armies, by the Constitution), the office existing only when created by Congress. The *General* receives a salute of seventeen guns.

GENERAL COURT-MARTIAL. A military court, composed of from five to thirteen members and a judge-advocate, for the trial of officers or men. A general court can be appointed by an army, division or department commander.

GENERAL HOSPITAL. A hospital for the treatment of officers and men, for some general purpose. There are several general hospitals in the United States: The Presidio, Cal.; Hot Springs, Ark.; Fort Bayard, N. M., etc. They are independent posts, and receive patients from all parts of the army.

GENERAL PRISONERS. Enlisted men serving sentences of confinement, who have been sentenced to dishonorable discharge.

GENERAL SERVICE AND STAFF COLLEGE. A military school for the general technical instruction of army officers in their line and staff duties. It is located at Fort Leavenworth, Kan.

GENERAL STAFF. A corps of selected officers, for the performance of the staff duties of the army, in its largest sense: their duties consist in studying foreign armies and probable theatres of war, preparing plans of the mobilization, and the strategic deployment of the army, etc.

GENERAL STAFF. Of the army. A corps organized under the Act of Congress, approved February 14th, 1903. Has charge of consideration of war plans and of questions affecting the efficiency of the army. The chief of staff is the military adviser of the Secretary of War. The general staff has supervision over the military bureaus of the department. The Navy Department has an advisory organization, the general board, with the duty of considering war plans and matters affecting efficiency. It has no administrative jurisdiction.

GEOGRAPHIC NAMES, BOARD ON. Composed of an official from each of the governmental bureaus, having to do with maps or publications, making an extensive use of geographical names. It decides unsettled questions as to the application and spelling of geographical names.

GEOLOGICAL SURVEY. Determines the character and value of public lands and the characteristics of lands in the various States. Measures streams and surveys forest reserves. Has charge of operations for the reclamation of arid lands. Publishes topographical and geological maps.

GIANT POWDER. A dynamite blasting powder, composed essentially of nitroglycerine, with an inert or a low explosive base, such as Kieselguhr and sodium carbonate; or, Kieselguhr, sodium carbonate, sulphur and resin.

GIN. A military machine for raising heavy weights: it is composed of two legs, fastened to each other at a certain distance apart, and a pry-pole, constituting a movable third leg. The garrison gin is the only one now in use.

GIPSY HEAD. A winch is generally made with two drums or cylinders, the smaller of which is made to revolve the more rapidly, and is called the gypsy head.

GLACIS. The slope of earth in front of the ditch or counterscarp of an earthwork of permanent fort, gradually blending with the natural ground in front.

GORGE. The open space in rear of a modern coast battery. Called also *Battery Parade.*

GOVERNMENT OF THE UNITED STATES. The primary idea of government is either that of the more or less restrained authority of one man based on the supposed superiority of himself or his ancestors in war or administration, or it is the idea of the free consultation of all the responsible members

of the body politic and the adoption of measures which have the adherence of the larger number. Of the latter idea there are two main sub-divisions, referring to different conceptions of who should be the responsible members of the body politic. One of these ideas would restrict participation in the government to male denizens possessing certain qualifications as to race, property or education. The other contemplates universal participation in the government by all adult persons and presupposes the existence of a civilization each person of which is capable of self-government. The government of the United States assumes the citizenship of all male persons over the age of twenty-one years, native born, or who have been naturalized. In actuality, however, citizenship is limited in participation in the government by the laws of the different States. The whole body of the citizens of the United States who are allowed to vote under the operation of State laws constitute the governing force of the country. They administer the government by the election of delegates and representatives, first, for the execution of municipal affairs; second, for the execution of State affairs; third, for the execution of national affairs. Although, in theory, the State is an unit and a factor in national affairs, the growth of a centralized national government has made the State little more than an enlarged municipality, and the citizen governs the affairs of the nation directly and through direct representation, instead of through his State organization. The direct delegation of the national government is made by the voting citizens to the House of Representatives of the Congress of the United States. It is composed of as many members as shall give an equal proportional representation to each State according to its population, the actual number changing with each decennial census, that from the census of 1900 being 386, on a basis of one for each 194,182 of population. All measures relating to the raising of revenues and the appropriation of money must originate in the House of Representatives, but measures affecting the general policy of the government in other respects may originate in either the House or the Senate. The term of office in the House is two years, the length of one Congress.

The Senate of the United States, intended as a check and restraint on the popular branch of the national legislature, consists of two members elected by the Legislature of each State, 90 in all. The term of office is six years, one-third of the membership being subject to change biennially. The body is not only a check upon the House, since its concurrence is required for the passage of all legislation, but it is a check on the executive branch. All the principal officers of the government must be confirmed by the Senate on the appointment of the President, and the Senate has the power to regulate the foreign policy of the government by means of ratification or non-ratification of treaties prepared by the executive branch.

The Senate and House of Representatives constituting the Congress have the right, power and duty to establish the policies of the general government, to lay down directions for the

guidance of the executive branch, and constitute the actual governing power. Their province in this direction cannot be trenched upon or ignored without plain disregard of the Constitutional provisions and intent, and they are given the power through the machinery of impeachment to resist encroachment.

The duty of administering the will of the voting citizens, which has been expressed by the acts of the Congress, is entrusted to the executive branch, the head of which is elected by the formal franchise of bodies of Presidential electors chosen by the plurality vote in a plurality, or generally, in a majority of the States. It is possible, therefore, that a candidate who received the largest total of citizen votes might not secure the election, though, owing to the apportionment of electoral votes in accordance with population, the popular will is generally registered by the electoral vote. The President, who has no powers except such as are directly given by the Constitution or acts of Congress, is assisted in the administration of national business by nine officers, who constitute his cabinet of advisers, and to each of whom is assigned the supervision of a branch of the executive work. The Secretary of State has the details of the foreign relations of the country; the Secretary of War, the army and coast fortifications, to which have been added the administration of dependencies, including the Philippines and the Isthmian canal; the Secretary of the Navy administers the details relating to the naval service, with the government of Guam and Tutuila; the Secretary of the Treasury has the finances and credit of the government in his charge; the Postmaster-General administers postal matters; the Attorney-General has oversight of United States courts and their officers, and is the legal adviser of the President and the Executive Departments; the Secretary of the Interior directs affairs relating to pensions, the public lands, the Indians and the granting of patents, and has certain duties in connection with the bond-aided railroads and the administration of the Territories; the Secretary of Agriculture has direction of the various activities in which the United States has engaged for the benefit of the farmer and the stock raiser, and the Secretary of the Department of Commerce and Labor has a varied jurisdiction, including the direction of the census, affairs relating to labor and corporations, immigration and undertakings for the benefit of the merchant marine, and is expected to forward the interests of commerce and trade.

As all of the activities indicated depend upon the direction of Congress, either in the form of direct authorization or of appropriation for the stated purpose, a means of the interpretation of the will of the legislating body is essential. This, in ordinary matters, is found in the controlling system of the Treasury Department. For each of the departments a system of audit is provided, with provision for decision by a general comptroller on disputed points. The Attorney-General renders an opinion, which is binding on the officials of the government, on such points as the Comptroller cannot decide. The complete

decision, however, the ultimate resort in question of doubt, is to the third of the parts into which the total government has been divided. The Supreme Court of the United States, composed of one chief justice and associate justices, has jurisdiction to decide not only upon the meaning of the acts of Congress, but of their constitutionality. When the States which agreed to form the national Union completed the compact, certain powers were given to the central government, and a definite reservation of the remainder of the powers which are inherent in independent States was made. Since it has been decided, with regard to the union of the United States of America, that no State or States may withdraw from the compact, the defense of the separate States and their rights rests with the Supreme Court. Its members are appointed by the President, by and with the advice and consent of the Senate, hold office for life or during good behavior, and are supposed, and are believed to be, free from political and sectional influence. An act of the Congress which is declared by the Supreme Court to be in excess of the powers delegated to Congress, becomes void, and there is no power which can enforce it. On the other hand, any act of Congress which is affirmed as constitutional by the Supreme Court is binding on every State, and the full power of the government may be invoked to enforce its terms. In this just and even balance of powers, duties and responsibilities derived from the triple governmental agency of the voters of the United States, the legislative, executive and judicial, there is every reason for the perpetuity of self-government of the people of this country, since there is no dirction of stress or distortion for which an effective check has not been devised, and it is in this provision of checks and counter-checks that the government of this country is superior to any governmental system previously devised.

GRANNY KNOT. A reef or square knot crossed the wrong way, so that it will jam or slip; the natural way of tying an ordinary knot.

GRAPNEL. An anchor with several prongs, used for small boats, also for dragging for an object on the bottom. Formerly used for fastening ships together preliminary to boarding.

GRAVE. To clean a vessel's bottom and paint it over with sulphur and pitch. Before the general custom of sheathing wooden vessels with metal this had to be done frequently. Beaches of gravel or small shingle with a gradual slope, were in demand, on which this work could be done between tides.

GREAT CIRCLE. The circumference of the earth on a line connecting two given points, representing the shortest distance between those two points. As it does not, except in the case of the equator or a meridian present a constant angle to the true meridian, in sailing a great circle course, courses are laid which intersect the arc of the circle being sailed at different points, and the sum of these courses is not much over the short-

est distance between two points by sea. It is the aim of the higher navigation to decrease distance and save time by a skillful calculation of these successive steps.

GRISOUTINE. A French mining powder, containing ammonium nitrate and dynamite.

GRUSON TURRET. A turret (with hemispherical top covering), made of Gruson chilled cast-iron, used in land and coast fortifications. Antwerp and other European ports are fortified with guns in Gruson turrets.

GUARD. A detachment of men, detailed daily in camp or garrison, for the protection of public property, to guard prisoners and to insure order. The guard is regularly formed at guard mounting. It is divided into three reliefs, each on duty for two hours in turn, and posting its own sentinels.

GUARD MOUNTING. A ceremony, prescribed in Drill Regulations, for forming the guard before it enters on its duties for the day.

GUARDO. A receiving ship, on which new enlistments are kept until wanted for detail.

GUIDE. An officer, non-commissioned officer or private upon whom a command regulates its march. He is responsible for direction, length of step and cadence.

GUIDON. A small flag, cut swallow-tail for cavalry and rectangular for light artillery, carried by each troop of cavalry or battery of field artillery.

GUN. An artillery weapon, not carried and fired in the hands, designed for *direct* fire (not over 15° elevation), and in which the length of the bore is great, compared with that of howitzers or mortars of similar caliber. Guns may be divided into mountain, field, siege, fortification and coast guns. The term *gun,* however, is sometimes used to include small arms, and is often synonymous with *cannon,* but the most recent tendency is to use it to designate only *direct-fire* cannon (hence, not including howitzers and mortars).

GUNBOAT. The smallest type of war vessel not torpedo craft. They are unprotected vessels as to armor, and carry such battery power of quick and rapid fire guns as their size and construction will permit. The United States has a large number of these vessels, both of gunboat design and of converted yachts and other steamers. They are largely used for station work abroad, and for visiting minor ports and enclosed waters. For lack of more serviceable vessels they have constituted a considerable part of the various squadrons of the United States Navy, but are being placed in ordinary as better vessels become available.

GUN-CARRIAGE. The carriage, mount or support of a gun. In mountain, field and siege artillery, and in the mobile armament of coast forts, this is usually a wheeled vehicle, but for the heavier guns various and often complicated machines are

used. Disappearing carriages are used for the 12, 10, 8 and 6-inch guns; barbette carriages for the same guns, the 6-inch being a pedestal mount; the balance pillar mount is used for the 5-inch gun; casemate mount for the 15-pounder (3-inch) gun; the masking parapet mount for the 15-pounder or 6-pounder gun; and the rampart mount for the 6-pounder.

GUN COMMANDER. A non-commissioned officer, commanding an emplacement of a gun battery or a pit of a mortar battery. He is responsible for the condition of the material and the efficiency of the men.

GUN CONSTRUCTION. The processes in the construction of cannon. Modern cannon are of the built-up forged-steel type, and composed of a series of tubes or hoops, shrunk one upon the other. The processes in their construction are: Forgings turned and bored, assembling, cooling, finish boring, rifling, finish turning, inserting the breech-screw and fitting the mechanism.

GUN-COTTON. An explosive, prepared by treating cellulose (cotton waste, rags, etc.) with a mixture of nitric and sulphuric acids. It is the basis of most of the smokeless powders, and of many other explosives.

GUN-COTTON. The original of the nitrocellulose explosive compounds. It is made by the treatment of cotton with nitric or nitric and sulphuric acid. Although extremely sensitive when dry, it may be handled with comparative safety when wet. Its use in naval warfare is restricted to torpedoes, as the uncertainty of its action and its sensitiveness makes it undesirable for bursting charges for shells.

GUN DETACHMENT. The cannoneers assigned to a gun. In coast artillery the non-commissioned officers and men required for all purposes on the gun platform; each gun detachment is divided into a number of details, such as the breech detail, traversing detail, elevating detail, etc.

GUN FACTORIES. Government establishments for the manufacture of small arms, cannon, ammunition, etc. In the United States small arms are made at Springfield, Mass., and ammunition therefor at Frankford Arsenal, Philadelphia; heavy guns are made at Watervliet, N. Y. In England government ordnance is made at Woolwich; in France at Bourges and Puteaux. In Germany small arms are manufactured at Spandau, Danzig, Erfurt and Amberg; heavy guns at Essen (Krupp Works).

GUNNER. A duly qualified non-commissioned officer or private, who adjusts the sight in its seat, sets the elevation and deflection scales, and aims the piece.

GUNNER. A warrant officer in the United States Navy, who has charge of ordnance, explosives, etc. A quarter gunner is an old rating, with duties equivalent to the rating of gun captain recently abolished. A gunner's mate is a petty officer who per-

forms the duties of a gunner in his absence or is under his direction.

GUNNERY. The science of using cannon, including drill and target practice, and exterior and interior ballistics.

GUN PIT. A temporary or field intrenchment for a field or siege gun. Several forms are prescribed in the Field Artillery Drill Regulations.

GUN PLATFORM. In coast artillery, the part of the battery upon which the gun rests.

GUNPOWDER. An explosive mixture of nitre, charcoal and sulphur, used in fire-arms. For military use it has been replaced largely by the modern smokeless powders.

GUNWALE. The rail of a small boat.

HADFIELD PROJECTILE. An armor-piercing projectile of chromium-steel, made in England by Hadfield's works: the process has been adopted by the Taylor Iron & Steel Company, Highbridge, N. J.

HALF MAST. To set a flag midway between the truck and the lower masthead is an indication of death on board a sailing vessel, or a token of respect on board a man-of-war. A half-masted flag is hoisted to the truck before being lowered instead of being lowered direct. Homeward-bound fishermen who have lost members of the crew from sickness or accident come into port with the flag at half mast.

HALF PAY. The lessened pay of an English officer, who has no active employment, generally amounting to about 60 per cent. in full pay. The practice has no parallel in the navy of the United States, as shore employment was found for officers at times when there was no opportunity for sea employment. Naval officers have also been allowed leave of absence to accept sea employment in private pay, the government pay being stopped. The United States Navy has, however, been under-officered for a number of years, and active employment is given all available officers. Half pay, as applied to retired officers, is a misnomer, as half pay and retired pay are distinctly different.

HALLIARDS, OR HALYARDS. The ropes by which a sail or yard is hoisted into place. They lead from the deck to the masthead, and then through pulleys to the gaff or yard to which the head of the sail is fastened or, in the case of a trianguler sail, to the head of the sail itself. All fore and aft sails are hoisted by halliards, but only the upper square sails, the lower square sails or courses, dropping from the yard when unfurled.

HAMMOCK. A strip of canvas, generally three feet wide and six feet long suspended by small cords. Its furnishings include a mattress and blanket, and it is used as a bed for the enlisted men of the navy. Merchant sailors generally sleep in a bunk. Hammocks when not in use are rolled up with the bedding inside and stowed in receptacles along the rail of the ship.

They are stowed and gotten out at regular times indicated by bugle calls.

HANDSPIKE. A heavy wooden bar, used as a lever to move heavy objects aboard ship. It has a wedge-shaped end and a round handle. Formerly used in pointing great guns and was a part of ordnance equipment.

HANDY BILLY. A term given to a small and convenient accessory. A handy bill pump is a small and portable pump which can be quickly set up to perform service in an emergency.

HANGFIRE. A delay in the explosion of the powder charge of a fire-arm after the primer has been fired. In coast guns, using smokeless powder, long hangfires are possible, and have led to serious accidents.

HAPPY SHIP. A vessel, on which the discipline is such that there is little friction, and in which the work goes on satisfactorily and the food is good. A lax commander does not necessarily make a happy ship, as small quarrels and petty tyrannies among subordinates may be fostered. A just and humane commander who insists on strict discipline is more likely to bring about the desirable end indicated.

HARPOON. A spear with a barbed head, used to strike large fish and sea mammals, such as whales. A line is attached to the shaft of the harpoon, which serves to keep the attacking party "fast" to the prey and also to tire it out. When the latter has been effected the killing is done with a lance. The harpoon was formerly thrown by hand, but a harpoon gun is now generally used to throw a harpoon with a line attached or an explosive. For smaller fish or mammals, a buoy is sometimes attached to the line and the fish allowed to run, or the line may be checked and the fish hauled in by main strength. In the latter case a harpoon with several tines called a grains is more frequently used.

HARVEY PROCESS. A process for hardening steel armor plates on the surface, invented by H. A. Harvey, of the Harvey Steel Works, Newark, N. J. Such plates are designated as *Harveyized.*

HATCH. An opening in the deck of a vessel, more closely an opening into the main or cargo part of a vessel. Also the wooden shutter which covers the opening.

HAVERSACK. A canvas bag, for carrying the mess kit and the rations for two or three days: part of the equipment of a soldier on the march.

HAWSE. A general term relating to the situation of a ship when at anchor. Athwart the hawse is to strike against the anchor cable when it is paid out. The hawse holes are the apertures through which the cable runs. To come in through the hawse hole is to have worked up to an officer's billet from before the mast, as opposed to coming in through the cabin windows, which is said of an officer who has had little practical experience.

HEAD. The leading element of a column.

HEADQUARTERS. The office of the commanding officer, designated by its location, as well as by the command involved: Headquarters of the army, Washington, D. C.; headquarters, Department of California, San Francisco, Cal.

HEAVY MARCHING ORDER. The equipment of troops for permanent field service, comprising the prescribed uniform, arms, blanket rolls, shelter tents, canteens, etc.

HECLA POWDER. A dynamite, composed of nitroglycerine, lignin (brown coal) and sodium nitrate.

HELIOGRAPH. A military signaling apparatus, used for sending messages by means of movable mirrors, which reflect flashes of sunlight, long and short flashes corresponding to dashes and dots in the code. For night work, acetylene lamps furnish the necessary light.

HELMET. A head covering, part of a soldier's uniform, formerly made of iron or steel, now made of felt or cork. In the United States army the white helmet only is now part of the uniform.

HERCULES POWDER. A dynamite, composed of nitroglycerine, potassium chlorate, magnesium carbonate, sugar and nitre.

HEXAGONAL POWDER. Brown or cocoa powder, granulated in hexagonal prisms, pierced by a central hole.

HIGH-ANGLE FIRE. The fire from guns, howitzers and mortars at angles of elevation exceeding 15° or 17°. Used only exceptionally for guns, normally for howitzers and invariably for mortars. Mortar fire is sometimes called *vertical fire,* but the trajectory is never vertical.

HITCH. A knot by which a rope is made fast to a spar or other object, the simplest form is two half hitches, which is the natural knot to make for the purpose.

HOGGED. The upward curve or strain on a vessel, caused by resting on some object amidship without adequate support fore and aft. The opposite of sagged.

HOIST. The perpendicular height of a flag and of sails, except lower square sails. This dimension of the latter is the drop.

HOIST. In coast forts, an ammunition lift or elevator for transferring ammunition from the magazine floor to the loading platform. The latest form is an electric chain hoist.

HOLD. The general term in cargo-carrying vessels for the cargo space; strictly the space between the lower deck and the bottom.

HOLSTER. A leather case for a pistol or revolver, worn on the waist belt.

HOLTZER PROJECTILE. An armor-piercing projectile of chrominum-steel, made in France by the Holtzer Company.

HOLYSTONE. Pieces of sandstone, used in scrubbing decks.

Possibly from its most frequent use in cleaning up on Sunday. Smaller pieces are termed bibles and prayer books.

HOMING PIGEON. See *Carrier Pigeon.*

HONOR. A mark of respect. Military honors include the dropping of standards and colors; marches, flourishes and ruffles by the band or field music; saluting the colors; salutes with the hand, sabre or rifle; salutes with cannon. The ***salute to the Union*** is one gun for each State; the President receives a salute of 21 guns (the *national* salute); the Vice-President and President of the Senate, 19 guns; the Secretary of War, 17 guns; the Assistant Secretary of War, 15 guns; generals, according to their rank.

HONORS OF WAR. Unusual privileges allowed an army that capitulates, such as the retention of arms or standards, permission to march off in military formation, etc.

HORIZONTAL-BASE SYSTEM. A system of range-finding for coast artillery. The end of the base near the battery has a Depression Range Finder (but may have only a simple azimuth instrument); the far end a simple azimuth instrument. The advantage of this system is its greater accuracy (due to the long base), its security against destruction by the enemy (since, if the enemy captures a station, it is only necessary to come back, after he leaves, with another instrument), and the long ranges at which it can be used (far exceeding the Depression Position Finder).

HORSE. An iron rod fixed horizontally on the deck, on which the blocks attached to the foot of a sail slide when the vessel goes about. Also the sailors' name for salt beef.

HORSE ARTILLERY. Light artillery, similar to field artillery, but in which the cannoneers are mounted on horses, and the armament is a lighter piece: it should be sufficiently mobile to accompany cavalry in the field. Germany has thirty-eight batteries of horse artillery, France fifty-two, and Great Britain twenty-eight.

HOSPITAL. An establishment for the care and treatment of the sick and wounded. Permanent hospitals are established at every military post, and field hospitals are organized as required. There are also several general hospitals, as at Fort Bayard, N. M.; The Presidio, San Francisco, Cal.; Little Rock, Ark., etc.

HOSPITAL CORPS. The enlisted force of the medical department.

HOSPITAL MATRON. A matron, appointed by the Post Surgeon, for miscellaneous work at a post hospital.

HOSPITAL SHIP. A ship arranged as a floating hospital, accompanying a fleet of warships or transports, or group of coast defense vessels, flying the Geneva flag.

HOSPITAL SHIP. Although charitable persons have been active in ameliorating the condition of the sick and wounded in

case of war, it remained for the Spanish-American war to develop the possibilities in the line of floating hospitals. Commodious passenger vessels were turned into effective hospital places, and the possibilities developed were extended during the Boer war. The hospital ship is now recognized as a necessary part of every fleet in active service and an advisable addition to the fleet in time of peace. It is possible to duplicate to a considerable degree the conditions of the best hospitals ashore, and the environment makes especially for rapid recovery.

HOSPITAL STEWARD. A non-commissioned officer of the Hospital Corps, ranking next above first sergeant. In the United States army 100 hospital stewards are allowed. His duties require him to make up prescriptions, keep the books and records of a post hospital, and take charge of the interior administration of the latter, under the post surgeon.

HOSPITAL TENT. A large tent, used for hospital purposes, 14 x 15 feet, accommodating eight or ten men.

HOTCHKISS GUN. An automatic rifle-caliber machine gun, in which the pressure of the powder gases is utilized to work the automatic machinery. It has been adopted in France for the cavalry and the Alpine troops.

HOTCHKISS REVOLVING CANNON. A rapid-fire gun, 1.65, 2.95 and 3-inch calibers, used as a mountain gun.

HOWITZER. A cannon shorter than a gun proper, used for indirect or high-angle fire. Howitzers are designed to reach troops, ships, etc., behind cover, and are of all calibers. In Europe the coast howitzer is used like a mortar at the longer ranges (to pierce the deck of a warship), and as a direct-fire gun at the shorter ranges (to penetrate side armor).

HOUSE. To house a spar is to remove it from its usual position and lash it inboard. This is done in case of topmasts to relieve a ship in a gale.

HOY. Formerly a small sloop-rigged vessel, carrying passengers on short runs. Now a heavy-built boat for transporting articles of considerable weight.

HURRICANE DECK. The uppermost deck of a steamer. It usually carries the pilot house and texas.

HUSBAND, SHIP'S. An agent empowered to receive and advance money on account of a vessel. Also a person who seldom leaves his ship.

HYDRAULIC JACK. A portable form of hydraulic press for raising heavy weights short distances. Those commonly used in coast artillery work are either base or horizontal, and 15, 20 or 30 tons.

IMMIGRATION, BUREAU OF. Of the Department of Commerce and Labor. Charged with the duty of the enforcement of the immigration and Chinese exclusion laws. Conducts inspection stations at all termini of ocean steamship lines and along the

frontiers. Collects evidence of violation of alien contract laws for action by the Department of Justice.

IMPEDIMENTA. The supplies and materials of an army, not necessary for actual fighting. The impedimenta of an army are the supply, bridge and other trains; those of the individual soldier are the equipments, extra clothing, rations carried on the person, etc. Efforts are constantly being made to reduce the impedimenta.

IMPLEMENT CHEST. A chest containing the implements necessary for the proper care and manipulation of the different parts of an artillery gun-carriage, comprising wrenches, oilers, screw-drivers, etc.

IMPRESSMENT. A former practice in England, by which seamen were secured for the navy. While theoretically only seamen were to be seized in practice a clean sweep of every man who could be captured and who was reasonably ablebodied was frequently made. The pretension of England that she was empowered to impress every English-speaking seaman who could not prove American birth was the main cause of the War of 1812.

INDIAN DEPREDATION CLAIMS. A class of claims, referred to the Court of Claims at Washington for adjudication, growing out of losses sustained by the settlers of Northwestern States on account of raids by Indians held on reservations and under the guardianship of the United States. The results of the inquiry by the Court of Claims is reported to Congress for action in relief of claimants.

INDICATORS. The safety and accuracy of the operation of modern steam vessels is largely aided by various automatic devices acting as indicators of existing conditions, such as revolution indicators, magazine and bunker temperature indicators, drainage system indicators, etc., forming perpetual watch service without the uncertainty of the personal equation in such matters.

INDIRECT FIRE. The fire from guns (often with charges less than service charges), and from howitzers and mortars, at angles of elevation up to about 15° or 17°, especially when this takes place over some intervening object obscuring direct view.

INFANTRY. The foot troops of an army, marching generally on foot, and trained to fight on foot. It is the most important, the most numerous, and the most valuable arm of the service, since it is the only arm that can operate on all kinds of ground, and is more independent in its action than any of the other arms, besides being more easily trained, and requiring comparatively little war material. The United States army has thirty-one regiments of infantry to fifteen of cavalry and thirty field batteries, or 180 guns. In the French army there are 190 regiments of infantry to eighty-five of cavalry, and 2,892 field guns. In war the proportion of infantry is much greater.

INITIAL VELOCITY. The velocity of a projectile at the muzzle of the piece, now generally called *muzzle velocity.* The

new smokeless powder gives 2,550 foot-seconds muzzle velocity in the new 12-inch rifles, 2,600 in the 6-inch and 5-inch rapid-fire guns, 1,700 in the new field piece, and 2,300 in the new United States rifle, model 1903.

