A DICTIONARY OF COMMERCE, AND COMMERCIAL NAVIGATION.

AAM, Aum, or Ahm, a measure for liquids, used at Amsterdam, Antwerp, Hamburgh, Frankfort, &c. At Amsterdam it is nearly equal to 41 English wine gallons, at Antwerp to 36½ ditto, at Hamburgh to 38¼ ditto, and at Frankfort to 39 ditto.

ABANDONMENT, in commerce and navigation, is used to express the abandoning or surrendering of the ship or goods insured to the insurer.

It is held, by the law of England, that the insured has the right to abandon, and to compel the insurers to pay the whole value of the thing insured, in every case "where, by the happening of any of the misfortunes or perils insured against, the voyage is lost, or not worth pursuing, and the projected adventure is frustrated; or where the thing insured is so damaged and spoiled as to be of little or no value to the owner; or where the salvage is very high; or where what is saved is of less value than the freight; or where further expense is necessary, and the insurer will not undertake to pay that expense," &c. — (*Marshall*, Book I. cap. 13. § 1.)

Abandonment very frequently takes place in cases of capture: the loss is then total, and no question can arise in respect to it. In cases, however, in which a ship and cargo are recaptured *within such a time that the object of the voyage is not lost*, the insured is not entitled to abandon. The mere *stranding* of a ship is not deemed of itself such a loss as will justify an abandonment. If by some fortunate accident, by the exertions of the crew, or by any borrowed assistance, the ship be got off and rendered capable of continuing her voyage, it is not a total loss, and the insurers are only liable for the expenses occasioned by the stranding. It is only where the stranding is followed by *shipwreck*, or in any other way renders the ship incapable of prosecuting her voyage, that the insurer can abandon.

It has been decided, that damage sustained in a voyage to the extent of forty-eight per cent. of the value of the ship, did not entitle the insured to abandon. If a cargo be damaged in the course of a voyage, and it appears that what has been saved is less than the amount of freight, it is held to be a total loss. — (*Park on Insurance*, cap. 9.)

When by the occurrence of any of the perils insured against the insured has acquired a right to abandon, he is at liberty either to abandon or not, as he thinks proper. He is in no case bound to abandon; but if he make an election, and resolve to abandon, he must abide by his resolution, and has no longer the power to claim for a partial loss. In some foreign countries specific periods are fixed by law within which the insured, after being informed of the loss, must elect either to abandon or not. In this country, however, no particular period is fixed for this purpose; but the rule is, that if the insured determine to abandon, he must intimate such determination to the insurers within a *reasonable period* after he has

got intelligence of the loss, any unnecessary delay in making this intimation being interpreted to mean that he has decided not to abandon.

No particular form or solemnity is required in giving notice of an abandonment. It may be given either to the underwriter himself, or the agent who subscribed for him.

The effect of an abandonment is to vest all the rights of the insured in the insurers. . The latter become the legal owners of the ship, and as such are liable for all her future outgoings, and entitled to her future earnings. An abandonment, when once made, is irrevocable.

In case of shipwreck or other misfortune, the captain and crew are bound to exert themselves to the utmost to save as much property as possible; and to enable them to do this without prejudice to the right of abandonment, our policies provide that, "in case of any loss or misfortune, the insured, their factors, servants, and assigns, shall be at liberty to sue and labour about the defence, safeguard, and recovery of the goods, and merchandises, and ship, &c. without prejudice to the insurance; to the charges whereof the insurers agree to contribute, each according to the rate and quantity of his subscription."

"From the nature of his situation," says Mr. Serjeant Marshall, "the captain has an implied authority, not only from the insured, but also from the insurers and all others interested in the ship or cargo, in case of misfortune, to do whatever he thinks most conducive to the general interest of all concerned; and they are all bound by his acts. Therefore, if the ship be disabled by stress of weather, or any other peril of the sea, the captain may hire another vessel for the transport of the goods to their port of destination, if he think it for the interest of all concerned that he should do so; or he may, upon a capture, appeal against a sentence of condemnation, or carry on any other proceedings for the recovery of the ship and cargo, provided he has a probable ground for doing so; or he may, upon the loss of the ship, invest the produce of the goods saved in other goods, which he may ship for his original port of destination; for whatever is recovered of the effects insured, the captain is accountable to the insurers. If the insured neglect to abandon when he has it in his power to do so, he adopts the acts of the captain, and he is bound by them. If, on the other hand, the insurers, after notice of abandonment, suffer the captain to continue in the management, he becomes their agent, and they are bound by his acts."

As to the sailors, when a misfortune happens, they are bound to save and preserve the merchandise to the best of their power; and while they are so employed, they are entitled to wages, so far, at least, as what is saved will allow; but if they refuse to assist in this, they shall have neither wages nor reward. In this the Rhodian law, and the laws of Oleron, Wisby, and the Hanse Towns, agree.

