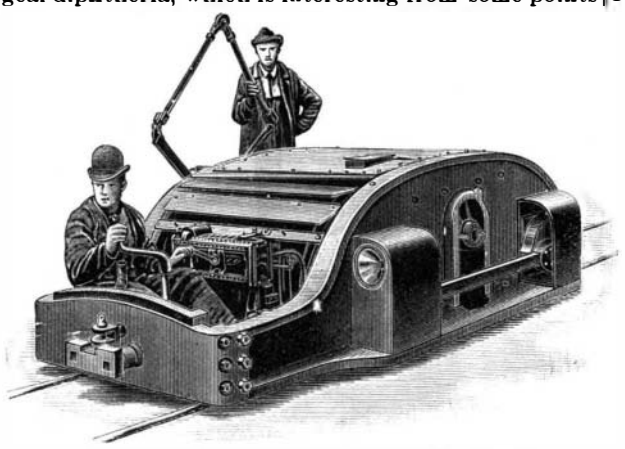
ELECTRIC MINING LOCOMOTIVES.

In October, 1889, the Thomson-Houston Electric Company designed and installed in the Erie colliery of the Hillside Coal Company a successful electric mining locomotive. The requirements of other mines, however, have led to the production of a locomotive differing essentially from that in the Erie colliery, and a type known as the "Terrapin Back" is shown in the accompanying illustration.

It is most substantially and solidly built, the interior mechanism being entirely protected by a heavy iron armor, and possesses in a marked degree the important features of strength and solidity. The motor for operating the locomotive is of the iron-clad consequent pole type, having a Gramme-ring armature. It is provided with the radial type carbon brushes and elongated commutator segments, by means of which the most durable connection with the armature coils is obtained. The motor is situated midway between the axles, the proper speed reduction being attained by means of a train of gears. The locomotives can be run at various speeds, the motors being wound for any speed from four to ten miles an hour.

The locomotive is provided with the necessary controlling devices, all placed within easy reach of the operator. A special type of rheostat, composed entirely of mica and German silver, is employed, and a new and improved brake lever and reversing switch. The trolley arm through which the current is conveyed to the motor is of the double elbow pattern, which accommodates itself automatically to the varying heights of the conductor, and permits the operation of the car in either direction. On each side of the locomotive is placed an incandescent lamp, which serves the double purpose of signal and head light. A 220 volt generator supplies the necessary current.

The Thomson-Van Depoele Electric Mining Company, which designed this locomotive, has also in process of construction several new types suited to the requirements of different mines, hard and soft coal, iron and other metals, and for high and low entries, and for gauges varying from eighteen inches to the standard. The success of the apparatus already installed has given great impetus to this branch of applied electricity, and will undoubtedly result in the still further use of electricity in mining operations.



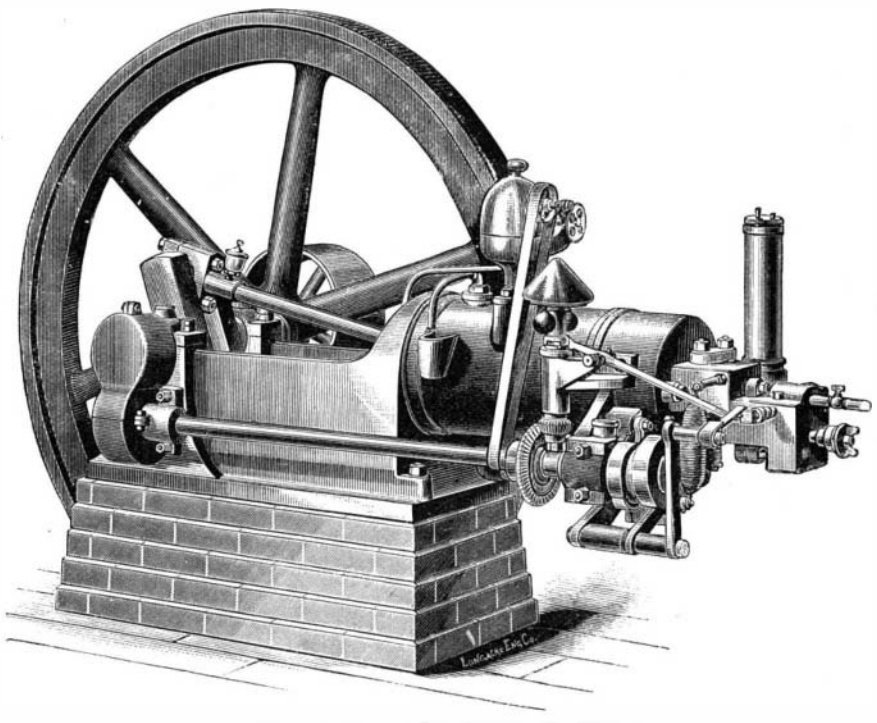
A THOMSON-VAN DEPOELE ELECTRIC MINING LOCOMOTIVE.

