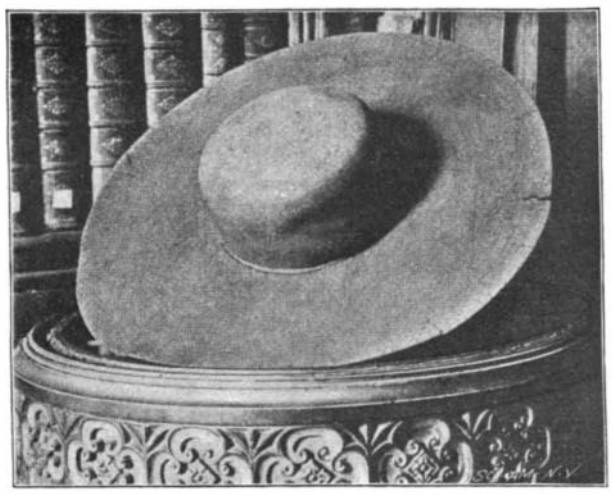
CARDINAL WOLSEY'S HAT.

Christ Church, Oxford, has secured a hat that once belonged to the great Cardinal Wolsey. Christ Church, Oxford, was founded by Henry VIII., in 1545, but, in reality, he merely adopted the magnificent work commenced by Cardinal Wolsey in 1524. It may be said that Christ Church, Oxford, is not a church, but a college. The great cardinal intended "Cardinal College" to be a splendid institution for the advancement of learning and a memorial of his own greatness. In order to create it he abolished monasteries, pulled down churches, collected costly vestments, and sent agents to buy manuscripts. A considerable part of the building was finished in 1529. He drew up statutes providing for a dean, fellows, and many graduates, scholars, and others, and appointed the first holders to



CARDINAL WOLSEY'S HAT.

these offices, and, curious to say, some of these turned out to be the pioneers of the Reformation. The college was at work when Wolsey fell, in October, 1529, and a year later the college was suppressed. Fifteen years later Henry VIII. re-established it under a new name, but the buildings were chiefly Wolsey's, and the endowments were taken from endowments provided by Wolsey.

Quite recently a new treasure was obtained by the college—a hat which is said to have been Wolsey's hat. While the pedigree of the hat is incomplete, it is ancient at any rate. For years it was one of the curiosities of the famous Strawberry Hill collection of Horace Walpole. When it was sold, it was bought by Charles Kean, the actor, who, it is said, wore it while he was acting. In 1898 it was exhibited at the Tudor exhibition, and in the same year it was bought and presented to Christ Church, where it will be very carefully preserved.

It has a large, flat brim of red felt; both brim and hat are absolutely round. The hat is 3½ inches high and 7½ inches in diameter. It is so very round that it is a wonder it could have been worn. The brim is perfectly flat and measures not quite 6 inches in width, so that the whole diameter of the hat and brim is about 19 inches. The tassels are lost, but the place where they went in can be seen. A narrow cord ran around the outside of the bottom of the hat along the inner edge of the brim and passed by two small holes through this edge, so that the ends of the cord could be brought together and tied. That it is a genuine cardinal's hat seems beyond doubt, but whether or not it is Wolsey's hat is, of course, open to question. We are indebted to Black and White for our engraving and for the foregoing particulars.

American Locomotives for the Barry Dock.

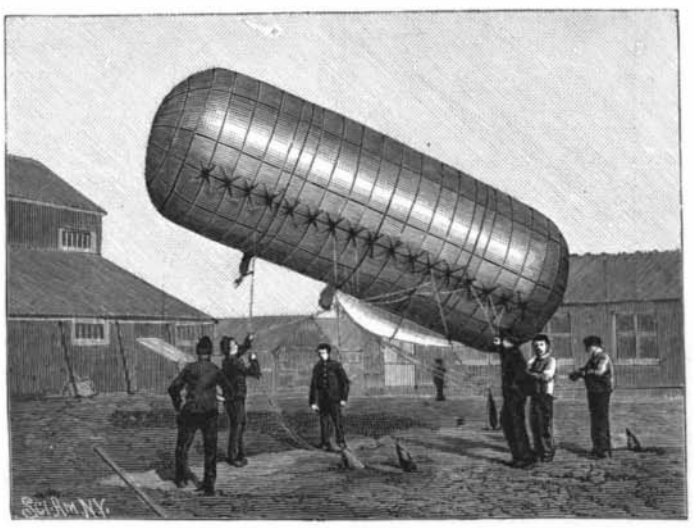
The directors of the Barry Dock have accepted American tenders for the construction of their locomotives. They get quicker delivery and the price will be about $500 less per engine.