The policy of the practice of abandonment seems very questionable. The object of an insurance is to render the insurer liable for whatever loss or damage may be incurred. But this object does not seem to be promoted by compelling him to pay as for a total loss when, in fact, the loss is only partial. The captain and crew of a ship are selected by the owners, are their servants, and are responsible to them for their proceedings. But in the event of a ship being stranded, and so damaged that the owners are entitled to abandon, the captain and crew become the servants of the underwriters, who had nothing to do with their appointment, and to whom they are most probably altogether unknown. It is admitted that a regulation of this sort can hardly fail of leading, and has indeed frequently led, to very great abuses. We, therefore, are inclined to think that abandonment ought not to be allowed where any property is known to exist; but that such property should continue at the disposal of the owners and their agents, and that the underwriters should be liable only for the damage really incurred. The first case that came before the British courts with respect to abandonment was decided by Lord Hardwicke, in 1744. Mr. Justice Buller appears to have concurred in the opinion now stated, that abandonment should not have been allowed in cases where the loss is not total.

For further information as to this subject, see the excellent works of Mr. Serjeant Marshall (book i. cap. 13.); and of Mr. Justice Park (cap. 9.) on the Law of Insurance.

ABATEMENT, or REBATE, is the name sometimes given to a discount allowed for prompt payment; it is also used to express the deduction that is some-

times made at the custom-house from the duties chargeable upon such goods as are damaged. This allowance is regulated by the 6 Geo. 4. c. 107. § 28. No abatement is made from the duties charged on coffee, currants, figs, lemons, oranges, raisins, tobacco, and wine.

ACACIA, or GUM ARABIC, (Fr. *Gomme Arabique;* Ger. *Arabischen Gummi;* It. *Gomma Arabica;* Arab. *Tolh,*) a gum which exudes from the trunk and branches of the *Acacia vera*, a tree growing in Arabia, Barbary, and other places. — It is hard, brittle, transparent, of a pale yellowish hue; insipid and inodorous. It is imported from Barbary and Morocco in large casks. Its specific gravity varies from 1·31 to 1·43. It is often mixed with gum Senegal, which is nearly as pure, but in larger masses, of a darker colour, and more clammy and tenacious.

ACAPULCO, a celebrated sea-port on the western coast of Mexico, in lat. 16° 50½′ N., long. 99° 46′ W. Population uncertain, but said to be from 4,000 to 5,000. The harbour of Acapulco is one of the finest in the world, and is capable of containing any number of ships in the most perfect safety. Previously to the emancipation of Spanish America, a galleon or large ship, richly laden, was annually sent from Acapulco to Manilla, in the Philippine Islands; and at her return a fair was held, which was much resorted to by strangers. But this sort of intercourse is no longer carried on, the trade to Manilla and all other places being now conducted by private individuals. The exports consist of bullion, cochineal, cocoa, wool, indigo, &c. The imports principally consist of cotton goods, hardware, articles of jewellery, raw and wrought silks, spices, and aromatics. Acapulco is extremely unhealthy; and though it be the principal port on the west coast of Mexico, its commerce is not very considerable. The navigation from Acapulco to Guyaquil and Callao is exceedingly tedious and difficult, so that there is but little intercourse between Mexico and Peru. The monies, weights, and measures are the same as those of Spain; for which see CADIZ.

ACIDS, are a class of compounds which are distinguished from all others by the following properties. They are generally possessed of a very sharp and sour taste: redden the infusions of blue vegetable colours; are often highly corrrosive, and enter into combination with the alkalies, earths, and metallic oxides; forming compounds in which the characters of the constituents are entirely destroyed, and new ones produced differing in every respect from those previously existing. The quality or strength of an acid is generally ascertained, either by its specific gravity, which is found by means of the hydrometer, if the acid be liquid, or by the quantity of pure and dry subcarbonate of potass or soda, or of carbonate of lime (marble), which a given weight of the acid requires for its exact neutralisation. This latter process is termed Acidimetry, or the ascertaining the quantity of *real* acid existing in any of the liquid or crystallised acids.

The principal acids at present known are, the Acetic, Benzoic, Boracic, Bromic, Carbonic, Citric, Chloric, Cyanic, Fluoric, Ferroprussic, Gallic, Hydrobromic, Hydriodic, Iodic, Lactic, Malic, Margaric, Meconic, Muriatic or Hydrochloric, Nitrous, Nitric, Oleic, Oxalic, Phosphoric, Prussic or Hydrocyanic, Purpuric, Saccholactic, Suberic, Sulphurous, Sulphuric, Tartaric, Uric, and many others which it would be superfluous to detail. It is the most important only of these, however, that will be here treated of, and more particularly those employed in the arts and manufactures.

Acetic or pyroligneous acid. — This acid, in its pure and concentrated form, is obtained from the fluid matter which passes over in distillation, when wood is exposed to heat in close iron cylinders. This fluid is a mixture of acetic acid, tar, and a very volatile ether; from these the acid may be separated, after a second distillation, by saturating with chalk, and evaporating to dryness; an acetate of lime is thus procured, which, by mixture with sulphate of soda (glauber salt), is decomposed, the resulting compounds being an insoluble sulphate of lime, and a very soluble acetate of soda; these are easily separated from each other by solution in water and filtration; the acetate of soda being obtained in the crystalline form by evaporation. From this, or the acetate of lime, some manufacturers employing the former, others the latter, the acetic acid is obtained by distillation with sulphuric acid (oil of vitriol); as thus procured, it is a colourless, volatile fluid, having a very pungent and refreshing odour, and a strong acid taste. Its strength should be ascertained by the quantity of marble required for its neutralisation, on account of its specific gravity not giving a correct indication of its strength. It is employed in the

preparation of the acetate of lead (sugar of lead), in many of the pharmaceutical compounds, and also as an antiseptic.

