MECHANICAL INVENTIONS.

Mr. William B. Hickman, of Sterling, Kan., has patented a swage to be used in welding the triangular bar which is to form the flange of a plow point or share to the body of the same.

Mr. Lucius S. Edleblute, of Cincinnati, O., has recently patented what he calls the rubber cushioned spoke and hub. This is an improvement in the class of vehicle wheel hubs having an elastic band or annular portion which surrounds the journal box and on which the butts of the spokes rest, so that the wheel is rendered elastic and more durable, also comparatively noiseless when running on stony pavements, roads, or streets.

Mr. George Richards, of Roxbury, Mass., has patented a steam muffler composed of two plates of a diameter very much greater than the diameter of the pipe through which the steam escapes from the boiler, so that the steam has room to expand before escaping to the outer air, its expansion effectually deadening the noise caused by the passage through the contracted escape pipe.

The Baby Elephant takes a Bath.

It is customary with traveling menageries in hot weather when convenient to a river to allow the elephants to take a bath. The London Circus passed through Woonsocket, R. I., the other day, when the keeper let loose all the elephants, including "Hebe" and her baby, for the above purpose. The mother and her offspring were permitted to approach a river for the first time since the baby was born, and they were, therefore, watched with great interest by their keeper. The mother cautiously approached the Blackstone River, which flows past the circus grounds, and waded in a short distance, carefully feeling her way; she then encouraged the baby to follow her, which the obedient little fellow did. When far enough in the mother caught the baby between her fore legs, and then lay down in the water and rolled over, giving the baby the first bath. The mother then felt perfectly satisfied with her job, and rising up approached the bank, bringing the little one with her. On reaching terra firma she drove the younger before her, and would not allow it to approach the water again, though it showed a disposition to do so.

PHYLLIRHOE BUCEPHALA.

This little animal belongs to the family of snails, class Heteropoda, is about an inch long, and is devoid of any shell or covering whatever. It is flat, and so absolutely transparent that a person can read through its body. It is provided with a pair of feelers. The little animal is very luminous if placed in fresh water or disturbed, but this phenomenon is most beautiful when an ammonia solution is poured over the animal. It will shine with a vivid blue light, which extinguishes with life. But even after death the nerve cells, which are directly below the skin and produce the light, can be irritated sufficiently to become luminous. It is a singular fact that electricity has no effect upon these nerve cells.

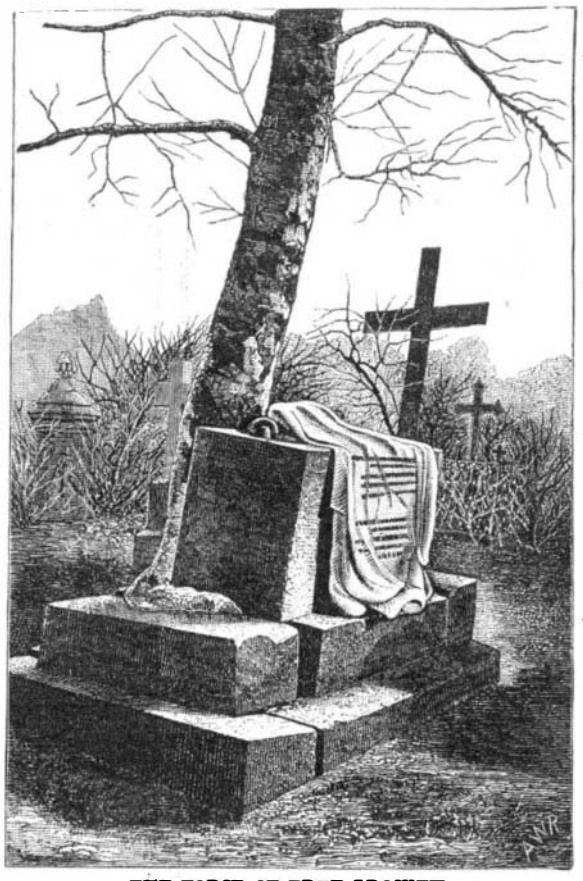
Care of Trees and Shrubs.

In view of the drought which prevails in many parts of the country and its unusual severity over extensive districts, the *Rural New Yorker* suggests to those who have planted trees or shrubs the past spring that there is one method, and so far as we know, says the writer, only one, by which they may be protected against injury or death from that cause. Surface watering has been shown to do more harm than good. The ground is made hard and compact, thus becoming a better conductor of heat while it becomes less pervious to air and moisture. A portion of the surface soil should be removed, and then pailful after pailful of water thrown in until the ground, to a depth of two feet and to a width about the stem of not less than three feet in diameter, has become saturated. Then, as soon as the water has disappeared from the surface, the removed soil should be well pulverized and returned. A covering of boards, straw, or hay, or even of sand or gravel, may then be applied, and the tree or shrub, thus treated, will pass through ten days of additional drought in safety.

