Old Ants and Aged Spiders.

Dr. H. C. McCook, in an interesting paper lately read before the Philadelphia Academy of Sciences, and reported in the *Ledger*, gave an account of the life history of a fine specimen of the spider commonly known as the American tarantula. The animal was given to him in 1882 by Dr. Joseph Leidy. It was then apparently 18 months or 2 years old, and it lived in captivity until July, 1887. At the period of its death, therefore, it must have been at least 7 years old, and may have been 8, having thus attained the distinction of being the most aged spider known to science. How long this species and other spiders generally live in their natural habitat is not known, but human protection in the present instance probably aided to prolong life. It was kept first in a glass globe, and afterward in a wooden box, with glazed sides and a sliding glass door at the top. One end was filled with dry soil, which was slightly compacted and heaped up. The other end was sparsely covered with earth. It was at all times liberally supplied with water, and its food consisted of live flies, grasshoppers, and locusts. During confinement the tarantula shed its skin several times, a process apparently attended with some danger, as it was during such a change the creature died; and once before, on a similar occasion, it was found apparently dead, although it afterward revived. It is possible that it was too much exhausted by long previous fasting to endure the severe strain which evidently is laid upon the organism in the act of moulting. The spring of 1887 was a backward one, and some difficulty was experienced in procuring insects for food from the immediate neighborhood. The annual supply of grasshoppers and locusts was very late, and it may be that, had the spider been strengthened by a few weeks' generous feeding previous to its last moult, it might have been still alive.

In connection with the general subject of the prolonged life of insects, Dr. McCook stated that during a recent visit to Sir John Lubbock at his house in London he inquired after a queen of the fuscous ant, which he had seen in an artificial formicary six years ago, it being then nearly 8 years old. He was told by his host that it had died the day before, having at the time reached the wonderful age of more than 13 years. She was still attended by her circle of courtiers. Some of these were licking the dead queen, or touching her with their antennæ, and making other demonstrations as though soliciting her attention, or desiring to wake her out of sleep. It was certainly a touching sight to witness these faithful attendants surrounding the dead body of one who had so long presided over the maternal destinies of the colony, and seeking by their caresses to evoke the attention which never again could respond to their solicitations.

AN ELECTRIC CARRIAGE.

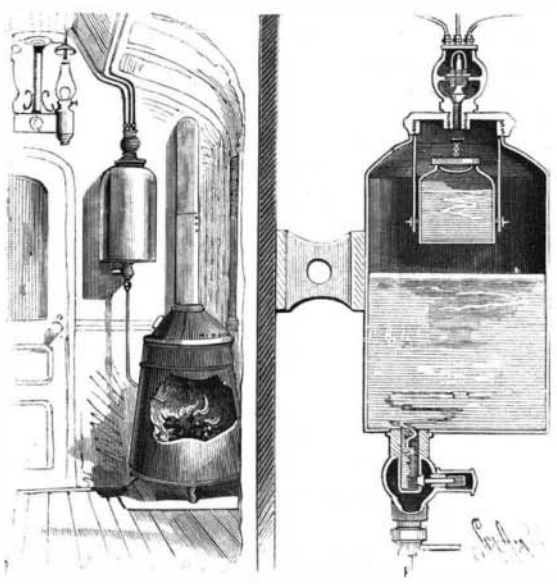
Mr. Magnus Volk, of the Brighton Electric Railway, has recently turned his attention to the application of electric traction to vehicles running upon ordinary roads. The dog cart represented in the adjoining engraving was built by Messrs. Pack, coach builders of Brighton, and is driven by an Immisch motor of ½ horse power type. The current is supplied by 16 E. P. S. accumulators, which at the normal rate of discharge are good for a six hours' run. The cells are placed under the seats. The motor is supported by hangers under the body of the car, and drives on to a countershaft in front by a Renold's steel link chain. Upon the inner side of the rim of the right hand wheel, which is four feet in diameter, are a number of blocks fixed about one foot apart, and a second steel chain passes from the countershaft around these blocks. The arrangement is neat in appearance, and has the advantage of reducing the weight of the gear to a minimum.

The motor at present employed weighs 40 pounds, though it is scarcely large enough for the work it has to do. The experiments so far made have resulted in obtaining valuable data as to the tractive force required for vehicles on roads of various kinds. On asphalt the tractive force is less than on a grooved rail, and a speed of nine miles an hour can be obtained, whereas on a soft macadam road only four miles an hour is possible. With a load of two persons a grade of 1 in 30 can be surmounted.