INQUIRY, COURT OF. A board of naval officers, charged with the determination of the facts in an alleged breach of duty or regulations or of the facts attending an accident or disaster. They are preliminary to a court-martial should the court of inquiry recommend such action, or should the convening authority deem a court-martial justified by the facts reported.

INSIGNIA. The badges, or cap, collar and sleeve ornaments worn by different branches of the army.

INSPECTION. An investigation to determine the military efficiency of a command. The drill regulations prescribe the formations of the troops for inspection under arms or at the guns. Weekly and monthly inspections are made by company and post commanders, but the more formal inspections are made by the inspector-general of the division.

INSPECTION, BOARD OF. A board of high officers of the navy charged with the inspection of the state of efficiency of a vessel and her crew, the inspection being carried out at stated intervals. The Board of Inspection and Survey reports on ships recently completed and on the necessity for repairs of ships going out of commission.

INSPECTOR-GENERAL. An officer of the Inspector-General's Department, charged with the inspection duty of a military division, etc.

INSPECTOR-GENERAL'S DEPARTMENT. A corps of officers, charged with the duties of inspectors. In the United States this was, until recently, a closed staff corps, but the officers of the line are now *detailed* for four years' duty in this department.

INSULAR AFFAIRS, BUREAU OF. A bureau of the War Department which has supervision over civil government in the Philippines and Porto Rico. Has general direction of insular affairs, including appointments to the Philippine civil service.

INTERIOR BALLISTICS. That branch of ballistics which relates to the combustion and energy of the powder, its effect on projectile and gun, and the motion of the projectile in the bore.

INTERIOR CREST. The line which marks the top of a parapet: the intersection of the interior and superior slopes. In coast forts, the line of intersection of the interior wall or slope with the superior slope.

INTERIOR, DEPARTMENT OF THE. Has the administration of business relating to patents, pensions and public lands, including the administration of the homestead and bounty laws. Administers the national parks, and has charge of Indian affairs. These several sub-divisions are in charge of bureau chiefs known

as commissioners, who have administrative action subject to the direction of the Secretary of the Interior.

INTERNAL REVENUE, COMMISSIONER OF. Collects internal revenue taxes, which gives him supervision over the distilling, brewing and tobacco interests as affected by internal revenue laws, and has the enforcement of such laws. Prepares and distributes stamps and administers general stamp laws when such are in effect.

INTERNATIONAL CODE. A set of signal flags, including an alphabet and arbitrary denotations, which is understood by all sea-going nations, and is in general use for the ordinary occasions of flag signalling.

INTERRUPTED SCREW. A device used in the construction of the breech mechanism of ordnance. Threads of a screw are cut at intervals on the breech plug, corresponding with threads in the breech of the gun. Plain sections alternate with threaded sections, so that by partially revolving the breech block the threads become disengaged and the breech block may be drawn out.

INTERSTATE COMMERCE COMMISSION. Charged with the administration of the laws requiring uniform rates to all patrons of railroads and carrying companies whose operations extend within more than one State, and regulating the carriage of goods and persons in connection with such operations; also charged with the administration of the act requiring the equipment of railroad cars with uniform appliances for the safety of employés; is empowered to act in mediation in cases of controversy between railroads and their employés.

INTERVAL. Space between elements of the same line, measured parallel to the front of the alignment.

INTRENCHED CAMP. An extended area, capable of containing a large force, fortified by means of a line of forts, its purpose being to increase the defensive and offensive powers of the field army. Intrenched camps have taken the place of the old land fortresses, especially on the borders of continental countries.

INTRENCHING TOOL. A tool for making intrenchments in the field. Intrenching tools include the pick, shovel, spade, hunting knife, etc. Tools for hasty (or battle) intrenchments are carried by the soldier on his person in modern armies, or are transported by wagons with each unit of organization (company, battalion or regiment). A German battalion is furnished with 400 spades, forty picks and twenty axes; a French battalion with thirty-two spades, eighteen picks, sixty-four axes, sixteen hatchets and five saws.

INTRENCHMENT. Any form of defense for fortifying or strengthening a position, involving the construction of a trench or trenches with a parapet. Various forms of earthworks are used in intrenchments, and on the battlefield such works are

called *hasty* or *battle* intrenchments, of which modern armies make abundant use.

JACK. A mechanical apparatus for raising heavy weights short distances. Jacks are divided into screw, hydraulic and geared jacks. In coast artillery work hydraulic jacks only are used.

JACK O' THE DUST. An enlisted man detailed to assist the paymaster's yeoman in the navy to help stow and break out supplies. He receives five dollars per month additional pay.

JETTISON. To throw overboard a portion of the cargo of a ship to provide for the vessel's safety and that of the rest of the cargo.

JIB. One of the triangular head sails of a vessel. From the foremast forward the jibs are: inner jib or fore staysail, outer jib, jib topsail, flying jib and flying jib topsail. In yachting a large triangular sail hoisting to the topmast head, called a spinnaker, is set forward for running before the wind.

JIBE. To shift over a fore and aft sail when running before the wind. A slant of the wind or change in the course will sometimes bring the main boom over with violence and damage to the unwary.

JIGGER. Originally a small mast stepped in the extreme stern as in a yawl rig. In schooners of more than four masts it is the fifth mast.

JUDGE-ADVOCATE. The prosecutor on a military court, usually an officer of the army detailed to perform the duty.

JUDGE ADVOCATE. An officer of courts martial, with the triple duty of legal adviser of the court, of prosecuting attorney and sometimes of attorney for the defense, since he must at least see that all the rights of the defendant are preserved in the absence of other counsel. He is charged with seeing that the forms and procedure are properly carried out, and acts as the recorder of the court.

JUDGE-ADVOCATE-GENERAL. A brigadier-general, the head of the bureau of military justice: he has charge of the records of military courts, and is the custodian of titles to lands under the control of the War Department.

JUDGE ADVOCATE-GENERAL. Of the army and navy respectively is the head of the legal bureau of the department; his chief function is that of reviewing officer of court-martial cases, upon whose recommendation final action is taken in matters of punishment. Supervises and regulates the operation of military courts.

JUDGE-ADVOCATE-GENERAL'S DEPARTMENT. A corps of officers, performing the duties of judge-advocate at military division headquarters. These duties consist in serving as judge-advocates of important military courts, in revising proceedings of military courts, for the information of the division commander, and in rendering opinions upon legal questions.

The corps is a closed corps, the officers in it being there permanently.

JUDSON POWDER. An American dynamite, made by melting together sulphur, resin and asphalt, and stirring in a mixture of nitrate of soda and anthracite; nitroglycerine is then added as desired; it requires a detonating primer. There are several grades, containing different proportions of ingredients.

JUMP. The difference between the angle of elevation and the angle of departure at the moment the projectile leaves the bore; it is due to the movement of the gun at discharge. It differs for different classes of guns and carriages, and must be determined by experiment in each case.

JURY MAST. A temporary mast erected in place of a mast which has been carried away, to enable the vessel to reach port.

JUSTICE, DEPARTMENT OF. Transacts all the general legal business of the government, conducts prosecutions and suits, and defends causes to which the United States is a party. Headed by the Attorney-General, who is assisted by the Solicitor-General and Assistant Attorneys-General and solicitors, each of whom is assigned to a particular class of cases arising from the business of a particular department.

KEDGE. A small anchor used in propelling a sailing vessel in a harbor or in a calm in soundings. It is carried ahead of the vessel in a small boat, dropped, and then hauled up and carried ahead again when the vessel has been pulled up to its location by hauling on the cable.

KEEL-HAUL. An old punishmenet, in which a man was hauled under the bottom of a vessel from one side to the other, and in which he was half-drowned and torn by contact with barnacles, etc.; one of the forms of torture used by pirates.

KEELSON. A timber in a vessel, placed above the keel and bolted to it, which serves to bind the timbers of the floor of the vessel to the keel.

KETCH. A small vessel, formerly used as a yacht, in which the foremast was stepped a considerable distance aft so as to leave room forward. Vessels of this rig were largely used as bomb vessels, as there was room for the emplacement of the mortar forward.

KHAKI. A clay-colored material, used for the uniforms of troops on campaign service. The new United States service uniform is an olive-drab material.

KID OR KIT. A small wooden tub. In the old days of group messes, and in the merchant service formerly, it was a part of the mess gear. Also used as a package for pickled fish. The name is now applied to any small wooden receptacle. The sailors' cuspidor is a "spit-kit."

KILLOCK. A fisherman's anchor, consisting of a cobblestone enclosed in a wooden frame with projecting arms.

KIT. The articles carried in the soldier's knapsack, blanket,

bag or roll, or haversack, such as a blanket, a poncho, an extra pair of shoes, towels, brushes, soap, etc. The *mess kit* (carried in the haversack) comprises a meat can, knife, fork and spoon.

KITE, MILITARY. A balloon, shaped like a long sausage, filled with hydrogen, and flown like an ordinary kite. It has been adopted by the German, Swiss and Austrian armies, and has been successfully used in recent maneuvers. It is used for obtaining a wide view of the ground during a battle or in reconnaissance. Information is sent down from it by means of a telephone.

KNAPSACK. A rectangular case or valise, in which a soldier on the march carries his kit. Still used in some armies, but abandoned for the blanket roll and haversack in the United States.

KNIGHT HEADS. The timbers or frames of a vessel which come up to the rail at the bow. The bowsprit formerly was placed between the knight heads, which in old times were carried up and terminated in carved work.

KNOCKABOUT. A form of pleasure boat designed to give great sail carrying ability with small wetted areas. A deep fin, heavily weighted with lead at the lower end, is attached to a shallow hull. They develop markedly more speed than boats which depend on hull construction for stability.

KNOT. A loop or turn in a rope, made in different ways for different purposes. A knowledge of knots is as important to a coast artilleryman as to a sailor. The principal knots used are the overhand and square knot, half, blackwall, clove and timber hitches, and the sheet and carrick bends.

KNOT, SHOULDER. See *Shoulder Knot.*

KRAG-JORGENSEN RIFLE. The service magazine rifle now in use by the United States army; it has also been adopted in Denmark and Norway. The United States rifle is soon to be replaced by the new United States magazine rifle, model 1903. The present Krag rifle has a caliber of 0.30 inch, 2,000 foot-seconds muzzle velocity, and a maximum range of 4,066 yards (at 44° elevation), the sight graduated up to 2,000 yards.

KRUPP ARMOR. Armor of high resistance, manufactured by a special process at the Krupp works. The term *Kruppized* is used to designate the latest process.

KRUPP GUN. A gun with the Krupp breech-block, which is wedge-shaped and slides across the breech, entering on one side of the gun. All calibers are made, and the guns have been adopted in the German and several other armies, and recently in Switzerland.

KRUPP WORKS. The gun factories at Essen, Rhenish Prussia, where Krupp armor and guns are manufactured. In 1893 the Gruson works were also absorbed by the company.

LABOR, BUREAU OF. Under the Department of Commerce and Labor. To prepare and disseminate information on the

subject of wages, hours of labor and other matters relating to the welfare of wage earners, and investigates and reports on cases of disputes between employers and employed.

LANCE. A military weapon, shaped like a long javelin or slender spear, with which some cavalries are armed (German *Ulans* and the Russian *Cossacks*). It is being abandoned, however, as a cavalry weapon.

LANCE CORPORAL. A private, appointed to perform the duties of corporal temporarily, with a view to his promotion to that grade.

LANCER. A cavalry soldier, armed with a lance. Germany still has twenty-five lancer regiments; in Russia the lance is carried only by the first line of certain of the Cossacks (Siberian, Don, Ural and Trans-baikal); France abandoned the lance in 1871; in Austria the *Ulan* regiments are no longer armed with the lance, while Italy still has ten lancer regiments; England abandoned the lance after the Boer War.

LAND. One of the spaces between the grooves of a rifled gun.

LAND-FALL. When land is seen at a time, and in a direction according with the navigator's calculations, he is said to have made a good land-fall.

LANDING PARTY. An organization of the enlisted men of a naval vessel, commanded by their officers, sent ashore on a military expedition. The term is generally used as indicating an expedition in which blue jackets take the principal part. Latterly, however, the marines of a squadron or special battalions sent from the United States have been used as expeditionary forces in different parts of the world.

LANDSTURM. The last reserve of a nation, including all able-bodied men between 17 and 43 years of age, not already in the army or navy. It is called *Territorial Militia* in Italy, and *Reserve of the Territorial Army* in France.

LANDWEHR. That part of the enrolled army of a nation (under the conscription system) which is called out only on the outbreak of war. It is called *Mobile Militia* in Italy, and the *Territorial Army* in France.

LANIARD. A rope of small diameter, used to secure an object, as a knife, bucket, etc., also the cord by which a percussion lock of a great gun is fired. The rope which connects the upper and lower deadeyes of standing rigging and which serves to tighten the rigging is called a laniard.

LANYARD. A cord with an iron hook at one end to fasten to the primer, and a sliding piece of wood near the other end, which, when pulled, comes up against a wooden stop, and thus explodes the primer.

LARBOARD. The left side of a vessel looking toward the bow. On account of its similarity to starboard it is seldom used,

the word "port" being used. Larboard, from the Italian words meaning that side.

LATEEN. A triangular sail bent to a long, tapering yard which hoists on a short mast. A Mediterranean rig.

LAUNCH. The heaviest boat of a war vessel, answering to the long boat of a merchant vessel. In the larger sizes they are fitted with a gun for work with landing parties and which may be used ashore, a carriage being supplied. On some battleships a large picket launch is carried, fitted with a torpedo discharging tube. The name given to a class of small craft having steam or other power installed, and used for pleasure.

LAUNCHING. The act or ceremony of putting a newly-built vessel into the water. Inclined ways of timber are built under the bottom of the vessel upon which the vessel rests when the shores and supports are knocked and cut away. She slips down toward the water of her own weight or is started with jack screws. The executive of a city or State, in case of a Government vessel, or the party interested in the construction of the vessel, is generally asked to name an unmarried lady to give the vessel its name, and the launching takes the character of an official function in the former case, although the vessel is not yet in the hands of the government. It is a custom of long standing for the shipbuilding company to give a dinner upon the occasion to a large number of guests.

LAVA. A mode of attack, used by the Cossacks, consisting of a first line in open order, followed by its support, and a reserve, in closed order, the entire line, or a part, advancing in this formation.

LAWS OF WAR. The laws governing the conduct of war among civilized nations. They relate principally to the treatment of prisoners, spies, traitors and private property, and to blockades, rights of capture, etc. They have either been established by long usage or agreed to by international conventions.

LEAD. The apparatus used on board ship to determine the depth of water under a vessel's keel. It generally consists of a leaden weight attached to a small line. On soundings, a man stands in the chains, or in a station, just forward of the fore shrouds, and makes successive casts, announcing the depth, which is denoted by one of the strips of leather or rag attached to the line appearing above the surface of the water when the line is up and down, the leadsman having thrown it some distance ahead on his cast. Various devices have been arranged for deep sea soundings, that of Lord Kelvin denoting the depth by the discoloration of a chemical compound by the sea water forced into a tube closed at one end, the length of the discoloration denoting the pressure under which the water has been forced up into the tube. For oceanographic work a number of ingenious and complicated registering devices are used, which are carried to the ocean bottom by heavy weights, which are there detached.

LEAVE OF ABSENCE. Permission to remain away from a ship for several days, as opposed to day's liberty. Stragglers from

the naval service are tried by summary court-martial for absence without leave.

LEAVE OF ABSENCE. Permission granted to an officer to be absent from his post for a limited time. An officer on leave is entitled to full pay for thirty days a year (which he may allow to accumulate for four years), but beyond that he receives only half pay while on leave.

LEBEL RIFLE. The French small caliber rifles adopted in 1886; the old model has been replaced by the new of 1893.

LEE. The side of a vessel or the land opposite that against which the wind blows, hence a sheltered place from the wind. A lee shore, however, is that in the direction of the vessel's lee and toward which the wind tends to blow her.

LEECH. The side of a square sail and the after edge of a fore and aft sail.

LEE-METFORD RIFLE. The small arm of the British army up to 1895. It was replaced at that time by the *Lee-Enfield* rifle, which is very similar, but has fewer grooves, of greater depth and width, than the older model.

LEG. The distance made in one direction in sailing, especially in beating or sailing against the wind. A long leg is sailed for the purpose of securing distance, followed by a short leg to gain into the eye of the wind, or because of the conformation of the shore.

LETTER OF MARQUE. A commission issued to a private armed vessel to prey upon an enemy's shipping. The operations of the privateers of the War of 1812 form a large part of the naval history of that war and were a factor in its conclusion. Such letters have been issued by non-maritime powers in wars with maritime nations, notably those to the Sea Beggars by William of Orange. Although the right of privateering has never been relinquished by the United States, it is doubtful if important nations will ever issue letters of marque again or permit less powerful ones to do so, as the practice was a form of legalized piracy and difficult of regulation.

LEVY. A call for troops, in countries where service is voluntary; the calling into service (in time of war) of a certain contingent of the reserve or of the enrolled masses, in countries where conscription is in vogue. In Germany a part or the whole of the Landwehr would be the *first levy* raised; in France, a part of the Territorial Army.

LEWIS POSITION-FINDER. The vertical-base range finder in use by the coast artillery for the purpose of locating an enemy's warship by range and azimuth for the use of the batteries it is connected with. There are two kinds, the larger, or type A instrument, and the smaller, called the emergency, or type B instrument.

LIBERTY. Permission given to a portion of a ship's crew to go ashore for a holiday. Restriction of liberty is a frequent cause

of discontent. Former naval liberty days were marked with much disorder, but there is a growing custom in the United States Navy to spend liberty time in rational amusements, to which the countenance of athletic sports gives encouragement. Breaking liberty is to remain away after the liberty time is up.

LIBRARIAN OF CONGRESS. The head of the Congressional Library in Congress and administrative officer of the coypright system of the United States. Besides maintaining the collection of books in Washington, for which a special library building was erected at a cost of six millions of dollars, all books, pictures, periodical and musical publications of which the publisher desires the exclusive use and sale are registered by him.

LIEUTENANT. A company officer, ranking below a captain. There are two grades, *First* and *Second Lieutenant,* the former being the senior in rank. The principal duty of lieutenants is to assist the captain.

LIEUTENANT-COLONEL. A field officer, ranking next below a colonel, his main duty being to assist the latter.

LIEUTENANT-GENERAL. An officer, ranking next below general, and next above major-general. He is entitled to a salute of fifteen guns. At present he is the ranking officer of the United States army and chief of staff.

LIFEBOAT. A boat constructed with a view of making her unsinkable by the addition of air chambers. The lifeboats of the navy are generally whale boats, built sharp at both ends. One boat is kept free from lashings and ready for lowering at all times. Boats used in the life-saving service, in addition to extra buoyancy, have devices for automatically ridding themselves of water which may break over the boat.

LIFE-LINE. A rope stretched about the decks of a vessel during a gale to enable the crew to get from one part to another without being washed overboard.

LIFE PRESERVER. A device intended to add sufficiently to the natural flotation of the human body to enable it to remain constantly at the surface of the water. It is generally made in the form of a vest of canvas filled with cork. A standard form of life preserver affixed to the rails of ships consists of an air-tight metallic cylindrical ring and carrying a light which ignites when the preserver strikes the water. With a properly made life preserver, properly adjusted, there should be no fear of drowning, since but a few ounces of extra flotation is sufficient to prevent the human body from sinking.

LIFT. To shake slightly, as a sail when the wind blows against it at too slight an agle. The ropes which extend from the mast head to the ends of a yard by which it is supported. A topping lift supports the end of a boom.

LIGHT BATTERY. See *Field Battery.*

LIGHT HOUSE BOARD. Under the presidency of the Secretary of the Department of Commerce and Labor, a board con-

sisting of a high naval officer as chairman, officers of the army and navy, with a distinguished engineer from civil life and a naval and an army secretary, has charge of all administrative duties relative to lights, range marks, buoys, etc., for the safety of commerce on the seaboard and on the great lakes and rivers. The subordinate officers in command of light-house districts are naval officers assigned to the duty.

LIGHT MARCHING ORDER. The equipment of troops for light service of short duration, comprising only the canteen and haversack, besides arms and ammunition; or both haversack and canteen may be omitted.

LIMBER. The forward part of a field or siege gun-carriage or caisson. It has one limber-chest, in which ammunition is carried. The new limber (just adopted for field guns) is of metal, except pole and wheels, and weighs 816 pounds.

LIMBER-CHEST. The chest of a limber, in which the ammunition is carried. The new field artillery limber-chest carries thirty-six rounds.

LIME-JUICER. An English vessel, so-called because a ration of lime juice is required by English law for the prevention of scurvy.

LINE. The fighting part of an army, in contra-distinction to the supply departments, including infantry, artillery, cavalry and engineers (or pioneers).

LINE. A formation in which the elements are abreast of one another.

LINE OFFICERS. The officers who have charge of the sailing and fighting of a war vessel as opposed to the staff officers, such as paymasters, surgeons, etc. There was formerly an engineer staff corps in the navy of the United States. This has been amalgamated with the line, though in other services the engine room force is of the staff. The officers and their corresponding rank with the army is as follows: Admiral with the commanding general, rear-admiral with major-general, captain with colonel, commander with lieutenant-colonel, lieutenant-commander with major, lieutenant with captain, lieutenant (junior grade) with first lieutenant, ensign with second lieutenant, midshipman.

LINE OF COMMUNICATIONS. A line (or road) connecting an army or its parts with the base of operations, or the parts with one another: in the first case it is usually the line of supply also, and may, or may not, be the line of operations.

LINE OF OPERATIONS. The line (or road) along which an army operates. When the line of operations and the line of communications (or supply) are the same, the part ahead of the army is usually called the line of operations, the part in rear, the line of communications (or supply).

LITTER. An appliance for transporting wounded. The United States *hand litter* consists of a piece of canvas stretched

between two long pieces of wood. In the field, mule litters of various forms are also used.

LITTER-BEARER. A soldier, detailed from his command, or a member of the Hospital Corps, who assists in carrying a litter for the transportation of sick and wounded, especially on the battlefield. Each company has a certain number of men instructed in this duty.

LIZARD. A rope or chain used in hoisting a spar or timber, and fastened to the timber and fall, so that the article may be hoisted on end and allowed to assume a horizontal position by slacking away on the lizard.

LOADING. Placing the charge and projectile in its proper place in the chamber of a fire-arm or cannon, and preparing the piece for firing. The *density* of loading is determined from the ratio of the weight of the powder charge to the weight of a volume of distilled water (at 39.2° F.), which will fill the powder chamber.

LOADING PLATFORM. In coast forts, the surface upon which the cannoneers stand while loading the piece.

LOADING TRAY. In coast artillery, a brass tray, used while loading to protect the breech recess.

LOADING TRAY. An irregularly shaped brass casting, bolted to the breech of a gun of large calibre, and intended to facilitate the entrance of the projectile and charge.

LOBLOLLY-BOY. A naval nurse, from loblolly or gruel. Now called a bayman.

LOBSCOUSE. A stew of vegetables, meat and hard bread, which is served aboard ship.

LOCKER. A small closet, especially a small closet on board ship, where the sea motion requires close stowage for all movables.

LOG. An apparatus used to determine the speed of a vessel. It formerly consisted of a bit of board weighted and arranged so that it would remain stationary, flat side toward the ship and cause the log line to run out from a reel during a space of time marked by a sand glass, the length of line run out indicating the speed. The modern taffrail log consists of a small brass propeller attached to a line and towed behind the ship. The twist of the line causes a dial on the rail to register the distance run. Another speed indicator utilizes the tendency of a steamer to settle or "squat" when speed is increased and registering devises in connection with a clock make the record permanent. A ship's log is the book in which the hourly events of a watch are entered, and is the ship's official record. A sea journal.

LOGISTICS. A branch of military science, relating to transportation and supply.

LONGEVITY PAY. The increase of pay (10 per cent. for every five years, up to twenty years, of service) allowed to

officers of the United States army. Also called *Fogey Pay, Fogey Ration,* or simply *Fogey.*

LONG TOM. A name given to a cannon of considerable length of chase, used for the long distance shots of the preliminaries of a battle when naval guns were short in dimensions and range. The bow gun used in the chase was generally a long piece of this kind. An equivalent gun was placed in the chase, so as to be available in both broadsides just previous to and during the Civil War.

LOOKOUT. The member of the crew of a vessel detailed to stand on the forecastle or elsewhere to watch for approaching vessels, dangers to navigation, etc. On war vessels lookouts are stationed at each side of the vessel on the topgallant forecastle, but in thick weather or when looking for a mark, a man is stationed at the cross trees or in one of the military tops.

LUCKY BAG. The general receptacle of articles of clothing and personal belongings of the enlisted men on board a vessel of war which are found out of their place. Such articles are confiscated by the masters-at-arms and placed in the lucky bag. The careless owners are punished if found, and unidentified articles are sold at auction.

LUFF. The forward edge of a fore and aft sail. To bring a vessel's head closer to the wind and to luff around is to bring the vessel's head up into the wind and allow her to pay off on the opposite tack.

LUG. A lug sail is a quadrilateral sail bent to a yard, one end of which goes by the mast to the leeward. Its advantage lies in giving a fore and aft rig without a boom. It was modified in old American schooners, mostly fishing craft, by hoisting with a gaff. The sail could be brailed up when work was being done amidships, and be ready for quick use. It was formerly the practice to rig small steamers with these lug sails for use in case of the failure of the steam power.

LUNETTE. 1. An iron ring at the end of the trail of a field piece, which is placed over the pintle hook of the limber, in limbering up the piece. 2. A field work, forming a simple salient, with flanks.

LYDDITE. The English explosive, composed mainly of picric acid, and resembling *melinite* in composition, used as a bursting charge for shell.

LYDDITE. An explosive used by the British troops in the Boer war. It is a compound of picric acid, dinitrobenzol, itself an explosive, but which reduces the sensitiveness of picric acid and vaseline.

MACHINE GUN. A gun of one or more barrels, using fixed ammunition and provided with mechanism for continuous loading and firing: the mechanism may be operated by man-power or by the force of recoil. Guns in which the force of recoil is used to operate the breech-block are termed *semi-automatic;* and

when this force is also used to load and fire the guns, they are termed *automatic*. The principal forms are the Gatling, Hotchkiss, Colt, Maxim, Maxim-Nordenfeldt and Vickers-Maxim. They are sometimes called *Pom-poms*.

MACHINE GUN. A form of cannon in which a number of loads or cartridges are introduced at one time, either in a hopper, magazine or belt, and which fires the charges successively either on turning the handle attached or by a mechanism which utilizes the recoil from each charge. Automatic and semi-automatic guns are used in the navy, from rifle calibre up to six pound projectiles, for protection against boarding and torpedo craft.

MACHINE GUN DETACHMENT. A detachment, or subdivision of an army, which has charge of a machine gun battery. Germany has thirteen such detachments, each of three officers and forty-five men, with four guns; Switzerland has mounted detachments of this kind, and Japan has two machine gun batteries.

MACHINIST. The enlisted man of the navy who has the operation of the steam motive power. The higher rating of the engine room force. Machinists are rated up from water tenders or enlisted direct from machinists by trade or competent marine engineers. A machinist is a petty officer with three classes and chief machinist. There is also a warrant grade of warrant machinist.

