

sion scarcely caused any further loss. It is supposed springs get stronger, in a minute degree, during the first two or three years they are in use, from some atmospheric change; when the springs are coated with gold by the electrotype process, no such change is observable, and the covering, although perfect, may be so thin as not to compensate for the loss of the blue oxidized surface.—*Metal-Worker's Assistant.*

#### DR. VÆLCKER ON DISINFECTANTS.

Dr. Vælcker recently delivered a practical lecture to the members of the Royal Agricultural Society on the subject of disinfectants, of which we reprint a portion.

The professor stated that microscopic researches have proved that the contagious matter of cattle plague consists of minute and peculiar organic cells moving about rapidly, that these cells were found in the dung of diseased animals, and, it was believed, might be given off by lungs and skin, and thus, either from the droppings, or floating about in the atmosphere, and capable of being wafted some distance, were introduced into the blood of animals brought within range of their baneful influence. He divided the subject under three heads—viz.: 1. Various disinfectants recommended, their mode of action, and efficiency. 2. Application of same for particular purposes. 3. Means of prevention. He first explained the nature of a true disinfectant, and how incorrectly the term was often applied to agents that acted in a totally different manner. The term disinfectant should only be applied to those matters that can actually destroy the contagious matter, whereas it was often applied to substances which neutralize or destroy gaseous products of decomposition; thus, sulphate of iron removes sulphureted hydrogen from the air without destroying the animal matters, which, on decomposition, evolve this gas; whereas chlorine and nitrous acid completely break up or destroy decomposing matters, converting them into their ultimate gaseous products, which are comparatively harmless. The latter are true disinfectants, as well as deodorizers. Again, substances which retard or prevent putrefaction are antiseptics; thus, weak solutions of carbolic acid do not destroy, but arrest putrefaction.

As true disinfectants we may class chloride of lime, chlorine gas, sulphurous acid, nitrous and nitric acid, charcoal, quicklime, caustic alkalies, earth, manganates and permanganates, and the action of fire.

Chloride of lime, which is, perhaps, the most useful of the above, acts by yielding up oxygen, which destroys organic matters; 1 pound of chloride of lime to 3 gallons of water forms a proper solution for applying to droppings of cattle, washing down floors, walls, etc.; while 2 ounces of the same, with 1 gallon of water, is a suitable mixture for washing our hands, or sprinkling on the clothes of those engaged in attending on diseased animals.

Chlorine gas and sulphurous acid fumes are useful for disinfecting buildings. The latter is the easiest to apply, as the combustion of  $\frac{1}{2}$  pound of flour of sulphur, in three or four little heaps on the floor, will produce abundance of sulphurous acid.

Nitric acid for the same purpose, obtained by mixing 4 ounces powdered niter, 4 ounces oil of vitriol, and 2 ounces water in an earthen vessel, and heating over a brazier.

Nitrous acid is made by pouring  $\frac{1}{2}$  pound of oil of vitriol on 2 or 3 ounces of copper shavings. All these produce disinfecting fumes.

Wood and peat charcoal are powerful disinfectants, as the condensed oxygen in the cells hastens decomposition and eats up organic matter, fresh supplies of oxygen being absorbed from the atmosphere and condensed; and thus the process continues. A small quantity of peat charcoal will destroy a large quantity of animal matter. This substance is very good to cover carcases that are buried.

Porous earth acts as a true disinfectant.

Caustic soda and soda ash: the latter is better than lime, as it dissolves in water, readily enters porous materials, and removes impurities from the surface.

Condy's Fluid, a solution of manganate and permanganate of potash, is a good disinfectant, freely supplying oxygen; but it is not practically available

by farmers. Fire and high-pressure steam destroy infectious poisons.

As simple deodorizers Dr. Vælcker merely mentions perchloride of iron, in solution of 1 to 10 of water; sulphate of iron (green vitriol); sulphate and chloride of zinc, and nitrate of lead, in the same solution.

As antiseptics we have creosote and carbolic acid, derived from distillation of coal, and which is the most powerful and cheapest antiseptic that we have. This substance enters largely into the composition of a number of materials, as McDougall's Disinfectant, Cliff's Antiseptic Fluid, etc., which are just now offered to the public. Dr. Vælcker next considers the application of disinfectants, according to the particular object: 1. For treating animal carcases. 2. Disinfecting cowsheds, etc., where disease has been. 3. Manure. 4. Pastures. 5. Cattle trucks, barrows, stable tools, clothes, etc.

The manure may be sprinkled with solution of chlorate of lime before moving, then a good layer of quicklime when put in the barrow, and taken to a field, and made into a heap, consisting of alternate layers of soil, manure and lime; 5 cwt. of lime to each tun of manure. At the end of three months the heap may be turned and ingredients mixed, and after lying another month, Dr. Vælcker considers it might be safely used.

The pastures which diseased cattle have inhabited should be left without stocking for some months, the clots knocked about, and 100 bushels per acre of quicklime applied.

Trucks, barrows, etc., cleaned thoroughly with soft soap and water, and then washed with a solution of chloride of lime.

Laborers and inspectors must also be disinfected—the latter, it was suggested, might keep at each farm, where animals were diseased, a pair of pattens, and stump about the sheds in these. The boots of attendants should be most carefully washed in the caustic soda, or else the men made to pass over a layer of fresh lime, and it strikes us as an excellent plan if the entrance to the sheds and premises generally were daily strewn with a layer of quicklime.

