

## Scientific Museum.

### Accidents and Emergencies.

This is the title of a very excellent and cheap little work, by Alfred Smee, F. R. S., and published by Fowlers & Wells, of our city. To show how practical it is, we publish the following extracts from its pages:—

**BURNS AND SCALDS.**—The action of a hot body on the skin is called a scald, if the hot body be fluid, such as boiling water or melted grease. If the substance be solid, or if the injury arises from the effect of fire, it is called a burn. When the clothes catch fire, roll the person in the carpet, or hearth-rug, or bed blanket as quickly as possible, to stifle the flames, leaving only the head out for breathing.

The effects of burns are three-fold—redness and pain, blisters, and total destruction of the part.

Apply cold wet clothes until the heat, redness, and pain abate; then, if the skin is entire, wet a cloth covered with a dry one. If the surface is destroyed, apply linen covered with any bland oil or cerate. If blisters arise, leave them alone, if not very tense; and if they be very tense, puncture with a fine needle, and keep on the lint and oiled silk.

Absence of pain over the injured part is a bad sign, and shows that it is destroyed. Apply linen and oiled silk as before, or a bread-and-water-poultice.

If shock exists, constant care alone will save the patient. Afterward, if excessive sleepiness or stupor, or difficulty of breathing sets in, or great pain ensues about the stomach, danger exists. The surgeon should always attend even the slightest burns, if large in size, for then, especially in children, there is always ground for alarm.

**EXPLOSIONS.**—Explosions may produce effects like burns, and the injury requires them to be similarly treated. Explosions may tear, bruise, etc., and Shock must be particularly attended to.

**CHEMICALS.**—Various chemicals, such as nitric acid, nitrate of silver, strong sulphuric acid, etc., may destroy some parts of the skin. Cover with linen and oiled silk, or bread-and-water poultice. These injuries generally do well.

**CHILBLAINS AND FROST BITES.**—Excessive cold will act upon the body somewhat like heat and produce redness, blisters, or destroy the part. For chilblains, employ friction, with soap liniment. For frost bites, rub with snow or very cold water, in a cold room, and bring the warmth back very slowly. A sudden application of heat instantly and irrecoverable destroys the part.

**COLD WATER.**—To drink cold water or other fluids after fatigue and abstinence in a heat above 85 degrees, is almost certain death.

**BITES OF MAD DOGS.**—Not one dog-bite in ten thousand comes from an animal which is mad. Where any one is bitten by a dog which is unquestionably mad, take a carving-fork and break off one prong, and heat the other in the hottest part of a common fire. Apply this thoroughly to the whole of the bite, so as to destroy the surrounding parts. If a surgeon be within a half an hour's journey, tie a string tightly above the part and use all possible dispatch to secure his aid. In all suspected cases of madness, keep the dog chained up, for perhaps it may be a false alarm, and the continuance of the dog in health will be a great satisfaction to the party bitten.

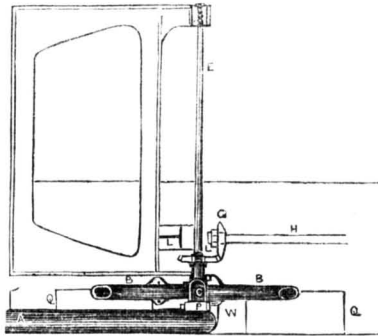
### Dangers of Camphene.

Under this caption the Boston Transcript of Saturday relates the following distressing incident: An interesting lad eight and a half years old, son of James M. Pettingill, Esq., No. 3 Washington Court, was mortally burnt last night by the breaking of a lamp filled with Porter's fluid. The boy was going up stairs to bed when he accidentally broke the lamp, and the contents were spilled upon his clothes. He tried to extinguish the flames, but not succeeding, ran screaming for help. But he was so badly burnt from head to foot that he died at half past four o'clock this morning.

[No family where there are children should

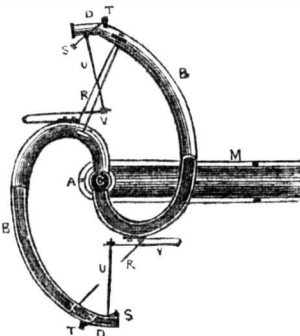
allow this fluid to be used in the house. We have distinctly spoken of this more than once and pointed out the dangers of using it. We hope this may meet the eye of some one who is careless of the safety of his family.

For the Scientific American.  
**Hydraulics.**  
(Continued from page 200.)  
FIG. 33.