MAGAZINE. The compartment or compartments on a ship of war in which the ammunition is kept. It is isolated from the adjoining parts of the ship and provided with mechanism for flooding, instruments for determining its temperature, etc., without opening it. The keys to the magazine are kept in the captain's room and cannot be removed without permission. Battleships are furnished with several magazines conveniently located with respect to the different batteries, and communicating with the locations by power hoists for the rapid moving of charges.

MAGAZINE. A store-house or a store-room for powder. Modern magazines of coast or land forts are bomb-proof rooms in the emplacement itself, behind the main parapet, or under a traverse. The *service magazine* is one from which the ammunition is taken directly, in action; the *reserve magazine* is one which supplies the service magazines.

MAGAZINE RIFLE. A small arm rifle, with a magazine for holding a small supply of cartridges, which can be fired in rapid succession. The magazine usually holds five cartridges, which are enclosed in a holder, and can all be inserted in the magazine at once.

MAJOR. A field officer, ranking next below a lieutenant-colonel, and next above a captain. His proper command is a battalion or a squadron.

MAJOR-GENERAL. An officer, ranking next above a brigadier-general, commanding a division. He receives a salute

of thirteen guns, except when he commands the army, when he receives fifteen guns.

MANEUVER. A movement of troops based on the character of the ground and the tactical conditions existing at the time.

MANEUVERS. Field exercises of forces of various strength, designed to teach (in time of peace) the duties of troops in war. The term is now usually applied to the exercises of comparatively large bodies of land troops, or to those between the navy and the coast artillery.

MANGER. That portion of the forward part of a vessel immediately abaft of the hawse holes and through which the chain cables run. It is generally separated from the rest of the deck by a manger board or half partition, which cuts off the water which may come in through the hawse holes.

MANIFEST. The list of a merchant vessel's cargo, containing the number and marks of packages, names of shippers, consignees, etc.

MANNING TABLE. A list of the names of the men constituting a manning party for a battery, station or search-light, with the particular post to which each is assigned.

MANNING THE SIDE. A mark of honor paid when a high official is passing a ship in review. The men stand with arms on each other's shoulders along the top of the rail fore and aft. If the crew is sufficiently numerous the yards are also manned, and in turreted ships a ring of men is formed on top of each turret. As a compliment to a departing commander or admiral the men often man the shrouds, when there are any, climbing to the tops and cheering.

MANNLICHER PISTOL. An automatic pistol (model 1901), loading by gas pressure, caliber 0.301 inch, muzzle velocity 984 foot-seconds, carrying eight cartridges, rate of fire forty shots in thirty seconds. There is also an automatic carbine, and a long and a short carbine-pistol of this type.

MANNLICHER RIFLE. The Austrian service small arm, model 1893, caliber 0.315 inch, muzzle velocity 2,034 foot-seconds, sight graduated up to 2,000 metres. Italy, Holland and Roumania use this type of arm, but of smaller caliber (0.256) and with greater velocity.

MANOEUVERS. See *Maneuvers.*

MANUAL. A hand-book for a particular fire-arm, gun or military subject, or the prescribed drill for the same, such as the Manual of Arms (rifle), the Manual of the Piece (8-inch, 10-inch, 12-inch, mortar, etc.).

MARCH. The movement of a body of troops from one point to another, whether on foot or mounted. The marching capacity of troops is an important factor in their mobility, and consequently in their efficiency. Infantry marches ordinarily from fourteen to fifteen miles a day, but this can be increased to forty

miles in thirty hours; cavalry or horse artillery can accomplish thirty to thirty-eight miles a day; field artillery about twenty-five miles.

MARINE CORPS. A semi-independent branch of the navy, originally intended for guard and police duty aboard ship, now constituting an elastic and quickly-mobilized force for infantry duty in foreign waters. Has no permanent company or regimental formation, but is organized as need arises into battalions. Is generally subdivided into small marine guards for each of the vessels in commission. Is commanded by a brigadier-general, and has its own commissary and pay organization.

MARK. In modern ordnance practice, guns of the same caliber are given Arabic numbers in the order of the date of their design, thus a Mark IV gun of a given caliber is of a later and probably more improved design than a Mark I, which is the originally designed gun of that caliber.

MARS PISTOL. A semi-automatic pistol, loading by gas pressure, caliber 0.33 inch, muzzle velocity 1,750 foot-seconds, carrying eight cartridges.

MARTIAL LAW. The law, arising out of necessity, exercised by military authority under circumstances which demand it, where the regular civil authority is powerless to act properly, as in case of invasion of a foreign country, or in internal dissension.

MARTINGALE. Ropes or chains from the ends of the jibboom and flying jibboom to sustain the strain of the head stays.

MAST PARTNERS. The beams of the deck of a vessel which are worked around the mast to assist in maintaining its position and to take up the strain of its leverage on the hull.

MASTER. A former rank in the navy, ranking with the first lieutenant of the army, and about equivalent to lieutenant, junior grade. Formerly eligible for the command of small vessels, tenders, etc. Up to and including the Civil War time, merchant captains were utilized in the service, being given commissions as acting masters. The title is the correct name for the officer commanding a merchantman. A sailing-master in the old navy was equivalent to the present navigating officer.

MASTER-AT-ARMS. A petty officer in the navy who has charge of the order of the ship and the good conduct of the men. He is known as Jimmy Legs. He looks out for lights and fires, prevents the smuggling of liquor, quells disturbances, and is the general monitor of the crew. A good master-at-arms has much tact and a command of the art of handling men. He has especial charge of men undergoing imprisonment. The name comes from the fact that he was formerly the instructor in the use of small arms. A chief master-at-arms is the chief of police of the ship.

MASTER ELECTRICIAN. An enlisted man of the United States army, with duties similar to those of an electrician ser-

geant, though of a higher nature; he is stationed only at the more important coast artillery posts. The number in the army is limited to twenty-five.

MASTER GUNNER. An enlisted man of the Coast Artillery, a graduate of the School for Master Gunners, Fort Monroe, Va.

MASTER SIGNAL ELECTRICIAN. An enlisted man of the Signal Corps, who has certain special qualifications.

MATE. The assistant or subordinate of the warrant officers of the navy. The position of mate was formerly about equivalent to that of a warrant officer. After having been abolished for a number of years, it was revived in 1903 for the purpose of providing promotion for chief petty officers who were ineligible on account of age for appointment as warrant officers. The mates of a merchant ship are the subordinate officers under the master.

MAUSER PISTOL. An automatic pistol (model 1902), loaded by recoil, caliber 0.30 inch, muzzle velocity 1,312 foot-seconds, carrying either ten or six cartridges; rate of fire, 10-loader, sixty; 6-loader, forty shots in thirty seconds.

MAUSER RIFLE. The German service small arm, model 1898, caliber 0.311 inch, muzzle velocity 2,118 foot-seconds, sight graduated up to 2,000 meters. The present rifle is really an improved Mauser, called the *Commission* rifle, as it was improved and tested by the Small-Arm Testing Commission. Belgium and Turkey use the older model (1889), and Argentina has an improved form of 1891.

MAXIMITE. An explosive, used as a bursting charge for shells. It is similar to Dunnite. It cannot be exploded by shock, but is readily detonated by a proper fuze, hence it can be used in armor-piercing shells, exploding *after* perforation.

MAXIMITE. A secret preparation, invented by Sir Hiram Maxim, which has given excellent results when used in connection with the fuse invented by Captain Dunn, of the United States Army. American practice seems to show that it is the best medium for the bursting charge of shells yet devised.

MAXIM GUN. An automatic machine gun of small-arm rifle caliber, in which, after firing one shot, if the finger be kept on the trigger, the gun will load and fire automatically till the supply of ammunition (fed from belts) is exhausted.

MAXIM-NORDENFELDT R. F. GUN. A 1-pounder automatic machine gun, called a *Pom-pom,* in which the force of recoil is used to load and fire the piece. There is also a 3-pounder semi-automatic gun, in which the loading is performed by hand, the dropping of the cartridge locking the mechanism and firing.

MAXIM PISTOL. An automatic pistol, loading by gas pressure, similar in principle to the Mannlicher Pistol.

MAXIM-SCHUPPHAUS POWDER. A smokeless powder, consisting of 80 parts gun-cotton, 19.5 parts soluble nitro-cotton (gelatin pyroxilin), 0.5 parts urea. It is manufactured by the

DuPont Company, at Wilmington, Del., in the form of multi-perforated cylinders.

MEDICAL DEPARTMENT. The military surgeons of the army, including the Hospital Corps.

MELINITE. A French explosive, consisting mainly of picric acid. It is used as a bursting charge for shells.

MERCATOR'S PROJECTION. A method of representing the earth's surface by a chart in which the parallels of latitude are at right angles to the meridians. It is preferred for salt water navigation because a ship's course appears as a straight line, though there is a variation as to distance from the fact and the representation. The polyconic projection is preferred in the navigation of large bodies of water inland as greater accuracy as to distance is secured.

MESS. A company of officers or men who take their meals together. In the navy the captain of the ship messes by himself or with any officers of command rank who may be on board. The officers of the rank of lieutenant-commander to lieutenant-junior grade mess in the ward room. The ensigns and midshipmen mess in the junior officers' mess if one is carried on, otherwise in the ward room. The warrant officers mess together, and the chief petty officers have a mess. The enlisted men were formerly allowed to form messes in groups, but a general mess system has been substituted. A commissary steward now provides the subsistence of the whole ship's company and purchases fresh provisions for all, the former commutation of rations in cash having been stopped.

MESSENGER. One of the crew of a war vessel, generally of the boys or lighter men, detailed during the watch to carry messages to parts of the ship not connected by speaking tubes or telegraph. The duty was formerly performed by midshipmen.

MIDSHIPMEN. Officers of the navy being educated. The name came from their station amidships to pass messages in the days of deep-waisted ships. Before 1845 they were taken on ships of the United States navy without a school course, sea-going schoolmasters being provided for them. Midshipmen now attend the Naval Academy for four years, and go to sea two years before being commissioned as ensigns. The old name was restored in place of the name naval cadets in 1902.

MILEAGE. An allowance to officers traveling under orders: at present 7 cents a mile.

MILITARY ACADEMY. A military school for the instruction and training of young men who aspire to commissions in the army. The students are usually called *Cadets,* and on graduation are commissioned second lieutenants in the army. The most noted military academies are those at West Point, N. Y.; Woolwich and Sandhurst, Eng.; Lichterfelde, Ger., and St. Cyr near Paris, France.

MILITARY ATTACHE. An officer on duty with the diplo-

matic representative of a nation at a foreign capital, for the purpose of observing and reporting all matters of interest to the army at home.

MILITARY BRIDGE. A bridge constructed by the troops, either of material carried in the bridge train or of material found in place.

Besides the simple forms for small spans, there are also *gabion, wagon, joist, plank, trestle, pile, rope, suspension, boat, raft, pontoon, flying* and *draw* bridges.

The *Michie* bridge (designed by Colonel P. S. Michie, Chief of Engineers, Army of the James), adopted in 1864, was used until the end of the war. It was a mixed bridge, partly fixed, partly floating, and also a *draw* bridge.

MILITARY BRIDGE TRAIN. The train of an army or some sub-division of an army, which conveys on wagons the material necessary for rapidly building field bridges, pontoon bridges, etc. In Germany each army corps has one corps bridge train carrying material for a bridge 500 feet long, and two division trains each for a bridge 143 feet long; in France one corps train for bridge 420 feet long, two advance guard trains, each for bridge 100 feet long, and one army train for bridge 840 feet long.

MILITARY COURT. A court for the administration of military law, differing from a civil court both in organization and procedure. Military courts comprise General, Garrison and Regimental Courts, the Summary Court and Courts of Inquiry.

MILITARY CREST. That part of the slope of a height, on the side towards the enemy, which is a little below the highest point, and at the crest of the steepest slope. It is the only part of the general crest from which the zone of the steepest slope (and the ground in front) can be effectually swept by fire.

MILITARY LAW. That part of the law of the land which pertains to persons in the military service. In nearly all countries special laws are enacted for the government of the officers and soldiers of the army, and these, together with the customs of the service, constitute the military law of the nation.

MILITARY MAST. A mast of steel supporting one or more armored circular tops which forms a part of the fittings of the larger vessels of war. Besides being used as a signal mast and in later days as a medium for wireless telegraphy, the military top is an important strategic point, especially in the repulse of torpedo craft. It is provided with one or more automatic or semi-automatic guns up to six pounders, and has provision for riflemen. The military tops are manned mainly by the marine guard of the vessel.

MILITARY SECRETARY. The new title (in the United States) of the Adjutant-General of the army, the old Adjutant-General's Department being now called the Military Secretary's Department.

MILITARY SECRETARY. An official of the War Department provided by legislation in the first session of the Fifty-eighth Congress. Has charge of correspondence and records of the department, including Civil War records on which pension claims are based. His duties include those of the former Record and Pension Bureau and a large part of those formerly exercised by the Adjutant-General. Has no jurisdiction in the granting of Civil War pensions, being confined to furnishing information bearing thereon.

MILITARY SCHOOL. A school for the instruction and training of soldiers, cadets or officers. In the United States the military schools comprise post schools for enlisted men, the United States Military Academy for Cadets, the Artillery School, the School of Submarine Defense, the Cavalry and Light Artillery School, the Engineer School of Application, the Army Medical School, the General Service and Staff College, and the War College, for officers.

MILITARY SCIENCE. The science of war, including (in a general sense) strategy, tactics, logistics and engineering. The first, in its highest sense, is really an *art*, especially in its application; while logistics is now regarded as an essential part of strategy, and engineering of tactics.

MILITIA. An organized military force, usually raised for national defense, and until recently not a part of the standing army. In European continental armies the reserves (*Landwehr, Landsturm, Territorial Army*, etc.) correspond to militias, but militias proper only exist in England and the United States, and in both they have recently been enrolled as a part of the regular force for war purposes.

MINISTER. (Envoy Extraordinary and Minister Plenipotentiary.) A diplomatic officer next below the rank of ambassador. He is held to be the representative of the bureau of his government which has charge of foreign affairs, rather than a personal representative of the highest official of the country from which he is accredited.

MISS-FIRE. The failure of a primer to explode the cartridge. See *Hang Fire.*

MIZZEN. The third mast of a vessel, counting from the bows.

MOAT. The ditch around the parapet of a fort. The term is usually applied to such a ditch filled with water, called a *wet* ditch, in contradistinction to the ordinary *dry* ditch or field works.

MOBILE TORPEDOES. Metal cases, enclosing large explosive charges, operated from shore torpedo batteries, to go under water in any desired direction. They are used in coast defense, especially where the depth of water is too great, or its current too strong, for the ordinary *submarine mines.*

MOBILIZATION. The transformation of an army from its peace to its war footing. In the European continental armies the

mobilization plans are fully prepared in time of peace, so that, at the outbreak of war, it is only necessary to issue the requisite orders for calling in the reserves and for the new organization of the forces.

MONITOR. A type of armored vessels, the name being taken from the first vessel of the type built by Ericsson. The distinctive feature which has been preserved in modern armored vessels is the revolving turret of heavy steel armor. The other characteristic of a low freeboard, that is, with the deck but a short distance above the surface of the water, has been long out of date, though it has retained its vogue in the United States till comparatively recent times. The monitor type has armored overhanging sides but a few inches above the water, with a superstructure for quarters and one or more circular revolving citadels containing heavy guns.

MOOR. To secure a vessel head and stern to a wharf, or to attach her to a permanent mooring or make a berth for her in the stream. The latter as opposed to the temporary anchorage.

MORTAR. A cannon, with a comparatively short length of bore, and mounted for high-angle fire. The United States army has three mortars—the 3.6-inch field, the 7-inch siege and the 12-inch coast mortars. The last is about ten calibers long, while a howitzer is about twenty-seven calibers, and a gun from thirty to fifty calibers long.

MORTAR BATTERY. A modern mortar battery usually consists of two or four *pits,* surrounded on front and flanks by a parapet, each pit containing four mortars. The entire mortar battery may be fired at one time, or the firing may be by pits.

MORTAR FIRE. The fire from mortars, always high-angle fire, between 45° and 70° elevation. Between these limits of elevation the range is varied by varying the charge, a series of eight or ten different charges being used to cover the entire field of fire.

MORTAR VESSEL. A specially-constructed vessel of considerable beam formerly used in connection with naval bombardments. The mortar was placed amidships in a massive bed. A development of the bomb ketch in which the mortar of smaller size was placed forward.

MOTOR WAGON. An automobile, or a road locomotive, run by steam, petroleum or electric power, used for transportation purposes in modern armies, either the rapid transport of troops or the transport of supply trains.

MOUNT. A carriage; or, rather, a support, for a small-caliber machine or rapid-fire gun, usually in the form of a tripod or pillar, such as the balanced pillar, masking parapet, rampart or casemate mounts, for 5-inch, 15-pounder and 6-pounder rapid-fire guns.

MOUNTAIN ARTILLERY. Artillery, for use in mountainous country, both carriage and piece being usually packed

and carried on pack animals. For this purpose England has a 3-inch Maxim-Nordenfelt gun weighing 235.4 pounds (carried as one load), the carriage weighing 600 pounds (carried as three loads). Italy, France, Switzerland and Spain have special mountain guns. The United States has the Hotchkiss 1.65-inch and 3-inch, and the Vickers-Maxim 2.95-inch mountain guns.

MOUNTAIN BATTERY. A battery, composed of mountain guns. The Swiss Mountain Battery has four guns, and on a war footing is manned by four officers and 100 men, with six horses and sixty-three mules.

MOUNTAIN GUN. A gun used in mountain artillery. The modern forms comprise, besides the special guns of about 3-inch caliber, a number of the machine guns.

MOUNTED INFANTRY. Infantry mounted on horses for rapid transportation. It is used only by England, and did not prove satisfactory in the Boer War.

MOUNTS. The carriages of naval guns are called mounts. Those up to six-inch calibre are placed on circular pedestal mounts, which permit a wide arc of motion in training. Turret guns which are trained by motion of the turret and emplaced with the more familiar form of artillery mounting used in large barbette coast defense guns.

MOVABLE ARMAMENT. In coast forts, the small caliber guns (automatic and semi-automatic rapid-fire guns and machine guns) on wheeled mounts, designed for use within the batteries to defend the mine fields and attack unarmored vessels; or, outside the works, to resist boat attacks, landing parties, etc.

MUSHROOM. The rounded portion of the breech-block of a gun which fits tightly into the bore.

MUSTER. The roll-call of the men of a command to determine those present and absent. As a ceremony it is prescribed in the Drill Regulations, and in practice it is usually combined with a review and inspection.

MUSTER. The assemblage of the officers and men of a ship's company during which the muster roll is called, from which the returns to the department are made. It is carried out in general on the first Sunday morning of the month, if pleasant, and the crew is dressed in its best or mustering clothes. An inspection of the condition of the ship generally accomplishes it.

MUSTER ROLL. A register of the men in each unit of organization (company, troop, battery, etc.) in which their presence or absence at muster is noted. Muster Rolls are made out every two months in the United States army, although the commands are mustered for pay on the last day of every month.

MUTINY. Unlawful resistance to military authority, such as exciting, causing or joining in any sedition in a troop, battery, company, etc. It is punishable with death, or such other punishment as a court martial may inflict.

MUTINY. Open and violent resistance to the authority of

officers. Mutiny is recognized in both the naval and merchant service, and offenders are liable to the severest penalties, and the death penalty may be imposed. The punishment for mutiny also extends to a person having knowledge of such plans or conduct who does not expose or help to suppress it.

MUZZLE. The front end of the tube of a small arm or cannon, including the mouth of the bore, the face and (in cannon) the swell of the muzzle (an enlargement of the exterior of the gun).

MUZZLE VELOCITY. The velocity of a projectile at the muzzle of the gun. Experimental determinations give the velocity of the projectile at a short distance in front of the muzzle, and from the data thus obtained the muzzle velocity is calculated. Muzzle velocity should always be considered in connection with weight of projectile, because the velocity that counts is usually the *striking* velocity, and a heavy projectile will *carry* its velocity (figuratively speaking) better than a light one. The muzzle velocity of the new coast guns, with the latest powder, is 2,600 foot-seconds; that of the navy guns (with a lighter projectile) is over 3,000 foot-seconds.

NATIONAL CEMETERY. A cemetery, located on government land, cared for by the general government, and used for the burial of officers and soldiers.

NATIONAL COLORS. The national flag, with the number and name of the regiment embroidered on it, carried by different organizations, such as engineer battalions, infantry regiments, etc., and the standards of cavalry regiments. Besides the *national* colors, these organizations have also their own battalion or regimental colors, different for the different arms.

NATIONAL FLAG. The official flag of a nation. The flag of the United States has thirteen stripes, seven red and six white, and a white star for each State in a blue field. When a new State is admitted, a new star is added on the 4th of July next succeeding such admission. The dipping of the flag, by way of salute, is no longer permitted. In the army garrison, post and storm flags are used at posts.

NATIONAL SALUTE. A cannon salute of twenty-one guns. The President receives this salute. It is also the salute to a foreign national flag. When foreign warships salute their own flag in a United States port, a salute of the same number of guns as those fired by the warship is returned by the nearest fort.

NAUTICAL ALMANAC. A publication prepared at the Naval Observatory in Washington and issued by the Bureau of Equipment. It contains tables of the position of the various heavenly bodies at stated times for the use of navigators. It is issued for several years in advance, and by law is required to be sold at a cost covering that of the paper and printing—usually about a dollar.

NAVAL BRIGADE. A State organization, intended to occupy a relative position to the navy to that occupied by the militia to the army. More or less successful organizations of this character exist in the seaboard and lake States. During the Spanish-American War they added materially to the strength of the navy.

NAVAL CONSTRUCTORS. Members of a staff corps of the navy having the construction and repair of the hulls and fittings of vessels except steam machinery and armor and ordnance. They are detailed from graduates of the Naval Academy, but not now, as formerly, from the head of the graduating class. On the expiration of two years' sea duty selections are made from young officers desiring the details on the basis of their probable efficiency. The education of constructors in technical details was formerly carried on abroad. It is now given at the Massachusetts Institute of Technology.

NAVAL INSTITUTE. An organization supported by officers of the United States Navy for the purpose of interchange of information and views on naval subjects. Prizes are given for meritorious papers on naval topics, which are published in the magazine of the Institute.

NAVAL STATION. A place intended for a port of call and supply for naval vessels at which facilities for slight repairs and the receipt of provisions, coal, etc., are maintained. Not a place for heavy repairs, building of ships, manufacture of supplies, etc., which would properly be termed a navy yard in the strict distinction. Some of the former naval stations, however, are coming to assume the characteristics of navy yards.

NAVAL STORES. Generally the supplies for vessels, but tar, pitch and turpentine, the products of pine forests, are given this name commercially.

NAVIGATION. The science of conducting a ship from place to place without reference to landmarks, the use of the latter being the characteristic of piloting. The two objects sought to be attained in navigation are the determination of the immediate position of the ship and of the correct course which will terminate at the desired point. These problems are solved by an observation of the positions of heavenly bodies at given times, the difference of the time as given by the position from the time at the prime meridian as shown by the chronometer, giving the longitude and the difference in the angle of altitude, giving the latitude. From the position as determined a course may be laid to gain the desired point.

NAVIGATION, BUREAU OF. Of the Navy Department, has charge of movements and discipline of officers and enlisted men and the movements of vessels. Is the military branch of the navy.

NAVIGATION, BUREAU OF. Under the Department of Commerce and Labor. Registers vessels and has general superintendence of the vessels and seamen of the merchant marine. Should not be confused with the Bureau of Navigation of the

Navy Department, which has jurisdiction only over vessels and men of the navy.

NICKEL STEEL. A form of steel made with the admixture of a given proportion of nickel which is almost entirely used in the manufacture of armor and ordnance. It is tough with great tensile strength, and is capable of being face-hardened without incurring danger of cracking upon the impact of a shell or other projectile.

NICKEL STEEL. A steel, containing certain percentages of nickel: it is used principally in making armor-plates, but has recently been also applied to the manufacture of guns (cannon and small arms).

NIGHT SIGHTS. A form of sights for naval guns, in which small incandescent lights show through bits of differently colored glass. By aligning the lights so that only one color shows a result is attained equal to ordinary open sights in daylight.

NIPPERS. A metal device, generally in the form of an eccentric which may be made to bear upon a chain cable so as to check or hold it. Used for a temporary fastening for the cable while the stopper is being adjusted.

NITROGLYCERINE. A high explosive, liquid at ordinary temperature, prepared by treating glycerine with a mixture of nitric and sulphuric acids. It is generally absorbed by some porous substance, so as to form a *solid* material, which is more readily handled: this is the principle of the *dynamites.*

NITROUS POWDERS. Those forms of so-called smokeless powders which are produced by the action of nitric acid on a vegetable fibre such as cotton. The excess of nitric acid is removed by solution or washing in ether, and the resulting mass which resembles hardened gelatine of a yellowish hue, is compressed in various forms, the latest form used by the United States being that of a ribbed wafer. The powder is given a special form in order that each section may burn evenly and the resulting waves of gas pressure regulated by the size of the charge.

NON-COMMISSIONED OFFICER. An enlisted man, appointed by a regimental or artillery district commander, or by the Secretary of War, to the grade of sergeant or corporal, or to that of the various grades of the non-commissioned staff (post quartermaster-sergeant, commissary sergeant, ordnance sergeant, etc.).

NON-COMMISSIONED STAFF. The non-commissioned officers of a post or command, who are not a part of the line, but belong to one of the staff or special departments. The term *Post Non-Commissioned Staff* includes ordnance, commissary, post quartermaster and electrician sergeants.

NORDENFELDT R. F. GUN. A rapid-fire gun in which, by moving a hand-lever after firing, the block revolves, the hammer is cocked, and the empty cartridge-case is ejected.

OAKUM. Old rope, untwisted and picked to fibres. It is

forced into the seams between planks in order to make them water-tight.

OBSERVATION OF FIRE. The observation of the effects of fire on the enemy. In artillery, no firing is considered satisfactory when the *effects of it* cannot be *observed,* directly or indirectly, by the firing party.

OBSERVER SERGEANT. A sergeant, specially selected, who has charge of a position-finder in coast artillery, and takes the observation (in azimuth and range) of the target.

OBTURATOR. A device used to prevent the escape of gas. In modern cannon it is a pad, or circular disc, of soft material at the forward end of the breech-block, which expands when the gun is discharged, and fills the opening between the block and the gun.

OFFENSIVE. In tactics or strategy, the active, energetic *attack,* in contradistinction to the more passive *defense* (called the *defensive*). It is the effort to find the enemy and bring him to battle, whereas the defensive consists in awaiting the enemy in a chosen position. History shows that the offensive alone promises prompt and decisive ultimate victory.

OFFICER. A commissioned officer of the army, including all ranks from second lieutenant up. The classes of officers are General officers (all generals, field marshals, etc.), field officers (majors, lieutenant-colonels and colonels), and company officers (lieutenants and captains). Subaltern officers are first and second lieutenants.

OFFICER OF THE DECK. The watch officer, who has charge of a naval vessel for the time being. When all hands are called it is the executive officer, and at quarters the navigating officer. Owing to the scarcity of officers in the navy of the United States, warrant officers and midshipmen are frequently assigned to this post.

