

[For the Desert News.]

CHEMISTRY AND PHYSICS.

BY ALEXANDER OTT.

In order to have an equilibrium of heat in bodies, their conducting power must be alike, so that the cavities or pores are equally filled with the caloric. As remarked in a previous article, metals are far better adapted to attract heat, and gather its particles, if such a term may be applied, in a focus than stones, woods, liquids and gases; and yet the latter, when in a certain condition, conduct the caloric to such a degree, that a rising of temperature with evaporation will speedily take place, this however is not the case under ordinary circumstances.

Supposing a vessel of a certain size, full of water, receive heat at the bottom, the lower strata of that fluid become directly lighter, and rising to the surface their heated particles circulate in every direction of the vessel, and thus the temperature of the water becomes entirely changed.

For as rays of light need a focus or gathering place, in order to make an impression on the retina of the eye, and thus produce an image, so the caloric needs a place in which radiation or the extending of heated particles in every direction may be accomplished; thus each cavity or pore forms a resting place of that wonderful element called heat, and the greater the power of conduction of these pores, the greater consequently the accumulation of the caloric, and the greater the entire change of temperature of a certain body or volume.

Upon this principle, heated water and air are extensively used as media of warming apartments, in Germany, where among the latest improvements of an elegant and comfortable mansion, are found metal pipes within the walls and communicating with the different parts of the building; thus perhaps forty rooms are warmed from one given point in the basement, without ever using a stove or chimney, except in the kitchen.

From the foregoing, the reader will easily perceive the facility of obtaining an equal temperature throughout the largest building, while at the same time, valves at different places admit fresh air to traverse every point of the house, and thus the accumulation of noxious gases like the carbon is prevented.

According to Horace, Livy, Pliny, Cæsar, Figulus and other classical authors, the Romans were extremely fastidious in the arrangement of domestic comfort, their houses and baths, that is those of the Patricians, were well provided with a warming and ventilating apparatus.

The Greeks, as mentioned by Strabo, one of the best authorities in such matters, were likewise exceedingly fond of having their houses well warmed and ventilated. Some of the Tyrants* of Athens had into the apartments of their palaces in summer, cool air from flower gardens, admitted by means of so-called ventilating towers, and in winter, through earthen pipes or *caeducts*, embedded in the walls, while the *hypocaust* or fireplace in the vaults below was breathing forth volumes of warm and perfumed air.

The Arabic authors *Avicenna*, the great commentator of Aristotle, and *Al-Farabi* the eminent polyglot, speak of similar arrangements among the Moors at the time that they ruled over the greatest portion of the European peninsula.

The importance of an equal and pure temperature in apartments, is well known not only to physicians, physiologists, but to every close observer of the human system. The blood (*sanguis*), the vital element from which the animal body receives its nutriment and growth, and without which food cannot be converted into the particles assimilating with the somatic, is much influenced by the air and gases conveyed through the respiratory organs to the different veins and arteries.

By a wise law of the Creator, the temperature of a great many animals such as the vertebrate and mammalia appears to be a little higher than that of the atmosphere and changes with it. The heat of the blood which in the above mentioned species of beings is of a red color, seems to depend upon the degree of activity of the respiratory organs. In man, the temperature is generally in every climate in a sound state of the body, 98° Fah., but in birds it reaches as high as 109°.

The difference of the caloric in fishes, snakes, man and birds, is evidently originating in the greater and smaller development of the respiratory organs; in birds, for instance, where they extend over a large portion of the body, the process of calorification or of producing heat, takes place under a temperature 12° higher than that of man, while in fishes, reptiles, &c., the blood, on account of the important respiratory organs is cold, hence they are called cold-blooded animals.

That a pure well-proportioned atmosphere is essential to the health of the animal system, is evident from the fact that the amount of heat disengaged by combustion, is always in proportion to the quantity of hydrogen and carbon consumed. During the process of calorification, the oxygen of the atmosphere unites with the carbon and hydrogen, and the result is, water and carbonic acid. Hence in badly ventilated and crowded apartments, the carbon will in consequence of foul air accumulate, while the quantity of oxygen decreases, and the temperature of the room is changed to a degree which will frequently put the human body in a state of perspiration, so that on reaching the open air the blood becomes suddenly chilled which may result in colds of a most fatal character.

I refer here especially to inflammation of the lining membrane of the nostrils and wind-pipe, and the ramifications of the latter, occasioned by exposure to sudden changes of temperature. But how often are not the premonitory symptoms disregarded, and the patient, to use the emphatic language of Samuel Warren, the author of the diary of a late physician, "is on the threshold of death without his knowing it."

