

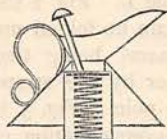
but slight. In the first the flowers are detached on a plain or self-coloured ground; in the second the same flowers are placed on stripes or enclosed in lines. If creamy white or saffron foulards are adopted for evening wear, then painted lace looks stylish as a trimming; and the more Eastern is the lace in colouring,

the more successful is the result. The colours for the month will be heliotrope in all shades (which include mauves and violets), seal-browns and coffee-browns (coffee in the bean, roasted, and ground), vanilla, a shade of yellow resembling Indian corn, slate-grey, willow-green, steel-blue, and porcelain-blue.

THE GATHERER.

A Corkless Oil-Can.

The greasy cork of oil-cans is generally a nasty as well as troublesome appliance, and a useful improvement has made its appearance in the "no cork" oil-can, which dispenses with a cork altogether. As will be seen from the woodcut, a knob projects from the mouth of the can, and when this is pressed by the



thumb it forces back a leather disc or valve, which closes the orifice by the upward force of a stout spiral spring. The oil can then be poured, and when the knob is released the spring again shuts the valve; moreover, if the can be upset the oil cannot escape.

A Ship-Railway across the Isthmus.

The revival of the project for cutting a canal across the Isthmus of Panama, in Central America, has called forth a rival scheme, which purposes to transport ships bodily from the ocean on one side of the isthmus to that on the other. Captain Eads, an American engineer, is the author of the plan, and a special committee of the United States Senate are now considering its capabilities and advantages. The proposed railway would consist of twelve heavy steel rails, placed three feet apart. It would be led into the water at both shores, by a gentle incline, to a depth of thirty feet, so as to carry the cradle or bogie-carriage intended to support the ship under the keel of the latter. By this means it would be possible, according to Captain Eads and other eminent engineers, to move the largest ships several times faster than they could pass through a canal with troublesome locks. Moreover, the cost of a ship-railway would be considerably less than either of the projected canals, and be built in a much shorter time. Touching the ability of ships to withstand the strain of transportation in this manner overland, Captain Eads is of

opinion that any vessel built to weather the gales and heavy seas of the Atlantic is capable of being carried by rail.

A Talking Picture-Book.

A somewhat clever toy, one that is sure to please children, and that is (so far as we know) quite new, is shown in the engraving. The book consists of a series of pictures of animals, with apparatus for producing sounds in imitation of each creature represented. Opening the book, the illustration is on one side of the page, and letterpress descriptive of it on the page facing. The text covers concealed mechanism, comprising bellows and whistles of peculiar construction for mimicking various voices. The bellows are "blown" by pulling a button at the edge of the page,



the button belonging to the picture on view being pulled to produce the sound in imitation of the cry of the animal exhibited. Mr. Brand, of Sonneberg, Germany, has patented this invention.

A New Eye-Shade.

The eye is so important an organ of the human frame that it is, of course, desirable to assist and protect it in all cases where it is weak or unusually delicate. This "goes without saying," as the French have it; yet, as many people wish to shield their eyes from excessive light or other disturbing influence without being compelled to use coloured glasses or some of the other shades now in vogue, the question with them has very particularly been, how to do it. Their requirement—an extremely common and not

unnatural one—can readily be met by one of the most recent shades offered to the public. This shade takes the form of a *pinc-nez*, which can be worn continually by those who require it for permanent use, or only as occasion demands by those whose sight is good, but who are anxious to protect their eyes when these organs are temporarily weak or subjected to intense light. Projecting outwards from the upper rim is a thin sheet of tortoiseshell about an inch or so deep, which intercepts all light coming from above, so that though the wearer should raise his head, his eyes do not come in contact with the light. Clerks, journalists, literary men, and others, working by strong gaslight or in daylight, would find this new eye-shade extremely helpful to their eyes. When their work was done, and they had no longer need to wear it, excepting those who habitually use spectacles, they would have only to fold the shade and put it in their pocket. This appliance is effective and simple, and is free from all objections that can be urged against many kinds of eye-shade now in use.

Glass from Bones.