OFFICER'S PATROL. A patrol of various strength, up to that of a platoon, commanded by an officer. It is employed in war in the reconnaissance of important points.

OILER. A rating of the engine room force of a vessel of war. The oiler attends to the proper lubrication of the bearings and to the cleanliness of the machinery.

OILSKINS. Coats, hats, etc., of cotton, linen, and, sometimes silk heavily impregnated with oil and dried by special process used as waterproof clothing by seamen.

OLD MAN. The commanding officer. An affectionate recognition of the paternalism exercised by that officer over the personnel under his charge.

OPERATIONS. All movements of forces, especially those of strategic importance, leading up to the battle. They are classified as principal and subordinate, offensive and defensive, etc.

An *Army of Operations* is the field army, in contradistinction to the army of occupation, or the troops located in garrisons.

A *Base of Operations* is that part of the country from which the army draws its supplies and to which it sends all men or material no longer required.

A *Line of Operations* is the line along which the army moves toward its object; several lines are generally used.

OPTICAL TELEGRAPHY. Visual signaling by flag (wig-wag) or by heliograph. For night work, torches, lanterns or colored rockets are used, or a heliograph supplied with an acetylene lamp.

ORDER. An injunction, instruction or command issued by a superior to his command or any part of it. Printed or written orders are issued from the various headquarters, and are classified as general or special, depending on their nature, the former usually applying to the entire command, the latter to some individual.

ORDER, CLOSE. The normal formation in which soldiers are regularly arranged in line or in column.

ORDER, EXTENDED. The formation in which the soldiers or the sub-divisions (squads, etc.), are separated by intervals greater than those of close order.

ORDNANCE. The war material which pertains to the armament, its use and its care; such as guns, carriages, small arms, soldiers' and horse equipments, ammunition, gun-cleaning material, etc.

ORDNANCE. The science of constructing and using guns and cannon of all calibres, of determining the nature and power of explosives used in such guns and of the range and characteristics of projectiles fired. It includes a high development of mathematics as well as of mechanical ingenuity.

ORDNANCE, CHIEF OF. Of the army, has charge of matters relating to cannon, small arms and explosives. The general subject of the preparation and use of fortifications and arms of all kinds is under the direction of a Board on Ordnance, of which the Chief of Ordnance is a member. In the navy the chief ordnance officer is Chief of the Bureau of Ordnance, which has jurisdiction over all questions relating to guns, powder, projectiles and armor.

ORDNANCE DEPARTMENT. A branch of the army, which is responsible for the supply of ordnance and ordnance stores to the army. Its higher duties consist in designing and constructing ordnance of all kinds.

ORDNANCE SERGEANT. An enlisted man, under the control of the Ordnance Department, ranking next below a regimental quartermaster-sergeant. He assists the post-ordnance officer and has charge of the ordnance property in store.

ORGANIZATION. The measures taken to secure system and order in the army, to insure regularity of supply in all departments, and to provide everything necessary for efficiency in fighting capacity. The theory of organization rests on the prin-

ciple of individual responsibility and subordination, and tactical organization is the arrangement of an army so that it may respond promptly to the will of the commander.

ORIENTING. The process of locating a position with reference to the points of the compass, or of locating an actual position in the field with reference to its position on a map. It is of great importance in reconnaissance and on the battlefield.

ORLOP. The lowest deck of a vessel, which is built directly over the beams.

OUTHAUL. The rope used for extending the foot of a sail on the boom or yard.

OUTPOSTS. Detachments of troops thrown out from the main body to secure the latter from surprise in camp, bivouac or cantonment. These are either separate detachments at important points (the common method), or a continuous chain of detachments, consisting of sentinels, pickets, supports and an outpost reserve (the typical method, but one seldom required).

PACE. The length of the full step in quick time: 30 inches.

PAD EYE. An eyebolt, which is affixed to the construction of the vessel with a plate or pad of metal, so that the strain on the bolt is distributed over a considerable bearing surface instead of the immediate point of the entrance of the bolt into the construction.

PAINTER. A rope attached to the bow of a small boat, used to make her fast to a vessel or dock.

PALISADES. Rows of strong stakes, six or seven inches broad on each side and eight or ten feet long, sharpened at the top, set vertically in the ground; used as obstructions in field works.

PALM. A strap of leather, which is fastened around the hand, and which has a metal boss which rests in the palm of the hand and is used to push a needle through cloth, performing the same office as the seamstress's thimble.

PARABELLUM PISTOL. The Swiss automatic pistol, model 1900, manufactured by Borchardt-Luger Co., caliber 0.301-inch, 8-loader, capable of firing 100 shots in thirty seconds.

PARADE. 1. A military ceremony, prescribed in the Drill Regulations. 2. The area of ground on which troops form for roll-calls. In coast forts the *Battery Parade* is the place in rear of the emplacements where the detachments form.

PARADOS. In fortification, a structure (in the form of a parapet) in rear of a battery, for protection against fire from the rear.

PARALLEL. In the attack of a permanent land fort (or of the land side of a coast fort) by regular approaches, a trench roughly parallel to the front to be attacked, in which are assembled the guns and troops of the attack.

PARAPET. In fortifications, walls of earth and other ma-

terials for the protection of the troops against the enemy's fire. In coast forts the parapet is made of earth, sand and concrete.

PARBUCKLE. A device for hoisting or lowering a cask or other cylindrical object by which both ends of a rope are passed around the circumference, the bight or loop being thrown over a post of stanchion. By hauling on the ends the object is rolled on board a vessel or lowered into a boat.

PARCEL. To wind strips of canvas round a rope previous to serving it with small rope to take the wear of friction.

PARK. A mode of assembling in compact formation a train of wheeled vehicles. For field artillery, the park is prescribed in Drill Regulations; other wagon trains are parked with a view to defense, or for facility of moving out on the march again. Formerly, the word signified *train (artillery park, engineer park,* etc.), but that use is practically obsolete.

PAROLE. A watchword, similar to the *countersign,* but confided only to the officer of the guard and the officer of the day. It is used by guards as a check on the countersign.

PASS. Permission to an enlisted man to be absent from his company and post for a short period, usually less than twenty-four hours. Passes are given in the form of written certificates.

PASSPORT BUREAU. In the Department of State. Issues letters and passports to citizens of the United States intending to travel abroad. A small fee is charged for issue of passports.

PATENTS. For the encouragement of invention, the United States issues a patent of invention entitling the inventor to the exclusive benefit of his invention for a term of seventeen years. The record of patents issued is kept in Washington under the Commissioner of Patents, whose subordinates decide whether an invention is new and patentable. The former requirement of a working model of a patent has been abolished, and patent ability is now determined from drawings.

PATROL. A small reconnaissance party, varying in strength from two to 100 men, either independent or forming part of an advance guard, or a system of outposts, or the general system of reconnaissance in front of an army.

PATROL BOATS. In coast defense, boats which patrol the coast, to report the appearance of the enemy's fleet. They are particularly useful in fog or thick weather to guard the mine field, or at night to observe the approaches to a fortified harbor.

PAY. To cover with melted pitch, tar, or some water-proofing compound to keep out the water.

PAY DEPARTMENT. A branch of the service, charged with the payment of the army. It was, until recently, a closed corps, but line officers are now detailed to perform the duties of paymasters.

PAYMASTER. An officer of the army, charged with the payment of troops.

PAYMASTER-GENERAL. The head of the Pay Department in the United States Army, with the rank of brigadier-general.

PAYMASTER-GENERAL. Of the army. Has charge of the payment of officers and enlisted men, with the payment of treasury certificates for bounty, back pay, etc. The paymaster-general of the navy has, in addition to similar duties, the duties also of the quartermaster-general and commissary-general of the army, as respects the clothing and subsistence of the personnel.

PAY ROLL. A roll, prepared monthly by company and detachment commanders, containing the necessary data for the proper payment of each soldier.

PEAK. The upper after corner of a fore and aft sail, also the end of the gaff. A compartment in the bows of a vessel, the fore peak. A contracted space used generally as a storeroom.

PELICAN HOOK. A hinged hook having a long shank and the two parts of which are secured by a ring affixed to the standing part and slipping over the hinged part, so that the hook may be let go by prying off the ring. Used on davits, etc., for quick release.

PELORUS. A compass card, used for taking bearings. The navy set consists of a standard on which the pelorus and sighting mechanism is mounted, together with an electric light for illuminating the card at night.

PENDANT. A short piece of rope or chain having a block or thimble in the end not attached to the spar, through which the braces, etc., are rove.

PENETRATION. The distance to which the point of a projectile enters a target of particular material. It is usually determined as perforation—that is, the thickness of material actually perforated. Thus, the new United States magazine rifle, at 500 yards, will perforate 18.3 inches of dry white pine; the German rifle, about 16 inches.

PENNANT. A long, narrow flag of red and white stripes and a blue star field, indicating a commanding officer. It is flown at the main when no superior officer is aboard, and flies from the boat staff when the commanding officer leaves the ship.

PENSION. An allowance, paid to disabled soldiers or to the widows and children of officers or soldiers deceased.

PERCUSSION FUSE. A fuse of a projectile, which acts by the striking of the projectile on some hard surface, as the ground, etc. There are *base percussion* and *point percussion* fuses.

PETROFRACTEUR. A blasting powder, composed of nitrobenzene, potassium chlorate, potassium nitrate and antimony sulphide.

PETTY OFFICER. A term in the navy corresponding to that of non-commissioned officer in the army. A petty officer is an enlisted man having authority over other enlisted men at the discretion of the commanding officer.

PICKET. A small detachment of men sent out from the support in a system of outposts. Each support sends out several pickets, and each picket posts several vedettes, or sentinels, in front of it.

PICKET LINE. A rope, to which horses are secured while they are being groomed.

PICRIC ACID. Picric acid is indigo treated with nitric acid. It was used as a dye before it was known to be a high explosive. It is the base of a number of forms of explosives, being combined with vaseline and other substances to decrease its sensitiveness.

PICRIC POWDER. An explosive, used as a bursting charge for shells, composed of saltpetre and ammonium picrate. Picric acid itself is also used.

PIER. A construction of timber, iron or stone extending out into the water of a harbor or bay so as to secure a depth of water in which vessels may lie afloat at all times of tide. Piers are frequently built at seaside recreation places in order to bring visitors closer to the salt water.

PIGEON, CARRIER OR HOMING. See *Carrier Pigeon.*

PILOT. A person having a special knowledge of a section of a coast, who holds a permit to offer his services to conduct vessels in and out of harbors and between coastwise points. The craft is divided into harbor pilots and coast pilots, the latter being competent for considerable stretches of coast. In the important ports the pilots are organized into associations whose members divide the duties and emoluments. Pilotage laws are made by the several States, and pilotage dues and regulations vary according to location and the difficulties of navigation.

PILOT CHART. A publication of the United States Hydrographic office, on which the course of storms, paths of floating obstructions, desirable sailing courses, etc., are shown. It differs from the usual form of chart in being a monthly publication intended for immediate information.

PINK. An obsolete type of vessel, in which the stern was built sharp similarly to the shape of the bow, though the upward rise was somewhat greater. It was formerly a favorite model for fishing boats.

PINNACE. Originally a small vessel propelled by oars and sails, used as a tender to a war vessel. Later the word was applied to the largest boat of a vessel similar to a long boat or launch.

PIN-RAIL. A timber bolted to the rail of a vessel, through which belaying pins are thrust, on which to secure the running rigging.

PINTLE. A bolt, provided with straps, secured to the rudder and working in a socket affixed to the stern post. The device on which the rudder turns.

PINTLE. A hook on the rear of a limber, over which the lunette (a ring at the end of the trail of a field or siege piece) passes in limbering up, or joining the two together.

PIONEER. A soldier, who forms part of the body of technical troops (engineers, in the United States Army), whose duty consists in preparing the way for the advance of the troops (repairing roads, building bridges, etc.) or effecting demolitions. Germany has twenty-four battalions and ninety-eight separate companies of pioneers.

PIPE. A whistle, used by boatswains' mates to attract the attention of the crew preliminary to a call or order, and also to give the signals for various manœuvers. They are capable of being sounded with considerable variations or trills, and require considerable practice before they can be sounded properly. Orders transmitted with their accompaniment are said to be piped, as "pipe down," to release the crew from a given duty.

PIRATE. One who traverses the sea for the purpose of seizing vessels or property without warrant of an established government. In early days there was some confusion between actual pirates and the operations of privateers. The concerted action of navies of comparatively modern times has abolished piracy except in regard to the depredations of semi-savage races in Asiatic waters, which are reduced to infrequent occasions.

PISTOL. A short fire-arm, intended to be used with one hand only. The modern pistols are self-loading. The principal forms are the Bergmann, Browning, Colt, Mannlicher, Mars, Mauser, and Parabellum or Borchard-Luger.

PIT. That part of a modern mortar battery, in which a group of mortars (usually four) are mounted.

PLANE OF FIRE. The vertical plane, passing through the line of departure (the prolongation of the axis of the gun at the instant the projectile leaves the bore).

PLANT INDUSTRY, BUREAU OF. Of the Department of Agriculture. Studies all forms of useful vegetable growths; seeks to develop and introduce new and valuable species, including crops better resisting disease. Has charge of the Congressional seed distribution.

PLASTOMENITE. A smokeless powder, manufactured in Germany, composed of nitrated toluene, nitrocellulose and barium nitrate. Called also *Toluol Powder.*

PLATFORM. A prepared surface, on which a gun-carriage rests. For siege guns, mortars and howitzers modern platforms are used; for coast guns, the platform is of concrete, built with the battery.

PLATOON. A sub-division of a company, field battery, etc. In the United States a company has two platoons, in Germany three; in a field battery a platoon is composed of two pieces and their caissons.

PLIMSOLL'S MARK. A line on a cargo vessel marking the point beyond which it is dangerous to load her. The losses on account of overloading sea-going vessels caused an agitation supported mainly by the Englishman whose name is given to the mark,

and which resulted in legislation enforcing the limitation of the mark.

PLOTTING BOARD. A board used for plotting a moving target, in connection with position-finders at coast forts. The Whistler Quadrant Plotting Board has been adopted in the United States.

PLOY. To form a close column from a line, in battalion drill. The reverse is called *deploy.*

PNEUMATIC GUNS. In the earlier days of high explosives, before less sensitive compounds had been devised, it was thought that dynamite might be used in warfare if a propulsive force could be utilized which would not detonate the charge. The cruiser *Vesuvius* was built with guns in which the power was compressed air. Although dynamite was successfully thrown and exploded in the Spanish War, the results were not satisfactory, owing to the impossibility of securing an accurate aim.

POINT BLANK. The range at which a projectile fired from a given gun will describe a straight course so that it is not necessary to elevate the muzzle of the gun to overcome the influence of gravitation.

POINTING. The operation of giving to a gun the direction and elevation necessary to hit the target. In coast artillery, when the sight is used it is called *aiming,* when the sight is not used it is called *laying.*

POM-POM. A machine or small caliber rapid-fire gun, such as the Maxim-Nordenfelt automatic gun, or the Vickers-Maxim 1-pounder quick-fire gun.

PONCHO. A rubber blanket, issued as a rain-coat to enlisted men of the United States Army.

PONTON, OR PONTOON. A portable boat, carried on wagons, used in constructing floating bridges for armies. Various forms are in use.

PONTON BRIDGE. A bridge built of ponton boats, placed at regular intervals across a stream and anchored in position. The boats are connected by wooden balks lashed together, over which planks are laid.

PONTON TRAIN. A wagon train, carrying the bridge equipage of an army in the field.

POOP. A partial deck raised above the spar or open deck of a vessel, and running from the mizzen mast aft.

PORT. A harbor, on the shore of which facilities are provided for carrying on a maritime trade. A port of entry is one at which a custom house is located. Also an opening in the side of a vessel for light and air, for the protrusion of a gun or for the entrance of cargo. The left side of a ship looking forward.

POSITION FINDER. An instrument designed to locate the exact position of the enemy's ships. The principal position finders

are the Lewis and the Swazey type A, and the Lewis and the Rafferty type B (or emergency) position finders. Also called *Range Finder.*

POSITION FINDING. A process used by coast forts for locating the exact position of the enemy's ships. This may be done by a depression position finder (using a vertical base) or by means of a horizontal base system.

POST EXCHANGE. An exchange established at an army post for the benefit of the enlisted men, resembling a department store in character but usually also combined with amusement rooms. An officer is in charge of it and the profits go to improve the company messes. It is still often called *canteen.*

POST NON-COMMISSIONED STAFF. See *Non-Commissioned Staff.*

POST QUARTERMASTER-SERGEANT. A sergeant of the Quartermaster's Department, ranking next below a regimental quartermaster-sergeant. His duties are principally to take charge of the papers of the post quartermaster and to assist the latter in his duties.

POWDER. The explosive used in military small arms or cannon. The black gunpowder originally used was gradually improved, *first,* by increasing its density and the size of the grains, resulting in *mammoth* and *pebble* powder, and, *secondly,* by changing the shape of the grains, resulting in *pellet* and perforated *prismatic* powder. The principal object in these improvements was to obtain a high muzzle velocity with a low pressure in the bore. The next step in the development was the use of *brown,* or cocoa powder, but the introduction of *smokeless* powders in 1886 opened an entirely new field, resulting in the present forms of powder for guns.

POWDER CHAMBER. The rear end of the bore of a gun or small arm, where the powder charge is placed. In heavy guns it is composed of the main chamber and the centering cone.

POWDER CHARGE. The powder which is used to propel a projectile. In all guns, excepting machine and rapid-fire guns, it is enclosed in silk or serge bags. The powder charge for the 12-inch gun is put up in four sections.

POWDER CLOTH. A material woven like cloth fabric, but composed entirely of smokeless powder material, made by Krupp, and used to enclose powder charges. It leaves no *residue,* consequently there is no danger of the latter setting off a new charge. Called also *Powder Skin,* when made in tough skin-like form, not woven.

PRATIQUE. A term derived from the commercial language of the Mediterranean, signifying that a vessel has shown a clean bill of health, and is authorized to communicate and trade with the shore.

PRATT BALLISTIC BOARD. An arrangement for me-

chanically applying the corrections for drift, wind, etc., in accurate firing with heavy guns. It has been officially adopted.

PRECEDENCE. A fixed code in diplomacy, which is reflected in official life. Refers to preference in entrance, seating, etc., at official functions and in social life. The embassador whose credentials bear the oldest date has the preference or "pas." In official life precedence is determined by the importance of the office held, and in the case of cabinet officers by the date of the establishment of the position. Moot questions on the subject are determined by the President.

PREDICTED FIRING. Firing, in which guns or mortars are given direction and elevation corresponding to a predicted point; that is, the point where a moving target will arrive at the expiration of a certain interval of time.

PRESIDENT. The commander-in-chief of the armies of the United States. He receives a salute of twenty-one guns.

PRESSURE GAUGE. A device intended to register the powder pressure in the bore of a great gun. It generally consists of a small copper cylinder contained in a steel device with a moving plunger. The pressure of the powder force on the plunger compresses the copper, and the rate of compressibility being known, the amount of pressure is ascertained.

PRESSURE GAUGE. An apparatus for measuring the pressure exerted by the powder gases in a gun. In coast guns it is screwed into the inner side of the breech-block. Its principle of action is the degree of compression of a short copper cylinder, the *pressure* being determined from that required to produce the same degree of compression on a similar cylinder by actual experiment.

PREVENTER. A rope set up to assist the standing rigging of a vessel to support the strain on the masts in case of a storm, as a preventer back stay.

PRIMER. The mechanism for igniting the powder charge in a gun. In small arms primers are percussion caps in the rear end of the cartridge case; in cannon they are either *friction* or *electric,* and each of these either *common* or *obturating.* A common primer is one that is blown out by the discharge and hence allows some of the gases of explosion to escape; an obturating primer remains in the vent and acts as a gas check there.

PRIMER. A device for starting the combustion in the powder chamber of a piece of ordnance. It either consists of an arrangement of fulminate or other detonator which is set off by a blow or by drawing a roughened wire through it, or of a platinum wire surrounded by dry gun-cotton and mealed powder. The platinum being heated by the passage of an electric current, the explosive takes fire, which is communicated to the primer magazine, and thus to the charge of the gun.

PRIMING POWDER. Igniting charges, necessary to insure ignition of the main charge. Black rifle powder (at each end of a section of the powder charge) is used for the purpose.

PRISONER. An officer or soldier, in arrest or in confinement at a post. The term is ordinarily applied only to enlisted men. Prisoners are classified as *general* and *garrison* prisoners, the former comprising such as have been sentenced to dishonorable discharge.

PRIVATEER. An armed vessel, owned by private parties, licensed to prey on an enemy's commerce in time of war. In the war of 1812 a number of the merchant vessels of the United States, which were debarred from their usual trade, were fitted out as armed cruisers and created much havoc among British shipping. The right to commission privateers has been steadfastly maintained by the United States, though the practice is now probably obsolete, as merchant vessels which are available for naval use are now taken over by the governments of modern nations in event of war.

PRIZE. A captured vessel or other property taken by a naval vessel in war. The circumstances of the capture and of the ownership of the property are taken under consideration by a court which awards the proportionate share of the money accruing from the sale of a prize. Provision is made by statute for distribution of prize money from the Treasury in cases of destruction of the vessels of an enemy.

PROFESSORS OF MATHEMATICS. Officers of the United States Navy engaged in instruction at the Naval Academy or in astronomical or other mathematical work. The position was established in order to teach the midshipmen at sea before the inception of the Naval Academy. Professors have relative rank and other privileges of a staff corps.

PROJECTILE. A rifle bullet shot, shell, shrapnel or canister projected from a small arm or cannon. All projectiles are painted with bands, etc., of different colors to indicate the kind of projectile (cast-iron, steel, etc.) and the bursting charge (gun-cotton, maximite, etc.).

PROMOTION. The successive steps of advancement of a military official. Promotion in the American navy goes by seniority, except by special act of Congress covering one or a class of services of merit. Promotions are made in usual course on the death or retirement of superior officers. Promotions made by act of Congress frequently provide that they shall constitute additional numbers in the higher grades to those which have been provided by general law.

PROMOTION. Advancement to a higher grade of rank. In most armies this is by seniority, but a certain (very small) proportion of officers are promoted out of turn, not by *selection,* but by being assigned (for special qualifications) to a branch, like the German General Staff, where promotion is more rapid, but this applies only to promotion below the rank of lieutenant-colonel. Promotion out of turn in any grade above major is not known in any continental army of Europe except that of Russia.

PROTECTED CRUISER. The third type of war vessel in importance. Modern protected cruisers are of approximately 9,000 tons displacement, equal in size to a former armored cruiser. They are given high speed and their protection consists of an armored deck, rounding in contour of from two to four inches thickness, and which protects the engines, boilers and magazines. They are armed with six-inch rifles and quick and rapid-fire guns, and are intended as the flankers of the naval battle line, as well as the nuclei of subordinate squadrons for peace and police service. The protective water line belt of cellulose is the characteristic feature of this type of vessel.

PROVING GROUNDS. Government grounds, used for testing cannon, powder, projectiles, explosives, armor and other ordnance or ordnance material. The best-known proving grounds are Sandy Hook (N. J.), Indian Head (Md.), Shoeburyness (England), Meppen (Germany), Felixdorf (Austria).

PROVOST MARSHAL. An officer, detailed to take charge of the prisoners of an army in the field.

PROVOST SERGEANT. A sergeant, detailed to take charge of the police of a post—that is, keeping it clean. He usually also has charge of the fatigue (or working) parties, including the prisoners.

PSCHYCROMETER. A set of meteorological instruments, including barometer and wet and dry thermometers, encased in a box, to which the air has free access. Readings are noted at stated intervals for the purpose of forecasting weather conditions and their accurate record in the log.

PUBLIC DOCUMENTS, SUPERINTENDENT OF. An official of the Government Printing Office, who has charge of all surplus copies of government documents not required for distribution by Congress and the departments. He is empowered to sell documents at cost, and prepares the index of all documents published.

PUBLIC PRINTER, THE. Has charge of all business relating to the public printing and binding. Is the head of the Government Printing Office, at Washington, where all printing is done for Congress and the departments, including the publishing of the Congressional Record. The smaller printing for the departments, and in some cases the pamphlet work is done by branch offices of the Government Printing Office, located in the department buildings.

PUBLIC ROAD INQUIRIES, OFFICE OF. Under the Department of Agriculture. Investigates the best method of road construction and disseminates information thereon.

PUNISHMENT. The basis of the discipline of the navy has been held to be punishment, though the newer idea is that a system of rewards would be more effectual. Punishment may only be inflicted by a commanding officer or a court, and consists of reduction from a higher rating, loss of pay, imprison-

ment, restriction of liberty for bad conduct or dishonorable discharge in the case of an enlisted man, loss of numbers, suspension or dismissal in the case of an officer. Flogging and other corporal punishments are forbidden, though it is still the practice to confine men in irons.

PURSER. The financial officer of a merchant ship, formerly an office in the navy, of which the incumbent discharged the present duties of the paymaster. The purser was formerly the agent of the victualling contractor, whose sins were visited on his subordinate's head, who, perhaps, had additional sins of his own.

PYROCOLLODION. The Russian smokeless powder of Prof. Mendeleef, in the form of little thin sheets, composed of nitrocellulose. It is very homogeneous in composition, and gives uniform ballistic results.

QUADRANT. An astronomical instrument, used to determine the angles of the relative positions of heavenly bodies by a determination of the distance between their reflected rays of light. It has a smaller arc than a sextant and measures up to 90 degrees only.

QUADRANT. An instrument used in artillery to determine the elevation of a gun, especially for angles over 15°, hence, generally, for mortars. The radius passing through the zero of the scale is fixed, and the instrument is placed with this radius on an element of the cylindrical part of the gun; a movable radius carries a level and a vernier, and when this is set for any elevation and leveled, the piece has the proper elevation.

QUADRANT ELEVATION. The elevation of a gun as determined by a *quadrant:* it is the elevation from a horizontal plane. When the target is below the level of the gun, the quadrant elevation is less than the sight elevation by the angular depression of the target.

QUARTER. The after part of the side of a ship from about the mizzenmast aft.

QUARTERMASTER. The helmsman of a merchant steamer. A petty officer in the navy who has charge of the signals, charts and navigating gear.

QUARTERMASTER. An officer, charged with the duties pertaining to the Quartermaster's Department. Line officers are detailed or appointed post, detachment, regimental or transport quartermasters, and the officers regularly assigned to the Quartermaster's Department are constructing quartermasters in particular localities, depot quartermasters in large cities, or chief quartermasters of departments, etc.

QUARTERMASTER-GENERAL. A brigadier-general, head of the Quartermaster's Department.

QUARTERMASTER-GENERAL. Of the army. Provides transportation and clothing for the army, has charge of con-

struction and repairs at military posts and of national cemeteries.

QUARTERMASTER'S DEPARTMENT. A branch of the army, which has charge of transportation, the construction of barracks, quarters and storehouses, and the supply of clothing, camp and garrison equipage, etc.

QUARTERMASTER SERGEANT. A sergeant in a company appointed to this position. He has charge of the company property, and usually of the company mess.

QUARTERS. The houses or tents in which officers or men live.