As remarked in a former article, both the animal and vegetable system are undergoing every moment, even by every inhalation and respiration of particles of air, changes,—that is, changes of a chemical nature, inasmuch as the most minute part of the body becomes affected, although generally gradually. Hence the constant rapport or relationship between organic bodies and the air, the effect of hurtful gases on the system and the fatal results of a neglected habitus.

Whenever I see a frail, weak constitution, which by its clear, transparent complexion, bright flush-spots on the cheek, especially on the left cheek, the peculiar brilliancy of the eye, is predisposed to that fatal, horrible scourge called consumption, I am pained that such a person should neglect himself so much as to disregard transitory chills or shiverings, difficulty of breathing, and thus end his mortal career in an untimely grave.

It is of great importance to know that the purity of the blood and consequently the healthy condition of the body depend upon the quality of the air inhaled. Even to a superficial observer, the effects of foul, deleterious gases on the animal system will be evident. But, nevertheless, few people seem to realize the necessity of having that comfort in their houses which will guarantee safety to life and longevity; else we would not often find small, badly-ventilated rooms with a low ceiling and a suffocating heat caused by the injudicious management of iron stoves, while exhalations produced by the promiscuous crowding of from eight to ten persons in one apartment, and of so offending a character meet you on entering such a hovel, that one almost wishes the *Lex Cloaca* of the Romans were in force.

In order to impress the importance of cleanliness upon the public mind by removing foul air from houses and crowded neighborhoods, a law was enacted by a *Senatus Consultum*, that everything impure should be removed from the domiciles of Rome, while at certain places canals were dug, and watered by the Tiber to receive the offal of the streets.

In places impregnated with impure air, miasma, a kind of atmosphere particularly adapted to be the hot-bed of various diseases, such as cholera etc. is readily generated. In fact the chemical influence of deleterious gases upon the human system is so great, that frequently whole generations become predisposed to or infected with certain maladies. Thus obnoxious effluvia may be conveyed from one person to the other, and often produce an epidemic.

*Tyrant from the Greek *tyranos*, signifies originally the usurper of a throne. Some of these illegitimate rulers were good men, but as in the course of time the character of such individuals, usurpation was frequently connected with unjust, cruel actions, tyrants denoted at a later period of the Grecian era men who would be capable of the greatest atrocities.

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HAPPINESS.

Life is like the sea, and man, if he has no object to pursue, is a wave upon its broad bosom. If you would be successful you must picture in your mind some object worthy of attainment, and then point your life-compass by its bearings, and steadfastly, unflinchingly bend your course towards it until the object is in your possession. We all know hundreds, and I might say thousands, whose lives are fruitless and totally void of interest to others or themselves; and the reason of this is the lack of a suitable object upon which to expend the accumulating energies of manhood.

The more noble, the more intellectual the object is, the more happyfying will it be in its influence upon his joys. We should discard selfishness, for it is no part of a noble nature. It is a low, grovelling passion, the offspring of little minds and weaker spirits. The truly great walk forth in the energy of manhood, fearing no difficulty and yielding to no meanness to accomplish a purpose. They are fully conscious of their own worth and the value of their integrity, yet they are not vainly proud. They never cherish their knowledge and keep selfishness aloof, but the wisdom they glean from the wide experience of life they freely impart to others, and follow for their guide and standard of right, "It is never wrong to do right."

Two men may start in life—one of noble aspirations, whose secret heart despises the superfluities of life, but whose soul is keenly alive to the value of wisdom and experience. Trials he takes as a matter of course, as a means of learning him more deeply the different phases of life, and opening to his view the superior excellence of contentment, proving, philosophy to the contrary, that his spirit can accommodate itself to circumstances. With him the joy does not consist in the position he occupies, but is within, and is a part of himself. No exterior or extraneous distresses can disturb his inward peace, and, wherever he goes, and wherever he suffers, he still has the same holy calm pervading all his life, and tingling with the mellow light of confidence, his every act.

Another starts upon his life-long journey with far different intent. Gold is his object. From morn till night, and from night to morn again, he thinks of gold and figures. He gains his object, and at the same time has gained an

increase of avarice and desires. His life is one long struggle; not for happiness, but against it. Perhaps the crushing band of adversity grasps him in its remorseless power, and the labor of years is dispersed in an instant. Then comes his misery. Having spent his life in the pursuit of a fleeting phantom which eludes his efforts, he has unnatural desires acquired by this profitless pursuit, which he can no longer gratify. It is too late (if it is ever too late), to reform his character and mould again each characteristic, and they remain as thorns to irritate and dispel happiness.

