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EXPLANATION OF CHEMICAL TERMS.

ACIDS are substances of a sour taste. The acids are very numerous—their most distinguishing properties are—1st. They change to red those colours of vegetable which the alkalses change to green. 2d. They combine withth alkalies, and thereby form various kinds of salt.

Some of the acids are met with in a solid state—others in a fluid state, as vinegar—and others in a gaseous state. Of the latter is Carbonic Acid, which reqnires a more particular description.

The carbonic acid, when uncombined with any other substance, is always met with in a state of gas and hence it is called carbonic acid gas It is the same substance which was formerly called fixed air. It exists in a small proportion in the atmosphere. It destroys life and extinguishes the light of a candle when immersed in it. It is disengaged largely from liquors, such as Beer, Cider, or Wine, when in the act of fermentation.—It is this gas which produces the many unhappy accidents in some subterraneous caverns, in closed cellars, containing large quantities of fermenting liquore, in some deep wells, and in bedchambers warmed by burning charcoal in pans.

This acid combines with a great variety of substances, which are then called carbonates. It exists in marble, chalk and limestone, in different proportions, all of which are called carbonates of lime, and the burning of limrstone is for no other purpose but to expel the carbonic acid, which is done by heat, in which operation the limestone loses half its weight.

The alkalies attract it from the atmosphere. It in present in pot and pearl ashes, from which it is disengaged by the addition of a stronger acid, as every one may have seen in throwing pearl-ash into cider, as some people do to drink in the morning.—The acid in the cider in uniting with the pearlash displaces the carbonic acid, which rises in the form of gas through the liquor, producing much foam with a hissing noise, called effereséence.

ATMOSPHERIC AIR, or the air which surrounds this earth, is a mixture of two different kinds of air, called oxygen and azote. It likewise contains a small proportion of carbonic acid gas, a substance already described.

It is well known that no animal will live nor fire burn without air, but it is that part of the air called *oxygen* which is necessary for both. It is this which supports life and combustion; and where there is no oxygen an animal will die and a light will be extinguished as suddenly as where there is no air at all.

Oxygen gas, (for you must remember that every substance in the form of air is called a gas) is a very wonderful substance. It unites with iron when exposed to the atmosphere for any length of time, and converts it into rust; it unites with melted pewter or lead, and converts them into dross or oxyde, as it is called; it unites with another kind of gas called hydrogen, and forms water. Yes, what perhaps it may surprise you to know, water is not a simple as most people suppose, but a compound substance composed of oygen and hydrogen gas. Both its decomposition and its composition are common experiments in every chemical room

Oxygen likewise is one of the ingredients in the composition of acids, all of which are compound substances; hence, oxygen has been called the great acidifying principle Thus, it unites with sulphur in the act of combustion, and forms sulphuric acid—oil of vitrol, as it was formerly called, it unites with carbon or charcoal, when burning, and forms carbonic acid gas, already described; and hence we see how the carbonic acid gas, which sometimes proves fatal in close shut bedchambers, heated with burning charcoal is produced. The oxygen in the atmosphere unites with the carbon or charcoal when burning, and thus produces this gas, so deleterious to life, when breathed without a due proportion of atmospheric air mixed with it.

These four elementary substances—oxygen hydrogen, azote and carbon, possess a very wonderful agency in nature, and every one who has any wish to look beyond the mere surface of things, cannot but be gratified in knowing more about them. It is important the character and distinguishing properties of each should be well understood. These are given in the following concise definitions which are not to be forgotten viz:—

Oxygen is one of the constituent principles of water; it is very inflammable, and was formerly called inflammable air. It is the lighest of all, ponderable substances—This is the substance generally used in filling air-ballons It is readily obtained by the decomposition of water. Vegetables and animals also in a state of decay and putrefaction, afford it, and it is evolved from various mines and volcanes.

Carbon is the pure part of charcoal. It forms a large proportion of all vegetables;—it exists also in animals, but its quantity is small.

Carbonic Acid is a combination of carbon and oxygen in the proportion of 18 parts carbon to 82 parts oxygen.

The Primitive Earths are four, viz: clay, sand, lime and magnesia.

These are the only earths which enter into the composition of soil: they enter also in very minute portions into the organization of plants. Sand and clay are by far the most abundant; lime is required but in small proportions; every soil, however, is defective without it. Magnesia is found but in few soils; its place is well supplied by time; its entire absence, therefore, is not considered any defect.

