

NEW AUTOMATIC CUT-OFF AGRICULTURAL ENGINE.

The annexed cut represents a new agricultural engine manufactured by Shapley & Wells, of Binghamton, N. Y.

The points claimed are the application of the well known merits of the automatic cut-off to the purposes for which agricultural engines are commonly used, such as thrashing, pressing hay and straw, sawing wood. The valve is a new method of balancing a slide valve, so simple that there is no liability to get out of order in the hands of the most unskilled engineer. Steadiness of motion, showing not over two per cent variation between light and rated power. Impossibility of running away and wrecking the machinery by the breaking of a governor belt, as there is no belt to break, the governing being done entirely in the balance wheel. Economy in fuel and water, using but from one-half to two-thirds of that used by a throttling governor engine.

The frame supporting the engine and boiler is made of wrought channel bar hung on elliptic springs at the rear axle, causing the engine to run smoothly on the road. Wheels are large, making draught light. Pump and beater, and injector, are attached.

The boiler is the Shapley patent, having a conical fire box with horizontal and vertical tubes, removable jacket allowing the engineer to clean tubes while steam is on. It is furnished with suitable plugs at bottom for cleaning water space when necessary.

It is also claimed that the boiler is practically sparkless, from the circuitous route through which they are obliged to pass, nearly all being deposited in the base, the condensation from the heater being all thrown into stack, thereby quenching any stray spark that might exist when dry wood is being used.

Prevention of Noise.

To those who carry on any operations requiring much hammering or pounding, a simple means of deadening the noise of their work is a great relief. Several methods have been suggested, but the best are probably these: 1. Rubber cushions under the legs of the work bench. *Chambers' Journal* describes a factory where the hammering of fifty coppersmiths was scarcely audible in the room below, their benches having under each leg a rubber cushion. 2. Kegs of sand or sawdust applied in the same way. A few inches of sand or sawdust is first poured into each keg; on this is laid a board or block upon which the leg rests, and round the leg and block is poured fine dry sand or sawdust. Not only all noise, but all vibration and shock, is prevented; and an ordinary anvil, so mounted, may be used in a dwelling house without annoying the inhabitants. To amateurs, whose workshops are almost always located in dwelling houses, this device affords a cheap and simple relief from a very great annoyance.

How the Salt Glaze was Discovered.

In 1680, a very simple accident revealed to the English potters a secret which they ought to have learned long before from the Dutch wares imported into that country. A maid-servant at the farm of Mr. Yates, near Burslem, was preparing in an earthen vessel a salt lye for curing pork. During her temporary absence the liquid boiled over, the sides of the pot became quickly red hot, and when they again grew cold, were found to be covered with an excellent vitreous glaze. The circumstance attracted the attention of Mr. Yates, who related it to a neighboring potter who at once made use of the discovery and imparted it to others. This "salt glaze" soon to a great extent superseded the lead ore glaze hitherto in use, and was employed in the manufacture of "crouch ware," in which all ordinary articles of domestic use produced at Burslem were made.

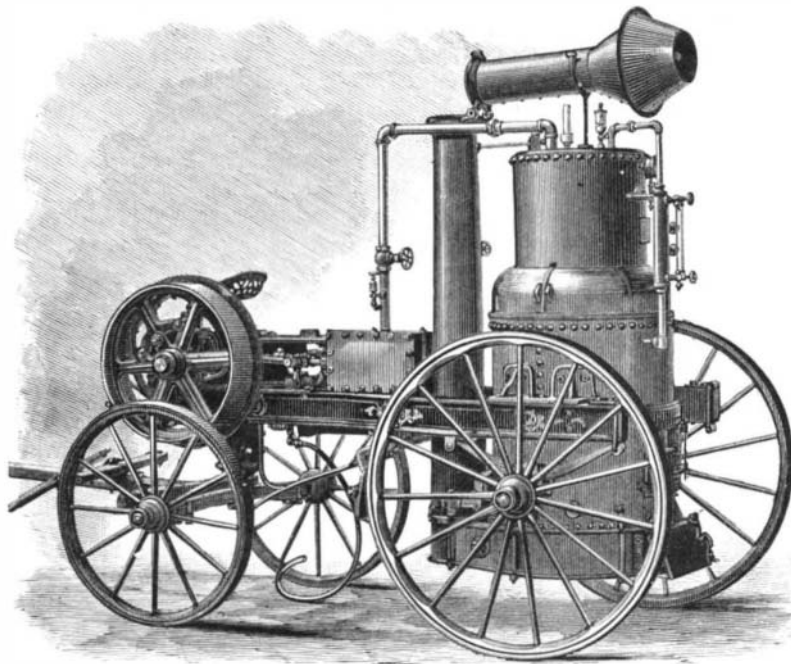
Photography with Colors.

