CHEMISTRY, WITH REFERENCE TO ITS HISTORY.

BY ALEXANDER OTT.

A knowledge of the most common principles of chemistry is important to every one, whether a scholar or not. In Europe it is considered an essential branch of a college or gymnasium education.

It is intimately connected with natural philosophy or physics, and a stranger to the same would prove his ignorance egregiously relative to the most common phenomena of Nature.

Everything has to be learned systematically, and with a good understanding of its rudiments. Thus, step by step new principles are being unfolded to the mind of the student, without becoming confused and mystified by things which ought to have been explained in a regular routine. The idea of picking up here a little and there a little, of having, for instance, a smattering of organic chemistry or of optics without a knowledge of the preliminary principles, is absurd, and will always show mental shallowness. Far better to know *little*, and that little *well*.

Not only the peculiar condition of the world, but also our isolated position demand peremptorily a development of the natural resources of the country we inhabit. Hence the necessity of familiarizing ourselves and others with those principles which will enable us to benefit both ourselves and others, and thus assist in building up the kingdom of God. With this view, I will treat in a series of sketches on the most essential parts of chemistry and physics.

Chemistry, as a science was known to the ancients, such as Aristotle, Hipparchus, Ptolemy, &c. The celebrated library which was established at Athens, 526 before Christ, is said to have contained interesting documents on chemistry. But, singular to say, a people that have now sank into the depths of barbarism, like the Arabs, knew, according to Averroes of Cordova, the great commentator of Aristotle, and †Al Farabi, more of this important science than the Greeks, Romans and other contemporaneous nations.

Since the seventeenth century, however, more discoveries have been made in the fields of chemistry and physics than ever, and the present age bids fair that still greater, more interesting and more important principles will be brought to light. It is frequently erroneously asserted that the Hindus had been very expert in chemistry—that their sacred writings contain much valuable information on this subject; but the Sanscrit literature is only a wild, fantastic, speculative, absurd theory void of every scientific principle whatever. *Seas of milk, and curds, and spirit, and butter and sugar-juice, with mountains 256,000 miles* high, bearing trees 8,000 or 9,000 miles tall; seas and continents ranged in succession round a central nucleus or navel, like the peels of an onion, and other similar extravagancies and *fooleries, form the staple of Sanscrit lore.*

The Chinese, who are said to have made many discoveries even previous to the Christian era, prove, according to recent critical investigations by Professor Dr. Bernstein, Bowring and other orientalists, not in the least their having much contributed to the development and enrichment of chemistry. Even the assertion of the Chinese having invented gunpowder long before Berthold Schwarz, the German monk, was born, cannot bear a strict criticism.

According to the testimony of Mr. H. H. Wilson, the celebrated professor of Sanscrit in Oxford University, there are thousands in Germany who understand oriental tongues, and the mythology thereof. At different times men of great genius and learning, like William von Humbold, brother of Alexander von Humbold, Professors Drs. Niebuhr, ‡Middeldorf and others have been traveling extensively by order of their governments to examine the literature and topography of oriental nations, for the purpose of ascertaining the scientific standard of those distant countries, and the *result has generally been the* same.

Whatsoever the annals of Oriental literature contain, it is nothing but a philosophy of fancy not of reality. Fabulous and extravagant legends are all that is furnished. European ingenuity, penetration and perseverance may indeed by dint of hard and continued labor elicit a few isolated facts here and there, and comparison of dates and circumstances, rejecting the crudities and absurdities that have gathered round them; bring them to bear upon some point of ancient story, yet in the depths of obscurity. But nothing is certain; all is only a happy guess or probable inference at best. The very principle of historic narration appears either never to have entered the minds of the early writers of oriental languages, or else a base and selfish policy led them to falsify, obscure and mysticize everything in order to conceal their own usurpations, violence and injustice. To sum up the matter relative to the merits of oriental literature, All science is at zero. Empirciism rules the day united with absurd quackery.

I could say much more and quote many authorities to show the error of believing the oriental or Eastern nations much expert in chemistry; suffice it to say it was the Anglo-Saxon race, who, in the intellectual development of the different nations took the lead. England, Germany, and lately France and Scandinavia have done much for the study of chemistry and physics. And it is to those nations that we owe the wonderful discoveries which have been made within the domain of these sciences.