MILITARY BALLOONING.

The idea of using balloons in warfare is more than a century old, the first attempt made to put the project into execution being in the Revolutionary War of 1794. Napoleon organized a ballooning corps for his second campaign in Egypt, but, before it could be employed, the wagons containing the accessories fell into the hands of the British. During the siege of Paris, in 1870, balloons were used extensively, and news was carried by that means from the beleaguered city to the provinces. Among the latest additions to military balloons are searchlights, which are regarded as invaluable in night reconnaissances.

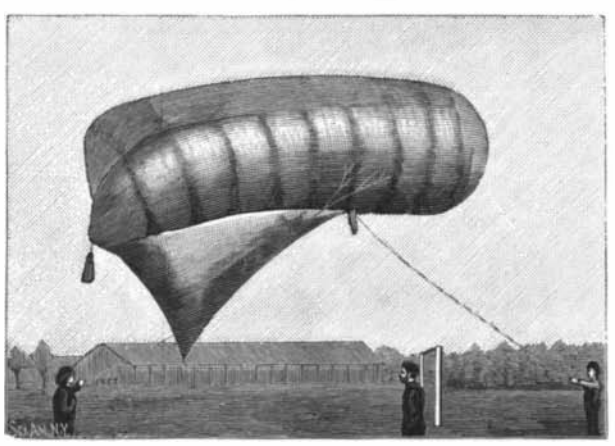
There is a military school of ballooning at Aldershot, says The London Graphic, which is wholly responsible for the theory and practice of aeronautics in the British army. This institution has not only to test every balloon destined for the service, but also to instruct those whose business it is to use the balloons, and to facilitate the employment of balloons generally in time of warfare. The balloon section of the Royal Engineers constructs all the appliances employed, with the exception of preparing and fitting the skins. All the nations of Europe are engaged in attempting to bring the science of aerial navigation to perfection. It is no doubt a serious matter to consider that, if ever the science were made really practical, not the finest navy ever seen could stop the destruction of a city by a military balloon armed with explosives. Experiments at Aldershot of late have been made with a balloon of a very different shape from that to which we are all accustomed. This new balloon is a weird-looking object, like a huge sausage floating in the air. It was, we believe, first tried in Germany. In the air the balloon floats at an angle of about forty-five degrees to the horizon. It is a somewhat complicated apparatus. In addition to the balloon itself there is a smaller balloon or bag attached, which has an open end, which inflates with air as the balloon moves. This helps to steady the balloon considerably. With the same object a small balloon, like a large football, is towed astern of the larger. This acts like the tail of a kite, and assists in keeping the balloon in the particular attitude it assumes, and also helps to maintain its steadiness. Oscillation is largely obviated, and special advantages for photographing are thus afforded. The little balloon at the tail also goes some way toward steering the balloon, for it enables the aeronaut to keep the head of what we will call the "sausage," for want of a better name, in a certain direction. This is a great advantage when the balloon is being towed, as, of course, it is generally captive. If let loose, the balloon would have to go before the wind, and the tail would still help in steadying it and keeping its head in the direction of the wind, which would never catch it athwart.

VESUVIUS was recently covered with a heavy snow fall while the crater was in eruption. The sight was a very strange one; three streams of red hot lava moving at one time through the white snow.