On extracting the phosphorus from bones, the residue consists of lime and phosphoric acid, which can be readily transformed into glass. Bone-glass, which is now manufactured in France, can be worked with the same facility as any other glass, and it possesses the valuable property of not being attacked by fluoric acid.

Tent for Camping out.

Capt. C. W. Hobbs, of the U.S. army, has invented an improved tent which ought to meet with the approval of those who spend their holidays in camping out, or of professional men, such as surveyors and engineers, whose occupation frequently takes them into the open at some distance from

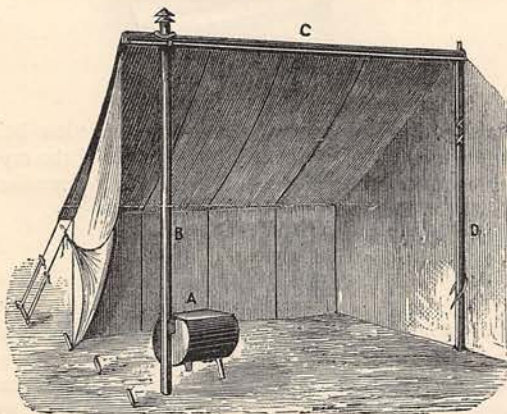


FIG. 1.

towns and villages. The frame of Capt. Hobbs' tent consists of a hollow upright of galvanised sheet-iron, an ordinary wooden pole, and a hollow ridge

(also of iron), which is carried from top to top of the upright and pole. Besides forming one of the supports of the tent, the upright is employed as a

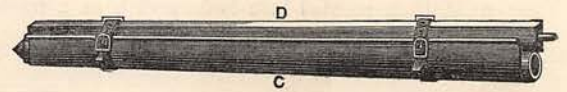


FIG. 2.

stove-pipe, and is furnished at the top with a chimney-cowl. Near the lower end of the hollow upright, a stove is attached in such a way as to sway with the motion of the tent, and is supported by a hinged leg which can be readily removed when the stove is not in use.

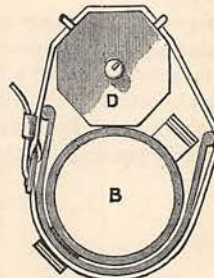


FIG. 3.

On referring to the illustration (Fig. 1), the construction of this tent will be understood at a glance. The stove A is attached to the hollow vertical upright or chimney B, which passes upwards

through the ridge C, supported at its other end by the pole D. Fig. 2 shows how compactly the framework can be folded up, the parcel being tied together by the straps of the pole. Fig. 3 is a transverse section of the apparatus thus folded. The chimney-cowl is carried inside the stove, and the leg of the latter, by a very simple contrivance, now becomes the handle, as represented in Fig. 4.

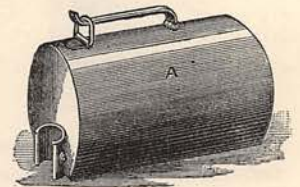


FIG. 4.

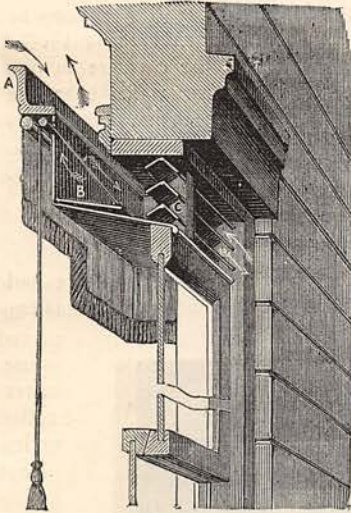
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Slag Cement.

The crude slag from iron-smelting furnaces has accumulated so much on the hands of ironmasters that the waste-heaps have become an unsightly nuisance; and it is always satisfactory to learn that a new use has been found for this capable refuse. For some time slag has been made into sand, spun glass, and bricks for building purposes; but another important use for it has recently been discovered. This consists in making it the chief ingredient in a hydraulic cement, prepared by a gentleman who is well known for his successful efforts to manufacture artificial stone. Ransome's slag cement consists of a mixture of lime and slag-sand in certain proportions. It is delicate in colour, sets rapidly in water, and is of extraordinary and increasing strength. According to experiments, in three days after application to a structure under water it is stronger than Portland cement after seven days; in fifteen days it is stronger than Portland cement after a year; and in twenty-eight days it is stronger than Portland cement after seven years.