QUARTERS. The stations of the personnel of a vessel of war for inspection, exercise or battle. The regular daily assembly of the crew for inspection and division drill.

QUAY. An artificial embankment by the side of a river or harbor at which vessels may lie to take on or discharge cargo. A construction parallel to the shore as differentiated from a projecting pier or wharf.

QUICK FIRER. A term applied to the larger guns of the secondary battery of a vessel of war. By a subdivision of the duties of the gun crews the operations of loading and firing are quickly carried out so that a large number of shots are fired in a given elapsed time. A distinction is made from the rapid fire guns which are automatic or semi-automatic so that the firing is almost continuous.

RACER. A circular piece of steel, on which the entire gun-carriage (top-carriage and chassis) rests, and which covers the roller-path, over which the gun is traversed.

RACING. The sudden and violent movement of the propeller of a vessel when thrown out of water by the pitching of the craft.

RACK-A-ROCK. An explosive of the Sprengel class, the separately transported constituents being nitrobenzene and potassium chlorate. This is the explosive that was used in the removal of Flood Rock, in the Hell Gate explosion of 1885.

RAFFERTY POSITION FINDER. An emergency position finder, for determining the range and azimuth of a target. It is now used merely as an azimuth instrument.

RAID. A rapid military operation, usually around the flanks of the enemy's army, threatening his line of communications, generally executed by cavalry.

RAILROADS, COMMISSIONER OF. An official of the Department of the Interior who has the supervision of the railroads which have been aided by grants of public lands or by guaranteed bond issues. He investigates the correctness of reports made by them, and sees that the laws relating to such roads and the stipulations on which aid was granted are carried out. Does not have general railroad supervision.

RANGE. 1. The distance from the gun (or station, in coast

artillery work) to a target. 2. A target range—that is, a place where target practice is held, with distances laid off, butts constructed, and targets properly arranged to conduct the firing.

RANGE FINDER. An instrument, used to determine the distance to the enemy's lines, his troops or his warships. Coast artillery range finders usually determine both range and azimuth of the target, and are therefore called *Position Finders.*

RANGE FINDER. An instrument which determines the distance of a given object by means of triangulation. An officer of a vessel of war in time of target practice or actual contest is stationed at an elevation for the purpose of determining the distance of the target or enemy, his finding being passed to the crews of the different guns to regulate the elevation of the pieces. In the stationary batteries of the army, a more minute system of rangefinding is employed, and the sighting of the guns is almost wholly done from the plotting done in the range finding tower.

RANGE OFFICER. 1. In infantry target practice, an officer detailed to take charge of the target range. 2. In coast artillery, an officer, assistant to the Battery Commander, who has charge of the primary position-finder station of the battery.

RANGING. The determination of the range to any target by field artillery. The process is described in Drill Regulations, and consists in firing trial shots with different elevations until one shot strikes beyond the target and another in front of it.

RAKE. The departure of the line of the masts or bow, or stern of a vessel from the perpendicular line. A rakish or smart appearance is given by this feature. To fire upon a vessel from such a position that the projectiles sweep her decks fore and aft.

RAM. A marine engine of destruction, which has had a vogue at intervals. A revival of the beak of Greek and Roman vessels. In modern construction it consists of a curved under-water extension of the bow projecting to a considerable distance, and designed to pierce the bottom of an enemy. Vessels, notably the U. S. S. Katahdin, have been built for the sole purpose of ramming an antagonist, and sinking her by the impact and damage done.

RAMMER. The old form of rammer on a long staff, which was a familiar part of the equipment of muzzle loading cannon has become obsolete. The only equivalent in modern ordnance is the power rammer, driven by gearing or hydraulic pressure, which is located directly in the rear of guns of large calibre, and has a short thrust for the purpose of seating projectiles in the bore.

RANDAN. A method of rowing in which two men row a long oar each, and the stroke oarsman uses a pair of short oars or sculls.

RANK. The comparative seniority of military officers. As between two officers, the one holding a commission of higher title of earlier date is said to rank the other.

RANK. The character or quality bestowed on military persons which marks their station, and confers eligibility to exercise command or authority in the military service within the limits prescribed by law. Rank is generally held by virtue of office in a regiment, corps, etc.

RAPID-FIRE GUN. A single-barreled breech-loading gun, provided with breech mechanism, mounting, etc., such that it may be fired with great rapidity. Metallic cartridges are generally used, and in the smaller calibers fixed ammunition.

RATE. A term applied to enlisted men, indicating his particular office or duty. Also applied to ships to denote their relative importance, as a first or second rate. War ships were formerly rated according to the number of guns carried. They are now rated according to tonnage of displacement, or the use for which they are intended. A first rater is an armored ship above 8,000 tons, a second rater an armored ship above 4,000 tons, a third rater, small armored ships, protected and unprotected cruisers and gunboats of good size and the larger auxiliary vessels; fourth raters include smaller auxiliary ships and small gunboats.

RATION. The allowance for the subsistence of one person for one day, and varies in components according to the station of the troops or the nature of the duty performed. There are four kinds: garrison, field, travel and emergency.

RATION. The allowance of food to a member of an armed force. The navy ration of the United States is placed at 30 cents a day, but the ration issued in provisions is probably considerably above that amount in retail trade value. Recent improvements in the navy ration make it the most liberal and varied in the world.

RATLINES. Short horizontal lengths of small rope fastened to the shrouds of a vessel to make a ladder for going aloft on the masts.

RAZEE. An old term for a vessel cut down by one deck from her original construction. This was a plan often followed in sailing vessels of war when it was found that they were cranky or bad performers. Such vessels made intermediate classes between vessel of regular ratings.

REAR GUARD. A detachment of troops, assigned to the duty of protecting the rear of an army. In a retreat the original advance guard becomes the rear guard.

RECEIVING SHIP. A vessel moored at a naval station or navy yard for the purpose of receiving recruits or seamen awaiting detail. Obsolete vessels are generally used for the purpose and frequently develop unsanitary conditions. The more logical methods of providing barracks is slowly gaining ground, though strenuously opposed from the mistaken idea that shore positions would be increased to the injury of the service.

RECEIVING TABLE. In coast forts, the hoist table, on which the ammunition is placed preparatory to raising.

RECOIL. The impulse given to a gun by the powder press-

ure on discharge, tending to drive it in the direction to which the breech points. While negligible in arms of small calibre and low power, it has been necessary to devise efficient means of overcoming the recoil of large calibre and power. Various systems of springs have been abandoned in favor of compression cylinders, filled with oil or glycerine, which take up the force of the recoil and return the gun to firing position, almost instantaneously.

RECOIL CYLINDER. The cylinder of a modern field, siege or coast gun, which serves to check the recoil. The cylinder is filled with oil, and a piston with a perforated head works in it, the oil passing from one side of this head to the other through the perforations.

RECONNAISSANCE. The method employed by an army to obtain information of the enemy, and at the same time guard the army against surprise. It is effected by means of scouts, by patrols or by special or forced reconnaissances.

RECRUITING. The effort to secure men for military service. The navy maintains permanent recruiting stations at all navy yard points as well as at the principal lake stations. In addition, temporary stations are established at various points, notably in the Western States, from which the navy has been largely recruited in late years. The Marine Corps follows a similar practice, though confining its efforts more to the large cities.

RECRUITMENT. The method or process of raising the men necessary for military service. In the United States and Great Britain this is by voluntary enlistment; on the continent of Europe by conscription or compulsory enlistment.

REEF. To decrease the area of a sail exposed to the wind by binding a portion to the yard or boom with small ropes known as reef points. Square sails are reefed on the head, fore and aft sails on the foot.

REGIMENT. A military unit of organization and administration, consisting normally of three battalions, with its proper regimental staff. A German infantry regiment on a peace footing has seventy-four officers and 1,850 men, including the regimental surgeons and paymasters and the band; on the war footing its strength is over 3,000.

REGIMENTAL COURT-MARTIAL. A military court, consisting of three officers, appointed by the commander of a regiment or corps to try offenses not capital.

REGIMENTAL QUARTERMASTER-SERGEANT. A sergeant appointed to do the duties of quartermaster-sergeant for the regiment. He ranks next below a regimental sergeant-major, and next above an ordnance-sergeant.

REGISTER. The enrollment of a merchant vessel with the Treasury Department, as a domestic-built and owned ship. It confers especial privileges, including participation in the coastwise trade, with freedom from certain charges to which foreign vessels are subject. It is intended as a protection to American ship builders,

but acts as a discouragement to the ownership of vessels in the United States, as commerce cannot be carried on as cheaply under American as under foreign laws.

REGISTER OF THE TREASURY. Signs and issues all bonds and destroys them on redemption, together with all other forms of government financial paper which have been redeemed, keeping a complete record of the various issues and redemptions.

RELIEF VALVE. A valve fitted to boilers and to auxiliaries, such as feed drums, which opens inward but not outward, and which relieves atmospheric pressure due to the condensation of steam following on cooling off.

REMAINING VELOCITY. The velocity of a projectile remaining in it at the point considered. The velocity of a projectile at any point of its trajectory is its remaining velocity *at that point.*

REMOUNT. The method or process of supplying horses for the army. Most European nations have *remount depots* where the horses purchased for the army are collected and raised, and from which they are distributed to the army.

RENDROCK. A dynamite, containing nitroglycerine, nitre, wood-fibre and paraffine (or pitch).

REPRESENTATIVES. In Congress. The numerical strength is based on the results of the decennial census. The membership, based on the census of 1900, is 386. Each State is awarded a proportional representation, and the several districts are constituted by the legislatures of the various States by selecting contiguous territory which shall give the required number of districts of nearly equal population. When a State is not redistricted, or it is impossible to redistrict it to provide the required number of districts, a Congressman is sometimes elected at large. This is also true of States of small population entitled to one, two or three representatives.

REPRISAL. A license granted by the sovereign power of a State to make reprisal on the enemy for loss sustained. Is generally granted as a letter of marque.

REQUISITION. The general name in the military and governmental service for an application for material or supplies. Forms are provided in each branch on which applications for articles desired are made and from which the applications are filled on the approval of superior authority. Enlisted men of the navy make bi-weekly requisitions in advance for small stores, which are served out on alternate Saturday afternoons.

RESERVE. 1. *Tactically,* that part of an army or a command (⅛ to ⅙ of the force) held back for use at critical moments or at critical points. 2. *Strategically,* that part of an army left behind to await complete recruitment, equipment or training. 3. In *organization,* that part of the nation's forces designed as a reserve, such as the *Militia, Territorial Army* or *Landwehr.*

RETIREMENT. The placing of an officer or soldier on the retired list; that is, out of active service, with reduced pay (seventy-

five per cent. of his pay on the active list). Officers are retired for disability (wounds, sickness, etc.), or by reason of age (64 years), or on their own application after long service.

REVETMENT. A means of strengthening a steep slope of a parapet in fortification. In permanent fortification concrete is now generally used; in field fortifications, fascines, gabions, sod, sandbags or timbers.

REVIEW AND INSPECTION. A ceremony prescribed in the Drill Regulations. In the review the troops march past the reviewing officer so that he can judge of their marching; at inspection each organization is so formed that the arms, clothing and equipments of each individual may be fully inspected.

REVOLVER. A short military small arm, designed to be used at short range (fifty yards) and by one hand, containing a number of cartridges (usually six) which are fired in succession. The army revolver in the United States is the Colt, caliber 0.38-inch and 0.45-inch. The Smith & Wesson has also been used.

REVOLVING GUN. A gun with several barrels, but only one loading, firing and extracting apparatus, the barrels revolving around a central shaft in front of a heavy breech containing all the mechanism. The Hotchkiss revolving cannon fires a projectile weighing one pound.

RHUMB LINE SAILING. The usual manner of navigation at sea, being the straight line between two points, as shown on the charts made on the Mercator projection. A longer distance is sailed than in great circle sailing, but less skill is required, as the compass course is continuous.

RIB RIFLING. A manner of putting in the rifling in modern ordnance, in which the grooves are usually wide and the lands, in this case called ribs, are narrow.

RICOCHET. The trajectory of a projectile after striking, especially at a low angle. A projectile striking the surface of water with a greater angle of fall than 7° will not usually ricochet, but if the water is rough this rule will not hold. On land, the smaller the angle of the fall and the harder the surface struck, the more certain is a ricochet to occur.

The *angle of ricochet* is generally greater than the angle of fall.

RIDGE ROPE. The centre rope or back-bone of an awning. The rope from which an awning is stretched to either side.

RIFLE. A rifled small arm or cannon. The term is usually limited to the small arm or the flat-trajectory gun of heavy caliber.

RIFLEITE. A smokeless powder, manufactured in England for use in the small-caliber Lee-Metford rifle, composed of gun-cotton, soluble nitrocellulose and amidoazobenzene. It is granulated or in flakes.

RIGGING. The general name for the ropes and chains employed to stiffen the masts of a vessel or to work the sails. Standing rigging is that which is fixed in place to sustain the masts.

Running rigging is that which works through blocks to handle the sails.

ROBURITE. A blasting powder, consisting of ammonium nitrate, dinitrobenzene, potassium permanganate and ammonium sulphate.

ROGUE'S YARN. A yarn or ply in a rope of different color or twist from the rest, included as a means of identification and for the prevention of theft.

ROLL. The oscillating motion of a ship from side to side, as opposed to pitching, which is the motion of the ship down into the hollow of the waves. The roll varies with the build of the ship and with the location of the weights, a vessel in which the centre of gravity is high, having a tendency to roll more and sometimes dangerously. Some sort of a pendulum device is arranged on steam vessels to mark the degree of the rolling, in order that it may be checked by change of course, should it become dangerous.

ROLLS, BUREAU OF. In the Department of State. Charged with the care of the laws passed by Congress which are printed from type on sheepskin parchment.

ROTATION. The circular movement of a projectile fired from a rifled gun. The base of the bullet, or in the case of a shell or solid conical shot, a soft metal band with projecting lugs is forced into the grooves of the rifling, giving the projectile the twist which increases the velocity, range and flatness of trajectory.

ROTH PISTOL. An automatic pistol, model 1900, loading by the force of recoil, with short-recoil barrel.

ROWLOCK. A metal-lined mortise, cut in the gunwale of a boat which holds the oar while rowing, or a circular casting of metal ending in a pin working in a socket having a similar office.

ROYAL. The yard and sail above the top-gallant sail in a square-rigged vessel, the fourth from the deck in a double topsail rig. Generally the highest sail, though it is sometimes topped by light sails, generally called kites, such as skysails, etc.

RUDDER STOCK. The circular head of a rudder, which projects into the body of a vessel and to which the steering gear is attached.

RUN. The nautical name for desertion, a deserter being called a runner. The letter "R" is affixed to an enlisted man's name if he is absent more than ten days.

RUNNING BOATS. The boats of a vessel of war doing regular service at stated times between the ship and the shore when the vessel is in port.

SABRE. A cutting and thrusting arm, with curved blade. It is a weapon used by mounted troops.

SAFETY DYNAMITE. A dynamite, made by treating a mixture of glycerine and a nitrated hydrocarbon of the benzene series with nitric and sulphuric acids.

SALT HORSE. The salted beef, formerly the staple article

of diet aboard ship. It was a pleasing nautical fiction that ancient equines ended their earthly career as material for the harness cask. A famous sea song has a refrain, "Old horse, old horse, how came you here?" Rigid inspection was necessary to keep up the standard of navy beef, and from the earliest times there have been regulations as to the limitation of undesirable sections in the package.

SALUTE. A mark of courtesy or compliment. The salute with the hand, the rifle or the sabre (or sword) is prescribed in the Drill Regulations. General officers are saluted with certain drum or trumpet calls, by the colors, and by cannon.

SALUTE. An honor to a superior by firing guns, sounding drum or bugle calls, etc., presenting arms, etc. The honors in the navy include gun salutes, ruffles and the presence of members of the crew called sideboys, at the gangway, at the arrival and departure of the person honored.

SALVAGE. An amount allowed for saving vessels or goods at sea after they have been abandoned or cannot be brought to port by those having them in charge. Salvage cannot be collected by the crew or passengers of the vessel saved.

SALVATOR-DORMUS MACHINE GUN. A machine gun adopted in Austria, caliber 0.315 inch, the mechanism being worked by the powder gases. The barrel is kept cool by means of a water-jacket. The rate of fire can be regulated, but the usual rate is 300 shots a minute. Its range is 2,500 yards.

SALVO POINT. In coast artillery fire, a point, the range and azimuth of which are known, at which a concentrated fire (called *salvo fire*) from one or more batteries may be directed. Certain favorable points in a narrow channel are usually selected.

SAPPER. A soldier, who works in the trenches with the *sap,* formerly a gabion filled with earth, rolled in front of the working party running approaches toward the enemy's position, but now accomplished entirely by digging, keeping a parapet of earth constantly ahead of the workmen, while the side toward the enemy is strengthened by a parapet of good resisting power. Italy, Russia, Switzerland and France have regularly organized *sappers;* France having twenty-six battalions, recently divided into Sapper-Miners and Sapper-Pontoniers.

SAUCISSON. A tarred canvas or leather hose filled with powder formerly used to ignite a fire ship.

SCHNEIDER-CANET GUN. A gun made at the Schneider-Canet works, at Creusot and Havre, France. In 1897 the Schneider works, at Creusot, were combined with the Canet works, at Havre. Guns of all calibers are made at these works, as well as gun-carriages and armor.

SCHONBERGER PISTOL. An automatic pistol, 5-shooter, loading by gas pressure, with short-recoil barrel.

SCHOOL SHIP. The States of Massachusetts, Pennsylvania

and New York maintain ships of instruction for the education of young men for the merchant marine. Vessels are loaned by the United States Government and naval officers are detailed as instructors. The management is, however, a State affair.

SCHOOL OF SUBMARINE DEFENSE. A school of practice, established at Fort Totten (Willett's Point), N. Y., for the instruction of officers and enlisted men of the artillery, in the care and use of submarine mines and torpedo defenses, including a course of instruction for electrician sergeants.

SCHOONER. A purely American rig of vessel, said to have been devised by Captain Andrew Robinson, of Gloucester, Mass., in 1713. They have all fore and aft sails, and are able to sail close to the wind and to beat successfully. This fact, with the small number of men required to handle them, has caused them to entirely replace square-rigged vessels for coastwise traffic. They have been built rigged up to seven masts, and with the aid of steam winches for handling sails are said to carry bulk freight successfully in competition with steam vessels.

SCHWARZLOSE PISTOL. An automatic pistol, loading by the force of recoil.

SCOUT. A soldier sent out in front of an advancing line to reconnoiter the ground. A field battery, as well as infantry and cavalry, sends out such scouts, especially before coming into position, to make sure that the ground is clear of the enemy.

SCOUT SHIPS. Ships used to patrol the coast at a distance off shore, to discover and signal the approach of the enemy.

SCREENS. A portion of the defensive equipment of a modern vessel of war consists of screens of heavy wire mesh surrouning the ship's stations, which are not otherwise protected, and intended to check the force of projectiles and to guard against flying splinters.

SCULL. One of a short pair of oars. A shallow racing boat, with outriggers, for one or two oarsmen. To propel a boat by working an oar over the stern by diagonal strokes through the water.

SCUTTLE. To sink a ship by boring holes through her bottom. To bore holes through a deck for the purpose of allowing accumulated water to run off.

SCUTTLE BUTT. A cask with a hole cut in the bilge, containing the day's supply of water for a vessel. Formerly a marine sentry was placed over the receptacle to see that men of a war vessel did not get more than their allowance of fresh water for washing. To scuttle the butt was to steal water while the sentry's attention was diverted.

SEA BEGGARS. The semi-privateers of the Netherlands during the attempts of Holland to throw off the domination of Spain. While they were given a quasi-legal character by the commissions of the Prince of Orange, they had no regular home ports except as they might be able to capture and hold a port for a time.

and were really guerilla bands of the sea with more or less of a central organization. Under modern international law they would be in all essential respects pirates, as they were compelled to maintain themselves by raids and requisitions.

SEA CHEST. An interior box-like construction, into which the sea valves of a vessel open. The exterior aperture is fitted with a screen which admits the sea water through the plating of the vessel, but keeps out foreign substances.

SEACOAST CANNON. Cannon used in seacoast forts, including in the United States: 12, 10 and 8-inch guns, 12-inch mortars, 6 and 5-inch and 15-pounder and 6-pounder rapid-fire guns. A few 4-inch Driggs-Shroeder and 4.7-inch Armstrong rapid-fire guns are also installed.

SEALAWYER. An idle, querulous sailor, given to fault-finding, and an expert in the quibbles and evasions by which shirkers attempt to evade duty. The sealawyer in the navy is fond of quoting the regulations, and of standing on his rights and of urging others to contest points of discipline.

SEALED ORDERS. Orders given to the commander of a vessel, generally in time of war, which are not to be opened until a certain time, a precaution taken to prevent information of a vessel's destination becoming known before departure.

SEALEGS. The condition of use to the motion of a vessel so that rolling or pitching does not disturb the equilibrium of the body or the stomach. The muscles became habituated to balancing the body involuntarily so that motion about the decks may be had without discomfort. Long custom to sea life brings about a rolling and pitching gait characteristic of old sailors ashore. Any tendency to bowlegs is accentuated, hence many old sailors have a parrott-like gait.

SEAMAN-GUNNER. A rating in the United States Navy commanding a higher monthly pay than the regular enlisted man. Seamen on second enlistment may, on application, be sent to the seaman gunner's class at the Washington navy yard, where they are given a six months' course in ordnance construction, followed by a summer's course in the use of torpedoes, diving apparatus, etc., at the Newport torpedo station. On satisfactory completion of the course, they receive their rating and are eligible for further promotion in the ordnance branch. The course given includes a practical drill in the use of machine and other tools used in repairing and in keeping ordnance in condition.

SEAPAY. The pay received for sea-going service. It is the full pay of officers in the navy of the United States, and fifteen per cent. is deducted when shore duty is being performed.

SEARCH-LIGHT. An electric arc light, mounted in the focus of a parabolic mirror, the beam of which may be trained by hand or by an electric controller. It is invaluable in coast defense for night work. Several sizes (24 to 60 inch) are in use.

SEARCH-LIGHT. An electric arc light mounted in form of

parabolic reflectors so as to throw a single powerful beam of light. Used by vessels as an aid to navigation in picking up buoys, marks, etc., and for determining the position of other vessels. One of the most important accessories of modern warfare as a provision against surprise.

SEA SERPENT. The last of the great popular myths, being that of a tremendous sea reptile or animal inhabiting unknown depths of remote oceans. While its existence is not denied by scientists, on purely negative propositions, there is absence of authentic accounts of other than well known and classified marine life. Recent discoveries as to the character of the conditions at great depths have practically demolished this myth, and its possible habitat has been limited to some sections of the Pacific and Indian Oceans. Frequent reports of observations of the sea serpent have turned out to be imaginary or based on ordinary phenomena.

SEASICKNESS. The violent nausea, which attacks persons unaccustomed to ocean travel. Its cause has never been satisfactorily explained and is probably complex, having to do with the condition of the fluids in the stomach, together with the effects of the constant motion on the nerves of the eyes, with a resulting systematic disturbance. The effect of the motion of a ship is not uniform even in the same person and remedies and precautions are entirely unreliable. Abstention from much or rich food before sailing and as much sleep as possible during the time of the sickness probably reduces the suffering and time of the illness materially, though some persons find relief by moving about in the open air on deck. Peculiarities of constitution govern the matter largely, and many professional sailors become seasick in rough weather or on going to sea after a stay ashore, while utter landsmen and landswomen escape the infliction. It is not an unusual experience that men have to be discharged and officers have to resign from the navy on account of chronic seasickness, and acute cases have been known in which the weakened condition has resulted in death.

SEA STEPS. Bars of projecting plates of steel fixed permanently to the sides of a vessel to form a ladder, which is used to board a vessel at sea when the usual companionways are rigged in.

SEA VALVE. A large valve opening into the hull of a vessel at a distance below the water line and controlled by a hand-wheel located at or above the engine-room gratings. It is used to admit sea-water for freshening the bilges and to drain the ship when docked.

SEA-WATER. The water of the ocean varies greatly in its component parts in different localities. The solids are chlorides of sodium, potassium and magnesium, bromide and sulphide of magnesium, carbonate of lime and magnesium, ammonia, silver and traces of other metals. The average of solid parts is 3½ per cent.

SEAWORTHY. Ability of a vessel to stand heavy weather. It depends on a sufficient width of beam in comparison to the length and on the position of the weights in a craft. The contour of the sides of a vessel has much to do with its seaworthiness. The constant effort of marine construction is to refine and sharpen the lines of sea-going vessels to secure speed, but at the same time to keep within the limit of safety. Attempts to secure speed in sailing vessels by increasing their sail area and the height of their spars are checked by considerations of safety, and that same is true of efforts to increase the carrying capacity of steam vessels.

SECOND LIEUTENANT. An officer of the lowest commissioned rank in the United States Army.

SECRET CODE. The naval code of each maritime nation used between ships of that nation and carefully guarded, so that it is the duty of the commander of a captured vessel to destroy his copy. In addition there is a secret naval telegraph and cable code on an elaborate basis, used for all confidential messages and which will supersede the secret flag code under the operation of wireless telegraphy.

SECRETARY. The admiral of the navy of the United States is provided by law with a secretary, who has the relative rank of a lieutenant. He is carried on the navy list in a separate class and the exact definition of his military position is now (1904) pending.

SECRETARY OF WAR. A member of the President's Cabinet, who has charge of all duties connected with the army. He receives a salute of seventeen guns.

SECTION. A sub-division of a company, squadron, field battery or coast artillery company. In infantry or cavalry it is used in extended order movements only, and is composed of two or three squads. In coast artillery a company is divided into gun sections (one for each piece) and a range section. In field artillery a section is one piece and its caisson.

SECURITE. A blasting powder, composed of metadi-nitrobenzene and ammonium nitrate.

SECURITY AND INFORMATION. The service of reconnaissance, advance guards and outposts, on which the safety and security of an army depends, and by means of which its most reliable information is obtained.

SEIZING. To fasten ends of rope together, as the end of a turn which forms an eye to the main rope by means of turns of small rope or yarns laid closely together and fastened by turning the end of the rope yarn underneath. To seize is to fasten one rope to another or to any object by a number of turns of small rope. In flogging days the men were seized to the gratings at the gangway by ropeyarns about their ankles and wrists.

SENATORS. Of the United States. Elected by the Legisla-

tures of the various States, two for each State. One-third of the members of the Senate complete the six-year term each year. The Vice-President of the United States is the presiding officer of the Senate. A president pro tempore is also elected by the Senate from among its membership, who presides in the absence of the Vice-President.

SENNIT. Flat cordage, formed by plaiting an odd number of strands of rope together. Sennit hats were formerly made by sailors by plaiting strands of grass together and sewing into shape.

SENTRY. An enlisted man, generally a marine who is set on guard over a particular part of a ship, such as the magazine, at the gangway, etc. The marine guard supplies the sentry force of the ship unless in exceptional cases.

SERGEANT. A non-commissioned officer, ranking next above a corporal.

SERGEANT-MAJOR. A non-commissioned officer of a regiment, battalion, squadron, artillery district or artillery post, in each case the principal assistant to the adjutant.

SERVE. To cover a rope with smaller stuff to protect it from the weather or friction. A small line or worming is first laid to give the rope a uniform diameter, and strips of canvas or parcelling are wound about the whole, this covered with turns of small rope or serving.