It is very true that in the seventeenth and even as far as the eighteenth century societies existed on the continent of Europe, under the name of the "Knights of the order of the rosary," who pretended to have discovered the mysteries of chemistry—the elixir of life, by means of which they expected to live eternally, and that so great were the influence, superstition and ignorance of those times that even persons of the highest rank as the beautiful and accomplished Marie Antoinette, wife of Louis XVI. were duped by the famous Cagliostro, *alias* Count St. Germain, one of the greatest liars, swindlers, quacks and impostors of his age. It will almost sound incredible to mention the fact that even one of the keenest and most cunning men of his age, Mr. Rohan, general-superior of the Jesuits, became a tool of that impostor. With all due deference to the ingenuity of Mr. Barnum, of New York, his wonderful buffalo-hunt and his exhibition—woman who never grew old, I really believe that Count Cagliostro did beat him. He had access to all the crowned heads of Europe, could make himself invisible, and when banished by Frederic II. of Prussia from Berlin, left that capital by all the gates at the same time.

Chemistry at those times was almost synonimous with magic or the black art, and the professors of the same were generally supposed to be leagued with the evil one. Whenever a chemist was reported to be in town, he was sure to have been seen with the necessary appendages of a cloven foot and the smell of brimstone about him.

Yet with all these imperfections of the human mind, that is but too apt to believe in anything marvelous and supernatural, gradual enlightenment made its slow but steady march, the clouds of mental darkness and superstition dispersed before the light of some men of genius who showed the true merits of chemistry. Torricelli, a pupil of the celebrated Galileo, Scheele, Dr. Priestley, Lavoisier, Laplace and others improved rapidly on the principles of chemistry already discovered, published valuable works, delivered lectures to crowded houses, and directed the attention of the people to the importance of studying chemistry; thus, after having passed through the ordeal of ignorance, superstition and persecution, it received the citizenship as a science, became respected as such, and forms now a connecting link in the philosophical studies of a liberal education.

No medical student on the continent of Europe can take the degree of Doctor, and become a practitioner, without having a perfect knowledge of chemistry and physics; Pharmacy is not confined to mere empiricism but it is guarded by the light of science which is improved continually by some of the most talented men. No person is allowed to act in *the capacity of* a so-called pharmacopolist or apothecary *unless he has passed a strict* examination in chemistry and physics. An extensive chemical laboratory is attached to every college and university, where every principle is properly illustrated by a variety of interesting experiments.

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*The English term College does not fully interpret the Greek term Gymnasium used in the German language, for a school where the classical and modern languages with the leading sciences of the age are being taught, and the pupil is prepared for professional studies at Universities. The educational standard at American and English high schools differs much from that in Germany, as every one well knows who has been a student at Berlin, Heydelberg, Bonn or some other University which is frequented by English and Americans, who generally have to prepare themselves for some time before they are competent to pass the examinatio pro abitu and be legitimately immatriculated.

†Al Farabi, the great Arabic author whom I mentioned in a former article, was a prodigy of his age. He spoke 70 languages and wrote upon all the sciences. His encyclopedia is said to be still in the Emperial library of Paris.

‡Professor Dr. Middeldorf, the great Orientalist and one of the best Hebrew scholars in Europe, was for many years Dean of the Physolophical Faculty at the University of Berlin. His Bible translations, which were generally performed without the aid of a Lexicon, are pronounced by the most competent critics as correct and classic.

A BONE CAVE IN FRANCE.—A discovery of great interest with regard to the natural history of France in bygone times was made some days ago at Verrieres, Jura. In that part of the country there are great numbers of deep, funnel-shaped cavities, called "baumes" some of which have never been thoroughly explored. Last week M. Lavaur, stationmaster Verrieres, determined to see what they contained. Accordingly, accompanied by two friends and provided with ropes and torches, he went down one of these "baumes," about fifty feet in perpendicular depth, and at the bottom found an open passage. They had not advanced far when they found a quantity of bones of various animals, and among them the skulls of two elks with antlers of enormous size.

NEW DEFINITION OF LAW.—Seventy years' practice has incorporated it as a principle in our constitutional law, that what the necessity of the hour demands and continued assent of the people ratifies, is law.—[New Haven Palladium.

This may be regarded as the higher, very highest law yet discovered. According to this doctrine, whatever impudence may assume and the public is tame enough to submit to, is the law and the Constitution! Courts have lost their occupation, and discussion is useless.—[New Haven Register.

TERRIFIC TYPHOON IN CHINA.