A weak print is made from a negative, and after finishing is well washed. This print is then tinted by flat washes of the colors desired, which are diluted with salted albumen instead of water. The print so treated is next floated on a sixty grain bath, dried, and placed under the negative, care being taken to insure its proper registration. The rest of the operations are as usual. Another method consists in painting a weak proof with water color pigments let down with salted albumen. It is then coagulated with alcohol, recoated with salted albumen, floated on silver, printed, and finished as usual as just described.

ATTITUDES AFTER DEATH.

BY C. E. BROWN-SEQUARD.*

Among the phenomena sometimes noticed at the hour of death there is one that offers a peculiar interest, and which, up to recent times, has remained a mystery. This phenomenon appears especially, but not exclusively, after a sudden death due either to wounds received upon the field of battle or elsewhere, or to other causes, but almost always when there has been an intense excitement, and often also when great bodily fatigue has preceded the last moment of life. The principal feature of this curious fact is the persistence



SHAPLEY & WELLS' NEW AUTOMATIC CUT-OFF ENGINE.

after death of the expression of the face or of certain attitudes of the limbs or body, or of both. Such persistence exhibits itself clearly in certain cases; for example, when, despite the sudden cessation of life, a limb that is raised does not drop, or when the body of a man standing, or seated upon horseback, does not fall over.

In order to clearly understand the terms of the problem to be solved in reference to this phenomenon, it is absolutely necessary to know (1) that our attitudes and facial expression depend upon a contraction of our muscles due to an influence of the nervous centers, and (2) that such influence necessarily ceasing at the instant of death, a relaxation must also necessarily occur in all the muscles that were contracted, unless some other agency at once replaces that which has disappeared and causes the same physical state to persist that formerly existed therein.

The question, then, is this: What is the agency that, as soon as the faculty of volition vanishes, takes the place of the latter, or at least produces in the muscles an organic state that prevents all relaxation?

The object of this article is to answer this question, and to

death. One of the most striking examples of the strange fact that I am about to study was observed by Dr. Rossbach, of Wurzburg, upon the battlefield of Beaumont, near Sedan, in 1870. He found the corpse of a soldier half sitting, half reclining, upon the ground, and delicately holding a tin cup between his thumb and forefinger and directing it toward a mouth that was wanting. The poor man had, while in this position, been killed by a cannon ball that took off his head and all of his face except the lower jaw. The body and arms at the instant of death had suddenly taken on a rigidity that caused them to afterward remain in the position that they were in when the head was removed. Twenty-four hours had elapsed since the battle, when Dr. Rossbach found the body in this state. (See engraving.)

In the first work of any importance in which this subject has been treated of, Dr. Chenu relates that a French military surgeon, Dr. Perrier, was greatly surprised upon going over the battlefield of Alma, the day succeeding the terrible conflict, to see that many corpses of Russian soldiers had attitudes and expressions of countenance like those of living persons. Some of these corpses had the different expressions that characterize anguish, suffering, or despair. Others, on the contrary, had the appearance of greater calmness and resignation.