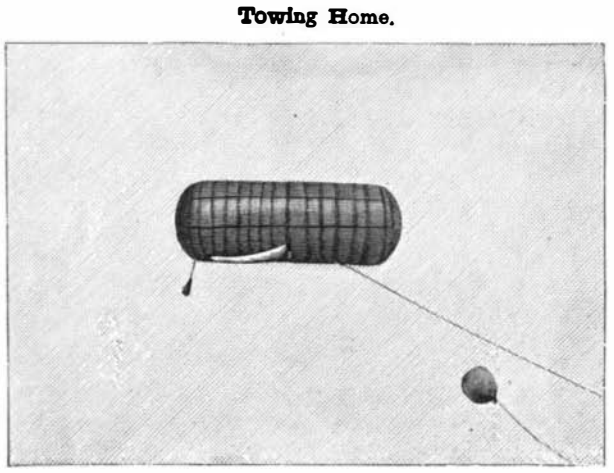


The Ascent.

Towing Home.



With Steadying Pouch Fully Inflated.



In Mid-Air.

AN ENGLISH MILITARY BALLOON.

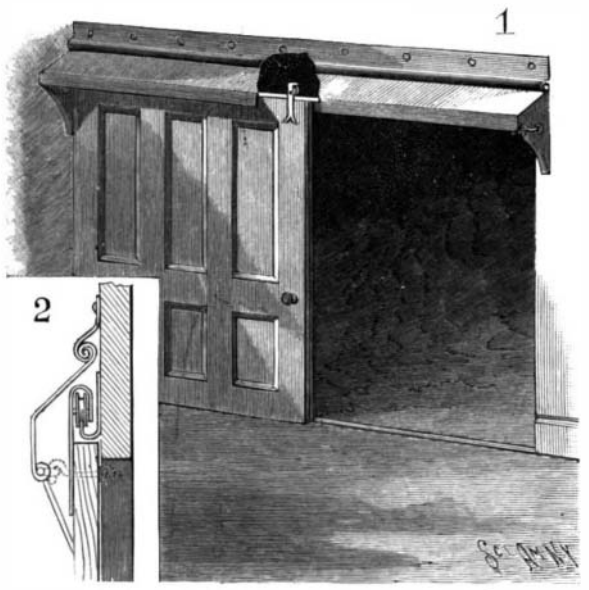
A CAP FOR SLIDING DOORS.

The illustration presented herewith represents an improvement in caps or devices for covering the tracks upon which sliding doors run, the improvement rendering it possible readily to repair the moving parts of the door-mechanism.

Fig. 1 is a perspective view of the device. Fig. 2 is a vertical section taken through the improvement.

Secured above the door opening is a plate which is bent to form a track for the door. Upon this track the door is hung by means of bars in which wheels are journaled, rolling upon the track. Above the track there is fastened to the wall a plate provided with an inwardly turned roll.

The cap which covers the track is also made in the



DOANE'S CAP FOR SLIDING DOORS.

form of a plate, but is provided with an outwardly turned roll intermeshing with the previously mentioned inwardly turned roll, so as to secure the two plates together and to form a hinge whereby the cap can be raised.

The cap extends down over the door and at its lower end is provided with a stiffening-rod held in place by a roll in the edge of the plate. At each end the cap is provided with eyes which are engaged by hooks. If it be so preferred, the eyes may be formed upon the ends of the stiffening-rod.

Should the wheels run off the track, or should the door become impeded, the cap is unhooked and swung up, thus enabling the necessary repairs to be made.

The cap has been patented by the inventor, Elias H. Doane, Tonica, Ill.

The Use of Peat Moss in Europe.

As we have had many inquiries concerning peat moss, we take pleasure in giving some additional particulars regarding this interesting substance which are furnished by United States Consul Listoe, of Rotterdam. The largest dealer in, and exporter of, peat moss in the Netherlands writes him as follows: Moss litter is used for the bedding of horses and cattle, while the peat dust is used for disinfecting purposes; that is to say, by mixing it with manure the moisture of the latter is absorbed and there is no unpleasant odor. It is also used as a packing material for fruit. Mixed with molasses, peat dust forms a fodder for cattle. This is mostly made in Germany, and the sales of this molasses fodder are daily increasing. The peat dust is sifted from the moss litter; the peat fiber is used in Holland to make horse clothes and carpets and also antiseptic wool for dressing horses. A few years ago there was established at Maestricht works for making peat wool, but the enterprise was not a success.