THE "OTTO" GASOLINE ENGINE.

The successful gasoline engine should, first of all, be so constructed as to prevent any leak of gasoline either in vapor or fluid form, and it should besides be simple in design and reliable in operation for each function belonging to the cycle of work of the engine. The Otto Gas Engine Works, of Philadelphia, who have made a national reputation on their Otto gas engines, have endeavored to meet these conditions, and the engine herewith illustrated represents the smallest size of such an engine which they have recently placed on the market. No separate apparatus is used for producing vapors, but the gasoline is conveyed to the engine from a supply tank placed outside of building, and only mixes with air when it reaches the engine cylinder, where it is fired at once.

The igniting is done by a hot tube, which has been found so efficient a device with the modern Otto gas engines, and this tube is heated by a flame, similar to that produced in gasoline stoves, and surrounded with the same precautions for safety. The Otto gasoline engine is also fitted for electric ignition, and the engine is so arranged that it can be furnished with either form of igniter as desired.

Among the sizes offered by the Otto Gas Engine Works some are specially designed for electric lighting, running at high speed and adapted for use in country residences, hotels, public gardens and grounds, etc. Other sizes have been made of portable design and are available as farm or contractors' engines, for thrashing, hay baling, pumping for irrigation, etc. The size illustrated is of about four horse power, and this size has been in demand from grain dealers for running elevators, conveyors, feed mills, corn shellers, etc. The running expense is of course very low, and as compared with gas engines the cost corresponds to that of gas at 60 to 80 cents per 1,000 c. ft., gasoline being 8 to 10 cents per gallon.



THE "OTTO" GASOLINE ENGINE.

SUNOL, the new mare of Mr. Robert Bonner, trotted a mile, in harness, in 2 m. 8¼ s. This was on Oct. 20, at Stockton, Cal. This is half a second faster than the time made by Maud S., heretofore the fastest trotter in the world. Both horses are owned by Mr. Bonner, of New York.

New Treatment of Diphtheria.

The highly unsatisfactory state of the therapeutics of this terrible destroyer of infantile life is assuredly in nowise better shown than by the amount of literature constantly devoted to the subject and the number of systems of treatment continually being proposed. Pretty nearly every drug in and out of the Pharmacopœia has had its advocates, and still the sheaves are garnered, and the edge of the sickle has not been turned by drugs and systems.

Professor Seibert proposes (*Archives of Pediatrics*, June, 1891) yet another system of treatment of pharyngeal diphtheria, which is interesting from some points of view. Basing his ideas upon the fact that the pharyngeal manifestations of diphtheria begin as a local process, and that this owes origin to the entry and penetration in the mucous membrane of the Klebs-Loeffler bacillus; that the pseudo-membrane is not the disease, but the result of the disease, and is "a safe guide to the diphtheritic inflammation below it;" that the chief treatment should be local, and that the removal of pseudo-membranes is useless, as the bacilli contained therein are of no further consequence, and that local treatment, as carried out generally, does not reach the *active* bacilli in the lower strata of inflamed tissue, and is therefore neither local nor germicidal; that wiping away the pseudo-membranes and applying strong antiseptics to the parts is also ineffective, as only tending to cauterize and infect the healthy surrounding mucosa, to rubbing the bacilli into deeper parts, and is without germicidal effect, Professor Seibert has devised instruments for the purpose of bringing comparatively small, but very strong, solutions into *direct* contact with the bacte ia which are in activity upon the lower stratum of the mucosa. The anti-bacillary medium to be used is the officinal and freshly prepared chlorine water of the United States Pharmacopœia, and with a special syringe (the chief feature of which appears to be that instead of one needle point there are five such points arranged on a flat disk) the points are pressed firmly in to their full length into the pseudo-membrane, so as to reach the inflamed tissue below, and chlorine water is injected into the part. Thus brought into direct contact with the active bacilli and cocci of diphtheria, these latter are immediately destroyed, and "the process comes to a stand-still." The contact of the chlorine and the active germs is the foundation of the treatment.

