

## CHEMICAL NOMENCLATURE.

(Continued from page 42.)

Of the seventy elementary substances thus far discovered by chemists, there are only fifteen which make up the chief mass of our globe, and of these the following nine are the most abundant and also arranged in the order of their abundance: oxygen, hydrogen, nitrogen, silicon, chlorine, sodium, aluminum, carbon, and iron; after these follow potassium, calcium, magnesium, sulphur, phosphorus, and fluorine.

In regard to the organic products of the earth's crust, they are chiefly made up (see p. 42) of four substances, namely, carbon, oxygen, hydrogen, and, in many cases, also nitrogen; after these follow, also in the order of their frequency, potassium, calcium, phosphorus, silicon, sulphur, sodium, magnesium, chlorine, iron, and fluorine. It will be seen that the order of frequency is quite different in both kingdoms, the inorganic and the organic. For instance, chlorine, which is the fifth in the order of frequency in the mineral kingdom, is only the twelfth in the organic, and aluminum, so very abundant in the first, hardly ever occurs in the last.

Some fifty-six of the elementary substances possess metallic properties, and therefore are called metals. The remaining fourteen are called metalloids; they are

Oxygen, hydrogen, and nitrogen.....Gaseous.  
Carbon, boron, and silicon.....Solids.  
Sulphur, selenium, tellurium, and phosphorus.....Combustible.  
Chlorine, bromine, iodine, and fluorine.....Salt formers.

The other substances are metals, and are again subdivided into light and heavy metals; the light metals of which the specific gravity is less than five, are

Potassium, sodium, and lithium.....Alkalies.  
Calcium, barium, strontium, and magnesium.....Alkaline earths.  
Aluminum.....Earthy metal.

The remaining in the list (page 42) are heavy metals; their specific gravity is more than five. When a metalloid is combined with a metal or other metalloid, the compound was named in such a way that the name of the metalloid was added with the appendage of the affix *atum*; so the combinations of potassium with oxygen, sulphur, phosphorus, chlorine were called respectively, kalium oxydatum, kalium sulphuratum, kalium phosphuratum, kalium chloruratum.

The symbols were founded on these names, and the compounds expressed respectively by KO, KS, KP, KCl. They are in use at the present day, and we cannot sufficiently insist on the fact that these symbols, besides the names, also represent definite quantities of the elementary substances; so KO means 39 potassium to 8 of oxygen; KS, the same amount of potassium with 16 of sulphur; KP, 39 potassium and 31 of phosphorus; and KCl, 39 of potassium and 36 of chlorine.

The Latin names corresponding with the symbols did not however come in use, but have been translated into the different languages, and so, for instance, we call these four compounds in English, oxide of potassium, sulphuret of potassium, phosphuret of potassium, chloruret of potassium. More recently, for the sake of abridgment and uniformity, they have been named oxide, sulphide, phosphide, and chloride of potassium, and the termination *ide* has generally been adopted to denominate all primary compounds, (that is to say, compounds containing only two elementary substances); thus,

The compound of any substance with oxygen is called an oxide.  
" " " sulphur " a sulphide.  
" " " phosphorus " a phosphide.  
" " " chlorine " a chloride.  
" " " hydrogen " a hydride.  
" " " carbon " a carbide.  
" " " nitrogen " a nitride.  
" " " arsenic " an arsenide.

As the names in the last column differ so little in orthography as well as in pronunciation from the names sulphite, phosphite, chlorite, etc., which latter names indicate compounds of an entirely different nature (as will be explained hereafter), it has lately been proposed by various authorities to drop the final *e* in the names of these compounds, and to write oxid, sulphid, phosphid, chlorid, etc. This termination has been adopted by some writers of the present day, but most text books still retain the final *e* to the names of the primary compounds.

## NATIONAL AGRICULTURAL EXPOSITION.

## PROGRAMME.

ARTICLE 1. On the 1st day of April, 1869, there will be opened in Santiago in Chili, South America, an Agricultural Exposition, at a locality hereafter to be designated.

ART. 2. The chief object of this exposition is to stimulate as well the lauded proprietors of the country as national and foreign manufacturers and importers of agricultural tools and implements, to cause the adoption of the best methods introduced in husbandry, to improve the breed of animals, and to give an impetus to everything that tends to cheapen and perfect production.

ART. 3. The exposition will be especially devoted to agricultural tools and implements and breeding animals; but all such things will be admitted as appertain in any way to rural industry.

ART. 4. The exposition will, in consequence be divided into departments as follows: The first for tools and implements; the second for cattle; and the third for all such articles as serve for the advancement of agriculture—as seeds, wines, oil, dried fruits, timber, models of country houses, household articles, articles of rural economy, dried beef, pulse, liquors exotic and textile plants, etc., etc., etc.

