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Sun Stroke.

Several of our cotemporaries have been giving some good advice on this subject, and although we think they are wrong in some points, for in our opinion, a sun stroke is actually the result of a rush of blood to the head, suffusing and choking up the brain, and thus producing insensibility and weakness of muscular action, yet in the main they are right. Cold water, bleeding, and other simple means should be tried on a person so affected, and friction to stimulate circulation should be resorted to. When the patient is reviving from the stupor a cup of tea or coffee will aid in restoring perfect consciousness.

Persons in sound health are seldom attacked. Previous debility, general depression of the vital forces, unusual and excessive physical exertion, violent gusts of passion, excessive drinking of cold water, or of alcoholic beverages, superadded to exposure to the summer sun or a hot fire, create the danger. Careful moderation in these particulars will generally secure exemption. The Arab, wandering in an arid desert, subsisting on camel's milk and a few vegetables, usually enjoys immunity; his blood is not vitiated by stimulating food or unwholesome drinking. Fishermen, for the sake of protection, sometimes fill their hats with moist sea-weed, though any large leaves, or even a wet cloth upon the head will answer as well. This is an infallible preventive, and should be more generally observed by laboring men.

The best preventive is, decidedly, temperance, more especially in eating. During the hot weather no person should eat flesh meat more than once a day, and then in small quantities. Highly seasoned dishes are to be avoided, and plenty of good, light, farinaceous food and fruit taken in their stead.

Steam Navigation and John Fitch.

A life of this early American inventor, by Thompson Westcott, just published by Lippencott & Co., of Philadelphia, affords matter for intelligent comment. John Fitch was a native of Windsor, Conn., in which place he was born in 1743. His lot, in many respects, seems to have been surcharged with sadness. From early infancy to the last sad act in his life's drama—when he became weary of the world and put an end to his existence—he seems to have been the subject of misfortune and disappointment. When he attained to manhood he emigrated to Trenton, N. J., and having taught himself to be a watch and clockmaker, also a silver and brass smith, he commenced business for himself, and for a brief space was somewhat successful. But the war of the Revolution having broken out, he was compelled to fly before the British army, sacrificing nearly all his property. On one occasion he was taken captive by the Indians, and retained a prisoner for a considerable time, during which he suffered incredible hardships. After the war of Independence had terminated, and peace had settled down upon the land, commerce and trade began once more to smile upon the mechanic arts. It was then that his inventive mind was directed to improvements in navigation, he having become convinced that some superior mode could be devised for propelling vessels on our noble rivers and lakes than by the old plans of oar, sail, or setting-poles.

It is not generally known that Fitch constructed a steamboat in 1787, which made several trips on the river between Philadelphia and Burlington, N. J. This was eighteen years before Fulton's boat—the *Clermont*—made her first successful trip on the Hudson river.

When it is taken into consideration that Fitch was poor, and that his steam engine and boiler were constructed in a very rude manner, it is a matter of surprise that his boat was able to make a single trip; that it made several does him great credit, as at that early day it completely demonstrated the practicability of steam navigation. Being deficient of means to have a good engine and boat built, he was not able to infuse the same enthusiasm regarding its success which he felt himself. By some he was looked upon as one "beside himself;" and generally he met with sneers where he should have found encouragement. Becoming discouraged at last, he took up his abode at Bardstown, Ky., where he ended his life in 1798. He often said that although his invention was then looked upon as visionary, the time would come when steamboats would be seen on every river of his native land. His prophecy has been fulfilled on a grander scale than he ever dreamed of.

It is not a little remarkable that about the same time as Fitch's experiments were being conducted in America, efforts of a similar character were being carried out in Europe by Patrick Miller, of Dalswinton, Scotland, and neither of these two was aware of what the other was doing. It appears to us that these two cotemporaneous inventors deserve the credit of being original inventors of steam navigation—the one representing the Old, the other the New World. They were the first to demonstrate the practicability of steam navigation; and although they were not permitted to reap the fruits of their inventions, they deserve the honor.

Putrefactive Poisons.