A Self-acting Ventilator.

On the proper ventilation of sitting and bed-rooms largely depends, it is needless to urge, the health of the household ; and many times and oft have inventors endeavoured to devise some appliance that would meet the varied requirements in this direction. It has been always found easy enough to admit fresh air, but there has been far more difficulty in keeping out dust and "blacks." One of the most recent inventions



professes to achieve both ends, its author, Mr. Walter Sayers, of Guelph, Ontario, having spent considerable thought upon the matter. A reference to the engravings will explain the details of this ventilator. It is placed at the top of the window above the sash, and screened from view inside by curtains, while from the outside it resembles a small Venetian blind. The entering air is directed by the air-duct towards the ceiling, where it supersedes the foul air which escapes by the ventilator. Being automatic it needs no attention ; the wind, on attaining a certain velocity, shuts the pivoted guards C, and so prevents the admission of very strong air-currents. These guards likewise catch the dust, and when the pressure of wind ceases they swing open automatically. When it is desired to close the ventilator entirely, this is done by drawing the cord hanging from the centre of the window, which shuts the valve B. On the cord being loosened



the valve opens by its own weight. The network, A, over the cornice will keep out flies and other insects.

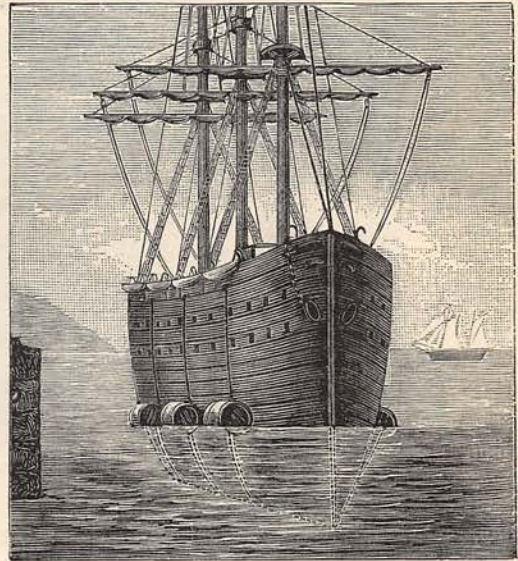
Protecting Trees from Insects.

To protect fruit-trees from the ravages of insects, a German horticulturist has invented the following little

device, which may prove useful to English gardeners :— A metal collar is made to clasp the tree loosely a few feet above the ground, and cotton wool or hemp soaked in tar is packed between the trunk and the collar. The lower part of the collar is encircled by a trough or saucer, sheltered from the weather by an overhanging screen. This saucer is to be filled with either glycerine, tar, mineral oil, or some poisonous liquid fatal to the passage of the insect pest ; and, being prevented from ascending the trunk both by this and the tarred hemp, the tree is rendered secure from their depredations.

New Way to Buoy Ships.

Vessels discharging in port, when not moored alongside the quay or dock, are liable to careen or roll unless proper precautions—some of which are not readily available, while others are clumsy—are taken with a view to prevent any such behaviour. Instead



of using spars or logs for supports, as is often done, Mr. Wheeden, of Baltimore, has patented the new method illustrated in the woodcut. It consists in attaching a line to air-tight casks—the ordinary water-casks carried by all vessels will do—floating at the sides of the vessel. From each cask a line is passed under the keel and up the opposite side of the ship, where it is carefully fastened. If one cask is not enough to secure the necessary stability, two or more can be used as required. Under this system, which may also be applied to floating docks, pontoon bridges, and disabled ships at sea, there is no tendency to roll, and cargo may be unloaded without the vessel careening.

Hardening Small Tools.