Vinegar is an impure and very dilute acetic acid, obtained by exposing either weak wines or infusions of malt to the air and a slow fermentation; it contains besides the pure acid, a large quantity of colouring matter, some mucilage, and a little spirit; from these it is readily separated by distillation. The impurities with which this distilled vinegar is sometimes adulterated, or with which it is accidentally contaminated, are oil of vitriol, added to increase the acidity, and oxides of tin or copper, arising from the vinegar having been distilled through tin or copper worms. These may be easily detected; the oil of vitriol by the addition of a little solution of muriate of barytes to the distilled vinegar, which, should the acid be present, will cause a dense white precipitate; and the oxides of tin or copper, by the addition of water impregnated with sulphuretted hydrogen. Vinegar is employed in many culinary and domestic operations, and also very largely in the manufacture of the carbonate of lead (white lead).

Benzoic acid—exists naturally, formed in the gum benzoin, and may be procured either by submitting the benzoin in fine powder to repeated sublimations, or by digesting it with lime and water, straining off the clear solution, and adding muriatic acid, which enters into combination with the lime, and the benzoic acid, being nearly insoluble in water, falls as a white powder; this may be further purified by a sublimation. Benzoic acid is of a beautiful pearly white colour when pure, has a very peculiar aromatic odour, and an acrid, acid, and bitter taste; it is used in making pastiles and perfumed incense. This acid also occurs in the balsams of Tolu and Peru and in the urine of the horse and cow.

Boracic acid—is found in an uncombined state in many of the hot springs of Tuscany, as also at Sasso in the Florentine territory, from whence it has received the name of Sassolin. In Thibet, Persia, and South America, it occurs in combination with soda, and is imported from the former place into this country in a crystalline form, under the name of Tincal. These crystals are coated with a rancid, fatty substance, and require to be purified by repeated solutions and crystallisations; after which it is sold under the appellation of borax (bi-borate of soda); from a hot solution of this salt the boracic is readily obtained, by the addition of sulphuric acid in slight excess; sulphate of soda is formed, and the boracic acid crystallises as the solution cools. When pure, these crystals are white, and have an unctuous greasy feel; they are soluble in alcohol, communicating a green tinge to its flame; when fused it forms a transparent glass, and has been found by Mr. Faraday to unite with the oxide of lead, producing a very uniform glass, free from all defects, and well adapted for the purpose of telescopes and other astronomical instruments. Borax is much employed in the arts, particularly in metallurgic operations as a flux, also in enamelling, and in pharmacy.

Carbonic acid.—This acid occurs very abundantly in nature, combined with lime, magnesia, barytes, aerial acid, fixed air, mephitic acid; from any of these it is easily separated by the addition of nearly any of the other acids. In its uncombined form, it is a transparent, gaseous fluid, having a density of 1·53, atmospheric air being unity; it is absorbed to a considerable extent by water, and when the water is rendered slightly alkaline by the addition of carbonate of soda, and a large quantity of gas forced into it by pressure, it forms the well known refreshing beverage, soda water. This gas is also formed in very large quantities during combustion, respiration and fermentation. Carbonic acid gas is destructive of animal life and combustion, and from its great weight accumulates in the bottoms of deep wells, cellars, caves, &c., which have been closed for a long period, and numerous fatal accidents arise frequently to persons entering such places incautiously; the precaution should always be taken of introducing a lighted candle prior to the descent or entrance of any one; for should the candle be extinguished, it would be dangerous to enter until properly ventilated. The combinations of carbonic acid with the alkalies, earths, and metallic oxides are termed carbonates.

Citric acid—exists in a free state, in the juice of the lemon, lime, and other fruits, combined however with mucilage, and sometimes a little sugar, which renders it, if required to be preserved for a long period, very liable to ferment; on this account, the crystallised citric acid is to be preferred. It is prepared by saturating the lemon juice with chalk: the citric acid combines with the lime, forming an insoluble compound, while the carbonic acid is liberated; the insoluble citrate, after being well washed, is to be acted upon by dilute sulphuric acid, which forms sulphate of lime, and the citric acid enters into solution in the water; by filtration and evaporation the citric acid is obtained in colourless transparent crystals. The chief uses to which it is applied are as a preventive of sea scurvy, and in making refreshing acidulous or effervescing drinks; for which latter purpose it is peculiarly fitted from its very pleasant flavour.

Fluoric acid is found in the well known mineral fluor spar in combination with lime; from which it is procured in the liquid form, by distillation with dilute sulphuric acid in a leaden or silver retort; the receiver should be of the same material as the retort, and kept cool by ice or snow.

This acid is gaseous in its pure form, highly corrosive, and intensely acid; it is rapidly absorbed by water, communicating its properties to that fluid. Its chief use is for etching on glass, which it corrodes with great rapidity. For this purpose a thin coating of wax is to be melted on the surface of the glass, and the sketch drawn by a fine hard-pointed instrument through the wax, the liquid acid is then poured on it, and after a short time, on the removal of the acid and the coating, an etching will be found in the substance of the glass. A very excellent application of this property, possessed by fluoric acid, is in the roughing the shades for table lamps. All the metals, except silver, lead, and platina, are acted upon by this acid.

