molecules, viz. two molecules of ammonium, NH4, and onomolecule of the composition SO4.

The following chemical equations or chemical formulas express the chemical reactions or changes which happen when the ingredients are brought together with proper precautions.

Gun-cotton decomposed by ignition.  $2C_6H_7(NO_2)_3O_6 = 6CO_2 + 5CO + CH_4 + 6N + 5H_2O_2$  $2{72+7+(14+32)3+80} =$ 6(12+32)+5(12+16)+12+4+84+5(2+16)

594594 Calcic Carbonate CaCO<sub>3</sub> Hydrochloric Carbonic Calcic Water Anhydride Acid 2HCl + CO. CaCl. H<sup>a</sup>O + 2(1+35.5) 40 + 12 + 4840+71 2 + 1612 + 32+ + 173 173

The reaction which occurs when (K, C, N, Fe), potassium ferrocy anide is heated with strong sulphuric acid H2SO4, and water H2O is expressed :--

## $K_4C_6N_6F_0+6H_2SO_4+6H_2O=$

6CO+2K2SO1+3(NH1)2SO1+FeSO1

The products are carbonic oxide, potassic sulphate, ammonium sulphate, and iron sulphate.

We can easily calculate the weight of any element in a given weight of a compound if we know its chemical formula. Thus Chlorate of potash, or potassic chlorate is KClOs. The 39 parts of potassium, 35.5 parts of chlorine, and 48 parts of oxygen give 122.5 parts of chlorate. Hence the potassium is  $T_{22.5}^{22.5}$  the chlorine  $I_{22}^{22.5}$ and the oxygen the  $T_{2,2,3}^{4,8}$  of the whole chlorate. Therefore in any given weight of chlorate these fractions of the whole weight will give the weights of the ingredients present. Similarly, the potassium is  $\frac{32}{5}$  of the chlorine and  $\frac{32}{5}$  of the oxygen. Hence 100 be of potassium require 3000 ths of chlorine, and 3200 ths of oxygen to form potassic chlorate. And the percentage composition is K=31.8 Cl=29,0=39.2 Similarly 594 oz of gun cotton yield 84 of nitrogen, that is the nitrogen is always the say of the gun cotton, and the gun cotton is the by of the nitrogen produced. Hence to produce a given quantity of nitrogen we must take 504 as much gun cotton by weight, and conversely if a given quantity of gun-cotton be used then 594 as much mitrogen by weight will be generated.

It will be observed that the atomic weight of a compound is always equal to the sum of the atomic weights of its constituents.

16 Chemical nomenclature is the spoken language of chemistry. just as the notation or symbolic characters are the written language. The principle followed in inorganic chemistry is that the name of the compound shall signify the nature of its elementry constituents but in organic chemistry, that is the chemistry of the carbon com pounds, this principle has to be abandoned on account of the immense number of similar substances, and names are given which shall suggest the origin of the bodies. The modern system was begun about the beginning of this century Old common names have generally been retained, but all elements and compounds of more recent discovery have received more or less systematic appellations. Metals and bodies resembling metals have names ending in ium as calcium, sodium. Elements like chlorine have names terminated in - ine Another group ends in on, carbon, silicon, boron. When two simple elements unite the compound ends in ide, thus we have hydrides, chlorides, bromides, iodides, fluorides, oxides, sulphides, etc., compounds of hydrogen, chlorine, bromine etc. with one otherele- 1 ing tooth-ache, extraction is the only cure. I may say however that as ment. In case two elements form several distinct compounds pre- a rule you need not fear tooth ache, if you take proper care of your fixes are used to denote the proportions, thus the monoxide, diox- | teeth. Sound teeth secure the thorough division of the food we cat, ide, trioxide, tetroxide, pentexide, of any substance contain 1, 2, 3, and go a long way in preserving good health. Bad breath is caused

The profixes di-, tri-, tetra-, penta-, &c., are used in this way. The profix per or hyperand suffix-ic denote that the compounds contain more of an element resembling oxygen than compounds beginning with hypo and ending in-ous respectively. Thus hypochlorous acid HClO, chlorous acid HClO, chloric acid HClO, perchloric acid HClO<sub>4</sub> ; mercurous chloric Hg Cl., mercuric chloride HgCl<sub>2</sub>.

Similarly -- ite denotes less than -- ate. Both are applied to the compounds of bodies v hose names ends in -ous and -ic respectively. Thus chlorous acid combines to produce chlorites, chloric acid to produce chlorates, hypochlorousacid gives hypochlorites, perchloric acid yields perchlorates, hypermanganic forms hypermanganates. 17 It is found that when compounds are decomposed by the electric current, some elements appear at the positive, others at the negative pole. Those which appear at the positive pole are called basylous or electro-negative those at the negative pole, chlorous or

electro-positive. The difference is one of degree only, thus mercury is negative to sodium, and positive to iodine. But the following eight, fluorine, chlorine, bromine, iodine, oxygen, sulphur, selenium and tellurium are negative or chlorous towards the remaining elements. The name of the positive element is placed first with the adjective termination-ic., the name of the negative element last with the ending-ide :- thus, mercuric chloride HgCl, argentic bromide AgBr, potassici odide KI, ferric sulphide FeS, sodic oxide Na<sub>2</sub>O. The adjectival ending-ic is not used by all writers. Some prefer silver bromide, potassium iodide, sodium oxide &c. The student must be prepared to hear the same thing called by different names as chemical nomenclature is at present in a transitional state.

## (To be continued)

## NOTES ON HYGIENE.

BY J A. WISMER, PRINCIPAL OF PARKDALE PUBLIC BOHOOLS.

## (Continued from last month.)

Never crack nuts with your teeth; leave that practice to squirrels and monkeys, to whom nature has been more generous in sharp pointed, easily repaired enamel than to the human race. Very hot or very cold substances should not be brought in contact with the teeth ; do not drink either ice water or very hot tea for the sake of the enamel of the teeth, if for no other reason. Too much sweet or too much acid likewise injures the teeth and causes them to decay; do not eat too many candles or very sour substances such as lemons, and for the sake of decency do not chew gum or tobacco. Tobacco smoke permanently discolors the teeth and has other bad effects such as increasing nervousness, and impairing digestion. Certammedicines, particularly many of the preparations of iron, will also discolor the teeth. Parents should watch their children's teethand, as soon as decaysets in, consulta regularly qualified dentist. Many a tooth, if filled in time, will last a life time, but, if neglected may have to be extracted in a very few months. A few sound teeth in the upper and lower jaws are worth more to the person interested, than all the teeth that can be made by the dentist's art. Take particular care of your teeth therefore; remember, that when once extracted, they cannot be replaced. Use only gold filling, it is the best for many reasons. For real, old-fashioned, jump-4, or 5 parts by weight of oxygen, N2O,N2O2,N3O,3N2O4N2O5. either by bad, ill cleaned, neglected teeth, or by a disordered

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