It is said that the engravers and watchmakers of Germany harden their tools in sealing-wax. The tool is heated to whiteness, and plunged repeatedly into the wax until it will no longer pierce the latter.

The steel becomes in the process almost as hard as diamond, and when touched with a little oil or turpentine, the tools are excellent for engraving, and also for piercing the hardest metals.

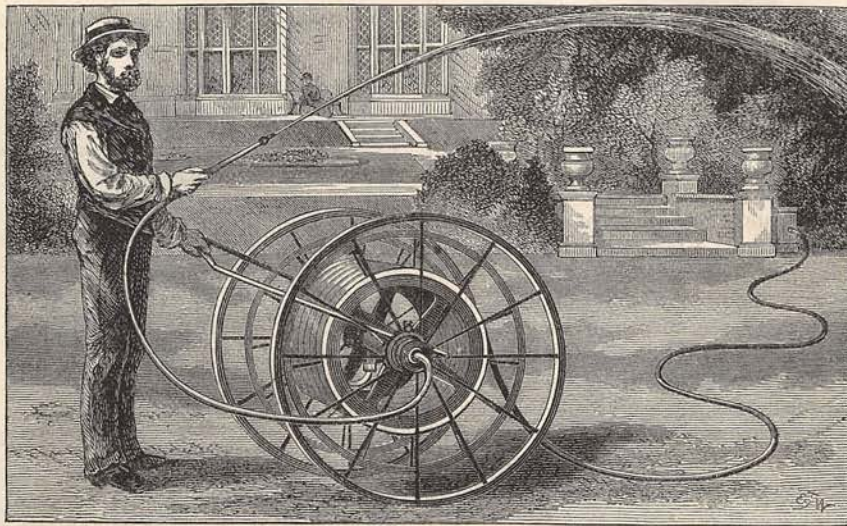
A Valuable Glue.

Householders and others will be glad to hear of a very permanent glue—a chrome-glue which is made by an admixture with common glue of one part of acid chromate of lime in solution to five parts of gelatine. The glue made in this manner, after exposure, is insoluble in water, and can be used for mending glass objects likely to be exposed to hot water. It can also be made available for waterproofing articles, such as sails or awnings, but for flexible fabrics it is not suitable. A few immersions will be found

round a reel secured to the axle, and by the revolving of this reel the hose is wound up or unwound. The water passes through the hose as it is wound on the reel, thence to the hollow axle, and out through the hand-pipe. The attendant (who, by-the-by, may be a boy of ten or twelve, so manageable is the contrivance) taking the handle of the carriage in one hand and the hose-pipe in the other, walks over the lawn, or up and down the garden paths, watering grass and flowers in the most business-like manner. The carriage is of very light construction, and the reel-wheels do not touch the ground.

Blasting Saltpetre.

A mixture of coal, sulphur, and soda-saltpetre, called "blasting saltpetre," has been introduced for blasting



NEW HOSE CARRIAGE.

sufficient to render the article impervious to wet. It is necessary that fractured objects should be exposed to the light after being mended, and then warm water will have no effect on them, the chromate of lime being better than the more generally used bichromate of potash.

New Hose Carriage.

The hose carriage represented in the wood-cut has been devised mainly for watering lawns and gardens, but could, of course, be pressed into service for more serious work should occasion for its use in this way ever unfortunately arise. The chief feature in the apparatus is the arrangement whereby water is conveyed, through the hose attached to the hydrant, to the hollow axle of the carriage, from which it is served by means of a short hand-pipe. One end of the hose is furnished with a union for coupling it with the hydrant from which the water is obtained; while the other, or inner end, is fastened over a nozzle projecting from the axle. The hose is wound

purposes in the Saarbruck coal-pits and rock-salt mines of Stettin, in Germany. It is much cheaper than ordinary gunpowder, and its blasting power is equally great, but it is apt to suffer from moisture. Its chief recommendation, however, lies in the fact that it is not exploded by mechanical shocks, and can therefore be easily conveyed by rail; moreover, it burns quietly on being ignited in an open space.

Artificial Stained Glass.

