

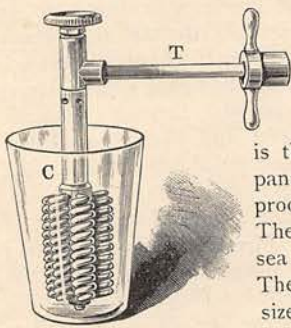
# The GATHERER

An Illustrated record of Invention Discovery & Science

Correspondents are requested, when applying to the Editor for the names and addresses of the persons from whom further particulars respecting the articles in THE GATHERER may be obtained, to forward a stamped and addressed envelope for reply, and in the case of inventors submitting specimens for notice, to prepay the carriage. The Editor cannot in any case guarantee absolute certainty of information, nor can he pledge himself to notice every article or work submitted.

## A Simple Cooler.

The little device shown in the figure is intended to cool beverages and other liquids without the use of ice or freezing mixtures.



The cooler, C, is placed in the liquid and the tube, T, connected to a steel bottle of compressed gas. The valve is then opened, and the expansion of the gas in escaping produces the required cold. The coolers will be useful at sea and in hot countries. They are made of various sizes, and the gas bottles are supplied with them.— We

may also mention that a small and convenient aëerator for making aërated drinks, which in fact is a domestic mineral water-works in itself, has recently been brought out. The machine is about four feet high and twelve inches square, and contains a cylinder of carbonic acid gas which is pumped into the beverage. One model is capable of filling three bottles at once.

## A Tree Well.

The "Traveller's Tree" of Madagascar is of great service to thirsty travellers. According to Professor W. G. Stebbins of Richmond, U.S., it has no branches, the leaves growing from the trunk and spreading like a fan. There are seldom more than twenty-four leaves, varying from six to eight feet in length and four to six feet broad. At the base of each is a cup holding about a quart of cool water. To save the trouble of climbing the tree the Malagasy traveller throws a spear which penetrates the cup, and catches the water as it falls.

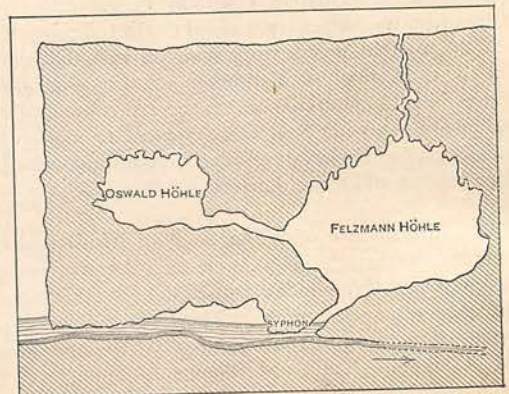
## A Clever Spider.

Mr. Phillip of Buenos Ayres has observed a spider employ a small stone to ballast its web which extended between two trees about ten feet apart. The web also

carried a single fibre which hung towards the ground, and was weighted by a stone about the size of a pea. When this stone was lifted on the finger the web swayed in the breeze, and it had evidently been used to steady the latter.

## The Lur-Loch Cave.

The cavern of Lur-Loch, which was the scene of a dramatic episode in real life not long ago, is situated in the escarpment of a calcareous plateau bordering on the valley of the river Semriach, about nine miles north of Graz in Styria. The river enters the mouth of the cave by a passage 18 feet wide and 2 feet broad or thereabouts, which extends 210 feet from the entrance, and forms at one part a kind of natural syphon, as shown in the accompanying section of the cave. The water then flows on through a subterranean channel to Peggau, about two miles distant, where it issues to the light of day as a spring. The explorers who so nearly lost their lives entered the cave on Saturday evening, April 28th, a little before midnight, intending to remain there 24 hours, but a violent rain swelled the stream and submerged the entrance. They discovered the fact on Sunday about 1 p.m., and took refuge in the Felzmann Höhle, a chamber reached by



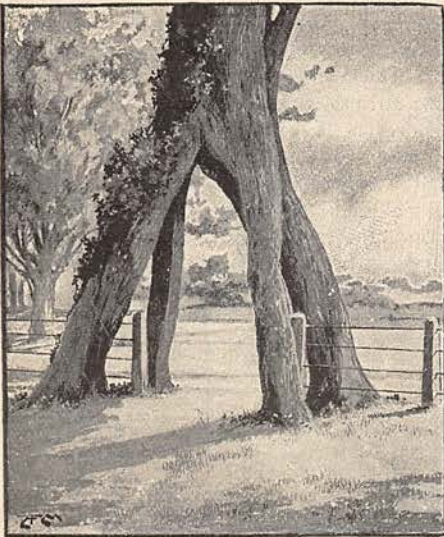
THE LUR-LOCH CAVE.