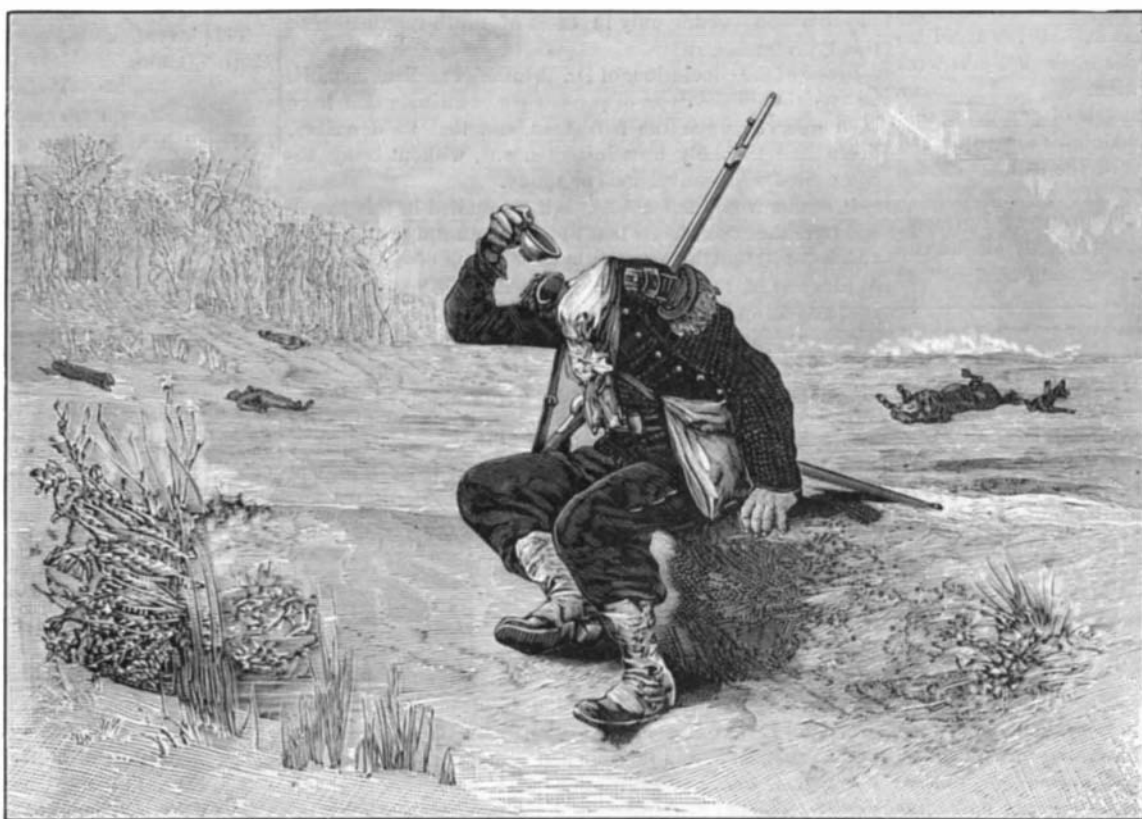
One case, particularly, attracted the doctor's attention, where the body lay stretched out upon the ground, the knees bent, the hands clasped and lifted in the air, and the head thrown back, as if death had come upon the individual while he was reciting a prayer. In addition, many other persons who have visited battlefields immediately after a conflict tell us that they observed numbers of corpses that were still holding their guns or sabers. Some seemed to be biting their cartridges, while others, still upon horseback, continued to preserve the attitude they had at the moment of death. These phenomena have been studied with special attention by Dr. Armand at Magenta, by Baron Larrey at Solferino, and by Dr. Baudin at Inkermann.

I owe to the kindness of Dr. S. Weir Mitchell a knowledge of an excellent memoir by Dr. John Brinton, of Philadelphia, upon the "Rigidity which Accompanies Sudden or Violent Death"—a work in which the question under consideration is studied with the greatest care. Speaking of the field of battle of Antietam, Dr. Brinton says that he counted forty corpses over a space of from 40 to 50 yards square, and he gives us the following picture of what he observed in this place:

"Several of these corpses were lying in extraordinary attitudes, some with their arms lifted and rigid, and others with their legs drawn up toward the trunk, and stiff. With others, in quite large number, the trunk was curved forward and also rigid. In a word, these attitudes were not those of the state of relaxation produced by death, but rather those of an apparently active character, doubtless due to a final muscular act at the very moment of the extinction of life—a spasmodic act that had left the muscles stiff and inflexible. Death, in the majority of these cases, had been caused by wounds made in the breast; and, less frequently, by balls that had traversed the head or abdomen. In the latter cases there had been considerable hemorrhage, as was proved by the pools of blood of dark color near the sides of the bodies. This inspection was made thirty-six hours after death, or still later."

The following three cases related by Dr. Brinton (which were furnished to him by friends) are very remarkable:

A detachment of United States soldiers, foraging around Goldsborough, N. C., came suddenly upon a small band of Southern troopers who had dismounted. These latter immediately jumped into their saddles, and all scampered away except one, after being exposed to one round of fire. The soldier who did not escape was sitting upright, one foot in his stirrup. In his left hand he held the bridle and the horse's mane, while his right hand



ATTITUDE OF A SOLDIER ON THE BATTLE-FIELD TWENTY-FOUR HOURS AFTER DEATH.

show that the cause or agency to be discovered is not the sudden appearance of that state of muscular stiffness known by the name of *rigor mortis* or *cadaveric rigidity*, but that such agency is found in a peculiar action of the nervous centers that manifests itself a little before or at the instant of

grasped the barrel of his rifle, near the muzzle, the stock of the gun resting on the ground. The horseman's head was turned toward his right shoulder, apparently watching the approach of the assailing party. Some of the soldiers of the latter were preparing to fire again, when their officer ordered them to desist, and to go and make the defiant man a prisoner. The latter, upon being ordered to surrender,

* *La Nature*.