As soon as rain comes to wet the earth thoroughly, we think it is better to remove the mulch. Nothing is then gained by permitting it to remain. Mellowing the surface soil about the trees, thus keeping it free from grass and weeds, is then the most that is needed. We would repeat that the present is the season when the female borer deposits her eggs on the stems of fruit trees, and the wash of lime, potash, sulphur, etc. (darkened with lamp black), should now be applied and reapplied during June and July, as soon as washed off by rain.

THE FORCE OF TREE GROWTH.

The disruptive power of tree roots, growing in the crevices of rocks, is well known. Masses of stone weighing many

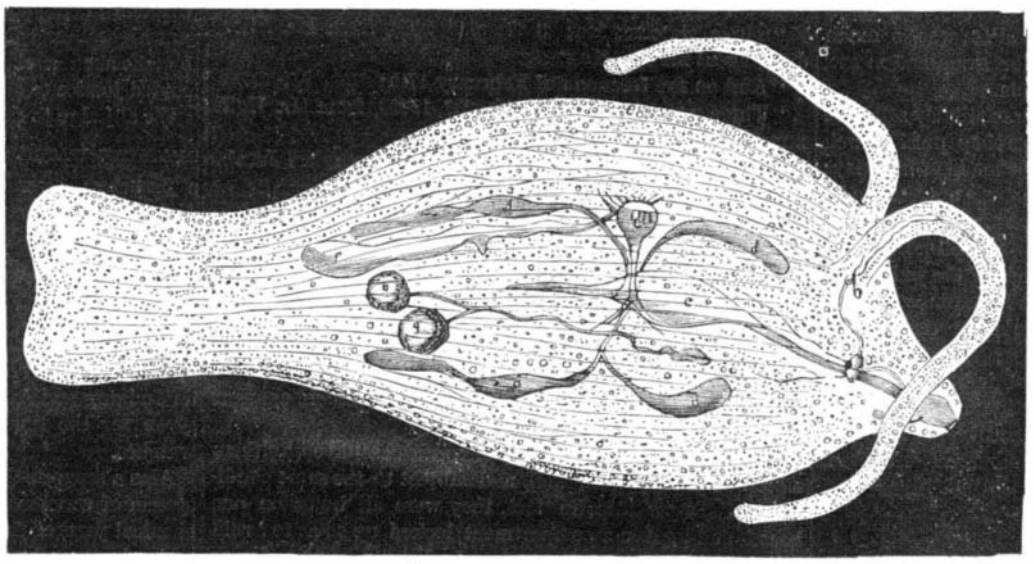


THE FORCE OF TREE GROWTH.

tons are often dislodged in this way from the faces of cliffs, and no one gives them more than a passing glance. When, however, the sanctity of the tomb is invaded, despite the graven warning of the occupant, the case is very different, and superstitious people are apt to think there must be something in it more than accident and the unconscious expression of the resistless force of growing vegetation.

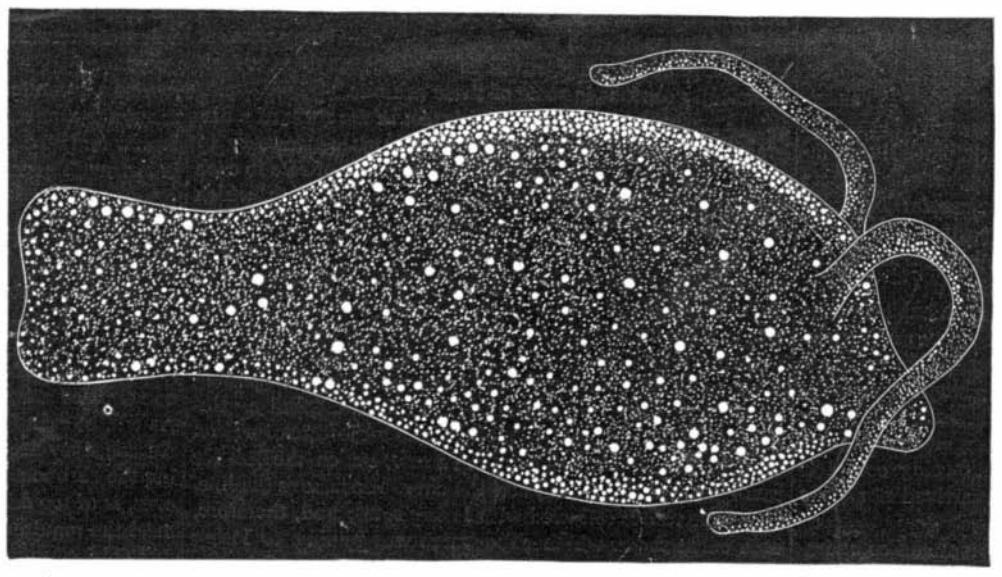
The engraving herewith is copied from a photograph sent to us by a European correspondent, of a grave in the Garten churchyard, in Hanover, Germany, the invasion of which by a birch tree has been the occasion of much wonderment by country people, who come from great distances to examine it.