Gallic acid. — The source from which this acid is generally obtained is the nut gall, a hard protuberance produced on the oak by the puncture of insects. The most simple method of procuring the acid in its pure form, is to submit the galls in fine powder to sublimation in a retort, taking care that the heat be applied slowly and with caution; the other processes require a very long period for their completion. When pure, gallic acid has a white and silky appearance, and a highly astringent and slightly acid taste. The nut galls, which owe their properties to the gallic acid they contain, are employed very extensively in the arts, for dyeing and staining silks, cloths, and woods of a black colour; this is owing to its forming with the oxide of iron an intense black precipitate. Writing ink is made on the same principle: a very excellent receipt of the late Dr. Black's is, to take 3 oz. of the best Aleppo galls in fine powder, 1oz. sulphate of iron (green vitriol), 1oz. logwood finely rasped, 1oz. gum arabic, one pint of the best vinegar, one pint of soft water, and 8 or 10 cloves; in this case the black precipitate is kept suspended by the gum.

Hydriodic acid, — a compound of iodine and hydrogen, in its separate form is of very little importance in the arts; its combinations with potass, soda, and other of the metallic oxides, will be treated of hereafter.

Malic acid — exists in the juices of many fruits, particularly the apple, as also in the berries of the service and mountain ash.

Meconic acid — is found in opium, in combination with morphia, forming the meconate of morphia, on which the action of opium principally depends.

Muriatic acid, or spirits of salts. — This acid (the hydrochloric of the French chemists) is manufactured from the chloride of sodium (dry sea salt), by the action of sulphuric acid (oil of vitriol). The most economical proportions are 20 pounds of fused salt, and 20 pounds of oil of vitriol previously mixed with an equal weight of water; these are placed in an iron or earthen pot, to which an earthen head and receiver are adapted, and submitted to distillation; the muriatic acid passes over in the vaporous form, and may be easily condensed. The liquid acid thus obtained should have a specific gravity of 1.17, water being equal to 100; it has a strong acid taste, and a slight yellow colour; this is owing to a small quantity of oxide of iron. By re-distillation in a glass retort at a low temperature, it may be obtained perfectly pure and colourless. It sometimes contains a little sulphuric acid; this is detected by a little solution of muriate of barytes. Muriatic acid, in its uncombined state, is an invisible elastic gas, having a very strong affinity for water, that fluid absorbing, at a temperature of 40° Fahrenheit, 480 times its volume, and the resulting liquid acid has a density of 121. So great is this attraction for water, that when the gas is liberated into the air, it combines with the moisture always present in that medium, forming dense white vapours. Its combinations with the alkalies, &c. are termed muriates; those of the greatest importance are, the muriates of tin, ammonia, barytes, and sea salt. The test for the presence of muriatic acid in any liquid is the nitrate of silver (lunar caustic), which causes a curdy white precipitate.

Nitric acid, or aquafortis. — This, which is one of the most useful acids with which the chemist is acquainted, is prepared by acting upon saltpetre (nitre or nitrate of potass), with oil of vitriol: the proportions best suited for this purpose are, three parts by weight of nitre and two of oil of vitriol; or 100 nitre, and 60 oil of vitriol, previously diluted with 20 of water; either of these proportions will produce a very excellent acid. When submitted to distillation, which should be conducted in earthen or glass vessels, the nitric acid passes over in the form of vapour, and a bi-sulphate potass (sal mixum), remains in the retort.

Nitric acid of commerce has usually a dark orange red colour, giving off copious fumes, and having a specific gravity of 150, compared with water as 100. Strongly acid and highly corrosive, it may be obtained perfectly colourless by a second distillation, rejecting the first portion that passes over. It is much employed in the arts, for etching on copper-plates for engraving; also, for the separation of silver from gold, in the process of quartation. In pharmacy and surgery it is extensively used, and is employed for destroying contagious effluvia. Combined with muriatic acid, it forms aqua regia (nitro-muriatic acid), used as a solvent for gold, platina, &c. This acid is frequently contaminated with the muriatic and sulphuric acids; these may be detected by the following methods. A portion of the suspected acid should be diluted with three or four times

its volume of distilled water, and divided into two glasses; to one of which nitrate of silver (lunar caustic in solution) is to be added, and to the other, nitrate of barytes: if muriatic be present, a white curdy precipitate will be thrown down by the former; and if sulphuric, a white granular precipitate by the latter.

Oxalic acid — occurs in combination with potass as binoxalate of potass in the different varieties of sorrel, from whence the binoxalate of potass has been termed salt of sorrel. This acid is usually prepared by the action of nitric acid upon sugar, evaporating the solution, after the action has ceased, to the consistence of a syrup, and re-dissolving and re-crystallising the crystals which are thus procured.