No paper is made from peat moss in Holland, and it is not believed it is a fit material for paper making.

Miscellaneous Notes and Receipts.

Swiss Alpen Kraeuterbitter-Liqueur.—(Bitters-liqueur made from Alpine herbs.)—

Gentian root	500 grms.
Juniper berries	500 "
Galangal root	500 "
Angelica root	240 "
Thyme	120 "
age	120 "
Calamus	120 "
Ceylon cinnamon	120 "
Spirit 60 per cent	65 liters.

Digest eight days and add, after pressing and filtering, Malaga wine 5 to 6 liters. Water, up to 100. Color brown.—Colonialwaaren Zeitung.

Diamonds in a Volcano.—An interesting discovery from a geological view-point has latterly been made in the Witries Hoek Mountains, in Natal. On the summit of an extinct volcano near the edge of a lake filling the former crater, soundings have established the presence of a sand layer containing small diamonds. It would be instructive to know whether these diamonds were there accidentally or whether the find is connected with a diamond field, for the said mountains are not situated in a district known to be diamantiferous. Considering the latter supposition, the presence of precious stones in the crater of a volcano will doubtless throw some light upon the formation of precious stones in nature.—Die Edelmetall Industrie.

To Reproduce Old Lithographs.--Prepare a bath consisting of sulphuric acid, 3 to 5 parts, according to the age of the picture, thickness of the paper, etc., alcohol 2 to 5 parts, water 100 parts, in which the picture is immersed for 5 to 15 minutes, whereupon it is spread face downward on a glass or ebonite plate, allowing a weak jet of water to run over it for a time. If the paper is very thick, the sheet is turned over and the water is permitted to run over the face as well. Now remove the lithographic print, lay it on a piece of blotting paper, cover it with another, and dry the picture as far as possible between the two blotters.

The print, still somewhat moist, is then, with the picture upward, laid on a glass plate, well smoothed down and covered with a layer of weak gum solution, using a very soft sponge. The picture is now ready to take the printer's ink or lithographer's ink diluted with oil of turpentine, as is customary in lithographing. After this is done, spread a sheet of suitable paper on it and pass a dry roller over it. A reversed imprint is the result, which is transferred to a zinc plate or a lithographic stone, from which numerous impressions can be made.—Neueste Erfindungen und Erfahrungen.

Coating for Parts of Iron in the Open Air.—The iron parts are cleaned with suitable tools, the joints puttied up and priming is done with a paint consisting of iron minium and linseed oil varnish, which is applied twice. When the grounding is perfectly dry, coat twice with a paint consisting of white lead 1 kilo., zinc-gray 1 kilo., ultramarine 20 grammes, finely ground with 500 grammes of boiled linseed oil. Cast iron or wrought iron water pipes are painted with gas tar heated to 180° C. or with a mixture of asphalt 1 kilo. with colophony 1 kilo., which is thinned with tar oil.

A coating for iron which is impervious to fire is obtained as follows: First apply a water-glass solution which is mixed with finely powdered glass. After drying, lay on a thin paint consisting of quartzose sand 14 parts, powdered hammer-scale, slaked lime ½ part, clay ½ part, and water-glass solution as necessary.

Rust-proof paint for iron and steel.—Dissolve caoutchouc in benzine, and put on the thickish solution by means of a brush.

Coating for wrought iron pipes.—Boil 72 per cent of coal tar, free from oily substances, with 28 per cent of crude asphalt until the necessary consistency is reached. The mixture must not be overheated.—Centralzeitung für Optik und Mechanik.