The monument, so unfeelingly disrupted, was erected in 1782, and bears on its base the following inscription: "This grave, which was bought for all eternity, must never be opened." A chance birch seed, lodging in a crevice of the monument, has displayed the irony of nature in slowly yet surely thwarting the desire of the person who designed it for a perpetual memorial. All the joints are separated, the strong iron clamps are broken, and the birch tree has embraced the upper large block, which weighs about one and a quarter tons, and the tree is driving its roots below, gradually but surely tilting the structure.



PHYLLIRHOE BUCEPHALA—AS SEEN IN THE LIGHT.

a b, ganglion; *c*, intestines; *d*, liver; *f*, kidneys; *g*, generative organs.



PHYLLIRHOE BUCEPHALA—SHOWING IN THE DARK THE LUMINOUS SPOTS.

Perseverance with the Drowned.

In a recent communication to the French Academy, Professor Fort asserts that he was enabled to restore to life a child three years old, by practicing artificial respiration on it four hours, commencing three hours and a half after apparent death. He mentions also a case in which Dr. Fournol, of Billancourt, reanimated, in July, 1878, an apparently drowned person by four hours of artificial respiration begun one hour after the patient was taken from the water. At this season, when cases of drowning are apt to be frequent, the possible benefit that may come from a persevering effort to revive victims of drowning, should encourage friends not to despair of their resuscitation, even after several hours of seemingly fruitless labor.

Simple Test for Chloral Hydrate.

A new test for chloral hydrate has been devised by Frank Ogston, namely, yellow sulphide of ammonium. On adding this reagent to a solution of chloral of moderate strength there is at first no change noticed, but in a short time the colorless solution acquires an orange yellow color, and on longer standing turns brown and evolves a gas of very disagreeable odor. Ogston's experiments show that a solution containing ten milligrammes turns brown in six hours, and gives the peculiar odor. With one milligramme the orange-yellow color appears in twelve hours, but no odor. Croton chloral gives the same reactions, but chloroform, chloric ether, and formic acid do not.

NATURAL HISTORY NOTES.

The Propagation of Oysters.—At the recent meeting in this city of the American Fish Cultural Association, a paper was read on the propagation of the oyster, by Dr. W.J. Brook, of the Johns Hopkins University. The manner in which this propagation takes place had never before, he said, been thoroughly understood. Through studies made by him last summer, however, great light was thrown on the subject. He found that the American oysters do not breed their young in the shell, as had been supposed, and that consequently the eggs can be impregnated artificially. An average oyster contains from six to nine million eggs, and one of large size may contain fifty millions. The plan pursued by him in fertilizing these eggs was to chop the male and female oyster up together; thus the fluids are mixed and the impregnation is made complete. The process of development immediately begins, and goes on so rapidly that a change may be noted every fifteen seconds. In a very few hours the embryo is sufficiently formed to swim in the water. The shells at first are very small, and are not adjacent to each other. They grow very rapidly, closing down over the sides, and finally unite and form the hinge. In the short space of twenty-four hours the young oyster is able to take food, and from three days to a week it attains perfect form. During its early life it is a swimming animal. The oyster is able to reproduce its species at the end of a year's growth, and it is marketable at the age of three years.

S. P. Ruggles.

S. P. Ruggles died at Lisbon, N. H., May 28. He was principally known as the inventor of the Ruggles printing press, which was among the first of machine presses. His invention was what printers call an "upside-down press," the type being upside down when in the bed. About twenty-five years ago Mr. Ruggles sold out his interest for nearly $200,000, and since then has not been in active business. He was the inventor of the raised alphabet for the blind, and always showed great interest in the amelioration of the condition of the sightless. He was also a great friend of mechanical education, and has written much on the subject.