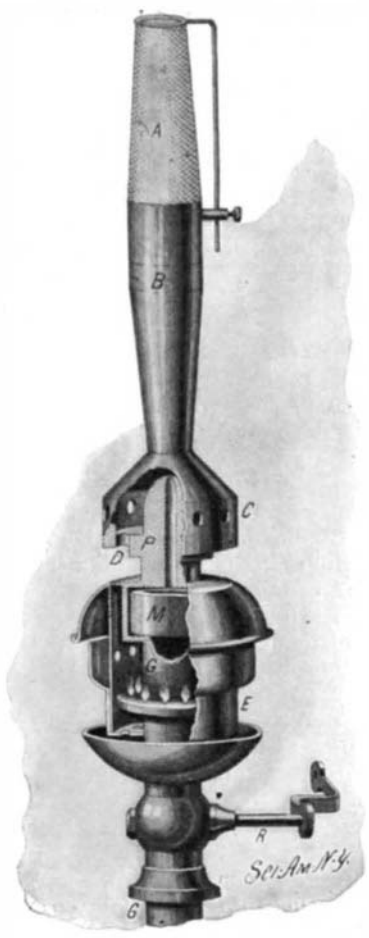
A PERFECTED BURNER FOR INCANDESCENT MANTLES.

Coal gas still continues in the contest with its new competitors, and it is enabled to maintain its position by the use of new burners which furnish more light for a smaller consumption. For some time now the authorities have had in use in Paris, a new burner with incandescent mantles, which increases the power of the light. The principle of the Auer mantle is well known, and everyone knows that the more the temperature of the flame in which it is suspended is increased, the brighter the light becomes. With the ordinary Bunsen burner, nothing like the maximum temperature is attained, and the mixture of air and gas takes



THE SAINT PAUL, A PERFECTED BURNER FOR INCANDESCENT MANTLES.

place under poor conditions; it is not intimate enough, and does not yield a homogeneous product.

In the new burner, the gas is heated before it enters the mixing chamber, where it comes in contact with the air. Reference to the figure will show how this is accomplished.

A ring, *H*, is placed around the burner pipe and connected with it by a small tube. The ring is in a chamber, *E*, having a circle of small holes in its side, and serving as a warming chamber for heating a metallic ring, *M*, enclosed in the tube, *G*, through which the gas passes to the ejector, *P*. *H* has a series of small holes through which the gas escapes, and, being lighted, furnishes heat. When the gas reaches the part of the burner where it mixes with the air, which enters through the holes, *C* and *D*, it has reached a temperature which, experiments show, favors the homegenity of the mixture. It then escapes through the conical tube, *B*, at the end of which it is lighted and makes the mantle incandescent.

From experiments which have been made with this burner, it is found that the flame has a temperature of nearly 1800° C., which causes the incandescent mantle to give a much brighter light than it does with the ordinary type of burner. In a short time now anybody will be at liberty to manufacture these burners and their price will decrease, so that incandescent lighting by gas is in a fair way of being more generally used.

The Peary Meteorite.