After the injection a gargle of one or two grammes of tincture of iodine, and ten drops of concentrated carbolic acid, in four ounces of water, is given, a teaspoonful being alternately gargled and swallowed every fifteen minutes, from 6 A. M. to 12 at night; five drops for gargling, and half a teaspoonful every half-hour for swallowing, being given to younger children. Zinc and mercurial ointment is rubbed into the swollen glands every two or three hours or less, and an icebag adjusted over the swollen parts of the neck. It is claimed that where the process is localized, and the membranes are undermined by the chlorine injections, the temperature makes three to four degrees, and the œdematous swelling disappears. Though the pseudo-membranes remain in the throat for two to four days, they are harmless, but the mouth wash keeps them from spreading the process. Of thirty-five cases, Dr. Seibert claims to have only lost two under this method of treatment, and none of his patients developed diphtheritic paralysis. If we could be sure that the arguments in favor of the treatment were not of the *post hoc, propter hoc* kind, we might be tempted to echo the author's remarks, that "these cases are sufficient to show that the chlorine water injections are efficient, local, and germicidal' enough to check the career of any diphtheria germs they come in contact with." At all events, the results are good, the treatment novel, and, in view of the disappointing nature of most plans of treatment of diphtheria, we cannot afford to disregard any suggestion, based upon respectable data, for contending with this formidable disorder.—*Journal of Laryngology and Rhinology*, Aug., 1891.

Effect of Water upon Horses.

A horse can live twenty-five days without solid food, merely drinking water; seventeen days without either eating or drinking; and only five days when eating solid food without drinking.

An idea prevails among horsemen that a horse should never be watered oftener than three times a day, or in twenty-four hours. This is not only a mistaken idea but a very brutal practice. A horse's stomach is extremely sensitive, and will suffer under the least interference, causing a feverish condition.

Feeding a horse principally on grain and driving it five hours without water is like giving a man salt mackerel for dinner and not allowing him to drink until supper time—very unsatisfactory for the man.

If you know anything about the care of horses, and have any sympathy for them, water them as often as they want to drink—once an hour, if possible. By doing this, you will not only be merciful to your animals, but you will be a benefactor to yourself, as they will do more work; they will be healthier; they will look better; and will be less liable to coughs and colds, and will live longer.

If you are a skeptic and know more about horses than any one else, you are positive that the foregoing is wrong, because you have had horses die with watering them too much, and boldly say that the agitators of frequent watering are fools in your estimation, and you would not do such a thing. Just reason for a moment, and figure out whether the animal would have over-drank and over-chilled its stomach if it had not been allowed to become over-thirsty. A horse is a great deal like a man. Let him get overworked, overstarved, or abused, and particularly for the want of sufficient drink in warm weather, and the consequences will always be injurious. Sensible hostlers in large cities are awakening to the advantages of frequent watering. Street car horses are watered every hour, and sometimes oftener, while they are at work. It is plenty of water that supplies evaporation or perspiration and keeps down the temperature.

What old fogy methods amount to may be seen by the change in medical practice to man. Twenty years ago a person having a fever of any kind or pneumonia was allowed but little water to drink, and then it had to be tepid. To-day practitioners prescribe all the iced water the patient can possibly drink; and in addition, cold bandages are applied to reduce and control the temperature of the blood. What is applicable to man will never injure a horse. Use common sense and human feeling. Don't think it is a horse and capable of enduring any and all things. A driver who sits in his wagon and lashes his worn-out, half-curried, half-fed and half-watered team should never complain of any abuse he may receive from his master or employer, for he is lower in character, harder in sympathy and less noble than the brutes he is driving, and deserves, in the name of all that is human, the punishment of a criminal.—*The Chicago Clay Journal.*

TO remove peach stains from white table napkins without injuring the fabric, try Javelle water or weak solution of oxalic acid. Wash out thoroughly. It is well to follow Javelle water with a weak solution of sulphurous acid.