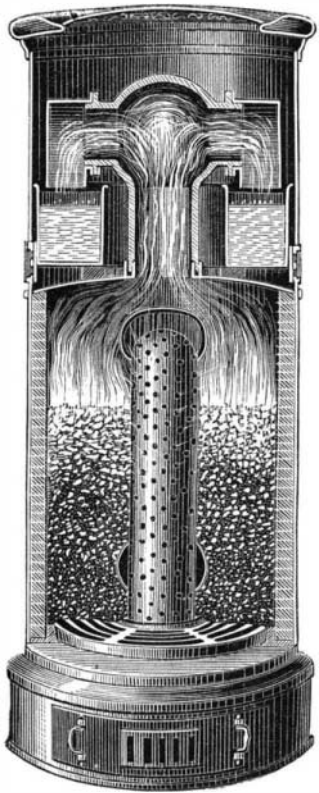


square and even on a whetstone. Bring the slope of the nib to a point to suit you. Then, holding the pen nearly upright, roll it around, holding the nib on the stone to make the point round. Make it as round and smooth as you can.

#### A CHIMNEYLESS STOVE.

M. Mousseron, of Paris, has recently devised the novel form of stove represented in the annexed engraving, the chief peculiarity of which is that no chimney is required for it. It makes its own draft, and is consequently portable. Rising from the grate is a perforated tube, through which, as well as through the interstices of the grate bars, the air enters and passes through the coal. This, it is stated, produces such thorough combustion that the formation of carbonic oxide is prevented and the carbon is wholly converted into carbonic acid. Carbonic oxide is essentially mephitic and deleterious, and a small percentage in the atmosphere is sufficient to produce highly injurious effects. Carbonic acid, on the other hand, while irrespirable, is not poisonous, so that any stove performs its most important duty when it obviates the generation of the gas first mentioned.



The products of combustion arising from the coal are led up through a flue and then conducted downward so that they come in contact with water contained in an annular vessel surrounding said flue. This water never boils, and vaporization is confined to its surface, producing an internal movement of rotation, the result of which is that the gas, etc., from the fuel becomes thoroughly mingled and saturated with the water. On rising, the gas meets the curved cover, and is once more deflected downward, again meets the water, and finally escapes into the atmosphere by side orifices provided for that purpose. In this way it is claimed that the carbonic acid becomes intimately mixed and dissolved in the water, so such as is contained in the escaping vapor is not in a condition to injure the air for respiration.

From the records of experiments we learn that in three hours 2.2 lbs. of charcoal and 6.6 lbs. of coke were consumed. At the end of an hour the air in the room, measuring 4,805 cubic feet, was analyzed with the following result: Carbonic acid, 0.375; carbonic oxide, 0.003; oxygen, by calculation, 20.6; nitrogen, by same, 79. Total, 99.978. With regard to quantity of fuel employed for a given space to be heated, it was determined that the initial temperature being 32° Fah., in order to heat 327 cubic feet of air to 60° Fah. from 1.1 to 2.2 lbs. of fuel were required, while ordinary stoves, under like conditions, necessitated from 4.4 to 8.8 lbs.

#### THE AMERICAN LIFE SAVER OR SURF CAR.

Nothing of consequence was accomplished to lessen the loss of life occasioned by shipwreck until the year 1848, when Captain Douglas Ottinger, of the United States Revenue Marine, presented to the world his "life car." No sooner was the invention introduced than the American Government acknowledged its fitness for the purpose intended, and ordered the life-saving stations along the Atlantic coast each to be provided with one of these cars.

Although so useful, the car is simplicity itself, and its construction such that it may easily be understood. It is made of galvanized sheet iron. In length it is about nine feet and in breadth three and a half. Outwardly it looks much as we would imagine one of our common clinker-built boats to appear if it had a slightly curved cover placed upon it. Instead of having a stern and stem, the ends are alike, both terminating in a point. Nearly in the center of the top is an air chamber, designed for the purpose of righting the car should it turn over. In shape this resembles a hemispheroid, and it is about two and a half feet in length, and ten inches in breadth. Between its end and the further extremity of the car is the entrance. Water is prevented from coming through this by means of a lid securely fastened. Around the circumference of the car a thick rubber band is placed to protect it from damage in case of contact with hard substances. Above and parallel to this is a rope. It is intended for drowning persons to grasp in order that they may be drawn ashore.