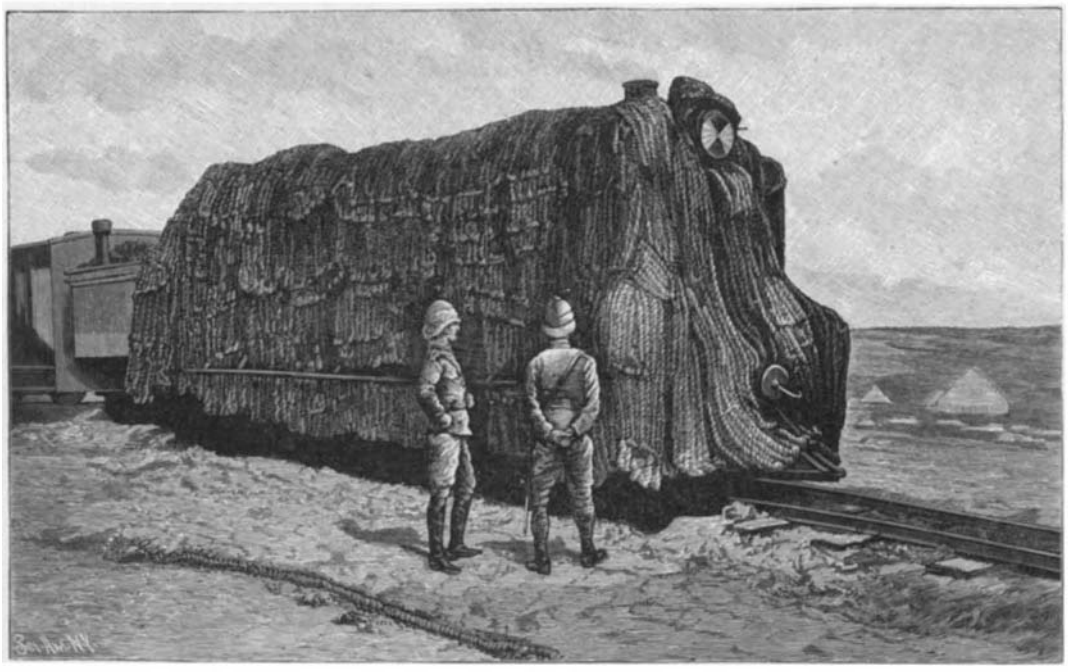
The great meteorite which Lieut. Peary brought back from his last expedition still remains on the Cob Dock of the Brooklyn Navy Yard. It is the largest in the world, and Lieut. Peary has been trying to dispose of it to some museum. Rear-Admiral Philip, commandant of the yard, desired to place the meteorite on exhibition near the guns taken from the Spanish during the late war, and he applied to the Secretary of the Navy for permission to do so. The Secretary informed him, however, that the department had no jurisdiction over the meteorite, it being Lieut. Peary's personal property, the Navy Department giving him permission only to land it and leave it on the Cob Dock until he could dispose of it. We illustrated the raising of this most interesting meteorite from the hold of the "Hope." The meteorite weighs 200,000 pounds, and it is said that Lieut. Peary wishes to obtain $75,000 for it.

A Hypothetical War.

Our esteemed French contemporary, Le Monde Illustré, has recently devoted an entire number to the description and illustration of a hypothetical war between England, France and Russia. The conflict is supposed to take place in the present year, and the results are most disastrous. We feel that a publication of this kind, even though it is a pure figment of the brain, does positive harm by giving people a false idea of war, its horrors, the ease with which victories are gained—on paper. It is assumed that the conflict arises from an attack by Afghan bands upon a Russian city, at the instigation of England and naturally France was brought into the contest. The first illustration shows the junction of the Russian and French fleet at Bizerta, this is followed by an illustration of the bombardment of Marseilles by the English squadron; then comes the Franco-Russian fleet passing the "impotent Gibraltar," followed by a number of views showing naval and military operations, and realism is given to the pages by the insertion of a number of pictures of those who would actually participate in this suppositious and unfortunate war. The most objectionable of all the pictures, perhaps, because of the evil suggestion it conveys, is the assassination of Lord Cromer at Cairo. The taking of Malta, is also depicted; battles in India and the great naval combat of the combined fleets in the English Channel, and finally the landing of the troops at Brighton, and, as might be expected, the French troops enter London and peace is declared. The entire article is couched in Chauvinistic terms and is concluded by a map showing the repartition of the world in which Ireland becomes an independent republic, Gibraltar falls to Spain, Malta to Italy, Cyprus to Greece, India becomes independent, and the Philippines are given to Japan, although at the time of writing we believe they belong to the United States. Africa and Asia are repartitioned and the United States seems to have received nothing but Canada, while Jamaica is given to Cuba, and Australia becomes a new confederation. The subject would be amusing were it not for the sinister purpose which existed in the minds of those who conceived and carried out the the suggestion and the imflammatory effect such publication may have upon the imaginations of an excitable people.

A ROPE ARMORED ENGINE.

