Philadelphia Dental College and Hospital of Oral Surgery.

CHAIRS OF CHEMISTRY AND OF MATERIA MEDICA.

Get a definite idea of chemical affinity or attraction.

What is chemistry?

How may we classify all matter?

What are chemical symbols?

Do the symbols express a definite or an indefinite quantity of the element?

What is a formula?

What is a chemical equation?

What is the atomic weight of an element?

What is a molecular weight?

Study the law of equivalent proportions.

What is the symbol of oxygen?

How is it prepared?

Notice the more prominent physical properties of oxygen.

Does oxygen unite readily with other elements?

What is the compound of oxygen with another element called?

What is meant by oxidation and combustion?

What are meant by combustibles and supporters of combustion?

When we burn a candle what takes place, and how does the weight of the products compare with that of the candle?

Of what importance is oxygen in respiration?

What is ozone?

Under what conditions is ozone found, and to what extent?

What are the properties of ozonized oxygen?

In what proportion does ozone exist in air, and how may it be detected?

What are the symbol, valence, and atomic weight of hydrogen?

How does hydrogen exist in nature?

How is it prepared?

Notice some of the prominent physical properties of hydrogen.

Is hydrogen combustible?

Is it a supporter of combustion or respiration?

What is the result of the burning of hydrogen in air?

Notice what takes place when certain oxides, as those of iron or copper, are heated in hydrogen.

What is meant by synthesis and analysis?

How can we prove by analysis that water has the composition H_2O?

What influence has temperature upon a mixture of oxygen and hydrogen?

Where does water exist in the animal economy?

What functions does water perform in the economy?

By what channels is water eliminated from the system, and how does the amount discharged compare with that ingested?

What substances render water unfit for drinking?

What is meant by organic impurity?

Study a rough method of detecting organic impurity.

What waters are most liable to organic contamination?

What poisonous metal occurs most frequently, and how may it be detected?

What influence has the purity of water upon its power of dissolving lead?

What practical indications may be drawn from the last question?

How may water be purified?

What is a hydrate?

What is water of crystallization?

Explain the terms, anhydrous, deliquescent, and efflorescent.

What are the more prominent properties of nitrogen?

What are the distinctions between a mixture and a chemical compound?

What are the constituents of atmospheric air?

What is the proportion by volume of nitrogen to oxygen in air?

Does this proportion vary much in pure air?

What is the function of the nitrogen in air?

What is observed with regard to the solubility of air in water?

Are gases more soluble in cold or in hot water?

How do the specific gravity and volume of solutions of ammonia vary with the amount of gas dissolved?

What are the strengths and specific gravities of the aquæ ammoniæ of the U. S. Pharmacopœia?

Under what popular names is aqua ammonia known?

What is the spiritus ammoniæ, U. S. Pharmacopœia?

What effect has great cold and pressure upon ammonia?

By what other names is nitrogen monoxide known?

By what method is it prepared?

Notice some of the physical properties of nitrous oxide.

How does N_2O rank as a supporter of combustion and respiration?

What effect has N_2O upon the system when inhaled?

What precautions are to be observed in the preparation and use of N_2O as an anæsthetic?

How many nitrogen acids are there, and what are they?

What is meant by an acid?

What is meant by a metallic hydrate?

What is a salt?

What is understood by the reaction of a substance?

What is a nitric?

What is a salt of nitric acid called?

What is the difference between two acids composed of the same elements, the name of one ending in *ous*, that of the other in *ic*?

By what names are the salts of these acids distinguished from each other?

What is the formula of nitric acid?

How does it exist in nature?

What is the principle of the manufacture of HNO_3?

What are the physical properties of pure nitric acid?

State some of the chemical properties of HNO_3.

Name and describe the varieties of HNO_3 met with in commerce and pharmacy.

How may nitric acid be detected?

On the plan thus set forth, inform yourself on the more important elements, as Chlorine, Iodine, Bromine, Fluorine, Sulphur, Phosphorus.

In the combination of these elements, what does the termination *ide* indicate?

What is aqua regia?

Study the properties of hydrochloric, sulphuric, sulphurous, and phosphoric acids.

Pass to the study of the metallic elements and their combinations.

What are the physical properties of the metals potassium and sodium?

Under what other names is potassium hydrate known?

What are the chemical properties of potassium hydrate?

What is the action of a solution of KHO on solutions of most metallic salts?

What is the strength of liquor potassæ, U. S. Pharmacopœia?

What is the action of KHO when taken internally?

What antidotes should be used?

What is the composition of potassium chloride, and where does it exist in nature?

What is the composition and what are the physical properties of potassium bromide?

What is the formula and what are the common names of potassium nitrate?

What are its chief uses?

Study the properties of potassium iodide and potassium bromide.

Of the salts of sodium, notice the carbonate; the sulphite.

Follow with the salts of ammonium, the carbonate, the nitrate, the chloride, the gas ammonia (NH_3), aqua ammonia, $H(NH_4)O$.

Of all the metals of the alkaline earths, notice the salts of calcium; the sulphate (gypsum); the carbonate; the chloride.

Calcium monoxide (lime, quick-lime).

Of all the metals of the earths, study aluminum; its most important salts are the alums.

Passing to the metals proper, notice—

Iron.—Important salts; ferrous sulphate, ferric sulphate, ferric chloride; tests.

Lead.—Acetate (sugar of lead); toxicology; tests.

Zinc.—Chloride, Sulphate; test.

Notice nickel as a metal.

Tin as a metal.

Chromic acid.

Study arsenic; its properties, poisonous effects, antidotes; test.

Arsenious oxide and its uses.

Of the compounds of antimony; tartar emetic (tartrate of antimony and potassa).

Study the properties of the metal mercury and its two chlorides.

The properties of gold, silver and its most important salt, the nitrate.

The metal platinum.

From Inorganic Chemistry pass to Organic.

Study starch and its derivatives, gum, sugar, dextrin, cellulose, etc.

Notice fermentation and its conditions.

Inform yourself about alcohol and ether.

Of the organic or vegetable acids, notice acetic, oxalic acid and its antidote, tartaric acid, tannic and gallic acids.

Pass now to what are called Organic or Vegetable Alkalies or Alkaloids.

Morphia, quinia, cinchona, strychnia, atropia; their uses and properties; where found?

Notice the two classes of oils and fats, the fixed and volatile.

What is glycerin?

What is wax?

What are camphors and resins?

What is caoutchouc, or india-rubber?

Of animal compounds notice albumen, fibrin, gelatin.

Books of Reference.—Wilson's "Chemistry," Wurtz's "Elements of Modern Chemistry," Roscoe's "Chemistry," Howell's "Synopsis of Lectures on Chemistry."