The following particulars of the terrific typhoon which visited some of the principal cities of China in July last, referred to some time since, was taken from the Hong Kong Trade Report of Aug. 10th:

A typhoon of unprecedented violence swept over Hong Kong, Macao, Canton and Whympoa on Sunday, 27th July, 1862, committing dreadful ravages on property and being the cause of the death of no less than 40,000 lives. The centre passed over Canton and Whampoa. Macao did not have it quite so strong, and Hong Kong escaped with a stiff gale, which simply caused a few ships in the harbor to foul one another.

The most peculiar feature in this terrific scourge is the short time it lasted, and the extraordinary high tide—eight feet higher than usual.

Mr. Max Wenzler, of the firm of Messrs. Courjau, Hubener & Co., was drowned by the capsizing of his boat in the harbor.

Two other house boats capsized and lost—crews saved.

Several houses belonging to the Chinese fell down, causing the death of many of the inmates. Hong Kong may be considered as having come off well.

CASUALTIES IN MACAO.

Whole fleets of West Coast boats are lost. In the inner harbor of Macao alone, one hundred oil, sugar, and other boats have been lost. The Fast boats, on their passage from Hong Kong to Macao, were lost, one of them with sixty souls on board. The Praya Grande is completely destroyed, and the damage done to houses, gardens, verandahs, &c, considerable.

The American ship Comet was at anchor in the outer Roads, laden with a cargo for New York. The glass stood as follows on board:

The sympiesometer touched 27 deg. 16 sec.; the most sensitive marine barometer 27 deg. 70 sec.; the lower marine barometer 29 deg. We hear that another captain in the Roads reports his marine barometer as low as 28 deg 40 sec.

The loss of life in the inner harbor alone was seven hundred.

CASUALTIES IN WHAMPOA.

New Town and Bamboo Town, two villages forming part and parcel of Whampoa, are one mass of ruins; hardly a native house is standing.

The Custom-house chop was capsized with nine tidewaiters (Europeans) in her, four of whom were drowned. The Bethel was smashed to pieces. Nearly all the chops went on shore. After the gale was over, no sampans could be seen, *and laborers were not to* be had. The loss of life in Whampoa is estimated at six thousand.

CASUALTIES IN CANTON.

With few exceptions the river was clean swept of all its flower boats, hong boats, and every other kind of boat; houses fell and killed people by the hundred; large junks broke adrift and came thundering up the river, doing much damage to the Shameen Site, and the houses along the shore. It is estimated that forty thousand lives have been lost in Canton and its vicinity. The Mandarins are giving $1 for every body found. $8,000 have already been spent.

The Rev. Mr. Gailliard was killed by a wall of his house falling on him. The ruin caused by this typhoon is wide spread.

In Canton it came on to blow at 9.30 a.m; the glass standing at 29.68 and wind from N E. The wind veered to S.E. at 11 a m. It was a dead calm at noon and the sun shining, and then blew furiously from S. and S.W., passing away at that point. Lowest pitch of barometer 29.17. The imperial fleet of war vessels numbering sixty, with an immense flotilla of covered soldiers' boats, are all dispersed, and their wrecks line the shore. Ten merchant junks remain at their old anchorage.

The war junks had just been reviewed and were upon the point of being dispatched for the North, covered with paint and decked with flags, but with very few effective guns. The gale was very severely felt in the new suburbs, where the town has not yet been entirely rebuilt: detached houses of great depth went down as if they were built of cards. In one of these near the Five Genii gate, one hundred and sixty refugees from the river, &c. had effected a lodging when they were overwhelmed in its ruins.

The old Chinese boat people say that within their recollection there has not been so heavy a typhoon, nor so high a tide. It is ruin for a populous place like Canton, to be in the centre. Macao was in the centre in the typhoon of July, 1841, and the strength of this one was very similar to the Macao one, as also in its phenomenon as regards the way in which the wind veered round from N.E. at 9 a.m., and S.W. at 3 p.m.

GENERAL SCOTT'S SUGGESTIONS TO PRESIDENT LINCOLN IN RELATION TO THE REBELLION.

After having failed in his efforts to induce Buchanan to take some salutary measures in the incipient stage of the rebellion, to prevent the ultimate subversion of the nation, General Scott thought proper to make the following suggestions to Mr. Seward, for the consideration of President Lincoln on his taking the chair of State.

Washington, March 2, 1861.