It is sold in small white acicular crystals, of a strongly acid taste and highly poisonous, and sometimes in its external appearance bears a strong similarity to Epsom salts (sulphate of magnesia), which it has been unfortunately frequently mistaken for. It is instantly distinguished from Epsom salts by placing a small crystal upon the tongue; when its strong acid taste, compared with the nauseous bitter of the sulphate of magnesia, will be quite a sufficient criterion. In cases of poisoning however by this acid, lime, or chalk, mixed with water to form a cream, should be immediately administered, the combinations of oxalic acid with these substances being perfectly inert. It is employed in removing ink stains, iron moulds, &c., from linen and leather; the best proportions for these purposes are: 1oz. of the acid to a pint of water. The most delicate test of the presence of oxalic lead is, a salt of lime or lime water, with either of which it forms a white precipitate, insoluble in water, but soluble in acids. Its combinations are termed oxalates.

Phosphoric acid — is of very little importance in a commercial point of view, except a forming with lime the earth of bones (phosphate of lime.) It is prepared by heating bones to whiteness in a furnace; from this phosphoric acid is obtained by the action of sulphuric acid, still combined, however, with a small quantity of lime. The action of nitric acid upon phosphorus, the latter being added gradually and in small pieces, yields this acid in a state of purity; its combinations are termed phosphates.

Prussic acid, or hydrocyanic acid. — This acid, which is the most virulent and poisonous acid known, is contained in peach blossoms, bay leaves, and many other vegetable productions, which owe their peculiar odour to the presence of prussic acid. For the purposes of medicine and chemistry, this acid is prepared either by distilling one part of the cyanuret of mercury, one part of muriatic acid of specific gravity 1·15, and six parts of water, six parts of prussic acid being collected; or, by dissolving a certain weight of cyanuret of mercury, and passing a current of sulphuretted hydrogen through the solution, until the whole of the mercury shall be precipitated; if an excess of sulphuretted hydrogen should be present, a little carbonate of lead (white lead), will remove it; on filtering, a colourless prussic acid will be obtained. By the first process, which is the one followed at Apothecaries' Hall, the acid has a density of 995, water being equal to 1000; by the latter, it may be procured of any required strength, depending on the quantity of cyanuret mercury dissolved. The best test for the presence of this acid is, first to add a small quantity of the protosulphate of iron (solution of green vitriol), then a little solution of potassa, and lastly diluted sulphuric acid; if prussic acid be present, prussian blue will be formed. Its combinations are called prussiates or hydrocyanates; when in its concentrated form, it is so rapid in its effects that large animals have been killed in the short space of 80 seconds, or from a minute to a minute and a half.

Sulphurous acid — is formed whenever sulphur is burnt in atmospheric air: it is a suffocating and pungent gas, strongly acid, bleaches vegetable colours with great rapidity, and arrests the process of vinous fermentation. For these purposes it is therefore very much employed, especially in bleaching woollen goods and straw. Fermentation may be immediately arrested by burning a small quantity of sulphur in casks, and then racking off the wine while still fermenting into them; this frequently gives the wine a very unpleasant taste of sulphur, which is avoided by the use of sulphite of potass, made by impregnating a solution of potass with sulphurous acid gas.

Sulphuric acid, or oil of vitriol — called oil of vitriol from its having been formerly manufactured from green vitriol (sulphate of iron). In some parts of the Continent this process is still followed. The method generally adopted in this country, is to introduce nine parts sulphur, intimately mixed with one part of nitre, in a state of active combustion, into large leaden chambers, the bottoms of which are covered with a stratum of water. Sulphurous and nitrous acid gases are generated, which entering into combination form a white crystalline solid, which falls to the bottom of the chamber; the instant that the water comes in contact with it, this solid is decomposed with a hissing noise and effervescence, sulphuric acid combines with the water, and nitrous gas is liberated, which combining with oxygen from the air of the chamber, is converted into nitrous acid gas, again combines with sulphurous acid gas, and again falls to the bottom of the chamber; this process continues as long as the combustion of the sulphur is kept up, or as long as atmospheric air remains in the chamber; the nitrous

acid merely serving as a means for the transference of oxygen from the atmosphere to the sulphurous acid, to convert it into sulphuric acid. The water is removed from the chamber when of a certain strength, and replaced by fresh. These acid waters are then evaporated in leaden boilers, and finally concentrated in glass or platina vessels. As thus manufactured, sulphuric acid is a dense oily fluid, colourless, intensely acid, and highly corrosive, and has a specific gravity of 1846, water being equal to 1000. This acid is the most important with which we are acquainted; it is employed in the manufacture of the nitric, muriatic, acetic, phosphoric, citric, tartaric, and many other acids; also in the preparation of chlorine, for the manufacture of the bleaching powder (oxymuriate of lime or chloride of lime), for the preparation of sulphate of mercury, in the manufacture of calomel and corrosive sublimate, and in innumerable other chemical manufactures. In the practice of physic it is also very much employed. It usually contains a little oxide of lead, which is readily detected by diluting the acid with about four times its volume of water, and allowing the sulphate of lead to subside. Its combinations are denominated sulphates. The fuming sulphuric acid, as manufactured at Nordhausen, contains only one half the quantity of water in its composition.