Stained glass windows in houses are almost as rare as black swans, but the reason for that is obviously based on their costliness. It appears, however, that the effect of stained glass can be cheaply and ingeniously imitated in a very successful manner. Thin sheets of silk paper are printed with oil colours in different patterns of a more or less artistic character. These, when pasted upon ordinary glass windows, have all the appearance of the far more expensive designs of the glass-stainer. They are said to be particularly well adapted for the decoration of houses, and can easily be applied by any housewife.

A Canal through France.

A new water-way through France from Bordeaux has lately been advocated in the French Senate, and an investigation of the proposed route has been made by a Société des Études. The canal is to unite the Bay of Biscay with the Gulf of Lyons, and will extend between Bordeaux and Narbonne. This canal will, when completed, be about 406 kilomètres in length; the depth 8.50 mètres; the width in the single channel 56 mètres, and in the double water-way 80 mètres. The double way will extend about half the total distance. There will be sixty-two locks, sufficiently large to admit an iron-clad. There will also be towing-paths constructed. The supply of water will be drawn from the Garonne, a

position of the substance which rendered them incombustible. It is—pure sulphate of ammonia, 80 parts; carbonate of ammonia, 25; boracic acid, 30; pure borax, 17; starch, 20; and distilled or pure water, 1,000 parts. The materials to be rendered fire-resisting are dipped in this solution while it is hot, so that they may be thoroughly impregnated with it, and when dried sufficiently are ironed in the same way as ordinary starched fabrics.

The Sea Messenger.

The mysterious disappearance of H.M.S. *Atalanta* has drawn attention to the existing means for communicating intelligence between ocean-going ships in dis-



PROPOSED ROUTE OF CANAL FROM BORDEAUX TO NARBONNE.

lateral canal near Mas d'Agenais, and the river Aude. The cost of this undertaking is estimated at 550,000,000 francs. The saving in distance between Bordeaux and Marseilles is about 2,572 kilomètres. Towing vessels will be employed, and hydraulic power will be used in engines of great strength, capable of proceeding fifteen miles an hour. A gain of four days in the passage from Malta to Brest is expected, and should the canal prove equal to the promises made on its behalf, the military and commercial advantages which will be derived from its construction cannot fail to be very great. The accompanying sketch will give an idea of the proposed route.

Making Clothes Fireproof.

At the Paris Exhibition, two years ago, considerable attention was drawn to some muslin curtains, to which a flame was constantly applied without setting them on fire. They were exhibited by M. Martin, of Paris, and we are now enabled to give the chemical com-

press and the land. A sealed bottle, however useful it sometimes proves, is not the best device that could be adopted. The "Sea Messengers" of Mr. J. A. R. Vanderbergh, of Portsmouth, are a decided improvement on it. These consist of little boats to which a small bright flag can be lashed, and they are visible for a considerable distance at sea. They are capable of carrying 60 lbs. of freight, and hence a quantity of jewels or other valuables could be entrusted to them for the benefit of the friends of those about to perish in the doomed ship. A list of the passengers on board, together with remarks on the cause of the disaster, and printed instructions in seven languages for the edification of the finders, is also put inside the "messenger" before it is committed to the deep. These messengers have hitherto done good service, but they have not been so generally adopted on board ships as they ought to be. Perhaps a coating of luminous paint, which would render them more conspicuous at night, would be an additional advantage.

An Electric Furnace.

For some time past, Dr. C. W. Siemens, F.R.S., in addition to his application of the electric light to horticulture, has experimented with an electric furnace for the purpose of melting the most refractory metals, such as platinum, iridium, and steel, in considerable quantities by means of the intense heat of the "voltaic arc." The electric current for producing the arc is furnished by the Siemens dynamo-electric machine. The furnace consists of a crucible made of refractory material, such as fire-brick or charcoal, and the arc was formed between an "electrode" or discharging point of carbon, and another of iron. In such a furnace the heat of the current melted 2 lbs. of broken files in about twenty minutes.