DEAR SIR: Hoping that in a day or two the new President will have happily passed through all personal dangers, and find himself installed an honored successor of the great Washington, with you as the chief of his Cabinet, I beg leave to repeat, in writing, what I have before said to you orally—this supplement to my printed "views" (dated in October last)—on the highly disordered condition of our (so lately) happy and glorious Union. To meet the extraordinary exigencies of the time, it seems to me that I am guilty of no arrogance in limiting the President's field of selection to one of the four plans of proceedure subjoined:

I. Throw off the old and assume a new designation—the Union Party. Adopt the conciliatory measures proposed by Mr. Crittenden or the peace convention, and my life upon it we shall have no new case of secession; but, on the contrary, an early return of many, if not all of the States which have already broken off from the Union. Without some equally benign measures, the remaining slave-holding States will probably join the Montgomery Confederacy in less than sixty days; when this city, being included in a foreign country, would require a permanent garrison of at least thirty-five thousand troops to protect the Government within it.

II. Collect the duties on foreign goods outside the ports of which the Government has lost the command, or close such ports by act of Congress, and blockade them.

III. Conquer the seceded States by invading armies. No doubt this might be done in two or three years by a young and able general—a Wolfe, a Dessaix, or a Hoche—with 300,000 disciplined men, estimating a third for garrisons and the loss of a greater number by skirmishes, sieges, battles and southern fevers. The destruction of life and property on the other side would be frightful, however perfect the moral discipline of the invader.

The conquest completed at that enormous waste of human life to the North and Northwest—with at least $250,000,000 added thereto and *cui bono?* Fifteen devastated provinces! not to be brought into harmony with their conquerors, but to be held for generations by heavy garrisons, at an expense quadruple the nett duties or taxes, which it would be possible to extort from them, followed by a protector or an emperor.

IV. Say to the seceded States—wayward sisters, depart in peace.

In haste, I remain,
Very truly yours,
WINFIELD SCOTT.

Hon. Wm. H. Seward.

THE UNITED STATES' NAVY.

According to the Navy Register recently published, the aggregate number of vessels in the navy, exclusive of those specially chartered, is 385, with an aggregate of 3,079 guns and 287,536 tons. Of this number 52 are ironclads, 15 entirely completed, and the balance (37) in the course of construction at the following ports: 1 at Portsmouth, 5 at Cincinnati, 6 at St. Louis, 3 in Brooklyn, 2 in Jersey City, 4 in Boston, 8 in New York, 2 at Chester, 1 at Brownsville, 1 at Mound City, 1 at Washington, 1 at Pittsburg and 1 at Philadelphia.

The regular force of the Navy, exclusive of enlisted men, is stated as follows:

17 in Navy Department, at headquarters, 10 in the Bureau of Yards and Docks, 40 in other Bureaus, 13 rear admirals; 18 commodores, 17 on the retired list; 40 captains, 22 on the retired, 10 on the reserve list; 91 commanders, 7 on the retired list, 12 on the reserve list; 144 lieutenant-commanders, 89 lieutenants, 6 on the retired list, 17 on the reserve list; 80 surgeons active list, 5 retired and 6 on *the reserve list*; 124 assistant lieutenants, 62 paymasters, 9 on the retired list; 31 assistant paymasters; 16 chaplains, 7 on the retired list; 27 professors, 317 midshipmen, 54 boatswains, 93 gunners, 60 carpenters, 46 sailmakers, 29 agents, 50 professors at the Naval Academy, 48 chief engineers, 32 first assistants, 78 second assistants, 246 third assistants and 96 officers in the Marine Corps—total officers, 1,789. If the acting officers are added, the total will be 3,729.

PINE WOOD.—According to a statement in the *Technologist*, there has for some time been in operation near Breslau, in Silesia, an establishment erected by M. Pannewitz, where pine leaves are converted into a kind of cotton or wool. This material, which is also known by the name of "woody wool," can be curled woven, or jetted. The method of operating pursued by M. Pannewitz in obtaining this kind of wool, is not given; but it is stated that a fibrous material can be obtained from pine leaves by boiling in alkaline liquors, and saturating them in a solution of chloride of lime. Blankets made of pine wool have been extensively sold in Vienna, and jackets, stockings, and other articles of dress are now made of this material. In the preparation of the wool an ethereal oil is produced, which is said to possess valuable properties.

DESCRIPTION OF A BIGOT.—The celebrated John Foster thus describes a bigot: "He sees religon, not as a sphere, but as a line, and it is a line in which he is moving. He is like an American buffalo—sees right forward, but never on the right or left. He would not see a legion of angels or devils at the distance of ten yards on the one side or the other.