ART. 5. In the department of tools and implements there will be admitted to the exposition, and to the contest for premiums, the following articles:

1. Thrashing machines, operated by animal, mechanical, or steam motive power.
2. Steam motive powers, fixed or movable.

3. Machines for reaping wheat or mowing hay, or for both purposes, worked by oxen or horses.

4. Improved plows of every kind, single and double.
5. Harrows of every kind, both of iron and of wood.
6. Cultivators of whatever form or denomination.
7. Rollers for breaking the soil or pressing the earth.
8. Harrows with movable teeth, drawn by horses.
9. Machines for separating the grain from the ear of corn, sifting hay or straw, or grinding pulse; for crushing grain or oleaginous substances, or triturating them for the food of cattle.
10. Machines for cleaning and separating wheat and all kinds of grain.
11. Machines for winnowing wheat thrashed by horses.
12. Portable agricultural mills, single or double, moved by water, steam, or animal force.
13. Implements for the dairy, and for the making of cheese and butter.
14. Apparatus for pressing grapes.
15. Wine presses, fixed and portable.
16. Distilling apparatus for grains and liquids.
17. Machines for rooting up and breaking the earth.
18. Machines for dressing and combing hemp and flax.
19. Apparatus for irrigation, as pumps, iron sluices, etc.
20. Machines and implements for spinning and weaving silk, and ovens for developing the eggs of the silk worm.
21. Bees and all utensils relative to the care of bees.
22. Machines for sawing wood.
23. Machines for dressing hay, straw, wool, charqui, etc.

ART. 6. In the cattle department there will be admitted, under the same conditions as for tools and implements, the following species and types:

**HORNED CATTLE.**—1. Animals indigenous to the country, of one, two, three, and four years of age; 2. Cattle imported from abroad, or born in the country of pure breed; 3. Cattle produced by a cross with the indigenous race, from the age of one year upwards.

**WOOL GIVING ANIMALS.**—1. Mixed ewes only of the Pehuenche breed; 2. Mestizo sheep of the first, second, and third crossing; 3. Merino sheep, pure English, Rambouillet, Negretti, or other sheep; 4. Native, foreign, and mestizo goats.

**SWINE.**—Swine of the pure race of the country, or swine produced by a cross between both.

**HORSES.**—Horses and mares of indigenous or foreign stock, carriage, riding, or race horses, and horses for the general use of the country in farming operations.

**ASSES.**—Asses of native or foreign breed.

ART. 7. In the department of general agronomy, there will be admitted seeds, fruits, wines, woods, birds and domestic animals, plants, hides and skins, butter, wool, wax, honey, hemp, flax, oleaginous seeds, models, plans, and all articles whether of artificial or natural production, which do not appertain to the two preceding departments, and which in any way tend to the improvement of agriculture and the welfare of the rural classes, in the judgment of the commission having charge of the exposition.

ART. 8. Each one of these departments will be under the charge of a special commission, which will nominate the proper judges for the examination of the animals and articles entered for exhibition, and will award the respective premiums.

ART. 9. There will be five classes of premiums special for the purposes hereinafter expressed, and which will be awarded by the different commissions combined into one.

1. A grand medal of honor and a premium of eight hundred dollars (gold), which will be awarded to the national or foreign manufacturer or manufacturing company that shall present the greatest number of machines, apparatus, or instruments of agriculture which, combined, shall be deemed to produce the most perfect results, and which, in the judgment of the commission, shall be entitled to the premium. But in this case the articles must be proved to have proceeded, and been sent directly from the manufactory in question.

2. A premium of the first class, which will consist of a gold medal and \$500 (gold), for the thrashing machine that shall deliver the grain in the cleanest condition, and render the greatest quantity in a given time, regard being had for the relative power of the motor, the size of cylinder, and other conditions which it may be proper to take into consideration. There will be a second premium, which will consist of a silver medal and \$300 for this class of machines, which will be awarded according to the discretion of the commission.

3. A gold medal and \$400 (gold), for the best winnowing wheat thrashed by horses, and which, in the judgment of the commission, attains the object for which it is intended.

4. A gold medal and \$5 (gold), to the exhibitor who in the judgment of the commission, shall offer the largest and best number of producing animals of the different classes and types already mentioned.

ART. 10. All the other apparatus or instruments will be classified by the special commissioners to be appointed, in different classes, according to their character and variety, or the quantity of each kind that may appear in the Exposition; and those that deserve premiums in each class will have awarded to them medals of gold and silver, and premiums ranging in value from \$10 to \$200 (gold).

ART. 11. The rewards for the exposition of breeding animals of the different kinds above designated, will consist of medals of the first and second class, those of the first class being of gold, and those of the second of silver, and in pecuniary premiums from \$20 to \$150 (gold), in value according to the kind to which they belong, and such as, in the judgment of the jury, may be entitled to such premiums.