**THE SCOTCH TURBINE.**—The accompanying engravings represent a water motor named "Whitelaw & Stirrat's Wheel," after its inventors. Figure 33 is a side elevation, and fig. 34 is a plan view, showing the arms and other parts of the machine. A is the main water supply pipe. B B are the arms of the wheel. The water passes into them at the centre part, C, and escapes at the extremity jet pipes, D D. E is the driving shaft; F is a bevel pinion, and G is a bevel wheel to give motion to the shaft, H. I is a large bracket affixed to the wall of the building, this supports the shaft, E, and another bracket, L, carries one end of the shaft, H. N is the bearing of the main shaft; Q Q are openings through which the water escapes under the arms into the tail race. As the main pipe, A, is secured to the building, the water would escape when the wheel is in motion, were it not for a ring round the under side of the aperture, C, and of a cylindrical part, P; this is packed with a leather washer. These parts are ground, packed, and fitted so nicely that the water acts to keep the joint tight, especially as there is a leather at W, inside of the pipe, A, to prevent escape by the pipe and cylindrical part. R R are stay bolts to support the arms; S S are valves, and ST ST are levers which work upon the centres, T T, and form a connection of these with the valves. There is a lever at the top and one at the bottom side of each valve. The rods, U U, form a connection with the levers, and V V are springs fixed to the arms. The end next to the valve of each jet pipe (fig. 34) is a circle drawn from

FIG. 34.



T as a centre, and each valve is curved to fit and work correctly upon the end of its pipe. The levers are adjusted so that the valves will work without rubbing upon the ends of the jet pipes, but it is not essential to have the valves perfectly tight. The machine revolves so fast as to make the united centrifugal forces of the valves, S S, the rods, U U, and the levers and springs greater than the weight which will bend the springs, V V, to the distance shown in fig. 34, the valves will recede from the centre of the machine till the force of the springs gets sufficient to overcome the centrifugal force of the valves; the centrifugal force, therefore, will cause the valves to cover the ends of the jet pipes and allow less water to escape, so as to diminish the water when the wheel goes too fast, acting like a governor upon the throttle valve of the steam engine. This wheel is built upon the principle of Barker's, which, as we have stated before, is the parent of all re-action water-wheels. The arms of this wheel are bent (thus it is differ-

ent from Barker's) to allow the water to run from the centre to the extremity of the arms when they are in motion, nearly in a straight line. The motion of the centre of the jet pipes is as quick as that of the water which drives the machine. The arms, it will be observed, are contracted towards the ends, and formed in the manner represented at X Y, fig. 34. A number of these machines are in operation in America, and the wheels are manufactured at Cold Spring, N. Y. It is stated that they give out 75 per cent. of the full power of the water. A controversy was carried on a few years ago between Mr. Whitelaw, of Scotland, and Mr. Elwood Morris, of Pennsylvania, respecting re-action water wheels, Mr. Whitelaw taking the ground that, if well constructed, they would give out 75 per cent., and even more, and Mr. Morris taking the ground that they could give out but little, if any, over 50 per cent.

### New Mode of Fresco Painting.

The London Athenaeum contains an account of a new discovery of fresco painting, lately introduced into Germany and termed Stereo-chromic.

The discoverer is Prof. von Euchs, of Munich, who, it seems, had to undergo all the opposition and jealousies incident to discoverers in general. Though now, in his old age, his invention is made use of in the new frescoes at Berlin, it is possible that he may die without reaping any personal benefit from it.

Stereo-chromic is a preserver of the wall on which it is painted by the chemical action of the solution sprinkled over the picture while in progress, the whole ground on which it is painted and the picture itself becomes one hard flinty mass, and the colors are converted into the hardest stone. So hard, indeed is it, that neither fire nor damp has the slightest effect on it. The most striking experiments have been made to test it during the last twelve years. The colors are not combined, as in *al fresco*, with lime, but with a solution of silex; and all the advantages of fresco painting are obtained without any of its disadvantages. This species of painting resists every influence of climate, and may be confidently used as an external coating for buildings in any part of the world. To the artist himself it offers the most important recommendations. He is not confined to time in executing it. He can leave off when he pleases, and for any length of time; which he cannot do in fresco work by any means, nor in oil painting within certain limits. The highest advantage of all, however, is, that the same part may be painted over and over as often as you please—which is not possible in fresco; and, consequently, in this new mode the most perfect harmony may be preserved throughout the largest possible painting. In fresco, the artist is the slave of his materials—here, he is their arbitrary master to the fullest extent.