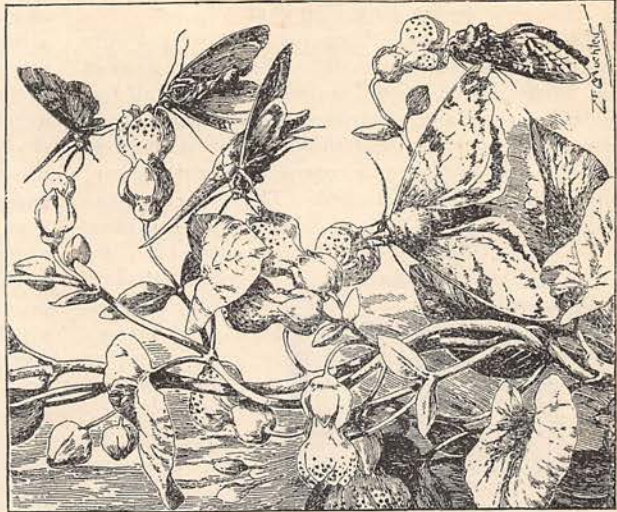
a kind of shaft which had been discovered on April 15th. Here they might die of hunger or go mad, but not for want of water or of air, because the chamber communicated with the top of the plateau by a narrow fissure or vent, as shown in our illustration. Another shaft also led from it into a second chamber, the Oswald Höhle towards the edge of the escarpment. Their food and candles could only last until the following Tuesday, but a box of provisions was floated through the syphon to them; and they were ultimately rescued after an imprisonment of 206 hours, or about  $8\frac{1}{2}$  days. The misadventure was all owing to their imprudence in exploring the cavern in the spring, and not waiting until the summer drought.

#### A Living Arch.

Another curious tree-growth is reported from America, where two beeches over a foot in diameter and twenty feet apart are joined like the Siamese twins by a nearly horizontal branch, which appears to have grown out of one trunk and united itself with the other in such a way that it is impossible to tell the tree from which it sprang. This bond is twelve feet from the ground, and near its middle a smaller limb springs almost vertically downwards towards the ground. Our illustration also shows an arch between a private park and a public road at Middleborough, Massachusetts, U.S. It is formed of three trunks which coalesce, and a fourth



which has been added for symmetry by the owner of the park; but whether the trunks are independent trees, or have sprung from one root, has not been ascertained. Such a curio from the hand of Nature is certainly more interesting than an artificial entrance.



THE CRUEL PLANT.

#### The Cruel Plant.

Our engraving illustrates a Canadian climber the *Physianthus albens* which has received the name of "Cruel Plant," from its ill-treatment of butterflies. It flowers in the month of August, and the butterflies, attracted by the perfume, hover round it in large numbers and push their trunks into the corollas to sip the honey. A pair of sensitive vegetable pincers in the heart of the flower grips the delicate proboscis, and in spite of struggles to get free the butterfly hangs suspended as shown until it dies. Apparently the plant has nothing to gain by the death of the insect, as it is not "carnivorous" like the Venus fly-trap. In fact, if the butterfly were allowed to come and go it would tend to foster the species by assisting cross-fertilisation. It appears, however, that the "cruel plant" came originally from Brazil where the butterflies are much stronger and extricate their suckers from the trap. We may add that another Canadian plant the *Cnicus discolor* is charged with cruelty. The flower has a gland which secretes a viscous liquid capable of liming insects which are fond of it. Moreover, they seem to be stupefied and poisoned by it, and no reason can as yet be assigned for the deadly consequence.