SERVICE CHARGE. The full powder charge of a gun, such as is used in actual war. The service charge of the 12-inch gun is 270 pounds of smokeless powder.

SERVICE UNIFORM. The uniform prescribed for field service. The new service uniform is similar to the khaki, but the material is olive-drab in color.

SEXTANT. The instrument used for determining position at sea by measuring the altitude of heavenly bodies by calculating the differences between the first and last reflection of their rays, which have suffered two reflections in one plane. With the improved sextant angles up to 180 degrees may be measured or double the number of degrees that may be measured with the quadrant.

SHACKLE. An iron link, one end of which is closed by a movable bolt, used to fasten a chain cable to an anchor, or to make any fastening of a heavy object which it is desired to release quickly, the release being effected by knocking out the movable bolt from its seat.

SHALLOP. A small vessel with fore and aft lug sails. A term now obsolete, but formerly applied to the tenders of vessels with which they frequently made long voyages. The first American-built sailing crafts were rough boats with lug sails, which answered to the general description of this type.

SHARPIE. A long flat-bottomed sailing boat, used in the sounds and shallow waters of the United States.

SHEATHING. Material placed upon the bottom of a vessel for the protection of the hull from corrosion, the action of worms, etc. The old custom of covering the bottom with pitch, sulphur and tallow went out of use after thin sheets of copper became available, which were fastened to the hull to above the water line. The galvanic action which resulted led to the use of copper bolts and nails for fastening ships. When steel and iron hulls came in provision was made for preventing corrosion by an outer sheathing of wood, and this is now sometimes utilized in the cases of gunboats which are to be on foreign stations for considerable periods, though special anti-fouling and anti-corrosive paints are chiefly relied on to preserve steel hulls. Besides copper, various alloys, capable of being rolled into thin sheets, have been developed for sheathing vessels.

SHEAVE. The wheel on which a rope works in a block or in a mast or yard. It is made of lignum vitæ or other hard wood or of metal. The old sheave worked on a metal pin in the center, but the modern sheave is fitted with brass rollers about the central pin to take up the friction.

SHEER. The upward, longitudinal curve of a vessel's deck. She is said to have a rank sheer when the curvature is especially noticeable. A sheer is also the curve described by a vessel from her course, either to avoid a danger or because helm control has been lost. A marked deviation in this direction is also called a rank sheer.

SHEERS. Two heavy spars placed in a nearly upright position, joined at the top, but separated at the base to form a sort of derrick, by which masts are removed from or placed in ships. By means of straps, placed near the center of gravity of the mast to be handled, spars taller than the sheers themselves may be set in place. Temporary sheers are frequently set up on board ship, while shipyards are furnished with stationary sheers proportioned to the work to be done.

SHEET. A rope or chain, fastened to the lower corner of a sail, by which it is managed and held so that the wind will strike it at an effective angle. With sails that are fastened along the foot to a boom the sheets are attached to the boom. The sheets of other than small craft are run through pulleys in order that force may be effectively applied in hauling the sail into place.

SHEET ANCHOR. An anchor, formerly the heaviest in the ship, which was stored in the waist just aft of the foresheet in square rigged vessels.

SHEETS. The spaces in a small boat unoccupied by rowers, as the fore and stern sheets.

SHELL. A hollow projectile, containing a bursting charge of some high explosive (gun-cotton, maximite, Dunnite, etc.), and a fuze to ignite this charge at some point of its flight or upon impact.

SHELL. A hollow steel projectile, containing an explosive and fitted with a fuse intended to explode the charge at a given

time. While solid shot were formerly used almost exclusively in maritime warfare, the development of ordnance has brought about the substitution of the conical armor-piercing projectile filled with a high explosive. The modern shell, from one-pounders up to sixteen inches in diameter, is constructed of special steel, with a cap or nose of a softer steel or metal, intended to take up the first shock of impact and prevent the shattering of the harder metal before it can accumulate its full impetus for piercing the armor plate at which it is directed. A fuse of one of several designs is thrown forward into the explosive charge by the check of the impact and is timed to explode the charge and rend the shell into fragments as soon as the shell has penetrated the armor or other protection. Each fragment thus becomes a projectile and capable of great destruction. Recent experience has shown that a few twelve-inch shells fortunately placed will destroy the immediate usefulness, if not permanently wreck the largest battleships.

SHELL BACK. An old salt, a well-seasoned mariner so accustomed to the sea habit that he is supposed to have accumulated a crust or shell of marine deposits on his back.

SHELL ROOM. A room in the magazine of a fort for the storage of projectiles.

SHELTER TRENCH. A trench dug in the ground to shelter troops under fire. Each skirmisher, lying down, first digs a shallow trench, throwing the earth up in front as a parapet; the individual trenches are gradually deepened (if the troops remain in position) and connected to form a long trench, parallel to the front of the line of troops.

SHIELD. An armor protection for a field or coast gun. The shield for the new United States field gun is 0.2-inch thick, and will protect against small arm or shrapnel fire at battle ranges. Rapid-fire coast guns are usually covered by shields thick enough to protect against similar guns at fighting ranges.

SHIP. A general term for vessels of considerable size. Strictly a vessel with three or more masts, having square sails on each. A steam ship, a vessel of considerable size propelled by steam without reference to its rig.

SHIP-BREAKER. One who pulls old ships to pieces after they have become useless for navigation and trades in their materials.

SHIP-CHANDLER. A merchant who deals in supplies for ships, cordage, naval stores, etc.

SHIP FEVER. A disease due to overcrowding and unsanitary conditions on shipboard and identical with typhus. It was formerly epidemic in connection with considerable movements of immigration in sailing vessels, and made great ravages in prison ships.

SHIP-KEEPER. A watchman employed to look after ships out of use and laid up in ordinary. A civilian rating in navy

yards. A ship-keeper is supposed to keep the vessel free from water and to prevent deterioration as far as possible. The amount of delicate machinery in modern war vessels, however, makes the deterioration of vessels out of commission rapid, and a state of semi-commission, in which a small force of enlisted men should be detailed to look after the vessel, has been suggested.

SHIPMATE. One who sails or has sailed in the same ship. It includes a certain amount of intimacy and close acquaintance and is generally a bond which endures for years, so that the meeting with an old shipmate is a sort of reunion. It is also a test of character, so that a person inquiring as to another sailor will ask if anyone has been shipmates with him. It is one of the very creditable aspects of the naval service of the United States that officers recognize enlisted men as well as brother officers as shipmates and carry a lasting interest in men who have served creditably under them.

SHOE. The lowermost piece of the forefoot of a vessel. Also to place pieces of plank over the flukes of an anchor to give it greater holding power in soft mud.

SHORE. A prop placed beneath a vessel while it is on the ways or in dock to support it on an even keel. A bilge shore is a shore under the bilge, in large vessels resting on the bilge or docking keels. Other shores are breast or wale shores, the former extending horizontally to the sides of the dock, the latter vertical shores.

SHOT. A shot of cable is two or more lengths spliced together. Shot, the old spherical cast or wrought-iron projectiles have almost wholly given way to shell.

SHOT. A projectile, which is nearly solid, and which is not intended to burst like a shell, but designed to perforate armor. Modern shot are forged steel, and have a considerable cavity at the center.

SHOT GALLERY. In coast forts, a gallery in which shot are stored.

SHOT TONGS. Iron tongs, for raising projectiles on a crane or by means of the blocks and chains of trolleys in coast forts.

SHOULDER KNOT. An ornament of braided gold wire, worn by officers on the shoulders in the full dress uniform.

SHOULDER, OR LEG OF MUTTON SAIL. A triangular sail stretched by a boom, but without a gaff, the apex of it being at the top. Used in small boats.

SHOULDER STRAP. A strap bordered by gold braid, worn on the shoulder by officers in dress uniform. The devices on the field within the border indicate the rank of the officer.

SHRAPNEL. A projectile used in field artillery, composed of segments of metal or small metal balls, with a bursting charge within. It is exploded (by means of a time fuze) in

front of and above the target, so as to cover the latter with a sheaf of fragments and projectiles.

SHROUD. One of the main ropes of the standing rigging of a ship. They are set up in pairs and are of tarred hemp or of wire rope. A collar is formed at the mast head and the shrouds are hauled tight by tackles and lashed permanently. The setting of this rigging, with the other work on standing rigging, is a particular trade followed by expert riggers in seaports, though an able seaman is expected to be able to do repairs or set up rigging in emergencies.

SIEGE. The slow, systematic attack of a strongly fortified place, following its investment. The field artillery and infantry of the attacking force first come into position and intrench; the siege artillery is then brought up from the siege train, and placed in batteries constructed along a *parallel;* zig-zag *approaches* are then run forward, another parallel is constructed, and other guns placed in position; finally, the place is carried by assault.

SIEGE ARTILLERY. The heavier artillery carried into the field, and used in siege operations, and for other important purposes. It is generally transported by rail to the theatre of operations, and then mounted on its wheeled carriages to follow the army.

SIEGE BATTERY. A battery of siege guns, howitzers or mortars, usually six, but varying considerably in number. The term is applied to the organization (cannon and personnel), as well as to the epaulement or fortified position in which they are placed.

SIEGE GUN. A heavy gun or mortar, for use in the field, but not light enough to accompany the army directly, although forming part of the heavy train, following the main army. The United States uses the 5-inch gun, the 7-inch howitzer and the 7-inch mortar.

SIEGE TRAIN. The part of the army train which contains the siege guns and other siege material. A German army siege train comprises 200 cannon (one-third flat-trajectory guns, two-thirds howitzers and mortars); a French siege train has 176 cannon (one-half guns, one-half mortars and howitzers), with 600 to 1,300 rounds of ammunition per piece.

SICKBAY. The hospital of a ship of war. It was formerly in the forepeak or some forward part of the vessel. In the new construction a grated compartment separated as far as possible from disturbing surroundings is provided. As with other conditions afloat, the arrangements for the care of the sick have been revolutionized in the past twenty years.

SIDE BOYS. Members of the crew, not necessarily boys, who are ranged at the gangway to exhibit respect for a commanding officer or higher officer when he arrives and departs. An admiral and the Secretary of the Navy has eight; rear

admiral, six; captain, four; other officers, two. In case of four or more side boys they are stationed in two lines, the after line at an angle with the other.

SIDELIGHTS. A cluster of electric lights placed at the gangway of a vessel of war. The running lights of all vessels—two colored lanterns placed in the fore rigging of sailing vessels and abreast of the wheel house in steam vessels, a red light on the port side and a green light on the starboard side.

SIGHT. An apparatus for pointing or aiming small arms or cannon. In the latter, telescopic sights are generally used, graduated to very long ranges, and capable of proper adjustment and leveling; in modern small arms, the sight is graduated up to 2,500 yards.

SIGHT ELEVATION. The elevation measured from the line through the sights of a piece and the target. It is equal to the quadrant elevation, when the target is at the level of the gun, but greater when the target is below, and less when the target is above the level of the gun.

SIGNAL CORPS. A branch of the army, which has charge of the signal, telephone, telegraph, balloon and telautograph work of the army.

SIGNALS. One of the important parts of naval life is connected with the means of signalling at sea. For all vessels an international code has been devised, by which the hoisting of certain flags in certain positions transmits the ordinary messages incident to occurrences of navigation, danger signals, etc. In the navy there is an additional and elaborate signal code besides the use of the wigwag or hand flag signalling. Other means of signalling used are by firing balls of colored fire from a specially designed pistol and by the Ardois system of red and white lights controlled by a keyboard, the different combinations representing letters. Dot and dash signals may also be transmitted by electric light, search light, or by whistle. As all these systems are slow and often unsatisfactory they will be entirely superseded by wireless telegraphy as it is now being developed.

SISTER HOOKS. A pair of hooks working on the same axis and forming one eye when closed and moused.

SKID. One of the longitudinal pieces of timber, on which bulky articles are piled or moved. The skids of a vessel consist of the scaffold-like structure on which the boats are carried.

SKIPPER. The master of a fisherman. Used in ship slang to denote the commanding officer.

SKODA RIFLE. A gun made at the Skoda Works, Pilsen, Austria. A typical one is a rapid-fire gun, model 1897, caliber 3 inch, muzzle velocity 1,970 foot-seconds, rate of fire eighteen shots a minute. Guns of all calibers are made at these works for the Austrian Government.

SKYLARKING. Frolicking, scuffling and playing about the deck and ship. A play time, "all hands for skylarking" was

formerly called when the discipline of the ship was relaxed and the men were encouraged to compete in feats of skill in going aloft.

SKYSAIL. The next sail above the royals, one of the light sails generally set flying. Only used when there is a very light air and that mainly aloft.

SLING. To suspend in ropes or chains. Yards were slung in extra chains when going into action on a vessel of war. Boat slings are the lengths of chain placed bow and stern to hook the tackles into.

SLOOP. A vessel having one mast carrying jib, mainsail and gaff topsail. Old sloops sometimes carried a square sail in addition, but the type has long since disappeared. A sloop of war was next below in size to a frigate and carried from eighteen to thirty-two guns.

SLOPS. Ready-made clothing and other furnishings for seamen. Furnished by the master of a merchant vessel from the store called the slop chest and checked against the seaman's pay.

SLUSH. The grease from the galley. Used to grease spars on which sail hoops run. On merchant vessels it is or was the cook's perquisite. It formerly formed the nucleus of a fund in the navy, called a slush fund, from which small articles for the added comfort of the men was furnished. The fund is now abolished.

SMALL ARM. An infantry rifle or musket. The carbine is also included. The new United States magazine rifle is to be used also as a carbine, without change. The principal small arms in use to-day are: United States magazine rifle, model 1903 (U. S.); Lee-Enfield, modified (Eng.); Mauser, improved (Ger.); Lebel (France); Mossinnagant (Russia); Schmidt-Rubin (Switz.); Krag-Jörgensen (Denmark).

SMALL ARMS. Fire-arms carried in the hand and fired from the hand or shoulder.

SMALL STORES. Tobacco, soap, needles, thread and other articles issued by the paymaster of a war vessel every other Saturday afternoon, and checked against the pay accounts.

SMITH AND WESSON REVOLVER. A 6-shooter revolver, caliber 0.38 inch, at one time the service revolver, now issued only to the militia. There are also other calibers made, 0.44 as well as 0.45 inch.

SMITHSONIAN INSTITUTION. Founded by an endowment from James Smithson, an Englishman, who determined to perpetuate his name in a country in which the distinction of rank was unknown. The main building in Washington is designed on the model of Westminster Abbey. Founded and is supported in part by the United States Government for the increase of scientific knowledge. Is under the government of a board of regents, and has in connection a national museum and a zoological park.

SMOKE BLOWER. A powerful blast fan installed in the turret of a vessel of war to rid the turret of the smoke and gases caused by the discharge of a gun. It has been further developed to sweep the bore of the gun free of gases and prevent dangerous flarebacks.

SMOKELESS POWDER. A powder producing comparatively little smoke in its explosion, and that little readily dissipated. Most modern smokeless powders are derived from gun-cotton or its modification (with or without nitroglycerine). In stability and ballistic properties, these powders are generally superior to the old ones.

SMOKELESS POWDER. The common name given to the different varieties of explosives capable of being used as charges for ordnance of large and small calibers. The result of the explosion is a bluish vapor instead of the heavy black smoke characteristic of the charcoal powders. The basic principle of such powders is that of guncotton, of the chemical treatment of a vegetable fibre with acids so that its composition is entirely changed and it gives off large volumes of gas on combustion. The distinctive characteristic of this class of explosives is that the combustion and production of gas is progressive and increasing in force in high ratio with the rise of temperature.

SNATCH BLOCK. An iron or wooden block with an aperture into which the bight of a rope may be introduced when an extra purchase is desired and there is not time to rig up a fall.

SNOW. An obsolete rig for a small two-masted vessel, similar to that of a brig, except that the spanker, instead of being set on the mainmast was set on a trysail mast, that is a small mast stepped just aft of the mainmast.

SOILS, BUREAU OF. Under the Department of Agriculture. Investigates the suitability of soils to various crops; maps soils by their similarity and suitability to similar crops; has charge of the investigations into improved methods of growing and curing tobacco.

SOLDIER. Among sailors the term for loafing and shirking. Based on the idea that the marines had nothing to do but idle about. To call a man a "sojer" is to call him a loafer, and an old punishment was to make a sailor shoulder a handspike and walk a beat on the deck.

SOLENITE. The new Italian smokesless powder, similar to ballistite, but containing less nitroglycerine, and vaseline in place of diphenylamine. It gives less gas pressure than ballistite for the same velocity.

SOLICITOR, DEPARTMENTAL. An official learned in the law whose duty is to state existing law, give legal opinions and examine proposed legislation affecting the department to which he is attached.

SOUNDINGS. Near shore water, where bottom may be found with the ordinary deep sea lead. A vessel is coming on

soundings when she approaches the coast. A whale is said to be sounding when it goes below the surface.

SPANKER. The fore and aft sail on the mizzen mast of a square rigged ship and the fourth mast and sail of a schooner.

SPANISH CLAIMS TREATY COMMISSION. A commission of five charged with the determination of the justice of the claims of those who seek to recover from the United States under the provisions of the peace treaty with Spain, under which the countries respectively agreed to satisfy the claims of their own citizens for damages growing out of the acts of the other during and prior to the Spanish-American war. The work of the commission has been largely concerned with establishing general rules defining the liability of the United States under the peace treaty.

SPAR. Any round piece of timber used for a mast, yard or boom. A spar torpedo is a torpedo on the end of a boom so that it projects ahead of the launch carrying it. The earliest form of torpedo.

SPENCER. A sail setting on a mast and gaff, but without a boom on the foot. So called from its designer.

SPIKING A GUN. The process of rendering a gun temporarily unserviceable by driving a spike into the vent.

SPIKING A GUN. A method of making muzzle-loading cannon unserviceable by driving a rat tail file or some similarly shaped piece of hard steel into the vent. It was broken off close to the exterior of the gun and could only be removed by drilling, so that a battery might be rendered useless for a time at least by spiking the guns when a position could not be retained. The modern equivalent is to carry off or destroy portions of the breech mechanism.

SPINDRIFT, OR SPOONDRIFT. The spray blown from the tops of waves and filling the air with mist. Also driving snow at sea.

SPLICE. To unite two ropes by intertwining the strands of the ends so that a firm joint is made. A long splice is made without materially increasing the diameter of the rope, the strands of the rope being mutually substituted and the ends tucked under neatly. A short splice is made where an increased diameter is not objectionable. An eye splice makes an eye in the end of a rope by inserting the end strands between those of the same piece of rope above the loop. To splice neatly and strongly is one of the chief accomplishments of an able seaman. Wire as well as fibre rope may be spliced.

SPLICING THE MAIN BRACE. Taking a drink of spirits, a stimulant after exertion. Equivalent to "topping up the boom" or "sweating up the halliards." The German equivalent is "hauling aft the spanker sheet." A drink of spirits used to be served around after reefing topsails in cold weather or other arduous duty.

SPLINTER. A fragment of wood or iron torn from its place and turned into a projectile by the action of a shell either by impact or explosion. It is one of the chief dangers of naval war under modern conditions, and every effort is made, by reducing the amount of woodwork and projecting points on a vessel, to reduce the danger of casualties by splinters.

SPONSON. A curved projection from the side of a war vessel intended for gun emplacement and designed to give a greater arc of fire fore and aft. As they are in the way in docking, coaling, etc., decrease the vessel's stability, etc., they have been abandoned in modern construction. Also the swell of a side-wheel steamer fore and aft the paddle boxes.

SPRENGEL EXPLOSIVE. An explosive, composed of two parts, both non-explosive separately, which are kept separate for safety in handling, and only mixed just before use. The principal ones are: Rack-a-Rock, Hellhofite, Panclastite, Romite.

SPRING. A hawser, run from the anchor cable of a ship to the stern, by means of which the vessel may be moved. Sailing vessels sometimes anchored with springs on the cable so that she could be turned for sudden departure or to resist attack. The spring line is that used as lever by a steam vessel to swing into or from a dock, the propeller or wheels furnishing the power.

SPRINGFIELD MAGAZINE RIFLE. The original name of the new United States Army small-arm rifle. It is a magazine rifle, barrel 24 inches long, caliber 0.30 inch, and its official designation is *United States magazine rifle, model 1903.*

SPRIT. A small spar or pole crossing a sail diagonally and removable, resting, while the sail is set, in a becket at the head of the sail at one end and in a grummet or loop of rope attached to the mast at the other.

SPUNYARN. Small rope, used for seizings, serving, etc., about a vessel, it is formed by twisting two or three strands from old rope together with a winch. Making spunyarn was one of the leisure jobs of sailing ships.

SQUAD. A sub-division of a company, used in open order drill and in active service in the field. It is also called a *four* (in double rank) and consists of a corporal (the squad leader) and seven privates.

SQUADRON. A unit of organization of cavalry, composed in the United States army of four *troops.* In Europe it is considered the smallest *tactical* unit of cavalry, and has a strength of about 150 to 200 men.

SQUADRON. A division of a fleet or a small number of naval vessels acting together. The usual formation of the ships of the United States Navy as a fleet formation has only been attempted at one or two stations and within very recent times. A flying squadron is composed of several swift vessels destined for observation or sudden attack. In naval tactics the fleet is

divided into squadrons, van, center and rear and appropriate movements are assigned.

SQUALL. A sudden and violent rush of wind, with or without rain. Generally experienced in waters of the United States as an accompaniment of thunder showers, the force of the wind being frequently extreme. As the weight and duration of a squall are impossible of forecasting, port should be made if possible by small craft or the most sheltered position sought and all sail furled. In case of surprise the boat should be luffed into the wind's eye and halliards let go at once. Care should be taken not to try to anchor off a lee shore or in an exposed position, as the usual tackle is not to be relied upon under such conditions.

SQUARE FORESAIL. The fore course, also a square sail formerly seen on sloops and schooners, which was set on a yard on the mast or foremast and called a monkey foresail.

SQUEEGEE. A wooden implement like half the head of a barrel, with a strip of rubber on the lower side and attached to a staff. Used for removing the surplus water from the deck of a vessel. A small swab is also called a squeegee. A squeegee band on board of a war vessel is a volunteer organization composed of members of the crew not regularly rated as musicians. It is said to play with much self approval and to be difficult to stop when once started.

STABLE GUARD. The guard of a cavalry or field artillery stable, detailed and mounted daily to guard the stable and the horses, police the stable and feed and water the horses; they are assisted at *stable call* by an additional detail.

STABLE AND PARK GUARD. A guard of a field battery, placed over the stables and the *park* of the battery.

STAFF. Naval officers, not in direct military command, such as surgeons, paymasters, naval constructors, civil engineers, etc. Also the officers detailed for duty on the staff of a fleet or squadron commander. The engineer corps of the navy was a part of the staff until the amalgamation by legislation following the Spanish-American War.

STAFF. The aides or assistants of a commanding officer, whose duties are to relieve the chief of the details to which he cannot personally attend. The staff of an *army* comprises the chiefs of staff (army, corps, division, etc.), adjutants-general, inspectors-general, chiefs of artillery, cavalry and engineers, aides, etc. See *General Staff.*

STAFF COLLEGE. A military school for the training of officers for the General Staff, a *War College.* It is the title of the English War College. In the United States the term has recently been used with a different meaning. See *General Service and Staff College.*

STAFF CORPS. A corps of officers or men, constituting the personnel of an administrative or special military bureau or depart-

ment, not a part of the *line* of the army, such as the Pay, Medical, Quartermaster's, Commissary, Ordnance, etc., Departments.

STAFF OFFICER. An officer of a so-called staff corps, or a member of some general officer's staff. See *Staff.*

STAGE. A light platform, which may be slung over the side of a vessel, from which painting or repairs to the exterior may be effected. A floating stage is a platform on barrels or other floats for similar work at the water's edge.

STANCHION. An upright support. The awning and other stanchions on the deck of a vessel of war are made removable to aid in clearing the decks for action.

STANDARD COMPASS. A compass placed where it is least likely to be affected by local influences. Used in correcting the compass actually used in navigation.

STANDARDS, BUREAU OF. Of the Department of Commerce and Labor. The custodian of the standards of weights and measures of the United States. Conducts operations of extreme nicety to determine accurately the condition of standard measuring or weighing apparatus of the United States, any State, or any educational instiuttion, firm or corporation.

STANDING PART. Of a hook, the part opposite the point, of a sheet, life, etc., that part which is secured to the yard, side, etc. Of a tackle, that part which is made fast to the block or any fixed point.

STANDING RIGGING. The rigging of a vessel that is permanent and does not serve to move the sails, etc.

STARBOARD. The right-hand side of a vessel looking forward.

STATEROOM. The individual rooms on board a vessel, used by officers or passengers. In a vessel of war the starboard staterooms of the ward room are for the line officers, the port rooms for the staff. The senior officer occupies the forward room, unless the wardroom is forward, when the senior officers are entitled to the after-rooms, a location near the waist of a vessel being the more comfortable.

STATION. The allotted cruising ground of a naval vessel or squadron. The United States maintains the following stations: North Atlantic, Pacific, Asiatic, European and South Atlantic. Also the post on a ship to which a man is assigned in maneuvers calling for the services of all hands.

STATISTICS, BUREAU OF. A bureau of the Department of Commerce and Labor which is charged with the preparation of general statistics, including those relating to exports and imports, and the movements of staple articles of commerce. Publishes a summary of the commercial reports of the consuls of the United States at foreign points.

STAY. A strong rope, leading from the head of a mast forward, by which the mast is supported against the weight and

pull of the sails. Also used as a means for setting the triangular staysails.

STEAMBOAT INSPECTION SERVICE. Inspects the hulls, machinery and equipment of commercial steam vessels, conducts examinations and licenses their officers and administers laws relating to the safety of such vessels for public use.

STEER. To control the movements of a vessel by moving the rudder, either by a helm or by a wheel working by transmitted power on gearing affixed to the rudder head. The usual form of steering apparatus is a wheel, which connects by chains or ropes with the mechanism of a steam engine with two cylinders. The movement of the wheel in one or the other direction permits steam to enter the appropriate cylinder, and movement is thus given to gearing which moves the rudder so that a heavy ship is handled with little manual labor.

STEERAGE. A living space for under officers and for certain classes of passengers. In ocean steamer traffic it is the forward part of the lower deck of a steamer. It was the cabin of the middle deck of sailing vessels of war, but is now forward of the ward-room and is the equivalent of a ward-room for ensigns not watch officers and for other junior officers, clerks, etc.

STEEVE. To pack cargo into the hold of a vessel by the use of levers or jackscrews. To elevate a spar at an angle.

STEM. The main timber at the bow of a vessel, the portion which makes an entrance in the water for the body of the craft.

STEP. To fasten a mast erect in a boat or vessel. The framing in the bottom timbers of a vessel intended to receive the lower part of the mast.

STERN. The after part of a vessel. Strictly the rounded or squared section which terminates the vessel's construction.

STERN BOARD. The backward motion of a sailing vessel, caused by its having missed stays and kept too long in the wind's eye. To direct the vessel's course under such conditions the wheel or helm must be maneuvered in an opposite direction from that when the vessel is going ahead.

STERN TUBE. The tube through which a propeller shaft runs to reach the propeller of a steam vessel. It is fitted with bushings and water-tight devices.