The vehicle is the object of much attention just now in Brighton, and taken altogether as a first experiment the results may be considered to be interesting and satisfactory. *The Electrician.*

AN IMPROVED FIRE EXTINGUISHER.

A fire extinguisher especially designed for use in connection with car heaters and lamps, by which the fire in either or both will be put out when the car is upset or subjected to a particularly violent concussion, is illustrated herewith, and has been patented by Mr. William H. Durant, of Concord, N. H. It consists of a tank containing a solution of bicarbonate of soda dissolved in water, with a valve in its bottom and pipes leading therefrom to the interior of the car stove or heater,

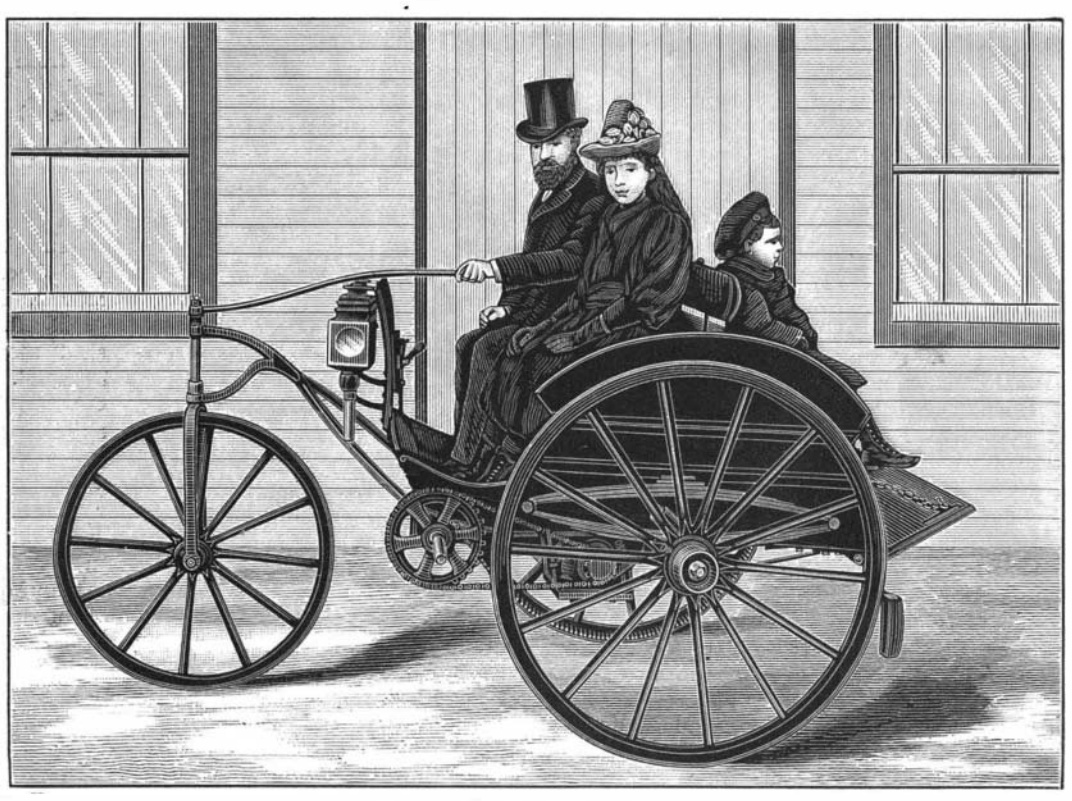


DURANT'S FIRE EXTINGUISHER.

while in the top portion of the tank a small vessel is held suspended containing sulphuric acid, which, when emptied into the bicarbonate of soda, produces carbonic acid gas. The sulphuric acid vessel is supported on trunnions in such way as to be overturned by a severe concussion, by which its stopper will be withdrawn and the acid allowed to flow into the tank, where the pressure produced by the consequent production of carbonic acid gas will force open the valve at the bottom, connected with pipes leading to the car heater, and the fire-extinguishing gas is thus conducted to outlets in proximity to the grate bars. A small extinguisher of this kind may also be readily applied to lamps, the extinguisher for a four-bracket light being placed in the center, with tubes leading over the mouth of the smoke bells to the lamp chimneys.

Jewelry Repairing.