#### An Electrical Quilt.

Mr. C. T. Snedekor has devised a quilt for beds, especially those of hospitals, which is warmed by an electric current passing through resistance wires inside it. The wire is, of course, properly insulated and covered with a cement which is unaffected by heat. Such a coating is made by mixing ground magnesia, talc, and asbestos with liquid glue, glycerine, and bichromate of soda or potash, and after applying it to the wire, tempering it in a solution of silicate of soda. Cloths thus heated can also be used as fomentations and poultices, or for Turkish baths, and will be useful where the electric current is supplied for lighting purposes.



### A Steering Compass.

Many attempts have been made to steer a ship directly by the compass, without the intervention of that "man at the wheel" to whom we are all forbidden to speak, and electricity has, of course, been tried for the purpose; but the difficulty has been to make the trembling needle control an electric current without being itself disturbed. This difficulty has

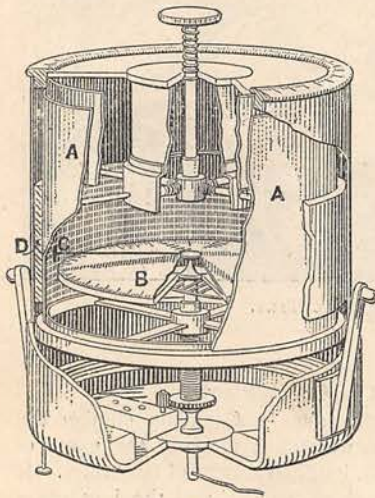


FIG. 1.

now been overcome by Lieutenant Bersier, of the French Navy, whose electric steering compass we illustrate herewith, part of the case being removed to show the interior. The compass card, B, Fig. 1, carries a light metal pointer or wire, C, just over its "rose" or north division, and this wire is in electrical connection through the pivot of the card, with an induction coil, at a safe distance from the compass. The current from the coil passes through the wire, C, and sparks across to one of two metal plates, D, insulated in the case of the compass to right and left of a mark which indicates the axis of the vessel. These plates form part of the electric circuit of the induction coil, which also includes an electro-magnetic contact maker or key by which another current is sent through an electric motor controlling the steering motor of the rudder. When the rose of the compass card deviates from the axis of the ship to right or left a spark passes from C to the right or left plate D, and works the key by which the electric motor governing the steering gear is actuated. In this way the ship is brought back to her true course, and the rose of the card to coincide with the axis of the ship. Fig. 2 illustrates the arrangement of the circuit where A is the induction coil, B the compass, C the key, and M the electric motor of the rudder. If desired, the deviations from the true course can be recorded by allowing the spark to pierce holes in a sheet of paper, A, Fig. 1. The course is readily changed by a simple adjustment of the compass case, and by means of four Geissler vacuum tubes illuminated by the spark orders can be signalled from any part of the ship. The new compass has been adopted in the French Navy.

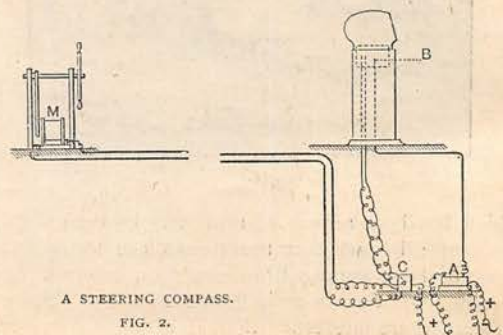
### A Sailing Cycle.

Mr. C. D. White, of San Bernardino, Cal., has invented a "sailing bicycle"—that is, a means of adding a sail to a bicycle. He employs a ten-foot mast and an eight-foot boom to hold the sail, which weighs

about seven pounds. The end of the mast goes into a head block, which can be removed, leaving the bicycle for ordinary footwork. The block must not be fastened to the handle bars or tubing, else it will interfere with the steering, but to the joint below the elbow, and the boom should be secured not to the machine but to a small pulley fastened to the spring under the seat, letting the cord run freely through it. The device is easily rigged up, and is a help to cyclists when they are tired. The sail should be kept furled until outside the town and used on quiet roads, care being taken not to frighten horses. The pedals should be used until the sail fills, and the regular speed is acquired. The best attitude for the cyclist is to keep one hand on the handle and another on the boom, if it is close enough. When the sail swings out of reach control it by the cord, which should run quite freely through the pulley. Keep the feet on the pedals, which had better be of the "racer" pattern. The highest speed is made at right angles to the wind, and twenty to thirty miles an hour can be achieved.