Tartaric acid. — This acid is procured from the cream of tartar (bi-tartrate of potass), obtained by purifying the crust which separates during the fermentation of wines by solution and crystallisation. When this purified bi-tartrate is dissolved, and lime or carbonate of lime added, an insoluble tartrate of lime falls, which after washing should be acted upon by sulphuric acid; sulphate of lime is thus formed, and the tartaric acid enters into solution, and may be obtained by evaporation and crystallisation. It is employed very much in the arts, in calico-printing, as also in making effervescing draughts and powders in pharmacy.

Uric acid — is an animal acid of very little importance, except in a scientific point of view: it exists in the excrement of serpents, to the amount of 95 per cent, and forms the basis of many of the urinary calculi and gravel.

N.B. *This article, and that on alkalies, has been furnished by an able practical chemist.*

ACORNS (Ger. *Eicheln, Eckern;* Du. *Akers;* Fr. *Glands;* It. *Ghiande;* Sp. *Bellotas;* Rus. *Schedudii;* Lat. *Glandes*), the seed or fruit of the oak. Acorns formed a part of the food of man in early ages, and frequent allusion is made in the classics to this circumstance (*Virgil, Georg.* lib. i. line 8.; *Ovid, Met.* lib. i. line 106., &c.). In some countries they are still used, in periods of scarcity, as a substitute for bread. With us they are now rarely used, except for fattening hogs and poultry. They are said to make, when toasted, with the addition of a little fresh butter, one of the best substitutes for coffee. Their taste is astringent and bitter.

ACORUS (*calamus aromaticus*), sweet flag, or sweet rush, a red or knotty root, about the thickness of the little finger, and several inches long. "The root of the sweet flag has a pleasant aromatic odour, similar to that of a mixture of cinnamon and allspice. The taste is warm, pungent, bitterish, and aromatic." (*Thomson's Dispensatory.*) The root, which is used in medicine, was formerly imported from the Levant, but it is now obtained of an equally good quality from Norfolk.

ACORUS, blue coral. The true acorus of this kind is very rare. Some of it is, however, found on the coasts of Africa, particularly from Rio del Re to the river of the Camarones. It grows in the form of a tree, in a rocky bottom.

ACRE, a measure of land. The Imperial or standard English acre contains 4 roods, each rood 40 poles or perches, each pole 272¼ square feet; and consequently each acre 43,560 square feet. Previously to the introduction of the new system of weights and measures by the act 5 Geo. IV. cap. 74. the acres in use in different parts of England varied considerably from each other and from the standard acre; but these customary measures are now abolished. The Scotch acre contains four roods, each rood 40 falls, and each fall 36 ells; the ell being equal to 37·06 Imperial inches. Hence the Imperial is to the Scotch acre nearly as 1 to 1¼, one Scotch acre being equal to 1·261 Imperial acres. The Irish acre is equal to 1 acre 2 roods and 19$\frac{21}{121}$ poles, 30¼ Irish being equal to 49 Imperial acres.

ADAMANTINE SPAR, (*spath adamantine, corundum, corivindum,*) a stone found in India and China; crystallised, or in a mass. The Indian is the best. Its colour is grey, with shades of green and light brown; its fracture is foliated and sparry, sometimes vitreous. It is brittle, and of such hardness as to cut rock crystal and most of the gems. Specific gravity from 3·71 to 4·18. The Chi-

nese variety differs from the Indian in containing grains of magnetic iron ore disseminated through it; in being generally of a darker colour, and having externally a *chatoyant* lustre: its specific gravity is greater, and its hardness somewhat inferior. There are two varieties known of corundum in mass. That from Bengal is of a purplish hue: specific gravity 3·876. It is called by the natives *corone*. That from the coast of Coromandel is a foliated texture, and seems to be confusedly crystallised: its specific gravity is 2·785. This stone is employed for polishing gems.

ADJUSTMENT, in commerce and navigation, the settlement of a loss incurred by the insured.

In the case of a total loss, if the policy be an *open* one, the insurer is obliged to pay the goods according to their *prime cost*, that is, the invoice price, and all duties and expenses incurred till they are put on board, including the premium of insurance. Whether they might have arrived at a good or a bad market, is held by the law of England to be immaterial. The insurer is supposed to have insured a constant and not a variable sum; and in the event of a loss occurring, the insured is merely to be put into the same situation in which he stood before the transaction began. If the policy be a *valued* one, the practice is to adopt the valuation fixed in it in case of a total loss, unless the insurers can show that the insured had a colourable interest only, or that the goods were greatly over-valued. In the case of all partial losses, the value of the goods must be proved.

"The nature of the contract between the insured and insurer is," says Mr. Justice Park, "that the goods shall come safe to the port of delivery; or, if they do not, that the insurer will indemnify the owner to the amount of the value of the goods stated in the policy. Wherever then the property insured is lessened in value by damage received at sea, justice is done by putting the merchant in the same condition (relation being had to the prime cost or value in the policy) in which he would have been had the goods arrived free from damage; that is, by paying him such proportion of the prime cost or value in the policy as corresponds with the proportion of the diminution in value occasioned by the damage. The question then is, how is the proportion of the damage to be ascertained? It certainly cannot be by any measure taken from the prime cost; but it may be done in this way. Where any thing, as a hogshead of sugar, happens to be spoiled, if you can fix whether it be a third, a fourth, or a fifth worse, then the damage is ascertained to a mathematical certainty. How is this to be found out? Not by any price at the port of shipment, but it must be at the port of *delivery*, when the voyage is completed and the whole damage known. Whether the price at the latter be high or low, it is the same thing; for in either case it equally shows whether the damaged goods are a third, a fourth, or a fifth worse than if they had come sound; consequently, whether the injury sustained be a third, fourth, or fifth of the value of the thing. And as the insurer pays the whole prime cost if the thing be wholly lost, so if it be only a third, fourth, or fifth worse, he pays a third, fourth, or fifth, not of the value for which it is sold, *but of the value stated in the policy*. And when no valuation is stated in the policy, the invoice of the cost with the addition of all charges, and the premium of insurance, shall be the foundation upon which the loss shall be computed."