STEVEDORE. One whose trade is to stow cargo in and remove cargo from vessels. An expert in the art of putting the largest amount of cargo in a given space and in making cargo secure for sea.

STEWARD. A person employed to provide for the table on board vessels. In the merchant service the head steward has charge, under the purser, of all of the arrangements for the care of passengers, serving meals and the care of staterooms. In the navy the stewards have charge of the mess arrangements and provide the food and direct the service under the directions

of the caterer. The general mess of the ship is looked after by the chief commissary steward, who is under the direction of the paymaster and who buys the fresh provisions for the ship's company and has general direction of the details of the subsistence.

STIRRUP. A short rope hanging from a yard or boom with a thimble in the end through which the foot rope is rove.

STOCKS. A building slip on the shore of a river or bay, in which vessels may be built. It is arranged so that it inclines toward the water to facilitate the launching of the vessel on completion.

STOKE HOLE. The space in front of the boilers in a steam vessel, the fire-room in which the firemen or stokers work. In war vessels the stoke hole is arranged to be sealed, in order that air may be maintained in it under pressure to increase the draft.

STOP. A short piece of line, used to secure clothes while drying, hammocks, awnings, etc.

STOPPER. A piece of rope, used to check or hold a longer rope or cable. An anchor stopper is a heavy piece of rope wound about the cable and fastened to the deck, bitts, or other convenient place, either to check the cable while running, or to hold it after all the necessary cable has paid out.

STOP WATER. A device, consisting of a tape set in a red lead filling introduced into the joining of angles in steel vessel construction to stop the percolation of water from leakage, condensation, etc., along the centers of angles, the edges of which are calked.

STORE-KEEPER. A pay officer of the United States Navy detailed for duty at a navy yard for the purpose of receiving and caring for all stores and supplies for the yard. He is called the general store-keeper, and all bureaus represented in the yard are supposed to secure all supplies and materials from him as from a general supply house.

STORE SHIP. A vessel attached to a navy and used to transport supplies to distant naval depots. When transportation took more time this work was an important part of the duty of even the navy of the United States. More frequent and quicker merchant transportation has substituted freightage for this system and the store ship is now more of an auxiliary of the fleet, which is generally its point of destination.

STORM FLAG. A flag (eight feet long), raised at a garrisoned post in stormy weather.

STOVE. A vessel is said to be stove-in when it has grounded and driven a hole in its bottom.

STOW. To store away and arrange cargo and supplies on a vessel, so that it will be secure at sea and the articles first wanted may be first reached.

STRAKE. One breadth of plank worked in successive lengths from one end of a vessel to the other.

STRAGGLER. An enlisted man of the navy who is absent from his ship after the expiration of the time for which he has been given liberty or leave of absence. If he does not return before the expiration of ten days he is marked as a deserter. A reward of twenty dollars is generally paid for the return of a deserter or straggler.

STRAND. One of the component parts of a rope, a number of rope yarns twisted together, preparatory to being laid up or plaited into a rope.

STRAP. A binding of rope or iron, placed around a block or pulley, by which it may be attached to the standing part of a rope or to a part of a vessel.

STRATAGEM. The art of deceiving an enemy: it may be an element of military policy, of strategy or of tactics. Secrecy, surprise and accurate information of the enemy are essential to its execution.

STRATEGIC DEPLOYMENT. The advance and deployment of an army from its points of assembly immediately after mobilization. A systematic sub-division of the available roads and railroads, and their assignment to the troops is of the utmost importance to prevent confusion.

STRATEGY. The art of leading armies, comprising all those larger measures in the art of war which relate to the grand field of operations, the concentration of the troops toward the battlefield, and the measures taken to reap the full reward of victory.

STREAM ANCHOR. An anchor about one-third the size of the anchors usually carried on the bows of a ship. It is stored below and is used for kedging, club hauling and other maneuvers in which the anchor must be dropped and raised frequently.

STRETCHER. A narrow footpiece in a boat for the oarsman to brace his feet against. An iron rod extending horizontally from the mast in yacht rigging to increase the purchase of a stay.

STRIKING DOWN. To lower, more specifically to lower articles below decks for the purpose of stowing them away, as striking down ammunition.

STRIPPER. A projecting metal point affixed to a capstan and arranged so that it clears the turns of cable as they come off and directs them away from the capstan.

STROKE. The cadence in rowing a boat. It is set by the oarsman sitting nearest the stern. There is almost infinite variation in its characteristics, ranging from the short, quick arm stroke of the dory fisherman to the galley stroke, in which the rowers rise from their seats as the oars are advanced and fall back on the benches with the finish of the stroke.

STRONG BACK. A spar lashed across the davits of a vessel, to which the boats are secured. Also a post or beam used to strengthen or take the strain of a hoisting device.

STUDDING SAIL. The stu'ns'l of nautical parlance. Studding sails are sails set outside the regular square sails in good weather. They are rigged out on small yards attached to and detached from the standing yards. The studding sails are rolled up on the booms and by pulling out a toggle, which releases the sail set, which is then sheeted home. They are used only in fair weather and with the wind abaft the beam. With the wind dead aft studding sails are set on both sides, otherwise but one is set.

SUBALTERN. A company officer below the rank of captain.

SUB-CALIBER. A device for securing target practice without the cost and wear and tear of full caliber practice is used in the navy. A rifle or other small caliber arm is securely fixed in the exact center of the bore of the larger pieces and the same mechanism used to fire the full charge is used to fire the sub-caliber device. Tubes which reduce the caliber of the guns and permit the firing of a smaller charge have also been used. The preparation for great gun marksmanship in the navy was formerly with sub-caliber devices, very largely, until the introduction of the dotter.

SUBMARINE. BOATS, MINES, NAVIGATION. The events of the war between Japan and Russia focussed the attention of the world on the problems of submarine warfare. Two types of boats are recognized, the submersible, in which all parts but a conning tower are placed under water, and the submergible, which is expected to operate at considerable depths. Of the latter two types have been developed in the United States which have seemed to promise usefulness; distinction being, that one, the Holland, dives by reason of the position of horizontal rudders placed at the stern, and the other, the Lake, becomes submerged by the pressure of the water on hydroplanes, placed along the sides of the boat. Submarine mines, which consist of receptacles of high explosives, anchored in channels and fairways and exploded by contact or by electric cables from shore, have been shown to be highly destructive and scarcely surpassed as a means of defense of ports against naval demonstrations. Although successful descents and underwater runs have been made by the submarine boats above referred to, it can hardly be said that submarine navigation is more than in its inceptive stages, as no device has yet been designed to ensure a straight course without frequently coming to the surface for observation.

SUBMARINE DEFENSES. The defenses of a coast, which are placed or act under water, including submarine mines, mobile torpedoes, marine obstructions and submarine boats.

SUBMARINE MINES. Metal cases, enclosing large quantities of high explosives, designed to attack the sub-water parts of warships. They are placed below the surface of the water in the navigable approaches to a harbor or roadstead. They are either *self-acting* or *controlled.* Self-acting mines are fired either *mechanically* or *electrically.* The *mechanically fired* mines are fired

by the mechanical process of a ship striking and exploding the primer, by the mere force of impact. The *electrically fired* are either *simple buoyant* mines, anchored at from five to twenty feet below low water, or *combination ground* mines, with a buoyant contact torpedo for each group; both kinds are exploded by the completion of the electric contact by the ship itself. *Controlled* mines are either *automatic* or *observation* mines. The *automatic* mines act so that a warship striking them closes the circuit and prepares the target for firing from a shore station. The *observation* mines are exploded by closing contact at shore stations when the warship is over the mine. The latter is sometimes called *judgment* firing.

SUBMARINE SIGNALLING. Material developments have been made recently, and are still going on, of the observations of Professor Gray of the vibrations transmitted in sea water from a bell rung in contact with that fluid. Apparatus has been designed which, by the use of telephones, is able to locate the ringing of a bell stationed at a considerable distance. It is also predicted that the improvement of the system will enable the detection of the approach of a steamer from the pulsation of her screw or paddle wheels. The idea of the system already developed includes placing submarine bells in connection with lighthouses along shore as effective fog signals.

SUBSIDY. As applied to the merchant marine, it is an amount of money in excess of the usual charges for any service that may be performed in carrying the mails, etc., by which a private company or corporation is able to build and maintain larger and more powerful vessels than the state of trade would warrant, the vessels being designed for use as cruisers and auxiliaries to the fleet in time of war. A large proportion of the trans-oceanic passenger steamers are subsidized by one or the other of maritime powers of Europe.

SUBSISTENCE DEPARTMENT. A branch of the army which provides subsistence for the army. Its officers are called *commissaries;* its chief is a brigadier-general, called *commissary-general.* The department is often called the *Commissary Department.*

SUMMARY COURT. A military court, composed of a single officer, appointed by a post or detachment commander, with power to try enlisted men, in peace or war, for offenses cognizable by garrison or regimental courts, which courts it has practically replaced. Its power to punish is limited by statute.

SUMMARY COURT-MARTIAL. A tribunal for the trial of petty offences in the navy, including absence without leave and infractions of discipline. It is called by the commanding officer, who designates the membership, and is limited in its punishment to an imprisonment of thirty days and three months' loss of pay, loss of pay requiring the approval of the Navy Department. It can also recommend the granting of a bad conduct discharge. It is a court for the trial of enlisted men only.

SUPERCARGO. An official on merchant vessels, who has been almost entirely superseded because of the ready communication by the electric telegraph with all parts of the globe. He was formerly sent with the vessel of which the captain did not also act as supercargo, to carry out the commercial transactions of the voyage, selling the cargo at the port of destination and purchasing a return cargo. He acted on instructions received before starting or by subsequent letter, but was largely required to depend on his own judgment and commercial ability. In the more savage portions of the globe he conducted the barter which was a large part of early commercial transactions.

SUPERINTENDENT. The title of the commanding officer of the post of West Point, N. Y., and of the Military Academy, including the corps of cadets. The *Commandant of Cadets* merely commands the corps of the cadets and the officers who assist him.

SUPERSTRUCTURE. The construction of a vessel of war above the main deck. It is devoted to mounting the secondary battery and to quarters, offices, etc. It is generally divided in battleships into casemates, protected by six-inch armor, each casemate being a protective work for one of the broadside guns.

SUPPORT. A detachment of troops held back as a temporary reserve close at hand, like the supports in company open order movements, or the supports of the pickets in a line of outposts, or the infantry or cavalry supports of a field battery, or the force supporting an attack.

SUPERVISING ARCHITECT. An official of the Treasury Department who prepares preliminary plans for public buildings, secures designs therefor in competition, selects sites for the same, arranges details of contracts and has charge of the repairs of all government buildings not in the District of Columbia, of all heating and hoisting apparatus and all safes and vaults.

SUPREME COURT OF THE UNITED STATES. Consists of a Chief Justice and eight Associate Justices. The court of final resort in judicial proceedings and the highest authority on questions relating to the constitutionality of legislation. The tribunal designed to be a disinterested and deciding factor in the three powers established by the Constitution of the United States, the legislative, the executive and the judicial. The members of the supreme court are appointed for life, or during good behavior, and are intended to be placed so that they are independent of all outside influence of whatever nature.

SURF. The swell of the sea breaking on a shore. Properly, swells, each one of which is a roller, breaking in gradually shallowing water. Swells which are suddenly broken up by rocks or other obstacles are breakers.

SURGEON. An officer of the Medical Department, with the rank of major. Assistant surgeons have the rank of captain or first lieutenant; deputy surgeons-general the rank of lieutenant-colonel, and assistant surgeons-general that of colonel.

SURGEON-GENERAL. A brigadier-general, head of the army Medical Department.

SURGEON-GENERAL. Of the army and navy. Each has charge, respectively, of the medical duties in connection with military service, the physical examination of candidates for entrance or promotion, the preparation and management of hospitals, etc.

SURGEONS. Members of the medical corps of the navy begin as assistant surgeons, and are promoted successively to be passed assistant surgeons, surgeons, medical inspectors and medical directors. In addition acting assistant surgeons corresponding to contract surgeons in the army are engaged for three years, unless the engagement is sooner revoked. Appointment to the medical corps is made from rgularly graduated physicians who are able to pass the required examination.

SURVEY. Surveys are held in the navy: 1. For the purpose of determing the amount of repairs which should be effected on a vessel going out of commission. 2. On officers or enlisted men to determine their physical condition, the survey held by a medical officer or officers, on whose certificate discharge of an enlisted man may be granted, and 3. On provisions and supplies which are alleged to be unfit for use. The medical officer passes on the sanitary condition of provisions which may be thrown overboard if found bad, and a board of officers passes in condemnation on useless supplies and equipments which are thus removed from the list of property to be accounted for as part of the ship's equipment.

SURVEY OFFICER. An officer who performs the duties formerly performed by Boards of Survey. His action is only *advisory.*

SUSPENSION. It is within the power of a commanding officer to suspend an officer from duty for a period not exceeding ten days, for remissness in his duty. The suspension must terminate at that time unless charges are preferred on which a court martial is held.

SWAB. A bundle of rope, yarns, or other loose, twisted stuff fastened to a handle and used to dry the decks of a vessel. Also sometimes used in applying tar and similar substances. A swab dipped in oil and fired has often been used as a signal of distress.

SWAMP. To sink a boat by filling her with water over the gunwale, either by the action of the waves or forcing the gunwale under water.

SWASEY POSITION FINDER. A depression position finder, similar to the Lewis, type A, adopted for the coast artillery (United States). It reads ranges from 1,500 to 12,000 yards, and can be adjusted for any height of site from 40 to 400 feet.

SWAY. To hoist or raise. Often used to indicate the extra pulls on a halliard or sheet necessary to bring in the last few inches of rope.

SWEEP. A large oar, formerly used in smaller sailing vessels in case of a calm. To drag a bight of rope of considerable length down through a channel for the purpose of determining the location of obstacles. A method of removing mines from a mine field of a protected port is to sweep for them in this fashion.

SWEEPERS. A portion of the crew of a vessel detailed to sweep up the decks. Sweepers are piped at intervals during the time a war vessel is under way to remove the cinders from the decks.

SWELL. The rise and fall of waves, not directly caused by the action of the wind immediately blowing. In Atlantic waters the effects of a storm are apparent after the storm has passed or at some distance from its path by the gradually subsiding swell. In the Pacific there is a constant swell, which has been said to be caused by submarine volcanic disturbances.

SWIFTER. A device to equalize pressure or strain, as a line passed from one capstan bar to another. Swifters are put on loose rigging to take up the slack. A rope passed about the body of a boat or vessel to strengthen it by binding all together is called a swifter. From this possibly comes the expression "taking a snifter" for taking a drink of stimulants.

SWIG. To put the full power of the crew on the halliards of a sail so that it may be hoisted to its fullest stretch.

SWING. The turning of a vessel by the action of the wind or tide while at anchor is called swinging. Swinging ship is the act of turning the vessel's head successively to each point of the compass, on known bearings, so that the error of the ship's compass may be noted.

SWISS PISTOL. See *Parabellum Pistol.*

SWORD. A hand weapon, consisting of a steel blade, with one or two edges, set in a hilt. In the United States Army only cadets and non-commissioned officers of foot troops carry the sword.

SWORD KNOT. A knot, with cord, worn on the hilt of a sword or saber. In action it is attached to the wrist so that the sword, if forced out of the hand, will not be lost. The *service* knot is of leather, the *dress* knot of gold lace.

TABLE MONEY. An allowance received by commanding officers in some navies, notably in the British navy, for the expenses of entertaining. The allowance varies with the station on which the officer is serving, but is frequently equal to the regular pay of the officer.

TACK. The lower corner of the luff of a fore and aft sail, the purchase by which the weather lower corner of a square sail is confined. To change the course of a vessel when going close hauled so that progress is made in the direction from which the wind is blowing. One of the courses or legs made in tacking.

TACKLES. Combinations of ropes and blocks, used in moving and hoisting heavy weights. They are rigged with single

and double sheaved blocks, according to the size of the work to be done.

TACTICAL UNIT. The largest body of men which can be directly commanded by the voice of a single commander (in infantry, the battalion; in cavalry, the squadron; in field artillery, the battery).

TACTICS. The art of conducting the operations of troops on the battlefield, be it a skirmish, an engagement or a serious battle. It is often divided, for separate study, into the tactics of each of the separate arms (infantry, cavalry and field artillery), and of the arms combined; the tactics of coast defense is a distinct branch of the general subject.

TAFFRAIL. The rail about a vessel's stern.

TAIL. A rope spliced about a block, to serve as a means of securing it instead of a hook. To tail on to a rope is to haul upon it.

TANNED SAILS. Sails soaked in oak bark, giving them a brownish hue. This process is seldom used now in American waters, but its results are commonly seen on small craft abroad.

TAR. The product of the sap of the pine tree or of the distillation of coal. The chief preservative of ropes used as standing rigging. Formerly extensively used to make the bottoms of vessels water-tight.

TARGET. The object fired at by a cannon or small arm, such as a warship, a field battery or a line of skirmishers. In target practice targets of various forms are used.

TARGET PRACTICE. The vessels of the United States Navy are required to conduct target practice with all calibres twice annually, in the fall and spring. The time covers several weeks, depending on the state of the weather. Floats carrying targets of sail cloth are anchored at various ranges and a careful computation is made of the number of hits and the time within which the guns are fired. The ship making the most hits in the least time is awarded a trophy to be held for one year, the vessels being divided into battleship, gunboat and torpedo boat classes.

TARPAULIN. Canvas, painted to render it water-proof. Large sheets of canvas thus painted are used to cover hatches, boats, etc. Tar was formerly used for this water-proofing, and coats and hats so protected were also called tarpaulins.

TAUT. Tight, as said of a rope when held in a tension. On a taut bowline is an expression used in square rigged vessels denoting that the vessels are sailing close hauled, as the bowlines are then taut.

TEAK. A sort of timber from trees grown in the East Indies, much esteemed for ship building and especially for laying decks.

TEA WAGON. An old name for East Indiamen or vessels sailing from Asiatic waters, as their homeward bound cargoes consisted largely of tea.

TECHNICAL TROOPS. A term used on the continent of Europe, including engineers, pontonniers, pioneers, railroad, telegraph and balloon troops.

TELAUTOGRAPH. An instrument, used in coast artillery work for transmitting data or sending important orders from a position-finder station to a battery. It works electrically, and the written message at the sending station is reproduced at the receiving station exactly as written; that is, as an autograph.

TELEGRAPH, FIELD. A telegraph equipment, used in the field, by means of which a commander may be in communication with all parts of his line, especially the more advanced portions and the flanks. Cable laid on the ground is now extensively used in place of the old steel wire on poles. In Germany each division carries fifteen miles of cable, each corps thirty-two, and the army fifty-one miles.

TELL-TALE. A compass set in the overhead deck of a cabin and face downward, so that the commanding officer is able to tell whether the ship is holding her course.

TENDER. A small war vessel, used to give assistance to a large vessel, squadron or fleet in the way of transporting dispatches, mail, etc., transferring men or carrying extra supplies of stores. In the day of the sailing navy a tender was dispatched with a ship or squadron carrying provisions to lengthen the time in which the main vessel could keep the sea, or would be dispatched to some rendezvous with provisions for this purpose.

TENT. A portable structure of canvas, supported on poles, used to shelter troops. The modern tent is khaki or yellowish-brown in color. The different kinds are hospital, conical wall, wall, common wall and shelter tents.

THIMBLE. An iron ring, the outer edge of which is concave, so that an eye of rope may be fastened about it by a splice. It serves to extend the eye of the rope and to prevent chafing by hooks or other thimbles.

THOLE PIN. A pin, generally of wood, inserted in a hole in the gunwale of a boat against which the oar is pressed in rowing. Thole pins are usually set in pairs, the oar plying between, but sometimes a single pin is used, the oar being secured by a loop of rope.

THROAT. That part of a gaff which is nearest the mast.

THROUGH THE FLEET. A former punishment, consisting of sending an offender in a small boat to be flogged near every vessel in the fleet.

THRUMS. Short bits of rope yarn, used in making mats. Thrums are sewed on one side of a heavy piece of canvas and the mats are used in protecting sails and rigging from chafe.

THWART. The seat in a small boat, on which a rower sits.

TIDES. The twice a day oscillations of the ocean, caused by

the influence of the sun and moon, especially of the latter, when the apparent diurnal motion of the moon is followed by an immensely flat and broad wave, which reaches its greatest protuberance about thirty degrees east of the moon, due to the attraction of the moon's bulk. This influence is modified by the attraction of the sun, the smallest tides being when the two influences conflict. These are called the neap tides, and the highest, called the spring tides, occur when the influence of the sun and moon are exercised in the same direction.

TIE. A part of the purchase, used for hoisting a topsail yard. It is that part which passes through a sheave in the mast or through a tie block at the mast head.

TIERCE. A cask, used in packing salt provisions, containing 336 pounds. Also a wine measure of forty-two gallons.

TILLER. An iron or wooden bar, fitting into a socket in the head of the rudder of a vessel, or over the head itself. It is seldom seen now except in small boats, as a steering wheel is universally used in connection with standing steering gear. Formerly fishing craft and vessels of moderate size were fitted with tillers.

TIMBER HITCH. A hitch, made by passing one end of a rope around an object, then over and under the standing part and secured from slipping by two or three turns around its own part.

TIME BALL. The time ball system for the use of mariners is conducted by the hydrographic office of the Navy Department. Chronographs are placed in the branch hydrographic offices of sea and lake ports, and balls are dropped from the tips of high buildings on the second, when the Washington noon time circuit is closed, giving mariners the time of the meridian of Washington.

TIME FUZE. A fuze in which the time of burning can be regulated, so that the shell or shrapnel is exploded at a certain number of seconds after the discharge of the piece. The fuzes used in the United States are fifteen and twenty-eight second fuzes, graduated by fifths of a second. *Delayed-action* fuzes are such as are prepared for action by the shock of discharge or of impact.

TOGGLE. A piece of wood, used for connecting two ropes in place of a hook. The toggle is fixed in the end of one rope and is passed through the eye of the other like a button.

TOMPION. A wooden plug, placed in the muzzle of a gun to keep out moisture and dust.

TOMPION. A cover for the muzzle of a gun. For mortars they are caps of sheet iron fitting around the muzzle; for guns they are combined tompions and muzzle covers, in which a disc of wood fits into the muzzle, and a canvas cover attached to it is fastened around the muzzle.

TONNAGE. The size or burden of a ship. The modern cal-

culation for naval vessels is in tons displacement, denoting the number of tons of water displaced by the vessel when at the full load line. Tons burden are calculated by the measurement of the interior capacity of the vessel, measured according to certain arbitrary rules covering cargo space, and omitting the space occupied by engines and boilers in steam vessels.

TOP. A platform of semi-circular form at the lower mast-head of square rigged vessels. It serves as a landing place for the work on the upper masts and yards, and in the sailing navy was the base from which all the work on the lighter yards was done. In modern war vessels one or more military tops, more or less shell proof, are affixed to the signal masts and are provided with rapid-fire guns which, with rifle fire, are handled by the marine guard.

TOP CARRIAGE. The upper part of a modern gun-carriage, on which the gun directly rests. The top carriage usually slides back on the chassis when the gun recoils, the force of the recoil being checked by means of hydraulic buffers.

TOPPING LIFT. A rope, sometimes fitted with a tackle which runs from the mast-head to the end of the boom of a fore and aft sail to carry the weight of the boom, and which is sometimes swayed up to make a bag in the leech of the sail.

TOPGALLANT. The mast, sail and ropes of the sail next above the topsails in a square rigged vessel. Also applied to portions of the deck or rail raised above the rest.

TOPMAST. The mast next above the lower mast in a square rigged vessel and the smaller and upper mast in a fore and aft vessel.

TOPSAIL. The sail next above a lower square sail or course. Topsails were formerly made in one piece, but for many years the topsails have been divided into two pieces, each of which can be set or furled independently of the other, the upper topsail being hoisted on its yard to the masthead, while the lower topsail drops from its stationary yard to the lower yard. Fore and aft topsails are either hoisted to the masthead and hauled out to the end of the gaff or hoisted from the deck bent on to a small yard or boom. Jib topsails are smaller than outer jibs.

TOPSAIL SCHOONER. A rig which was popular in the early part of the nineteenth century, consisting of a fore and aft rig, with generally a square topsail on the foremast, though sometimes with square topsails on the fore and main. They also carried a fore course for running before the wind, and were generally smart, able craft. A number of the privateers of the War of 1812 were topsail schooners.

TOPSIDES. The upper part of a vessel, including all above the water-line.

TORPEDO. A common name for *Submarine Mines.* Properly, a projectile with a large bursting charge, fired from a torpedo tube on land or aboard ship. The projectile is automatically self-

propelling and self-directing, and is intended to explode at a ship's side or under her bottom.

TORPEDO. An engine, containing a high explosive, used for attack on vessels of the enemy. The most common form is a modification of the Whitehead automobile torpedo, in which a tank of compressed air furnishes the motive power for propellers and steering devices. It is launched from a tube by the explosion of a small charge of gunpowder, and a trigger tripped automatically as it leaves the tube starts the motive power. An automatic steering device may be set to secure a change of direction at a given point. The effective range is about three thousand yards, with a speed of approximately thirty-five knots. Experiments have been made with turbine engines for this form of torpedo, intended to increase the range. Many forms of dirigible torpedoes have been designed depending on electric wires, which were unreeled as the torpedo travels through the water. Suggestions have been made as to the use of wireless impulses of electricity for directing and firing torpedoes, but none such has been devised.

TORPEDO BATTERY. A battery on shore, from which torpedoes may be discharged as they are from aboard ship. Much heavier torpedoes can be used in these batteries, and they can be made to keep up their velocity for a greater range than aboard ship. They are particularly useful in deep channels and swift currents and on very foggy shores.

TORPEDO BOAT. A small war vessel of high engine power and speed, designed to be effective by sudden attack, either singly or in squadron, and by the use of torpedoes against larger vessels. The first torpedo boats were of small size, and a larger class was developed, known as torpedo boat destroyers, intended to act offensively against torpedo boats and also offensively in torpedo attack on the war vessels of larger sizes. A torpedo flotilla is generally organized with one or more destroyers in the van, with a tail of torpedo boats. The latter, however, are becoming obsolete, and the tendency is to increase the size of torpedo craft up to a certain limit. In addition to the several tubes for firing torpedoes, torpedo craft are armed only with quick-firing and machine guns of small calibre. They are of light construction and contain the largest possible installations of high pressure boilers and engines.

TORPEDO COMPANY. A company of coast artillery, which has charge of the submarine mine work of the artillery district in which it is stationed, including the rapid-fire guns and search-lights provided for the defense of the mine fields.

TORPEDO SHELL. A shell for the 12-inch mortar, longer than the ordinary shell, and charged with Explosive D or maximite. Also a thick-walled steel shell, charged with a high explosive, used by the German field artillery; the French *obus allongé* is similar in character, but thin-walled; the same is true of the British *Lyddite* shell.

TORPEDO STATION. The torpedo headquarters of the United States is located on an island in the harbor of Newport, R. I. It contains besides a manufactory of explosives, various shops for the repair of and experimentation on torpedoes, and is the headquarters of the torpedo fleet in the summer and of the submarine torpedo boats owned by the United States Government.