### The Florida Reefs.

A correspondent of the Savannah Republican, writing from Key West, says:—

"We were highly entertained last evening with a lecture from Professor Agassiz. He took for his subject the Florida Reef and its builder, the coral insect. He set out with stating his opinion that the peninsula of Florida was made by this little workman, and with illustrations on the black-board, described its physiology. There are, he says, different races of coral insects, some of which lay the foundation of the reef in deep water, build up to a certain height, and die. These are succeeded by another race, who build up another step, and are followed by other races, until the edifice reaches to near the surface of the water, when the little mason is *functus officio*, and leaves his labors to be crowned by other agencies of nature. When this work is done, deposits from the sea are made upon the rock, which finally extend above the surface of the water, and become *terra firma*. He thinks that the peninsula is but an extension of reef after reef, the first being the construction of the coral-insect, then becoming reefs or islands, and the intervals between these being filled up in time by *debris* from the sea, altogether form main land. If this theory be true, we

may conclude that the wrecking business will last so long as the coral exist. Light-houses and beacons may warn the mariner from some of the dangers that lie in his path, but he has a little foe who is continually piling up stumbling blocks in his way, and laying snares in the track where he believed all was blue water and security. The Professor will make a report we understand, to the Chief of the Coast Survey, which will interest you as did his lecture of last evening his intelligent audience.

### Ohio Wheat.

Three Counties of Ohio—Wayne, Stark, and Ashland—raised over 4,000,000 bushels of wheat last year. Ohio can raise wheat enough to feed all England. This is the land of bread. Oh, why is it, that in any part of the world the poor should mourn for bread when there is enough and to spare raised for all?

### New York and Erie Railroad Bonds.

No less than \$3,594,000 bonds of this railroad were sold in the Exchange of this city on Thursday of last week, in the short space of 37 minutes.

### LITERARY NOTICES.

**THE ANNUAL OF SCIENTIFIC DISCOVERY, 1851.**—We are glad to see this useful yearly collection of facts relating to the progress of science, on our table. It is edited by Dr. Wells, of the Scientific School, Cambridge, and G. Bliss, Jr., and is published by those enterprising publishers of good works, Gould & Lincoln, Boston. This work is a collection of facts from a thousand different sources, about the progress of science in machinery, chemistry, astronomy, geology, &c. It is enriched with a fine steel plate of Prof. Silliman, of New Haven.

**HUNT'S MERCHANT'S MAGAZINE.**—This able Magazine, for March, contains a very able article on the Rise and Price of Silver; the Commerce of France, in 1849; Internal Improvements in the State of New York—and a great number of other articles, characterized by the usual ability displayed in the selection and management of its accomplished editor.

**MARINE AND NAVAL ARCHITECTURE:** By John W. Griffiths.—This valuable treatise upon ship-building has received the unqualified approbation of the most eminent builders in this and foreign countries. Mr. Aug. Normand, of Havre, one of the most scientific constructors in France, says,—"it is an excellent work, and embraces more substantial information and first principles than any other work published up to the present time." Price of the entire work unbound \$9, bound \$10. For sale at this office.

**DICTIONARY OF MECHANICS AND ENGINE WORK.**—No. 24 of this useful work, by D. Appleton & Co., N. Y., contains articles on Knife Sharpeners, Lamps, Lathes, and the Lead of Slide Valves.



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The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the SIXTH VOLUME of this valuable journal, commenced on the 21st of September last. The character of the SCIENTIFIC AMERICAN is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

It enjoys a more extensive and influential circulation than any other journal of its class in America.

It is published weekly, as heretofore, in *Quarterly Form*, on fine paper, affording, at the end of the year, an *ILLUSTRATED ENCYCLOPEDIA*, of over FOUR HUNDRED PAGES, with an Index, and from FIVE to SIX HUNDRED ORIGINAL ENGRAVINGS, described by letters of reference; besides a vast amount of practical information concerning the progress of SCIENTIFIC and MECHANICAL IMPROVEMENTS, CHEMISTRY, CIVIL ENGINEERING, MANUFACTURING in its various branches, ARCHITECTURE, MASONRY, BOTANY,—in short, it embraces the entire range of the Arts and Sciences.

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10 copies for 6 mos., \$8 | 15 copies for 12 mos., \$22  
10 " " 12 " " \$15 | 20 " " 12 " " \$25  
Southern and Western Money taken at par for subscriptions; or Post Office Stamps taken at their full value.

### PREMIUM.

Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—having first appeared in a series of articles published in the fifth Volume of the Scientific American. It is one of the most complete works upon the subject ever issued, and contains about ninety engravings—price 75 cents.