ART. 12. The fruits of the country, which, in the opinion of the proper committee, shall merit some reward, will receive it in medals of silver or gold, or premiums in money

to the value of \$50; but it is proper to notify those interested that such fruits must be produced in sufficient quantity to render them objects of consideration.

ART. 13. In addition to the gold and silver medals and pecuniary rewards, there will be given medals of bronze, whenever the commissioners deem any one of the various exhibitors entitled to this reward.

ART. 14. No object shall be admitted to the exposition which, in the judgment of the commission charged with the management of the exposition, ought to be rejected as not fulfilling the required conditions.

ART. 15. Every person who desires to take part in the exposition should at least two months beforehand, communicate in writing to the committee having charge of the exposition his intention of being one of the exhibitors, designating at the same time the article or articles which he wishes to present and the quantity thereof, in order to have the proper space reserved, and to make the necessary arrangements for the best and most convenient location with a previous knowledge of all the articles destined to figure in the exposition. Those who do not comply with this requirement will have no right to be admitted to the exposition.

From this condition are excepted manufactured articles and animals brought from abroad, which will be admitted up to the day preceding that of the opening of the exposition, and will be entitled to premiums like the former.

ART. 16. All articles intended to appear in the exposition ought to be sent punctually, at least fifteen days before the day fixed for the opening of the exposition, except the animals, which should be entered at least three days before the opening.

ART. 17. A special regulation, hereafter to be published, will determine the days on which the trial of the various machines is to take place, as well as everything else concerning the arrangements of the objects that may be transmitted, and all the necessary preparations for the realization of this programme.

(Signed) FRANCISCO ECHAURREN, SANTIAGO PRADO, DOMINGO BEZANILLA, MANUEL BEAUCHEF, RUPERTO OVALLE, BENJAMIN ORTUZAR, BENJAMIN VICUNA MACKENNA.

Santiago, April 30, 1868.

Any additional information desired can be obtained by addressing Mr. Sanchez Fontecilla, Chilean Minister, Washington, D. C.

## Floating Water Wheels for Siam.

The practice of utilizing the power of the tides has just been applied to pumping purposes for the king of Siam by English engineers. The first of a series of wheels is completed for supplying water to the king's palace at Bangkok. It recently received a preliminary trial on the river Thames. It was fixed on a wrought iron punt sixteen feet long, five broad, and two feet six inches deep. The wheel is five feet diameter, with paddles two feet broad, and working treble two-inch plunger pumps of nine inch stroke, and fitted with India-rubber disk valves. The engineers were consulted by the king of Siam, with reference to supplying the four grand palaces at Siam with water, and not finding sufficient fall from which to obtain motive power adopted the plan of tidal wheels. The velocity of the stream ranges from two and one half to four miles an hour—about the same flow as on the Thames—and the apparatus will have to force water a considerable distance to a height of over a hundred feet. This in a recent trial on the Thames it proved itself quite capable of doing, working equally well on each change of the tide.

## A New Pleasure Vehicle.

Hitherto the velocipede has been considered a mere toy for the amusement of children, but at the present moment this vehicle has produced a fashionable mania in Paris among both sexes, and it is very likely to come over to us. Why should we not adopt the velocipede as a pleasure carriage? It appears that a "veloce club" of sixty members has been organized in Paris, at the head of which is Monsieur de Vesin who has made a considerable wager that he can out-run the swiftest horse of Prince Murat. M. de Vesin has recently made the journey from Angers to Tours a distance of sixty-four miles, where his velocipede broke down. A first class race is soon promised to come off at the Bois Boulogne. The Paris velocipede is sometimes constructed of two large wheels, one following the other, and connected so as to provide a comfortable seat for the rider who adroitly balances himself and at the same time guides and propels the machine by his feet. Generally however three large nicely balanced wheels are used, and with a powerful crank and easily working levers, the machine is propelled along with the greatest apparent ease and at high speed.

Velocipedes are very common upon the streets of Paris which have smooth pavements, and can be used anywhere in our parks and upon good country roads, therefore we expect very soon to witness their introduction into this country. The exercise is graceful and healthful.

## Cheap Ice Pitcher.

We republish, it being seasonable, the following simple method of keeping ice water for a long time in a common pitcher or jug. Place between two sheets of paper (newspaper will answer, thick brown is better,) a layer of cotton batting about half an inch in thickness, fasten the ends of paper and batting together, forming a circle, then sew or paste a crown over one end, making a box the shape of a stove-pipe hat minus the rim. Place this over an ordinary pitcher filled with ice water, making it deep enough to rest on the table, so as to exclude the air, and the reader will be astonished at the length of time his ice will keep and the water remain cold after the ice is melted.