Probably there is not anything upon which the reputation of a keeper of a jewelry store is more easily built up than the neat and substantial repairing of the jewelry of his patrons. The intrinsic value of a filled ring may be almost nothing, but to the owner it is surrounded by a halo of associations which give it priceless worth, and if broken by accident, its neat repairing is very highly appreciated. So, also, the cleaning of jewelry, which through discoloration has lost its beauty, is often looked upon with delight as marvelous.



AN ELECTRIC CARRIAGE.

Perhaps a few hints on this subject may be of use to some who have met with difficulty in making repairs to their satisfaction.

It is of the utmost importance that the use of soft solder be avoided as far as possible in repairing articles made of gold or silver, and even filled and plated jewelry may be repaired with hard solder.

To repair a ring, the shank of which requires soldering, bury the head in a crucible full of wet sand, place a small piece of charcoal against one side, coat the break, previously cleaned by filing or scraping, with borax, and charge with solder; blow a flame against the ring and charcoal until the solder runs in. For articles which require to be protected against discoloring in the process of soldering, coat them with a mixture of burnt yellow ocher and borax, adding a little dissolved gum tragacanth to make it lie all over, allow it to dry, then charge with borax and solder and heat sufficiently. Boil out in weak pickle made of nitric or sulphuric acid. One important point is to wash the piece well in hot water with a little ammonia in it before attempting any repairs. This removes all dirt and grease, which, if burned on, cannot be removed.

If the article be of colored gold, boil out in pickle made of muriatic acid, and never coat with any protecting mixture. The solder must vary in regard to fusibility according to the quality of the article. For repairing most filled work, very easily melted solder is required, which may be made of 1 ounce of fine silver, 10 pennyweights hard brass wire, adding 2 pennyweights zinc just before pouring; or, to make it more fusible, use bar tin instead of zinc; or, for stronger silver solder, use only the silver and brass. For repairing most bright gold work, use gold coin, 3 pennyweights; fine silver, 3 pennyweights; fine copper, 2 pennyweights. For colored work, fine gold, 1 pennyweight; silver, 17 grains; copper, 12 grains; hard brass wire, 2 grains.

A good solder for repairing spectacles or other steel work is made by melting together equal parts of silver and copper. In soldering steel, plenty of borax should be used.

Very often the want of a rolling mill is a great obstacle to the making of solder, but it may be flattened very thin, although not with great regularity, by pouring on to a flat piece of wood, and putting on it the flat surface of a piece of iron while it is still in a melted condition; a piece of cigar box is good to pour it on, as the odor emitted is not very disagreeable, and the solder may be melted in the hollow of a piece of charcoal, by using gas and a blowpipe.

For cleaning colored gold, a mixture of one pound sal soda, one pound chloride of lime and one quart of water will be found useful. It should be placed outside the building after mixing, and when settled the water poured off and the sediment thrown away; with great care this may be used for cleaning gilt bronzes and cheap gold and plated jewelry, but caution is necessary, as it will corrode brass very rapidly.

To remove lead solder from badly repaired jewelry, place the piece in muriatic acid and leave till the lead is eaten away. It is best always to heat the piece gently and brush off the lead, while melted, before subjecting the piece to the action of the acid, as too long a steeping is not desirable.

Set pearls, which have become discolored by wear, may often be improved by placing in a covered vessel with a mixture of whiting, ammonia, and water, and permitting them to remain for a few hours.

A good powder for cleaning jewelry, silver watch cases, etc., is made by mixing about four parts of whiting with one of rouge, using with alcohol or water; this, it will be found, is easily brushed out of crevices, engravings, etc.

Many are not aware of the fact that gold and jet jewelry, which has been worn so much for years, can be hard-soldered with easy-running solder without removing the jets, but it is easily accomplished by coating the gold with ocher, and laying the piece with the jets up while soldering, care being taken not to smoke the jets. An alcohol lamp is perhaps preferable to gas for this purpose, but in most cases gas answers best for soldering.—*Jewelry News.*

A SUBSTITUTE for gum arabic, patented in Germany, is made as follows: Twenty parts of powdered sugar are boiled with 7 parts of fresh milk, and this is then mixed with 50 parts of a 36 per cent solution of silicate of sodium, the mixture being then cooled to 122° Fah. and poured into tin boxes, where granular masses will gradually separate out, which look very much like pieces of gum arabic. This artificial gum copiously and instantly reduces Fehling's solution, so that if mixed with powdered gum arabic as an adulterant, its presence could be easily detected. The presence of silicate of sodium in the ash would also confirm the presence of adulteration.