Burning Stubble Ground.—In conversation with a farmer, the other day he stated that he thought he had received much benefit from burning over a piece of stubble ground. It caught fire by account, from some bushes that he had cut and was burning; and the field, being dry, the fire run over it and burned the stubble pretty clean. It was sowed the spring following to grain of some sort, (we did not learn what) and it was found that the ashes were a good dressing, and improved the crops of that year and the grass which followed.

The plan of burning stubble was practised much in olden times. Old Virgil said or sung about it more than eighteen hundred years ago:

"Long practice has the sure improvement found,
With kindling fires to burn the barren ground:
When light the stubble, to the flames resigned,
Is driven along, and crackles in the wind"

Beatson, in his new system of cultivation, mentions the practice of a Mr. Curtis, of Lynn, Norfolk (England,) as follows;—His stubble was shorn and left about *eighteen* inches high, and so completely set fire to, as to consume every particle that appeared upon the surface. This operation, says he, destroyed every weed and seed that grew, leaving the surface entirely covered with ashes: the consequence was, that his crop of wheat proved extremely advantageous, i s produce being full four quarters per acre. Moreover, his land, treated in this manner, was remarkably clean and free from weeds *Maine Farmer*.

HENS.—A neighbour of ours, states that hog's lard is the best thing he can find to mix with the dough he gives to his hens. He says one cut of this fat as large as a walnut, will set a hen to laying immediately after she has been broken up from setting; and thus his hens lay through the whole winter.

Early Cucumbers.—Take a herring or raisin box, cut a piece of turf the size of the box, then lengthways and crossways, to make eight pieces. Put it into the box inverted; put in rich soil half an inch deep, plant seed enough for a hill on each turf, cover them with rich soil half an inch deep, place the box by a stove, sprinkle water on as occasion requires, set the box out on the south side of the house in pleasant weather, carrying it in at nights; and at a proper time remove them to the garden. The benefits of this mode are, the little trouble and expense attending it, and the ease with which they are transplanted. By removing each peace of turf separately, they seem not to be stunted at all in growth.

Utility of Geese to Farmers.—It has been long remarked that cattle of all kinds are never unhealthy where geese are kept in any quantity; but the reason assigned is simply this, that geese consume with complete impunity certain noxious weeds and grasses, which taint more or less according to their abundance, the finest paddocks pastured by horses, bullocks and sheep. Most farmers are aware of this, and in many places where the beeves appear sickly, geese are let into the pastures, and the soil where they tread is converted for the time being into a sort of infirmary.

A Wholesale Teetotaller.—In a neighboring city, a few days ago, a bacchanalian from the country expressing a determination to become a teetotaller, consulted a wag as to the mode of procedure, when he was jocularly recommended to go to the office of the New Water Company. When the rustic called a number of clerks were seated at their desks but the manager was absent. Being anxious for information, he asked if many were joining just now? He was answered, "Oh, yes." He further inquired, "Do you no tak' a drap yoursels' occasionally?" "What do you mean, sir?" "Now," rejoined the would-be water votary, "tell me honestly—do you no tak' a spark o' whisky ava?" "Oh, certainly," was the answer. "I was just thinkin as muckle," quoth he. One clerk asked another, "What does the old quiz mean?" when the manager made his appearance.—Bumpkin was then shown into the manager's room, upon which he expressed a wish to join his society. Well, sir, said the manager its eighty pounds a share. "Eighty pounds, sir! exclaimed the *soi disant* water bibber in amazement, "what for?" "Oh, for the water, sir." "Eighty pounds for water!—Saul, I'll stick to the wisky yet! said he emphatically, and bolted out of the office.—*Dundee Adver*.

POETRY.

THE FARMER'S ODE

Let Commerce spread her flowing sails
And Trade her path pursue,
Without the Farmers what avails,
Or what without him can they do?

Let learned Divines and Lawyers boast,
Let physic follow in her train,
The Farmer's skill is valued most
In making golden sheaves of grain,

Let Statesmen rack their brains with care
Some mighty project to fulfil;
The Farmer's wiser projects are
His flocks to feed, his grounds to till.

His orisons at early dawn,
To the Almighty Power he makes,
Then treads the dew spangled lawn,
Or pleasure in light labour takes.