Some say that life was given to enjoy. So it was, but to properly enjoy it we must become every day better and more wise. To ever run to extremes, as many do, is not to enjoy life, for enjoyment is a natural and calm feeling, foreign from the excitement and turbulence which springs from an ill advised judgment. Wisdom seeks this enjoyment, not for the purpose of being counted wise by the multitude, and rising in the estimation of others, but for the pure joy to which it gives rise. Contentment in obscurity is preferable to honor or fame in public, where often the station stifles the real sentiments of the heart which would otherwise find an exit.

I can conceive no situation in life more torturing to the heart or more destructive to all the noble and fine feelings of the soul than that in which no confidence exists. Confidence is the mainspring of action—the bone and sinew of life, guiding all our actions, and is subservient to anything but will. To cultivate this faculty we must have confidence in ourselves, for wherein we lack this we are sure to fail. To call all men dishonest because we are, would be to write fool to our names and trumpet forth our shame. To suspect all of evil intentions is to show that we harbor evil towards others, and that, were it not for the ignominy attending discovery we would launch forth in a career of crime with no moral stamina to resist its encroachments.

If we pretend to have virtue, why should we not practice it? To ever talk of a principle and never practice it is a shame to what manhood we possess, and tends to retard our after progress. Others have observation as well as ourselves, and to boast of our superior excellence, and then not to accomplish anything, simply makes us ridiculous and a laughing stock for our friends. Have not all their hopes too? Have not all their desires? Life is a race in which emulation leads us, and in which virtue should be our aim. Emulation would not cause us to envy the superior success or excellence of a brother, but it might cause us to redouble our own exertions, to string each energy we possess to the tenseness of a determined purpose—a purpose in the accomplishment of which there is no swerving from right or from principle.

Some minds grasp at truth intuitively, as it were, understand principle by instinct, almost, yet this lightning rapidity of deduction should never discourage us in our endeavors. What is heaven? Were I to define it in one word, and that to be of the standard of human comprehension, I should say it is happiness, supreme happiness. Every human being—every one that possesses a soul, will at once say, we seek happiness; yet in how many myriad of ways will they do so. No two views life in the same light, in all its varied phases, nor do they seek happiness in the same manner.

If we philosophize upon life, we can but deduce from its mysteries one rule—that man is the founder of his own fortunes, subject to the dispensations of a higher power. Happiness is more innate than existent in extraneous wealth, and they who roam from zone to zone in search of it, who encounter the dangers of a thousand scenes of daring adventure, whose whole life is one search for excitement, would find it far more to their advantage did they rouse each latent energy for the conquest of themselves. How great, how morally grand would that man be who could really, and at all times, look upon wealth, power, pleasure—pleasure such as the world seeks, but as dross before the superior charms of duty, of the calls of virtue and of wisdom. Such a course certainly brings a superior happiness to that satiety which follows the gratification of the grosser passions; duty cannot be slighted and the aggressor escape punishment, nor will he whose life is virtuous ever flee or cower beneath the scorpion stings of conscience.

Reason, then, tells us contentment is the foundation upon which happiness rears her superstructure, and, when founded upon anything else than self government, it cannot stand permanent and secure against the winds and the waves of an adverse fate. Resignation! Even the Pagan philosophers inculcate that principle, and shall we not cultivate it? But it should not be the resignation of inaction, of imbecility, as will the querulous complaint of ill nature, of fancied wrong; they are as harmless; it should be the resignation of manhood, of persevering, energetic hope, of trustfulness in divine protection, of ardent seeking wisdom, and of the laborious toil of industry.

Then if we wish happiness we must seek her, not amid the flowery paths of pleasure, the dizzy heights of ambition, nor yet amid the glittering treasures of a Croesus; but on oft times rugged path of duty, amid the hovels of poverty, in the pathway of abnegation and of self-conquest. Happiness dwells in the mind; the palace cannot receive it any sooner than the cottage. The sceptre is as impotent as the artisan's implement, aye, and a thousand times more so, for fear often crushes it out of the ruler's heart, and tyranny usurps its rightful home. Seek it, then; seek it. It is within the reach of all, it is equally theirs—if they earn it. OXION.

SACRED PLANTS.