Lastly, the question of prevention was slightly touched upon, rather to point out how very little we really knew about antiseptics, and how desirable some thoroughly exhaustive experiments would prove than to suggest anything. Perfect isolation was pointed out as all important; then the distinction of contagious matter. The use of carbolic acid in weak solution (1 to 100) to wash over the animal's body and sprinkle about, might, probably, be a wise precautionary measure, and could do no harm.

The most noticeable remarks in the discussion that followed were those of Colonel Talbot, who related his experience in a dairy of over one hundred cows, at Sudbury, about six miles from London, which, till within a week, had escaped the plague. He had employed Burnett's Fluid (chloride of zinc) to sprinkle about, and wash the animal's body, and had also given internally charcoal daily and niter occasionally. Whether this treatment has been of any use he could not say, but up to the time stated no disease appeared. His treatment of the disease, which he could not trace to any contagion, was as follows:—First, if the bowels were constipated, a mild aperient should be given, consisting of one and a half pounds of treacle, two or three ounces of salts, two table spoonsful of sulphur, and a bottle of Day's Fluid; after some hours, a dose of warbena—a patent medicine of Dr. Collis Browne's, much resembling chlorodyne. If not cured in two days, he tried hydropathy, as recommended by Mr. Graham, of Capeleie; and if this was unsuccessful, he applied external stimulants to the region of the abdomen. According to Col. Talbot's account, the effects of the warbena had been most remarkable, as, although the disease only first appeared a week or ten days ago, several animals were considered to be recovered, and one was giving nineteen quarts of milk daily.—*London Field.*

A DENTIST published an article in the *Dental Register* for December, 1865, on the steam gage, wherein it was stated that at a heat of 320° the pressure was 30 pounds per square inch. Some error occurs here, for the pressure of steam at 320° is 75 pounds per square inch by Regnault's scale and Fah. thermometer.

#### NEW INVENTIONS.

*Combined Watch Key, Toothpick and Toggle; and Combined Watch Key and Toggle.*—Two articles of jewelry with the above titles form the subject of two letters patent issued on the 20th inst. to Richard Cross, manufacturing jeweller, 54 Friendship street, Providence, R. I. Both articles are neat, ornamental, and useful. The one combines, in one article, a toggle for preventing the watch chain from slipping through the button-hole of a gentleman's vest, a watch key, and a gold toothpick—the latter being concealed in the toggle so as to prevent it from being injured; the other combines in one article a toggle and a watch key; and in this case the toggle may be of the usual or any appropriate style externally, the key being arranged to fit inside the toggle, so as always to be protected against dirt, etc., getting into the keyhole, and the key may be detached from the toggle for winding the watch, which can be done more easily than where the key is attached to a bunch of keys, or the like. Both articles are ornamental, and the several functions which each will perform recommend the articles for general use.

*Pump for Oil and Other Wells.*—The object of this invention is to produce a pump which can be used under the liquid to be raised, and which can be worked effectually at great depths. A vacuum is formed, both at the top and the bottom of the cylinder, without the use of the ordinary articles outside water ways, a valve chamber being formed in the top of the cylinders, and the sides of the cylinder being perforated with numerous holes to admit the liquid to the valve. H. A. M. Harris, of Philadelphia, Pa., is the inventor.

*Stereoscopic Instrument.*—The object of this invention is to so construct or arrange a stereoscopic instrument that when not used it can be folded up in a compact and convenient shape for being carried about the person, and when unfolded for use the picture-holder can be readily adjusted to the proper focus corresponding to the eyes of different persons; and it consists in attaching the head-piece of the instrument, or that in which the lenses are hung to any suitable bed plate, in such a manner that when the instrument is not in use it can be swung down and upon the same, together with so attaching the diaphragm or partition plate for the two lenses of the instrument, to confine the vision of each eye to its appropriate picture, to the said bed plate that it can be folded down and upon the same, while, at the same time, when the instrument is to be used, by swinging the said diaphragm up and into its proper place, the holder for the lenses is securely held in an upright position thereby; the frame in which the picture is placed being arranged upon the bed plate of the instrument in such a manner that it can be moved either toward or away from its lenses, and thus adjusted to the sight of the person using the instrument. Antonio Quirolo, of 337 Broadway, New York City, is the inventor.

*Horse Hay Fork.*—This invention relates to a new and improved implement for unloading hay and depositing it in barns by means of a horse, and which are commonly termed horse hay forks. The object of the invention is to obtain an implement for the purpose specified which may be constructed at a very moderate expense, be capable of being manipulated with the greatest facility, and not liable to be impeded or interfered with in its operation by obstructions in a barn, such as beams, braces, etc., of the framing, and which may be tripped to discharge its load at any point in the path of its upward movement, however much it may turn while being hoisted or elevated, and whatever position the tripping latch may have relatively with the operator. B. F. Hisert, of Norton Hill, N. Y., is the inventor.

*Machine for Cutting Barrel Heads.*—This invention consists of a circular concave or disk-shaped saw and cutter head, placed on an adjustable arbor, in connection with an adjustable or swinging rotating clamp, all arranged to operate in such a manner that barrel heads of different sizes or diameters may be sawed with one and the same machine and the work done very expeditiously and in a perfect manner. John S. Thompson, Glen Falls, N. Y. is the inventor.

How is the red color given to watch hands? Can any reader inform us?