As we have so lately had occasion to refer to that virulent epidemic, the yellow fever, we cannot but be doing service in giving some information concerning the above, the result of investigations conducted by an English gentleman, and communicated by him to the London *Engineer*. There is little doubt that epidemic and putrid diseases owe their origin, in the first instance, to a product of putrefactive fermentation, or that change which goes on in the decay of animal and vegetable substances. Whether this product be a new compound alkaline body, or an organic germ, the one of far greater power than any alkaloid at present known, the other rapidly producing a morbid change in the animal system, or a powerful ferment, volatilized, and carried off by other bodies; its fearful consequences cannot but excite our wonder, and its existence should excite the man of science to study its properties, so that we may place it out of the domain of conjecture into the realms of certainty. By specifying a few examples of the action of "putrefactive poison," we shall be able to more correctly ascertain its nature. The malaria of India, Ceylon, and the Campagna of Rome, the subtle emanations which occasionally follow the course of rivers, the effluvia of marshes, cesspools and drains, and the poisons generated in certain preparations in animal food seem to be but modifications of the same cause. If so, the study of one will afford a key to the whole. Our authority has chosen the *malaria* of Ceylon; let us follow him. This emanation is supposed to owe its virulence to sulphureted hydrogen, but that gas when diluted with air does not produce the effects of *malaria;* so that it is no longer the gas of the laboratory, but has acquired new properties by contact with decaying vegetation. It holds in solution an organic poison, the composition of which analysis cannot reveal. By imitating this process in the laboratory, namely, passing sulphureted hydrogen through water containing putrefying vegetable matter, we find that it has a new odor and peculiar properties. When decomposed by chloride of lime it deposits *carbon* as well as sulphur, and it is probable that the remaining constituent of the poison is hydrogen. If this can be proved, the poison is a true hydrocarbon, and it is probable that it only emanates where there is no growing animal or vegetable life to assimilate it while in an innocuous state, because it has been observed that vegetable as well as infusorial growth lessens the dangerous character of putrefactive poisons. The gases with which this poison assimilates itself, and on whose character much of its virulence depends are the following:—

1 Hydrogen,
2 Sulphureted hydrogen,
3 Carbureted hydrogen,
4 Phosphureted hydrogen.

The study of the properties and peculiarities of these gases assumes therefore an importance which they never possessed before.

Fungi are also known to propagate disease, but when we remember the extraordinary diffusive character of the gases, the growth of fungi as a means of spreading disease falls into insignificance. We think that this chemical theory is the key to the mystery, and it only now remains for some hero of science greater than Alexander, Cæsar or Hannibal, to unlock the door, and make the grandest conquest the world has ever seen, namely, the conquest of man over epidemic disease.

A Prize Architectural Association.

Mr. Simon P. Sleppy, of Wilkesbarre, Pa., proposes the formation of an association for the promotion of the interests of architects upon the following general basis:—Architects who desire to become members to furnish drawings of the choicest structures of their own designing, one per cent of the cost of the building shown in the drawings to be deposited by the designer as a contribution to the funds of the association. The drawings to be properly classified. The money received to be paid, in suitable prizes to the originators of the best designs in each class, a sufficient amount being deducted to pay the expense of annually engraving and publishing the prize plans. The awards to be governed by vote of the members.

With good management an enterprise of this kind would seem to be practicable. An annual volume of architectural designs of the character indicated would be highly useful.

Horseshoeing.

[Concluded.]

One of the great mistakes smiths fall into in shoeing the hind feet is squaring the toe, and placing a clip on each side of it, with a view, as they say, of preventing the horse striking the toe of his hind shoe against the heel of his fore shoe, and producing the disagreeable sound called "forging;" but as a horse never does "forge" with his toe, the plan of squaring it and the reason assigned for it equally fail in their object, and, like many other fallacies connected with the art of horseshoeing, produce the very results they were intended to obviate.