On other occasions we have referred to the armored train which has played so important a part in the South African war. Almost the first incident of the war was the attack on the armored train near Mafeking and a similar incident was the memorable fight at Chieveley in which Winston Churchill was engaged. Col. Baden-Powell and Col. Kekewich, at Mafeking and Kimberley, respectively, have armored trains, which have been in almost constant use. As is well known railway iron and boiler plates are the usual protection, but the locomotive shown in our engraving was made safe in an unique manner. Rope mantlets were used during the Crimean war and the protection of the locomotive by rope may be regarded as a new adaptation of the mantlet. The first thought which is brought to mind after looking at a picture of this engine, is that the work was done by sailors, and this is correct for sailors devised the protection for the Colenso armored engine. Its appearance is most grotesque, looking not unlike a gigantic French poodle dog. It has been found that the rope protection is a most admirable one, although no very full details have been forwarded of the construction. It is probable that the engine is run entirely by bell signals, the engineer and fireman being entirely protected.



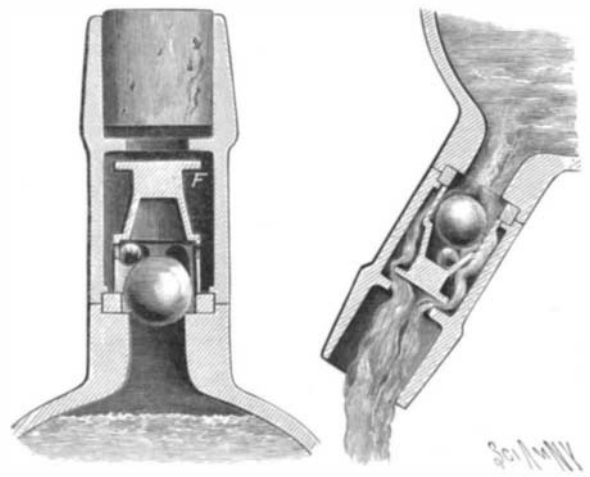
A ROPE ARMORED ENGINE ON THE COLENSO LINE IN NATAL.

A NON-REFILLABLE BOTTLE.

A new form of bottle has been patented by Joseph Goodman, of New Haven, Conn., which is inexpensive, and which is designed to prevent refilling after the contents have been poured out. The illustrations are sectional side elevations, showing the bottle upright and tilted.

The bottle is formed with a short neck, upon which an extension is secured, provided with an apertured partition which divides the extension into an upper and lower compartment.

The upper compartment receives the stopper or cork; the lower compartment a valve-cage, the bottom of which is formed with a flange, locking with a flange



NON-REFILLABLE BOTTLE.

on the extension. The cage consists of a hollow, apertured cylinder above the flange. The cylinder is surmounted by a hollow cone closed by a baffle-plate, *F*, and formed with a base having an annular shoulder at its junction with the cylinder.

A ball-valve moves within the hollow cylinder, closes the neck when the bottle is in an upright position, and fits on the annular shoulder of the cone when the bottle is tilted. A locking-ball in the cage bearing on the annular shoulder holds the valve to its seat when the bottle is in vertical position, and rolls into the hollow cone when the bottle is inverted.

The arrangement of the apertured partition and the baffle-plate, *F*, prevents the introduction of a wire to unseat the ball-valve in attempting to refill the bottle; for the baffle-plate will deflect the wire sidewise. The ball-valve is to be made sufficiently light to float in liquid. If glass be the material used, the interior will be hollowed, so that the bottle cannot be filled under a vacuum. When the bottle is held in a horizontal position the locking-ball will roll down the sides of the hollow cone to seat the ball-valve.

Acetylene for Autocars.

(Archiv. Post Tele. 11. pp. 555–568, 12, pp. 602–612, Jnue, 1899.)—The author predicts, says Science Abstracts, when safe methods of generating and storing acetylene have been discovered it will displace petrol as the explosive agent in motor-car engines. Acetylene explodes best when mixed with 12 parts of air, whereas the best proportion for coal gas is 6 parts of air. The fuel for 10 horse power for 100 hours, which in a Serpollet generator occupies 4 cubic meters, and in a petrol motor 316 cubic decimeters, only requires 300 cubic decimeters in an acetylene engine. Moreover, acetylene is more cleanly and smells less. Ravel has experimentally found that the efficency of acetylene is two and a half times as great as that of ordinary coal gas, but he concludes that a type of gas engine suitable for it has yet to be found. Claude and Hesse have shown that, under a pressure of 12 kilogrammes per square centimeter, 1 liter of acetylene will absorb no less than 300 liters of acetylene, all of which it will give off again upon lowering the pressure.

THE Paris Exposition will be commemorated by an issue of French stamps which will be sold beginning on the opening day.