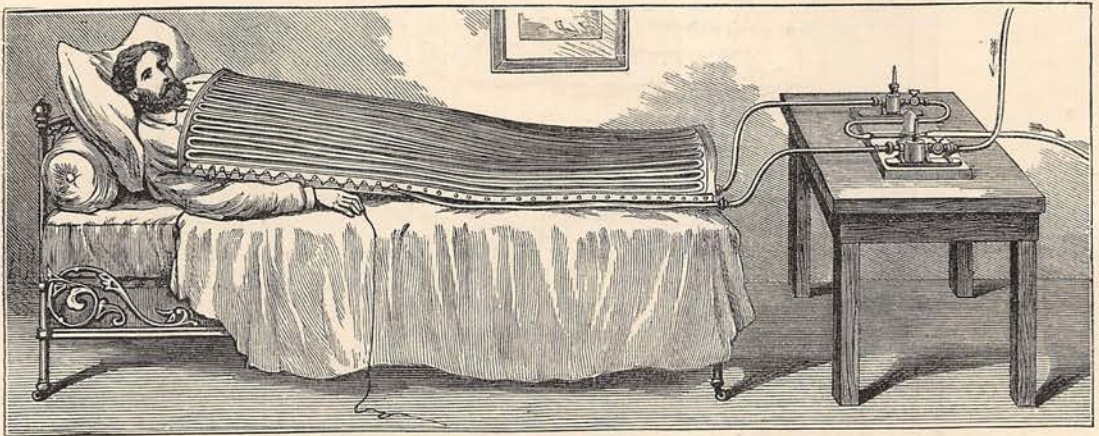
Waterproof Leather.

A new mode of waterproofing leather, which has

connection with the reservoir of cold water, and the other with the outflow-pipe. Thermometers, to show the temperature of the water as it enters and leaves the coverlet, are inserted in special chambers fitted to the stop-cocks. The tube from the coverlet to the outlet stop-cock is arranged to send the water through a small glass bell-jar on the table, so as to enable the regularity of the outflow to be seen. The apparatus is said to be highly sensitive; a slight alteration in the orifice of one or the other stop-cock, or both together, is followed almost immediately by a variation of the thermometric readings.

Edible Earth.

It is well known that certain semi-civilised tribes of men have a habit of eating earths; but no good reason for the practice has ever been given. Humboldt at-



A COOLING COVERLET.

proved very successful, has just been patented. A series of experiments made with the leather shows that it does not absorb more than 6½ per cent. of its weight of water after being immersed for five hours, while leather not so treated absorbs in the same time about 25 per cent. of water. This waterproof leather is therefore evidently well adapted for the manufacture of leather buckets, pipes, and articles of dress exposed to the wet.

A Cooling Coverlet.

Certain diseases, such as typhoid fever, are sometimes treated by refrigeration, or artificial cooling of the patient; and a new coverlet for this purpose has been recently introduced into the Hôpital de la Pitié by Dr. Dumontpallier. The coverlet is made out of a tube of caoutchouc, 80 mètres long, folded on itself in a series of equal lengths, and enclosed in two squares of cloth. A current of cold water flows through the tube from end to end, from and into a distributing apparatus placed on a table at the foot of the bed. The distributor consists of two stop-cocks—one in

tributed it to a desire to fill the stomach and allay the pangs of hunger; but this explanation cannot hold in all cases, for those peculiar people, the Ainos, of Yesso, have plenty of flesh and bread to eat, yet they persist in regaling themselves with a species of clay. Dr. Fuchs thinks that the unctuous sensation of the clay in the mouth is agreeable, and other writers have traced the custom to times of want, when other food was scanty. Some definite information about the edible earth of the Ainos is forthcoming from the analysis of Dr. Love, of New York, who finds it to contain, besides silica, alumina, and lime, oxide of iron and oxide of manganese, some magnesia, potash, soda, sulphuric and phosphoric acids, and traces of water and volatile matter. There is nothing nutritious here, but some of these ingredients are medicinal, and justify the notion that the earth may be eaten simply for its wholesome qualities. The Ainos eat this clay in the form of soup, boiled with lily-roots in a small quantity of water, and strained. The volatile matter found is the remains of some aromatic herb mixed accidentally or purposely with the clay.