The inside of this curious life-preserver is divided into three separate apartments. Those at the ends are merely air

chambers, and are both about one and a half feet in length. Between these is located that portion of the air designed for occupants. Although this space may seem small, in order to prove its capacity it is only necessary to state that it has accommodated a woman and six children, and that three men can get into it without any difficulty. "How can the car be sent to a vessel during a storm, and especially if it be two thirds of a mile away?" is the question which naturally arises at this point. It has been done and in the following manner: The smallest cord capable of sustaining the force brought to bear upon it is fastened to a copper wire which is bent in form of a spring (to lessen the momentum), and attached to a twenty pound cannon ball. By firing this over a sinking vessel, those on board can grasp the cord. With this, a small rope is drawn in and so on until finally the car itself reaches the vessel. In the meantime, those sending the assistance keep their hold of the car by means of another rope. In this way they can pull it back. If once successful, all further trouble is at an end, because the main difficulty lies in getting the rope to the distressed ship. When this is accomplished both parties can retain their own rope, and thus the car may be drawn back and forth without delay. By working continually, fifty lives can be saved in an hour.

Thus does the usefulness and simplicity of the car combine to make it one of the most perfect life savers yet invented. Although recently introduced it still has a record, and a glorious one, as it has already rescued over four thousand persons from inevitable death. Its celebrity, however, is not bound by two oceans. France, ever on the alert for improvements, soon seized this, and her accounts of its perfections are exceedingly flattering, and are sufficient to cause America to be justly proud that one of her sons invented the life car.

#### Germ Destruction by Concussion.

Mrs. H. K. Ingram, of Edgefield, Tenn., proposes to kill germs by concussion of the air, and in a paper read before the American Association at Nashville, she explained her theory. It is well known that many dreaded pestilences are transmitted by living organisms which, floating in the air, are inhaled and so find entrance into the body. Mrs. Ingram points out that all the mosquitoes in a room can be killed by exploding in the center of the apartment a small quantity of gunpowder, and from her experiments she is led to believe that similar explosions might be used to kill the phylloxera on grape vines.

There is nothing new in the general idea of destroying lives by concussion, although the application of the same to the extermination of the minute organisms which generate disease is in itself a novel proposition. During the late war two attempts were made by the Federal forces to destroy large numbers of the enemy once by the explosion of a heavily charged mine and once by loading a vessel with powder, etc., and blowing her up under the walls of a fort. Neither were successful.

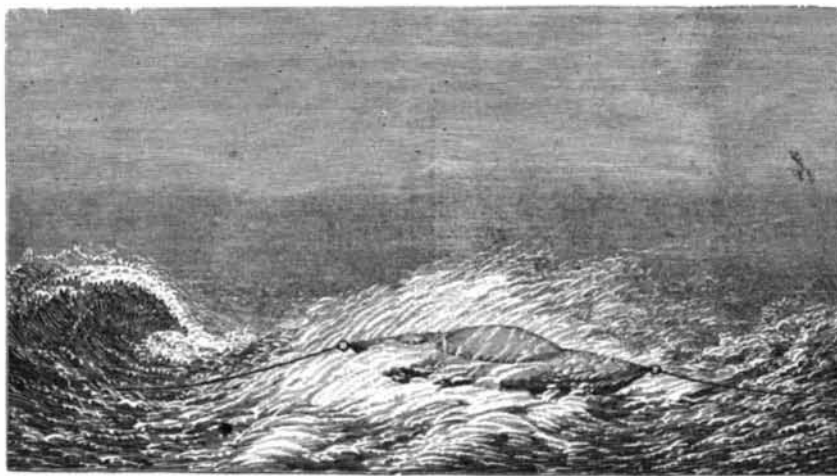
Mrs. Ingram's proposition suggests the plan frequently broached of firing heavy guns to provoke rain, and shows that such explosions may prove of double benefit.

#### Coloring Wool.

It is pointed out in Reimann's *Färber Zeitung* that fabrics, especially those of wool, which have for a long time been exposed to air and light, acquire a stronger power of fixing coloring matter than portions of the same material which have been kept in the dark. This circumstance often prevents the production of an even shade, those parts on which the light had fallen taking the light more readily and acquiring a striped or banded appearance.