He hears the robin's early song,
A rude note of cheerful swains,
While heedful of his crops, along
He travels over his own domains.

A stranger he's to fretful care;
No busy scenes perplex his life,
Contented with his homely fare,
His children and a prudent wife.

He labours to improve his soil,
While Ceres shows him her regard,
And blesses all his careful toil,
In fruitful crops for his reward.

No prodigal nor careless waste
On his domain is ever found;
With open hand he yet will haste
To help the poor till they abound.

And now his earthly labour's past,
And old in virtue he has grown,
To crown his well spent life at last
Kind heaven shall claim him for its own.

THREE CHEERS FOR THE FLAGS OF ENGLAND.

BY THE OLD SAILOR

Hurrah, hurrah! from the royal mast head
The standard of England flies,
Right royal it looks in its gold and red,
As it flaunts the very skies.
And the seamen all know that down below
Fair Royalty holds her reign,
And boldly will brave the ocean-wave
As Queen of the azure main.

Hurrah hurrah! for the flag of St. George,
The ancient Briton's delight
On land, when it led through the battle's gorge,
Emblem of Albion's might
Or when unfurl'd on the billowy world,
It constantly proved to be,
With its crots of red, ev'ry foeman's dread,
And lord of the deep deep sea.

Hurrah for the Union Jack, hurrah!
Admiral of England's pride;
Whether spread to the winds in time of war,
Or hoisted in peaceful tide;
The empire's boast, as it waved on our coast
Or dazzled some foreign shore,
It has claimed its due wherever it flew,
And shall do for evermore.

Once again hurrah for our ensigns bold,
The red, the white, and the blue,
For they will maintain, wherever unroll'd,
That our tars are firm and true—
Will stand by each gun till their duty's done
Their colors nail'd to the mast;
Or furl the sail in the terrible gale,
And boldly defy the blast.

Hurrah for our Queen in her sea-shell car,
Hurrah for old England! hurrah! hurrah!

USEFUL RECEIPTS.

Recipe for Pickles.—To each hundred of cucumbers, put in a pint of salt, and pour in boiling water sufficiently to cover the whole Cover them tight, to prevent the steam from escaping; in this condition let them stand for twenty-four hours. They are then to be taken out, and after being wiped perfectly dry, care being taken that the skin is not broken, placed in the jar in which they are to be kept Boiling vinegar (if spice is to be used, it should be boiled with vinegar) is then to be put to them, the jar closed tight, and in a fortnight, delicious hard pickles are produced, as green as the day they were upon the vines.

Pickling Cabbages.—Quarter the firm head of the cabbage, put the parts in a keg, sprinkle on them a good quantity of salt, and let them remain five or six days. To a gallon of vinegar, put an ounce of mace, and one of pepper corns and cinnamon. Cloves and allspice may be added, but they darken the colour of the cabbage. Heat the vinegar scalding hot, add a little alum, and turn it while hot on the cabbage, the salt remaining.

Economical White Paint.—Skim-milk, 2 quarts; fresh slaked lime, 8 ounces; linseed oil, 6 ounces; white Burgundy pitch, 2 ounces; Spanish white, 3 pounds. The lime to be slacked in water, exposed to the air, and mixed in about one-fourth of the milk; the oil in which the pitch is dissolved, to be added a little at a time; then the rest of the milk, and afterwards the Spanish white.—The quantity is sufficient for twenty seven square yards, two coats, and the expense a mere trifle.

Make your own Candles.—Take two pounds of alum for every ten pounds of tallow, dissolve it in water before the tallow is put in, and then melt the tallow in the alum water, with frequent stirring, and it will clarify and harden the tallow so as to make a most beautiful article for either winter or summer use, almost as good as sperm

Watery Potatoes.—Put into the pot a piece of lime as large as a hen's egg, and however watery the potatoes may be, when the water is poured off they will be perfectly dry and mealy.

Valuable Salve.—Take three carrots and grate them, place in a vessel and cover with lard, without salt. Boil thoroughly, strain and add sufficient bees wax to make a paste. This is a most invaluable ointment or salve, for cuts, burns, scalds, or wounds of any kind.

Buckwheat Cakes.—An exchange paper states that the following recipe for making buckwheat cakes has been tried and found to be o. k.