A horse forges by striking the outer rim of each side of the hind shoe, just where it turns backward, against the *inner* rim of the fore shoe, just behind the quarters; therefore the broader the toe of the hind shoe is made by the sqaring and the clips, the more likely the horse is to strike it against the fore shoe. It happens in this way: the horse fails to carry his fore foot forward quickly enough to get it out of the way of the hind foot, and the toe of the hind shoe is thrust into the opening of the still held up fore shoe, and the outer edge of the hind shoe strikes against the inner rim of the fore shoe and produces the sound. I have entirely cured several horses of forging by merely causing the corners of the artificially-squared toe to be removed and the toe restored to its natural form.

The best mode of treating the toe of hind shoe of all horses is to make it rounding and rather pointed, and to turn up a small stout clip in the center: the toe should be tolerably thick, as the wear is always great at this part of the shoe, and the back edge should be rounded with a file, particularly for horses at all likely to be put to fast work; it prevents the chance of "overreach," which, like forging, is often erroneously attributed to the front of the toe, but it is invariably caused by the back edge, which in a half-worn-out shoe becomes as sharp as a razor. The accident is very properly named, for the horse really overreaches the fore foot with the hind foot, and the back edge of the toe of the hind shoe in its return passage to the ground strikes the soft part of the heel of the fore foot, and often produces a wound that is very troublesome and difficult to heal.

The only other portions of the hind shoe which require special attention are the heels. The plan I have adopted for many years past is to have them forged longer and deeper than is commonly done, and when the ragged ends have been cut off, the heels are made red hot, and the shoe placed in the vice with the heels upward and projecting; the smith then hammers them down, to shorten and condense them, until the mass is reduced to about an inch and a-half in length; he then removes the shoe from the vice and makes the top, bottom and sides of the heels flat on the anvil, preparatory to fitting the shoe to the foot, taking care that both heels are of equal height. This plan affords a larger and more even surface of support than mere calkins would do, and is better for fast work; but calkins are very useful for heavy draught, provided they are made of an equal length at each heel. Nothing is more distressing te a horse than working in shoes that bear unevenly on the ground, twisting and straining his joints at every step he takes.

Some horses have a habit of striking the foot or shoe of one side against the fetlock joint of the other side either with their fore or hind feet, and various devices have been at different times suggested as a remedy for the evil; but as each horse has his own mode of doing it, much difficulty is often experienced in hitting upon the right one. I have frequently solved the difficulty by placing a boot or piece of cloth covered with damp pipe-clay over the injured part, and then causing the horse to be trotted along the road, and he generally retnrns with some of the pipe-clay adhering to the offending portion of the opposite foot or shoe, as the case may be, pointing out pretty clearly the part to be lessened or removed. The adoption of this simple plan has saved many a horse from months of torture arising from ill-contrived shoes and misapplied remedies.

As a general rule, horses' shoes should be removed once between each fresh shoeing; but this, like all general rules, admits of exceptions, for if a horse wears out his shoes in less time than a month, they had better not be removed, or if he has a weak, brittle hoof, and does not carry his shoes longer than five or six weeks, they had better remain untouched, as such feet grow horn very slowly, and are rather injured than benefited by frequent removal of the shoes; but a horse with strong feet, who carries his shoes over a month, should have them removed and refitted at the end of a fortnight or three weeks, dependent on the time his shoes are likely to last.

The treatment, or I might almost call it the ill-treatment, that horses' feet receive in the stable requires a good deal of revision, and might very well commence with the all but universal custom of washing the feet and legs with cold water the moment the horses return to the stable from their work, when they are often heated, tired, and exhausted. Nothing can be more injudicious than subjecting them to the sudden chill, caused by a liberal application of cold water to their legs and feet at such a time, and then leaving them to dry as best they can. The amount of cold produced during the process of evaporation is so great, that the poor beasts remain in a state of chilled wretchedness for many hours before they become thoroughly warm again. And as many stables are not provided with hot water at command, the best plan is not to wash them at all when they first come in, but merely to pick out the feet, clean off the dirt, and leave them for several hours, until the circulation has recovered itself and subsided into a natural state, or even until the following morning, when they may be safely washed with cold water, and the delay will do no harm.