#### TRIAL OF MILITARY APPLIANCES.

At a recent field day of the Royal Engineers, Chatham, England, a variety of exercises in practical military opera-



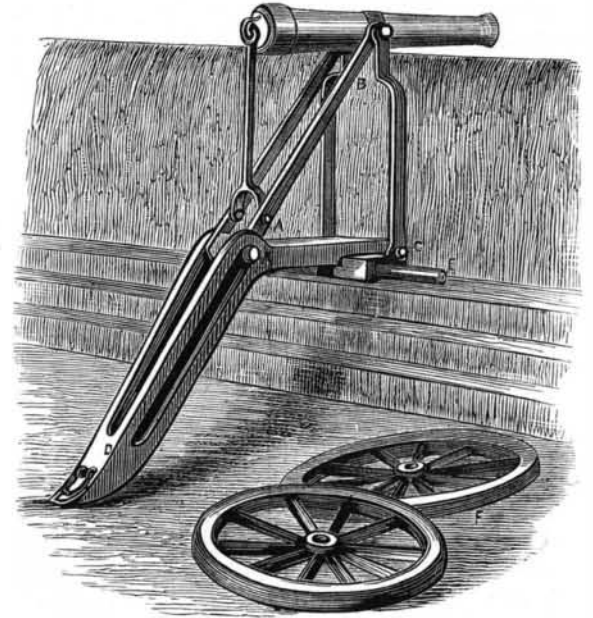
THE AMERICAN LIFE SAVER OR SURF CAR.

tions were performed, and trials made of improved batteries and other war appliances.

The chief features of interest in the siege works were as follows: First, the batteries, built a little in rear of each trench, so as to utilize the trench parapet as a screen to receive the enemy's fire instead of the parapet proper, and to mislead them. These batteries had the narrow soda-water bottle form of embrasure, with sides protected by means of hides. On the gun carriages were hung the so-called Prussian scale slides, for laying guns by reference to a line pass-

ing longitudinally under the carriage. The two scales having corresponding graduations, and being of considerable length, enable the gun to be laid without much traversing. For example, if a gun moves laterally in firing, it is immaterial whether the line on the platform beneath it corresponds to a 1 on the front scale and a 3 on the rear, or a 4 on the front scale and a 6 on the rear, the same inclination between the axis of the gun and the platform line being obviously maintained.

There was rather an ingenious device of Major Maquay's for enabling a field gun to fire over any part of a trench, consisting of a framework carriage of iron, on which the gun was mounted, which, by means of a parallel bar movement, descended under cover on firing. Wheels could be put on and the gun moved from point to point as might be desired.



MAQUAY'S BREASTWORK CANNON.

The trench tramway had carriages for carrying ammunition, guns, and carriages, or wounded along it.

There were examples of the newest forms of blinded trench and of splinter-proof cover, etc. On the salient of the new ravelin was an imitation of an iron-plated battery for three guns, the extreme angle of the salient being rounded off to admit of fire along the capital. In the modern system, it may be remembered that the space in front of the salient of the ravelin, that is to say, along its capital, is defended by direct fire, but that in front of the salients of the bastions by oblique fire, consequently there was no deficiency when the range of guns was short. In these days a spot can be found where the lines of fire have crossed each other which is within easy range of rifled guns; hence there exists a special necessity for fire being provided along the capitals of salients, although that does not apply to the case of the particular one in question. The iron work in question ought to be a very valuable one, both from its commanding position and from the complete protection afforded to the guns. It would be necessary, however, to have very thick armor for such a work, which, if it is liable to receive the fire only of much lighter guns than an armor-clad ship or coast battery, would be the constant mark of numbers of siege guns which would have the range accurately. Railway iron was used for the flank protection of splinter-proofs in places; but there are no examples of the concrete that proved so effectual last autumn. The steam sappers were the chief features of interest in the marching past. An 8 horse power steam sapper came by, drawing three 32 pounder smooth-bore guns on traveling carriages; a 6 horse power engine, four bronze guns of position—heavy 12 pounders and 32 pounder howitzers. Others drew loads of shot and shell, cases of arms, and materials for the engineer parks.

#### A Horned Rattlesnake.

An inhabitant of Burnt Chimney, Rutherford county, was in the city yesterday evening, exhibiting five rattlesnakes, one of which had genuine horns. The horns project perpendicularly from the snake's head, and are about an inch long. They are of a brownish color, and in shape and general appearance are exactly like those of a deer, with the difference that they are less crooked, and larger in proportion at the point at which they emerge from the head. The snake is about eight years of age, and in every other respect is perfect.

The owner of the phenomenal snake says that it was caught on Black Mountain, in McDowell county, about a month ago. He and several others had heard of a famous rattlesnake den there, and went for the purpose of shooting them. When they found it several hundred snakes were visible, among them the one with horns. Before they began shooting they captured a half dozen or more by means of nooses, taking the horny headed one first.—*Charlotte (N. C.) Observer.*