TOW. To propel a boat or vessel by means of a rope passed from another craft which furnishes the motive power. Generally used by sailing vessels and by large steamers in entering port and docking at wharves and piers. A specially designed class of steam vessels ply about the principal ports for the purpose of changing the location of vessels, barges, etc., and tow-boating is a special branch of maritime life. Large ocean-going tugs are used for wrecking purposes and for the towing of barges which are largely used for coastwise coal freights.

TRADE WINDS. Atmospheric currents in the north and south hemispheres, which move in a given direction for considerable spaces of time without cessation, that in north latitude from northeast, and that in south latitude from southeast. They are caused by the combined action of the revolution of the earth on its axis and by the movement of polar air to take the place of that rising from the heated equatorial belt.

TRAIL. The rear end of a field or siege carriage, which rests on the ground when the piece is unlimbered, and which has a spade attached to it to prevent recoil.

TRAIN. The transportation, or railroad or wagon train, of an army or a sub-division, with its personnel. A German army corps train comprises five commissary sections (thirty-six wagons of commissary supplies, one reserve wagon and one field forge), five forage sections (eighty-two wagons), one horse depôt (200 horses), one field bakery section (twenty wagons), the bridge train and twelve field hospitals. The ammunition train is separate, but marches with the regular train.

TRAJECTORY. The path (or curve), described by the center of gravity of a projectile during its passage through the air. The following are some of its more important elements:

Line of Departure. The prolongation of the axis of the gun at the instant the projectile leaves the bore; it is tangent to the trajectory at the muzzle.

Angle of Fall. The angle which the tangent to the trajectory at the point where the projectile first strikes makes with the line passing through the sights and the points aimed at.

Striking Angle. The angle which the tangent to the trajectory at the point of striking makes with the horizontal plane.

Angle of Incidence. The angle which the tangent to the trajectory at the point of striking makes with a plane normal to the surface at that point.

Angle of Impact. The angle which the tangent to the trajectory at the point of striking makes with a plane tangent to the surface at that point.

See also *Deviation, Drift, Range, Plane of Fire, Jump, Initial Velocity, Remaining Velocity.*

TRAJECTORY. The curve described by a projectile in its path from the muzzle of a gun to the point of impact. It includes the vertical curvature due to the influence of gravitation and a slight lateral curvature caused by the rotation of the projectile on its axis.

TRANSLATING ROLLER. A steel double-threaded screw, which works in the breech of a cannon, and when turned withdraws the breech-block from its recess in the breech, in other words, effects what is called "opening the breech."

TRANSOM. A longitudinal storage place or locker worked into the sides of cabins and state-rooms of a vessel. The top is fitted with cushions, forming a sitting place or bed.

TRAVELLER. An iron ring or thimble, fitted to slide on a spar or iron rod, generally used to accommodate the movements of sails so that sheets will not have to be changed when the course is changed in tacking.

TRAVEL RATION. A special ration, issued to troops traveling otherwise than by marching, or when separated for short periods from cooking facilities.

TRAVERSE. A parapet, built to cover a part of a fort against enfilade or reverse fire. In coast forts, a structure perpendicular or oblique to the front parapet wall, protecting armament and personnel from flank fire.

TRAVERSING CIRCLE. In coast artillery gun-carriages, a large gun iron circle laid on the gun platform, over which the carriage traverses, and to which the brass azimuth circle is attached.

TRAVERSING ROLLERS. The conical-shaped steel rollers, under a gun or mortar carriage, on which the carriage turns in a horizontal plane.

TRAVERSING WHEELS. The two wheels, on which the rear end of a coast artillery gun-carriage rests and traverses (or turns) over the traversing circle.

TRAWL. A line having hooks placed at intervals along its length and baited. One end is anchored at the ocean bottom and the other end is buoyed so that it may be overhauled. The method used for taking codfish on the banks.

TRAY. In large caliber guns, a heavy piece of brass, hinged to the rear face of the breech, carrying the breech-block (as if on a tray), swinging it around to the right, out of the way of loading.

TREASURER OF THE UNITED STATES. Receives and disburses money deposited in the treasury and sub-treasuries; is redemption agent for national bank notes and trustee for bonds owned by national banks and deposited to secure bank issue of currency and public deposits, in national banks.

TREENAIL. A cylindrical pin of oak or locust, used in building wooden merchant vessels, to fasten the planks below the water line to the timbers.

TRENCH. An excavation or ditch, the earth from which is thrown up in front to form a parapet. Trenches are important elements in both permanent and field fortification.

TRESIDDER PROCESS. A process for hardening steel armor-plates, consisting in heating the plate to a certain temperature, and applying cold water under heavy pressure in numerous small streams.

TRICE. To pull up a sail and make it fast to the mast or yard, a preliminary act in furling a square sail. Also used to take in the spread of a fore and aft lug sail, either temporarily or when the sail is furled on the mast.

TRICK. The time during which a helmsman remains on duty at the wheel.

TRIM. To arrange the cargo or other weights of a vessel so that it shall be upon an even keel, or in the position in which it sails the best. A vessel is trimmed by the head when the draft is greatest at the bow, and by the stern when the deeper part is aft.

TRIMMING TANKS. Large tanks, included in the construction of large steam vessels, which are intended by the admission of sea water to counterbalance the uneven use of coal from the different coal bunkers. By admitting water at intervals, as required, the vessel is kept on an even keel during the fluctuation of the weights of coal in the bunkers.

TROLLEY. In coast forts, a mechanical device for transporting projectiles on horizontally suspended tracks, placed overhead in shell rooms or shot galleries. It is a form of differential pulley, with chains, the pulley running on the track, the chain attached to the shell-hooks carrying the projectile.

TROOP. A sub-division of a regiment of cavalry, corresponding to a company, but usually smaller than the latter.

TRUNKS. The system of large pipes on board vessels attached to the ventilating and draining systems, forming the main arteries of such systems.

TRUNNIONS. Cylinders on a cannon, perpendicular to its axis, designed to rest in the bearing surfaces of the carriage. They transmit the force of recoil to the carriage.

TROUGH. Of the sea. The hollow space between two waves. A vessel is said to be in the trough when she lies broadside on to the waves.

TRUCK. A circular piece of wood affixed to the top of a mast, through which the flag or signal halliards are rove.

TRUNK. A projection above the spar deck of a vessel or above the deck of a small vessel or covered boat, consisting of

the roof and part of the sides of the cabin and designed to give more head room in the living space.

TRUNNION. One of a pair of cylindrical projections attached to or formed on opposite sides of a gun, forming pivots, by means of which the muzzle is raised or depressed. Superseded in modern guns by a steel or bronze jacket, forming a portion of the carriage.

TRUSS. A heavy iron fixture, by which the lower yard of a square rigged vessel is held in position on the mast, and which serves as the center of motion of the yard.

TRYSAIL. A fore and aft sail, used as a storm sail on square rigged vessels. It is set on a gaff and a trysail mast, which is just abaft the lower mast, and fastened to it.

TRYING OUT. The name of the operation by which whalers secure whale oil from the blubber. Large iron kettles are set in the waist and the oil part of the blubber is separated by the heat of a fire placed beneath the kettle. The solid parts of the blubber are used to maintain the fire.

TUG. A small steam vessel, fitted with powerful engines and intended for towing. Tugs of the navy are used for handling vessels and barges about navy yards, for conveying supplies, etc. Several powerful ocean-going tugs were added to the navy during the Spanish-American War and are used as tenders to the fleets.

TUMBLE HOME. When the sides of a vessel begin to narrow in so that the beam on deck is less than that at the water line she is said to tumble home.

TURK'S HEAD. An ornamental knot, made in the end of a standing rope, such as a man rope at a gangway, in which the strands of the rope are laid up into a shape somewhat resembling that of a turban.

TURN. To take a turn is to pass a bight of rope around a cleat or pin to secure it. To turn in is nautical for going to bed. To turn in a deadeye is to fasten a shroud about it.

TURNING MOVEMENT. An extended movement around the enemy's flank for the purpose of threatening or attacking his flank or rear.

TURRET. Circular or oval towers of armor. Revolving and fixed turrets are used in land fortification as well as aboard ship. Fixed turrets aboard ship are generally called *barbettes.* In land turrets the lower cylindrical part is often fixed, while the upper dome-shaped part revolves: guns are mounted in them in tiers.

TURRET. A revolving armored structure, intended to protect heavy guns and their crews from the fire of the enemy. Developed by John Erickson in the "Monitor" and constituting the characteristic feature of the naval construction of the United States. The original turrets were cylindrical, with a slightly crowning roof and without further protection at the base. As

modified a ring of armor protected the turning wheels and grooves, and the top was rounded to deflect fire. In the latest designs the turrets are elliptical in shape, balancing the weight of the chases of the guns exposed, and the turning mechanism is protected by a barbette of armor.

UNDERTOW. A strong current moving continuously in an opposite to the apparent motion of the surface of the water. Specifically the current which runs parallel to beaches, under certain conditions at or just beyond the breaker line, and forming a cross and unexpected force, which is dangerous to the inexperienced. It is due to tidal effects and is generally exerted in the direction of deeper or colder water.

UNDERWRITER. An insurer on any kind of an insurance risk, more specifically the insurers of maritime risks. The name comes from the old custom of exposing a proposition for insurance in a public place, under which various individuals subscribed their names and the amounts of the insurance they would undertake, the premium being divided pro rata.

UNIFORM. The prescribed exterior clothing and equipments, worn by officers and men. In the United States there are three regular uniforms—*full dress, dress* and *service*—and several special ones worn under special conditions, such as the canvas suits for the men, and the white uniforms for officers, etc.

UNIFORM. The uniform of a naval officer is usually a close-fitting blouse, buttoned to the neck and bearing devices denoting rank, with uniform trousers and a soft top, visored cap. The blouse may be blue or white, and white trousers are worn with the blue blouse. With white blouse and trousers a white cap is worn. This is the service uniform. The dress uniform substitutes a frock coat, with a double row of large gilt buttons, for the blouse, and the full dress consists of a blue swallow tail coat, with gilt buttons, trousers with gilt stripe and chapeau. The uniform of the warrant officers ends with the dress uniform. The enlisted men wear the loose sailor blouse, blue or white, with the round cap, except that chief petty officer wear a double-breasted coat, with visored cap.

UNITED STATES MILITARY ACADEMY. The government institution for the instruction of cadets, and their training for the position of commissioned officer in the army. It is located at West Point, N. Y.

UNSPIKING TOOLS. Tools for unspiking guns, which have been spiked. They are furnished to coast forts by the Ordnance Department.

UNITED STATES MAGAZINE RIFLE, MODEL 1903. The official designation of the new United States small arm, caliber 0.30 inch, length of barrel 24 inches, muzzle velocity 2,300 foot-seconds, total weight nearly nine pounds. The carbine is abolished, and this rifle is the small arm for all branches.

VAIL. An old nautical synonym for lower. As to vail or lower the topsails as a salute or token of submission.

VANGUARD. The more advanced part of an advance guard, usually about one-half the entire advance guard force, and consisting of an *advance party* (with its *point* and *flanking groups*), and a *support* (about one-half the vanguard).

VARIATION. The angle of difference established between the magnetic meridian at any point and the geographic meridian. The variation is shown on each chart, giving the variation in the portion of the earth's surface represented.

VEDETTE. A cavalry outpost, composed usually of three men, two of which are dismounted, and two are always in observation. Vedettes are pushed out to the front (on roads, cross-roads, lookouts, etc.) by the outpost squadrons.

VELOCITY. Rate of motion, of a projectile in firing, of a carriage in recoil, of a target (warship), moving body of troops, etc. See *Trajectory* and *Muzzle Velocity.*

VENT. The aperture in which the primer is placed, and through which fire is communicated to the charge. In modern cannon it is generally axial—that is, it is located in the axis of the breech-block.

VENT COVER. In modern cannon, a device covering the vent to prevent the insertion of a primer, and consequently the premature discharge of the piece before the breech-block is locked. It is a flat piece of steel, which automatically covers the vent till the block is locked.

VEER. To pay out rope. To wear ship. To change direction as applied to the wind, which hauls forward and veers aft, and is also said to veer when it changes direction against the sun.

VENT. The aperture, formerly drilled in the breech of a great gun through which fire was applied to the charge. Up to comparatively recent times it was simply a hole drilled to the chamber of the gun and primed with small grained powder, being fired with a slow match. A friction primer was used and developed subsequent to the Civil War, but the vent and appliances and drill for its serving became obsolete with the introduction of the breech-loading system.

VERTICAL FIRE. See *High-Angle Fire.* The term is a misnomer, but is often used.

VERY SIGNALS. A system of signalling in which balls of fire of different colors are fired into the air from a pistol, the arrangement and number denoting letters and letter symbols.

VETERINARIAN. A warrant officer of the army, who acts as veterinary for the horses of a cavalry regiment. Each cavalry regiment has two veterinarians, one with the pay and allowances of a second lieutenant, and the other with the pay of seventy-five dollars a month and the allowances of a regimental sergeant-major.

VETTERLI VITALI RIFLE. The Italian infantry rifle, model 1887, caliber 0.409-inch, four rounds in magazine, rate of

fire fourteen shots a minute. It was replaced by the Mannlicher —Carcano, model 1891, of smaller caliber (0.256-inch).

VICKERS' GUN. A gun, manufactured by Vickers' Sons, at Sheffield, England. The firm of Vickers' Sons annexed the Maxim works in 1889, but the guns of the combined firms are still often called *Vickers'* guns, especially when made at Sheffield.

VICKERS'-MAXIM GUN. A gun, manufactured by Vickers' Sons and Maxim at Sheffield and Birmingham, England. In 1889 the Vickers works at Sheffield annexed the Maxim works at Erith, Birmingham, etc. Guns of all calibers are made, from 1.5-inch to 12-inch.

VICTUALLER. A contractor with the old English navy, who undertook to find the vessels with provisions, etc. He was represented on board ship by a purser and was the frequent subject of complaint on account of bad or scanty provisioning.

WAD. A plug of hemp, tow or other material placed over the shot in a muzzle-loading gun to retain the charge in place.

WAGON TRAIN. The transportation train of an army or sub-division of an army. Automobiles, motor wagons and road locomotives are largely used in modern army trains. See *Train.*

WAIST. The part of a vessel between the quarter deck and the forecastle. The amidship portion of the spar deck which is free from houses. The general gathering place of the crew, the after part marking the limit beyond which the crew are not to go except on duty. The superstructures of modern battleships occupying the central portion of the vessels, leaving clear spaces forward and aft have abolished the waist in its former sense, though it is still retained on cruisers and gunboats. Deep waisted vessels are those having high bulwarks protecting and sheltering the space.

WALES. The courses of plank in a vessel from the bottom planking, which comes to just above the water line, up to the line which is broken by ports, gangways, etc. They form the sides of the hull proper between the water line and the upper works.

WAR. The contest of arms, which nations resort to when all peaceable means of settling differences have failed. A declaration of war is not necessary, but is usually made in the interest of neutrals.

WAR ACADEMY. The Prussian General Staff College, in Berlin, one of the most noted military schools in the world. It has about 400 student officers, selected by competitive examination. The course is three years, and the graduates return to their regiments to await assignment to the General Staff.

WAR CLAIMS. A class of claims against the Government of great extent, growing out of the operations of the Civil War. These include cotton claims, the various claims for supplies, forage, etc., furnished troops, and of organizations and individuals, on account of damage to churches, lodge halls and

private grounds. Under the Bowman Act a large number of these claims, which were exempted from the jurisdiction given the court of claims, have been referred to that court by Congressional committees. Upon certification of the justice of the claim it is included in the "omnibus" bill for the payment of claims which is annually introduced in Congress.

WAR COLLEGE, ARMY. A military school for the training of General Staff officers, established in Washington, D. C. It is under the control of a brigadier-general of the General Staff.

WAR DEPARTMENT. The department of a government which has charge of all matters relating to the army. In the United States it is directly under the Secretary of War, who has as his principal assistant the Assistant Secretary of War and the chief of staff (a lieutenant-general), under whom are the Military Secretary, the Chief of Engineers, the Chief of Artillery and other heads of bureaus.

WAR DOG. A dog trained to assist in reconnaissance (by barking on the approach of the enemy) or in hunting up the wounded after a battle. Several European armies have trained dogs for these purposes, and they have proved very effective, especially for hunting up wounded.

WARDROOM. The large main room with connecting sleeping rooms in a war vessel, constituting the living quarters of the officers of the rank of lieutenant and lieutenant-commander.

WARHEAD. The section of an automobile torpedo which contains the explosive, generally guncotton. The warheads, with their charges, are kept apart from the main body of the torpedo and only affixed when use is anticipated. It constitutes the forward part of the device, and a detonating device is screwed to the forward end or nose, which causes an explosion when forced into contact with a solid body.

WARP. A tow rope or light hawser, used to move a vessel about. To warp a ship is to move her up to a given point, either a wharf or a point where an anchor has been dropped, by heaving in on the warp.

WARNER AND SWASEY POSITION FINDER. See *Swasey Position Finder.*

WARRANT. An appointment to an office in the navy inferior to a commission. Warrant officers are appointed from the ranks of the enlisted men after a determination as to qualifications, which now generally takes the form of a professional and mental examination. Warrants rank with, but after, the lowest commissioned grade, and consist of boatswains, gunners, carpenters and machinists. Acting warrants are first given, which are confirmed after a year's satisfactory service. A grade of chief warrant officers is established, and warrant officers have a ration and other allowances and retired pay. A number of warrant officers, not to exceed twelve in each year, may be given commissions after passing a satisfactory examination.

WATCH. One of the sub-divisions of a ship's company, of which there are two, the starboard and port watches. Also the division of the nautical day, during which one watch is on duty. The day is divided as follows: First watch, 8 p. m to midnight; midwatch, midnight to 4 a. m.; morning watch, 4 a. m. to 8 a. m.; forenoon watch, 8 a. m. to 12 m.; afternoon watch, 12 m. to 4 p. m.; first dog watch, from 4 to 6 p. m.; second dog watch, 6 to 8 p. m.

WATCH CAP. A knitted woolen cap, issued to enlisted men of the navy which fits close to head, and is worn in cold weather and in storms. It is only worn with the blue uniform.

WATCH OFFICER. Naval officers of the grades of lieutenant and ensign are assigned to vessels for duty in charge of the deck, which includes the general routine of the ship, one during each watch, except in port, when full day's duty is done in turn. Owing to the scarcity of watch officers in the navy in late years warrant officers and midshipmen have been detailed as watch officers. A watch officer has charge of carrying out the work of the ship as directed by the executive officer, and of keeping the course laid down by the navigating officer.

WATER-LINE. The horizontal line of the side of a ship, which is supposed to represent the position of the water in which she floats under certain conditions. The most important are the light water line and the load water line, representing her position when light and loaded respectively. The water line is generally taken as the location of measurement of length.

WATERLOGGED. The condition of a leaky vessel, which has become full of water and is heavy and unmanageable. The condition occurs most frequently with lumber-laden vessels, which, if abandoned, settle in the water until they float awash, and are then the most dangerous of derelicts. The term is also applied to wood which has become soaked with water and has slight or no flotation.

WATER TENDER. The chief rating of the fireroom force of a vessel of war. The water tender has charge of the feed water to the boilers and of the auxiliary pumps, etc.

WATER-TIGHT DOORS. The liability of disaster to modern vessels by reason of collision, leaks, etc., is materially decreased by the compartment system, of which the water-tight doors are the most important parts. The communications between the different compartments are closed by iron doors, fitting into their seats with rubber gaskets, and which, when closed, are water-tight and isolate the compartment to which damage may have been done. Power systems are installed on war vessels and large passenger ships by which the doors of all the compartments may be closed from a central point without the necessity of visiting the location of the different communications.

WATER TUBE BOILER. A development of the steam boiler for marine use, caused by the demand for higher pressures

and quick steaming capacity. The water is contained in a series of tubes connected with an elevated drum, and the heat is applied about the tubes. The question of the best type of this boiler has been a moot one in the naval services of the world, and the effort to develop the most economical type adapted to the conditions of shipboard use has been strenuous for a considerable period. A contention which is not yet settled has existed between the experts of various nations as to the relative value of tubes of small and large diameter for this service.

WAVE. A volume of water raised from the mean surface of a body of water by the action of the wind, tide or a current. The chief cause of waves is the action of the wind, either immediate or foregoing, leaving its effect. When two of the forces above named are opposed the effect is accentuated. Tidal waves, caused by the recession of the sea and the revulsion, are caused by various phenomena, chiefly volcanic.

WEATHER. A general nautical term denoting the direction from which the wind is blowing. To weather a point of land or another vessel is to sail to windward of it.

WEATHER CLOTH. Generally any cloth or tarpaulin, used to keep water away from articles exposed on deck. Specifically the canvas covering for the place where the hammocks are stowed.

WEATHER HELM. When a vessel, by reason of her build, rig or trim, has a tendency to turn into the eye of the wind, with the helm amidships, she is said to carry a weather helm. It is frequently sought to obviate the effect by a change of weights, the set of a sail, etc.

WEFT. A flag, knotted or tied in the middle. Formerly used to recall boats, to open communication, etc. A boat recall flag is now provided, and other uses of the weft are filled by regular signal systems.

WELL. The well of a vessel is generally understood to mean the pumpwell, the enclosed space to which the drainage system is led. In the old auxiliary ships the propeller worked in a well in the after-part of the ship, which was so built that the propeller could be hoisted out of water in it when the ship was under sail alone.

WELLORECH POWDER. A smokeless powder, pure nitrocellulose (without any nitroglycerine), made in Germany.

WESSON PISTOL. An automatic pistol, loading by gas pressure, and functioning like a machine gun.

WEST POINT. The locality (in New York State) of the United States Military Academy, and a term often used to designate the academy.

WHARF. A structure of stone, iron or timber projecting out from the shore into the stream, at which vessels may lie and discharge cargo.

WHARFAGE. The fees or dues charged for landing goods or laying by a wharf. Collected by the private owners of the wharves or by municipalities from vessels not having free privileges.

WHEEL. The circular device, used to secure a purchase on the helm of a vessel, made in the form of a wheel, with projecting spokes. Before the invention of the steam steering gear the wheels were made larger as the vessels increased in size and required the efforts of two men to handle the steering gear. The steering wheel of a modern battleship is about the size of the handsteering wheel of a sailing yacht.

WHERRY. A small boat rowed by one person. An English small craft carrying two lug or leg of mutton sails.

WHIP. A small light purchase, consisting of a rope rove through one or two single blocks and used for the speedy hoisting of articles inboard. To take turns of small stuff about the ends of a rope to keep them from fraying out.

WHISKERS. Two booms or iron bars projecting at right angles on either side of the bowsprit of a vessel and serving as spreaders for the head rigging. They take the place occupied in old ships by the spritsail yard, which carried a sail below the level of the jibboom.

WHISTLING. Although it is the fancy that in the merchant service the crew are often set to whistling for a wind in a calm, and the fact that a merchant skipper or mate will frequently pace the deck with a mournful whistle for wind; no whistling is allowed on board a man of war, the remark of the boatswain's mate in checking a whistler being, "Say, you swab, I'm paid for doing the whistling on this ship."

WHITECAPS. The spray caused by the force of the wind blowing on the tops of waves and causing them to break in white water. The gradual increase of white caps indicates that a strong or heavy breeze is making up.

WHISTLER QUADRANT PLOTTING BOARD. A specially constructed board on which the course of moving targets (warships) is plotted in coast artillery firing.

WILDCAT. That portion of a capstan which forms the bearing surface for the chain cable. It is connected with the driving mechanism rigidly and to the capstan by slip bolts, which permits the backing of the capstan.

WINCH. A hoisting device, used for a variety of purposes on board ship. Its simplest form is that of a horizontal capstan with a barrel, on which the rope or chain is wound and with cranks for the application of hand power. In modern vessels winches are either provided with independent engines or are geared to some form of engine power.

WIND. To turn a ship end for end by warps, boats, engine power, etc., in a channel in which the full turning circle cannot be made.

WINDAGE. The space left between the outer surface of a projectile and the surface of the bore of a smooth bore gun, in order to permit of easy loading. An obsolete term, since the rotation band of a modern projectile checks the former escape of powder gas.

WINDSAIL. A device constructed of canvas, consisting of a flaring mouth and cylindrical body. It is trimmed to face the prevailing wind, and serves to convey a current of air below the decks of a vessel.

WING. The portion of a command from the center to the flank: the battalion is the smallest unit usually divided into wings.

WING AND WING. Generally applied to fore and aft vessels running before the wind, with the mainsail out on one side and the foresail out on the other.

WIRE GUNS. Guns made of wire, wound with a graduated tension around a central core of steel tubing, the whole enclosed in cast-steel jackets. The *Crozier* and the *Brown Segmental* are the best known.

WIRE-WOUND GUN. A construction of ordnance representing the highest tensile strength known. A central tube or series of segments is wound with courses of wire at different tensions and the ordinary hoops or jackets shrunk over the winding. They are difficult of proper construction and are said to lack longitudinal strength.

WORM. To wind a small rope spirally in the spaces between the strands of a large rope preparatory to parcelling and serving it.

WRITER. A former rating in the navy, and still maintained in navy yards, appropriations for which provide for writers for clerical work. The clerical force of the navy is now composed of the yeoman branch, the executive officer's yeoman performing most of the duties of the ship's writer.

YACHT. A pleasure vessel, the name being derived from the Dutch, "jagt," a small, fast vessel used for chase of others, such as pirates and smugglers. The use and racing of yachts dates back to the time of Charles II, who is said to have sailed a race on the river Thames. Yachting has had intervals of great popularity, culminating in the United States in the series of international cup races, which firmly established the superiority of the American yacht model. The highest type of the speedy small boat was found in the "knockabout" type developed as the outcome of the principles so established. Steam yachting, a pleasure for the wealthy, preceded the introduction of the gasoline power boat, with which a new era in yachting has been inaugurated of small, high-powered boats attaining speeds previously unexampled in pleasure craft.

YARDS. The spars, which are placed crosswise of the mast in square rigged ships and to which the sails are fastened. The

middle portions are called the slings, the extremities the yard-arms, the intermediate portions the quarters. Yards are hoisted by halliards and trimmed by braces.

YARDS AND DOCKS, BUREAU OF. Has charge of the docks, buildings, etc., at all navy yards, together with all outdoor appliances, water and sewer systems, care of streets, jurisdiction over watchmen and similar matters relating to the improvement and maintenance of the navy yards.

YAW. To deviate from a steered course by reason of the action of a wave on a vessel or inattention to the helm.

YAWL. An English rig for a small vessel, sometimes seen on yachts in United States waters. It consists of a large mast carrying mainsail and jibs and of a small mast, called the jigger, stepped in the extreme stern. The mainboom is short, and the small after sail gives certain advantages in stays and maneuvers.

YEOMAN. A petty officer in the United States Navy, who performs a part of the clerical work of the ship. One is provided for each section of the accounting and clerical work on a large vessel, and under the direction of the various officers prepare the reports, keep the accounts, etc., of the vessel.

YOKE. An athwartship piece of wood or metal, fitting over the head of a boat's rudder and moved by means of lines in the hands of a person in the stern sheets, who is thus able to steer while facing wholly front.

ZIG-ZAG. An approach in siege operations, so named from its usual shape.