Nearly all nations have had at some time a sacred shrub, tree or plant, and appear to have been guilty of a species of idolatry in worshipping it. It is even conjectured that the adoration of idols sprung from this practice, the idol being made from the wood of the sacred tree. In the Scriptures we read of the "Tree of Life," the "Tree of Knowledge of good and evil." Dr. Barlow says the superstitious regard which in Christian countries has been shown to certain trees, while it admits of explanation, points us to a primitive practice in harmony with the figurative language of early literature, and with the symbolical character of holy writ. Sacred woods and consecrated groves were attached to the temples of the ancient heathens, and continue still in most Pagan countries, and were and are the terror of the timid, the refuge of the crafty and the grave of the credulous. The Mahometans consider it sacrilege to destroy a fine tree, and prefer praying under very old trees to the neighboring mosque. The few cedars remaining on Mount Lebanon are preserved with a religious strictness. On the day of the Transfiguration the patriarch repairs in procession to these trees, and celebrates a festival, called the Feast of Cedars.

In England there was a mysterious reverence for the oak, and though this may be traced in a measure to the use of its wood in the construction of ships, and also to its sheltering King Charles among its branches in the day of his adversity, yet it has a deeper reverence, which has come down to us from the ancient Druids, whose tabernacle was an oak tree. The mistletoe, from growing upon the oak, partakes of a sacred character, and it is considered that Isaiah alludes to this plant, which he makes symbolical of the Messiah. Deborah judged Israel under an oak tree. Our Christmas tree, which is such a source of delight to juveniles even in our own day, had its origin in Egypt, and was used long prior to the Christian era. Every reader of the Bible will remember the sacred groves; the first temple mentioned was the grove which Abraham planted at Beersheba. Such, it is conceived, was the origin of the Druidical groves of this country, and in Scandinavia and Germany, which in ancient times were the only places of public worship referred to.

Tradition has handed down the following figurative fable from the Edda of Woden—that the court of the gods was held beneath a miraculous ash, whose branches cover the surface of the world, and whose summit touches the heavens, whilst its roots descend to the regions of Pluto. An eagle constantly reposes on the tree to observe everything, whilst a squirrel ascends and descends incessantly to make the report. Beneath one of its roots runs a limpid fountain, where wisdom is concealed; it communicates with a neighboring spring, in which is found the knowledge of all things to come. The Edda of Woden holds the ash in so high veneration that man is described as being formed of it.

The Greeks devoted their terrestrial groves, as well as celestial gardens, to the gods; but the Mahometans reserve their flowery lawns and umbrageous bowers for scenes of future bliss.

The cypress has been the symbol of sorrow and the funeral tree of all countries where it grows. The fir was dedicated to Pan, as the god of huntsmen, from his supposed residence in woods of that tree.

The peach tree was sacred to Harpocrates, the god of silence. The Tabernaculum coronaria of botanists is held sacred by certain Indian tribes, who believe it to be the tree which bore the forbidden fruit.

In Arabia, Africa, China and India we find certain trees still worshipped. The sacred trees of China are *Cupressus funebris* and *Illicium religiosum*. In Malabar the flowers of *Ixora* are offered to Iswara, one of their idols, and the genus is named after him. *Nelumbium speciosum* is a sacred plant in Japan, and the images of their idols are often drawn sitting on its large leaves.

The Japanese place bundles and garlands of the flower of *Illicium anisatum* in their temples before their gods, and use the powdered bark as incense to their idols, and burn the seeds of *I. religiosum* as incense in their temples.

The genus *Thuja* or *arbor vita*, derives its name from *Thyon*, a sacrifice; the wood giving out an agreeable perfume, was used as incense in Eastern sacrifices. *Passiflora*, Passion flower (from *passio*, suffering, and *flor*, a flower, referring to the parts of the flower being likened to the circumstances of Christ's crucifixion).

Several genera of plants have been named after heathen divinities, as *Tageetes*, after *Tagees*, the son of *Genius*, and grandson of *Jupiter*, a Tuscan divinity; *Adonis*, after *Adonia* of the *Cassics*; *Atropa*, after one of the *Fates*; *Silene*, after the god *Silenus*, who is represented as always drunk and covered with saliva, as the species of this genus usually are with a viscid secretion; *Helenium*, after the celebrated *Helen*, who is said to have used it as a cosmetic, &c., &c.—[Scottish Farm r.]

A DIFFERENCE.—A Catholic once said to another who had taken the pledge and received a medal from Father Mathew, "And so you have signed the teetotal pledge, have you?"

"Indeed, I have; and I'm not ashamed of it either."

"And did not Paul tell Timothy to take a little wine for his stomach's sake?"

"So he did, but my name is not Timothy, and there is nothing the matter with my stomach."