Piercing Majolica and Porcelain.—Ceramic objects can be quite readily pierced with steel tools. Best suited are drills of ordinary shape, hardened like diamond and moistened with oil of turpentine, if the glaze or a vitreous body is to be pierced. In the case of majolica and glass without enamel the purpose is best reached if the drilling is done under water. Thus, the vessel should previously be filled with water and placed in a receptacle containing water, so that the gimlet is used under water, and, after piercing the clay body, reaches water again. In the case of objects glazed on the inside, instead of filling them with water, the spot where the drill must come through may be underlaid with cork. The pressure with which the drill is worked is determined by the hardness of the material, but when the tool is about to reach the other side it should gradually decrease and finally cease almost altogether, so as to avoid chipping. In order to enlarge small bore-holes already existing, three-cornered or four-square broaches, ground and polished, are best adapted. These are likewise employed under water or, if the material is too hard (glass or enamel), moistened with oil of turpentine. The simultaneous use of oil of turpentine and water is most advisable in all cases, even where the nature of the article to be pierced does not admit the use of oil alone, as in the case of majolica and non-glazed porcelain, which absorb the oil, without the use of water.—Metallarbeiter.

A CONVERTIBLE DUSTING-BRUSH.

The accompanying illustration represents a simple dusting-brush, so constructed that the handle, without being detached, may be shifted from one end of the brush to the other, so as to secure a uniform wear of the bristles.

Fig. 1 is a perspective view, showing the brush and handle arranged to form a long-handled brush. Fig. 2 is a side elevation showing the brush and handle arranged to form a floor brush. Fig. 3 is a transverse vertical section of the brush, the handle being omitted.

The dust-brush is provided with a tubular portion open at both ends, into which a double-ended handle is

HAM'S CONVERTIBLE DUSTING-BRUSH.

adapted to fit. At its upper face the tubular portion is provided with three apertures, one at each end and one at the center. At the bottom of the tubular portion, in transverse alinement with the central aperture, a depression is formed, as shown in Figs. 2 and 3.

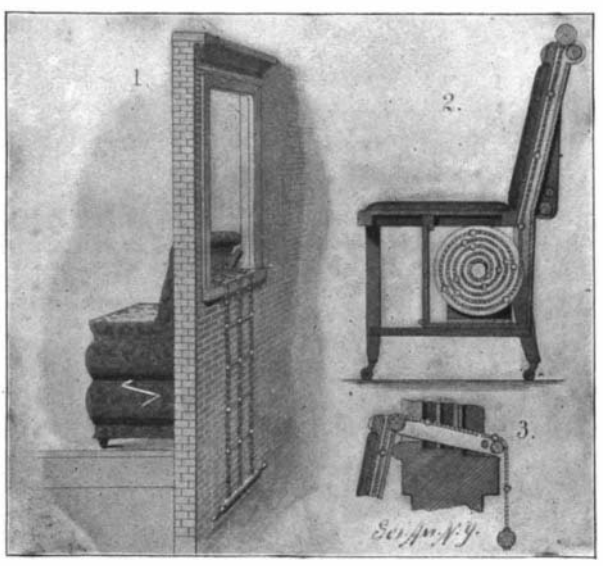
The handle at each end is provided with an aperture which is adapted to register with the end apertures of the tubular brush portion.

When the brush is to be used as a hand-brush, the handle is run through the tubular portion, and is secured by means of a pin which passes through the handle aperture and through one of the end apertures of the tubular portion.

By causing the pin to pass through one or the other of the end apertures, the brush can be converted from a short to a long-handled brush. Fig. 1, for example, shows the arrangement of the parts for a long-handled brush. When the brush is to be used as a floor brush, the handle is inserted in the central aperture of the tubular portion and into the depression registering with the central aperture, as shown in Fig. 2. The frictional engagement between the walls of the central aperture and depression and the handle is sufficient to maintain the handle in the brush body. It is evident that a brush thus constructed can be so arranged in its parts that the bristles may be evenly worn. The inventor is Henry H. Ham, of Portsmouth, N. H.

A NEW FORM OF FIRE-ESCAPE.

There has recently been patented by Emile Robiole, of 313 Amsterdam Avenue, New York city, a novel fire-escape, in which a piece of furniture is used as an anchor for the ladder.



A NEW FORM OF FIRE-ESCAPE.