Thus, suppose a policy to be effected on goods, the prime cost of which, all expenses included, amounts to 1000*l.*; and suppose further, that these goods would, had they safely reached the port of delivery, have brought 1,200*l.*, but that, owing to damage they have met with in the voyage, they only fetch 800*l.*; in this case it is plain, inasmuch as goods that would otherwise have been worth 1,200*l.* are only worth 800*l.*, that they have been deteriorated *one third*; and hence it follows, conformably to what has been stated above, that the insurer must pay one third of their *prime cost*, (1,000*l.*) or 333*l.* 6*s.* 8*d.* to the insured.

In estimating the value of goods at the port of delivery, the *gross* and not the *nett* proceeds of the sales are to taken as the standard.

A ship is valued at the sum she is worth at the time she sails on the voyage insured, including the expenses of repairs, the value of her furniture, provisions, and stores, the money advanced to the sailors, and, in general, every expense of the outfit, to which is added the premium of insurance.

When an adjustment is made, it is usual for the insurer to indorse upon the policy "adjusted this loss at (so much) per cent." payable in a given time, generally a month, and to sign it with the initials of his name. This is considered as

a note of hand, and as such is *primâ facie* evidence of the debt not to be shaken, but by proving that fraud was used in obtaining it, or that there was some misconception of the law or the fact upon which it was made. See, for a further discussion of this subject, the article MARINE INSURANCE, *Park on the Law of Insurance*, (cap. 6.) and *Marshall* (book i. cap. 14).

ADMEASUREMENT. See TONNAGE.

ADVANCE implies money paid before goods are delivered, or upon consignment. It is usual with merchants to advance from one half to two thirds of the value of goods on being required to do so, on receiving invoice, bill of lading, and orders to insure them from sea risk, &c. &c.

ADVERTISEMENT, in its general sense, is any information as to any fact or circumstance that has either occurred, or is expected to occur; but, in a commercial sense, it is understood to relate only to specific intimations with respect to the sales of articles, the formation and dissolution of partnerships, bankruptcies, meetings of creditors, &c. Until this year, a duty of 3*s.* 6*d.* was charged upon every advertisement, long or short, inserted in the Gazette, or in any other newspaper; and of 5*s.* 6*d.* on every advertisement inserted in any literary work published in parts or numbers. This duty has been so very oppressive as to add full 100 per cent. to the cost of advertising, for the charge (exclusive of the duty) for inserting an advertisement of the ordinary length in the newspapers rarely exceeds 3*s.* or 4*s.* According, however, to the new scale, the duty is to be only 1*s.* on advertisements of ten lines or under, and 2*s.* 6*d.* on those of greater length. The duty produced in 1829, 153,636*l.* 12*s.* 11*d.* in Great Britain, and 14,985*l.* 6*s.* in Ireland. We have little doubt that the reduced duty will yield a larger sum. For an account of the operation of the duty on literature, see BOOKS.

ADVICE, is usually given by one merchant or banker to another *by letter*, informing him of the bills or drafts drawn on him, with all particulars of date, or sight, the sum, to whom made payable, &c. Where bills appear for acceptance or payment, they are frequently refused to be honoured for *want of advice*. It is also necessary to give advice as it prevents forgeries: if a merchant accept or pay a bill for the honour of any other person, he is bound to advise him thereof, and this should always be done under *an act of honour* by a notary public.

AGARIC, a fungus growing on the trunks of trees. That produced in the Levant from the larch is accounted the best. It is brought into the shops in irregular pieces of different magnitudes, of a chalky whiteness, and very light. The best is easily cut with a knife, is friable between the fingers, and has no hard, or gritty, or coloured veins. It is used in medicine and dyeing. (*Lewis. Mat. Med.*)

AGATE. (Ger. *Achat;* Du. *Achaat;* Fr. *Agate;* It. *Agata;* Rus. *Agat;* Lat. *Achates.*) A genus of semi-pellucid gems, so called from the Greek αχατες, from its being found on the banks of the river of that name in Italy. It is never wholly opaque like jasper, nor transparent as quartz-crystal; it takes a very high polish, and its opaque parts usually present the appearance of dots, eyes, veins, zones, or bands. Its colours are yellowish, reddish, blueish, milk-white, honey-orange, or ochre-yellow, flesh-blood, or brick red, reddish brown, violet blue, and brownish green. It is found in irregular rounded nodules, from the size of a pin's head to more than a foot in diameter. The lapidaries distinguish agates according to the colour of their ground; the finer semi-transparent kinds are called oriental. The most beautiful agates found in Great Britain are commonly known by the name of *Scotch pebbles*, and are met with in different parts of Scotland, but principally on the mountain of Cairngorm; whence they are sometimes termed cairngorms. The German agates are the largest. Some exquisitely fine ones have been brought from Siberia and Ceylon. They are found in great plenty at the eastern extremity of the settlement of the Cape of Good Hope; and they are still met with in Italy.