"To three pints of buckwheat flour, mixed into a batter, add one teaspoonful of carbonate of soda, dissolved in water, add one ditto of tartaric acid, dissolved in like manner, first apply the carbonate, stir the batter well, and then put in the acid; the use of yeast is entirely superseded, and cakes 'as light as a feather' are insured. One great advantage is, that the batter is ready for baking as soon as it is made.'

Astonishing Powers of Calculation.—A new instance of the power of calculation is mentioned by several of the French journals. M. Libert, one of the chief clerks of the War office, recently, without the aid of a written note of any kind, extracted in six minutes the square root of 20,511,841, and in a quarter of an hour also worked without notes the multiplication of 279,625,348 by the same figures, giving the number of 144,115,404,-844,131,104. This may be regarded as one of the most remarkable instances of head-work in calculation hitherto recorded.

LIBERTY OF THE PRESS.

There is no right of which the people of these kingdoms are more jealous than the liberty of the press. In many other nations one cannot publish a book, or paper of any kind, without leave from some person in power, who is supposed to have read it and found in it nothing that he thinks exceptionable; and even in Great Britain this was the case till the year one thousand six hundred and ninety four. But since that time, within the British dominions, any man may publish any thing he pleases, without asking any person's leave. Indeed, if he publishes treason, blasphemy, defamation, or any thing which the law declares it a crime to publish, he is liable to the legal punishment. But still he may publish any thing, if he is willing to take the consequences.

This is a good security against oppression, and answers many other excellent purposes. If a man be injuriously treated, in a case in which the law can give him no redress (which will sometimes happen,) he may publish the injurious person, by laying the matter before the public. And this teaches men to be attentive both to their own conduct and to the rights of their neighbour. And hence every British subject, who can express his thoughts in writing, may be considered as having some influence on public affairs, and on his country. Public measures he may blame, if he do it with decency; which every man will do, who does it with a good design Plans of improvement he may propose, and advice he may suggest to the greatest persons in the kingdom. And, if his reasons be good, they cannot fail in a free country like this, to draw attention

It is true that this liberty of the press, like health, strength, genius, and many other good things, is liable to be, and at present is grossly abused. But the abuse is not without remedy; the licentiousness of the press does in some degree counteract and cure itself. If wicked books are published which often happens, they may be answered and criticised, to the shame of their authors—And worthy characters, and good measures of government, will always meet with general approbation, in spite of printed falsehoods; which are now becoming so common in newspapers, and some anonymous publications, that no body, who knows how these things are made, pays any great regard to them. Anonymous abuse, indeed, merits no regard, and among the intelligent part of mankind obtains none. The great prevalence of it is disgraceful to the age, but does little harm to individuals, no person of respectable character ever lost a friend by it.—This, however, will no more excuse the malignity of those who contrive and publish it, than missing his aim will vindicate the assassin, who in the dark makes a push with his knife at the inoffensive passenger.—*From Brattie's Elements of Moral Science, page 235*

The Girls.—They think on Hymen; and can't help sighing. When their lovers forsake them, they can't help crying. They sit at the window, and can't help spying. Into private matters, they can't help prying. To get a beau, they can't help trying. When together, they can't help plying.—At the mirror, they can't help twisting, and turning, and trying. They screw up their corsets, bring on the consumption, and can't help dying.—[Am. Pap.

Home and its Affections.—How sweet are the affections of kindness! How balmy the influence of that regard which dwells around our fireside!—Distrust and doubt darken not the brightness of its purity; the cravings of interest and jealousy mar not the harmony of that scene. Parental kindness, and filial affection blossom there, in all the freshness of eternal spring. It matters not if the world is cold, if we can but turn to our dear circle and ask and receive all that our own heart claims.—[Extract.

Birkenhead Docks.—One gentleman in Birkenhead is reported to have cleared £200,000 by land speculations, £100,000 of which was cleared in one day! Another is said to have netted £80,000 by similar speculations.

Comparison of Iron and Wood Ships.—A ship of wood costing £72,000 would require £48,000 for wood and £12,000 for labor.—One of iron, of the same cost would require £67,000 for labor and £5,000 for iron, all procured and work executed in this country.

M. Arago says the atmospheric pressure principle may be so applied as to insure safe transit at the rate of six leagues a minute, or one thousand miles an hour.