Fig. 1 is a perspective view showing the fire-escape in operation. Fig. 2 is a section of a chair, showing the general arrangement of the parts of the fire-escape. Fig. 3 is a section of a portion of the device, showing the position of the parts when the ladder is running out of a window. The chair or other piece of furniture is provided with the usual seat and legs, and with a supplemental back behind the ordinary back. Below the seat a casing is arranged which communicates with the space between the two backs. In order to enable the chair to serve as an anchor, a heavy weight in the form of a plate is attached to the lower portion. Within the casing a spindle is mounted, upon which a fire-ladder, formed of steel wire cables to which steel rungs are secured, is wound. A portion of this ladder extends up between the two backs, and, at its outer end, is provided with a heavy weight normally resting upon the upper end of the back and upon a roller in the supplemental back. When not in use, the various parts will be in a position to enable the chair to be moved from place to place. When it is desired to use the fire-escape, the chair is moved to a window, as shown in Figs. 2 and 3, and the weighted end of the ladder thrown out of the window. As the window-sill might interfere with the downward movement of the ladder, the inventor has pivoted arms to the back of the chair, in the free ends of which arms a roller is journaled. This roller enables the ladder to unwind readily; and the connection of the arms with the piece of furniture is such that they will serve as braces to prevent the tipping of the chair. When the fire-escape is not in use, the arms will hang downward as shown in Fig. 2. In order to wind up the ladder after having been used, a winding-crank is employed which fits in a socket in the ladder-spindle.

A Rectifier for Alternating Currents.

For many purposes in which electricity may be used, says Dr. Kalischer in the Elektrotechnische Zeitschrift, the direct employment of alternating currents is not convenient. In consequence of this, one has been forced to make use of intermittent direct currents. But the rectifiers with movable parts finding employment for this purpose are more or less unreliable and irregular in their action, besides which a loss of energy is represented by the sparking which occurs at the contacts upon the opening and closing of the circuit. The substitution of a rectifier without these defects, and adapted to work in conjunction with alternating currents, would therefore appear desirable. This has been rendered possible by the recently published discoveries made independently by Messrs. Pollak and Graetz, who have utilized certain properties of aluminum to assist in rectifying alternating currents by employing anodes of this metal in conjunction with certain electrolytic solutions, such as, for instance, potash-alum and soda-alum. By this means a very great resistance may be opposed to the passage of the current in one direction, which is, indeed, quite prevented provided its E.M.F. does not exceed a certain maximum.

It is obvious from the foregoing that if we connect one or several such cells, as may be necessary (in series), possessing aluminum or lead or carbon electrodes in circuit with an alternate current generator and the primary winding of an induction coil, the current will be able to circulate through this winding only when the aluminum forms the cathode, so that the coil will be alternately choked and opened with perfect regularity. By employing two cells or group of cells, it is further possible to excite two inductions simultaneously, and so to fully utilize the current generated. It need hardly be added that a part of the alternating current may be employed for other purposes without in any way interfering with the action of the induction coils. Electro-plating baths might also be connected, as will be readily understood, and at the same time a portion of the current from the common source of generation transformed into a continuous current through the medium of the arrangement of connections suggested by Messrs. Pollak and Graetz.

The Manna of the Bible.

In a recent number of La Nature there is an interesting note by M. Henry Castrey on the manna of the desert, which played such an important part in the history of the Jews. At the present day Arabs who are compelled to traverse the sandy desert wastes of Arabia not only feed their camels upon this little known food, but also consume it themselves. The "manna" is really a fungus, the thallophyte, either Canona esculenta or Lichen esculentus. The fungus is very abundant and is found upon the sand after every rain, sometimes in great mounds or heaps. It is of a gray color and is about the size of a pea, and it breaks with a mealy fracture, and the taste is rather agreeable and somewhat sweet. When eaten it acts as a laxative, and the analysis shows that the fungus has the following composition:

	Per cent.
Water	16
Nitrogenous matter	14
Non-nitrogenous matter	20
Carbohydrates	32
Fat	4
Mineral matter	5

This analysis demonstrates the fact that the manna, while not a complete food in the strict sense of the term, is still rich in certain kinds of food material and it is capable of sustaining life for a time.