AGENT. See FACTOR.

AGIO, a term used to express the difference between metallic and paper money; or the difference between one sort of metallic money and another.

ALABASTER. (Ger. *Alabaster;* It. *Alabastro;* Fr. *Albâtre;* Rus. *Alabastr;* Lat. *Alabastrites.*) A kind of stone resembling marble, but softer. Under this name are confounded two minerals, the *gypseous* and *calcareous* alabasters; they are wholly distinct from each other when pure, but in some of the varieties are occasionally mixed together. The former, when of a white or yellowish, or greenish colour,

semi-transparent, and capable of receiving a polish, is employed by statuaries. It is very easily worked, but is not susceptible of a polish equal to marble. Calcareous alabaster is heavier than the former; it is not so hard as marble, but is notwithstanding susceptible of a good polish, and is more used in statuary. The statuaries distinguish alabaster into two sorts, the common and oriental. Spain and Italy yield the best alabaster. That produced at Montania, in the papal states, is in the highest esteem for its beautiful whiteness. Inferior sorts are found in France and Germany. Alabaster is wrought into tables, vases, statues, chimney pieces, &c.

ALCOHOL, ARDENT SPIRIT. (Fr. *Esprit de Vin*; Ger. *Weingeist*; Ital. *Spirito ardente, Spirito di Vino, Acquarzente.*) Alcohol is the name given to the *pure spirit* obtainable by distillation, and subsequent rectification, from all liquors that have undergone the vinous fermentation, and from none but such as are susceptible of it. It is a light, transparent, colourless liquor, of a sharp, penetrating, agreeable smell, and a warm stimulating taste. It is quite the same, whether obtained from brandy, wine, whiskey, or any other fluid which has been fermented. The specific gravity of alcohol when perfectly pure is from ·792 to ·800, that of water being 1,000; but the strongest spirit afforded by pure distillation is about ·820; alcohol of the shops is about ·835 or ·840. Alcohol cannot be frozen by any known degree of cold. It boils at 174°. It is the only dissolvent of many resinous substances; and is extensively used in medicine and the arts. (*Drs. A. T. Thomson, Ure*, &c.)

ALE and BEER, well known and extensively used fermented liquors, the principle of which is extracted from several sorts of grain, but most commonly from barley, after it has undergone the process termed malting.

1. *Historical Notice of Ale and Beer.* — The manufacture of ale or beer is of very high antiquity. Herodotus tells us, that owing to the want of wine, the Egyptians drank a liquor fermented from barley (lib. ii. cap. 77.). The use of it was also very anciently introduced into Greece and Italy, though it does not appear to have ever been very extensively used in these countries. Mead, or metheglin, was probably the earliest intoxicating liquor known in the North of Europe. Ale or beer was, however, in common use in Germany in the time of Tacitus (*Morib. Germ.* cap. 23.). "All the nations," says Pliny, "who inhabit the West of Europe have a liquor with which they intoxicate themselves, made of corn and water (*fruge madida*). The manner of making this liquor is somewhat different in Gaul, Spain, and other countries, and it is called by many various names; but its nature and properties are every where the same. The people of Spain, in particular, brew this liquor so well that it will keep good for a long time. So exquisite is the ingenuity of mankind in gratifying their vicious appetites, that they have thus invented a method to make water itself intoxicate." (*Hist. Nat.* lib. xiv. cap. 22.) — The Saxons and Danes were passionately fond of beer; and the drinking of it was supposed to form one of the principal enjoyments of the heroes admitted to the hall of Odin. (*Mallet's Northern Antiquities*, cap. 6, &c.) — The manufacture of ale was early introduced into England. It is mentioned in the laws of Ina, King of Wessex; and is particularly specified among the liquors provided for a royal banquet in the reign of Edward the Confessor. It was customary in the reigns of the Norman princes to regulate the price of ale; and it was enacted, by a statute passed in 1272, that a brewer should be allowed to sell two gallons of ale for a penny in cities, and three or four gallons for the same price in the country.

The use of hops in the manufacture of ale and beer seems to have been a German invention. They were used in the breweries of the Netherlands in the beginning of the fourteenth century; but they do not seem to have been introduced into England till two hundred years afterwards, or in the beginning of the sixteenth century. In 1530 Henry VIII. enjoined brewers not to put hops into their ale. It would, however, appear that but little attention was paid to this order; for in 1552 hop plantations had begun to be formed. (*Beckmann's Hist. Invent.* vol. iv. pp. 336—341. Eng. ed.) — The addition of hops renders ale more palatable, by giving it an agreeable bitter taste, while, at the same time, it fits it for being kept much longer without injury. Generally speaking, the English brewers employ a much larger quantity of hops than the Scotch. The latter are in the habit of using, in brewing the fine Edinburgh ale, from a pound to a pound and a half of hops for every bushel of malt.