### Edison's Kinetograph.

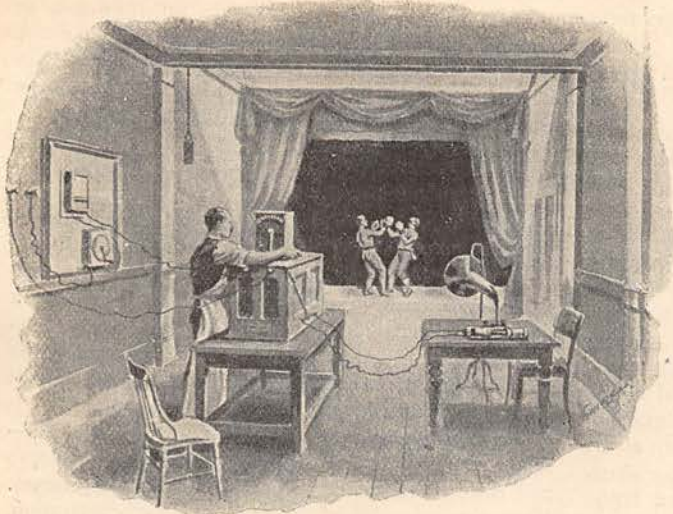
It is well-known that if a series of instantaneous photographs of a moving object be taken in quick succession, and subsequently re-combined in a zoetrope, the image they give appears to be animated like the object. Mr. Edison, however, seems to have been the first to think of adding the phonograph to such an arrangement and make the pictures appear to utter characteristic sounds or speak. Since 1887 he has been at work on the problem, and has achieved a certain amount of success. He is now able to take no fewer than 46 photographs of a moving object in a second, or 165,000 in an hour. These impressions are made on a highly sensitive strip of celluloid, which travels past the camera by mechanism, but stops for an instant whilst each image is taken. From the negative strip thus obtained a positive strip is made, and placed in the combiner or photo-kinetoscope, which works on the zoetrope principle, and compounds the images into one which is apparently endowed with life. A phonograph charged with the words and other ejaculations of the object is connected to the system by an electrical circuit in such a way as to utter them at the right moment, so that words and gestures are in harmony. Our illustration shows a puppet theatre, or stage, with the kineto-phonographic



A STEERING COMPASS.

FIG. 2.





EDISON'S KINETO-PHONOGRAPH.

apparatus in front and the moving image of two boxers visible on the dark background of the scene. The kinetoscope is on the right and the phonograph on the left. An electric motor and accumulator battery is used to work the mechanism and actuate the strip. A public exhibition of the apparatus has been opened in Broadway, New York, and a "nickel," or penny, dropped in a slot is sufficient to start it. Time alone will show whether it can be developed into a fully-developed peep-show or imitation drama. In connection with this subject we may mention that Mr. J. Munro, C.E., has suggested the institution of "phonograph halls" in conjunction with public portrait galleries and museums to preserve the voices of our great men and women to future generations, and also the cries and calls of animals. Mr. Edison and Colonel Gouraud have already formed private collections of phonograms, and public collections will undoubtedly follow. The voice and its manifestations, both in men and animals, is characteristic of individuals and races, and deserves our attention and even scientific study like the physical appearance. Thanks to the phonograph this can now be done in a proper manner, and some curious as well as important results will be the consequence. Even as a matter of sentiment, it is as natural to wish to preserve the sounds of a friend or benefactor's voice as his likeness.

#### A New Hood for Perambulators.

A new hood for perambulators which has the advantage of allowing the fresh air to enter, and the child to see out by the sides if desirable, while warding off the rain or sunshine, has been brought out. To this end the sides of the hood can be detached or rolled up, if need be; and we may add that curtains are attached to the front of the hood.

#### The Twin-Elliptical Pendulum.

This ingenious device of Mr. Joseph Gould draws figures of wonderful beauty, no two of which are exactly alike. The card, or Bristol board, on which the figure is drawn is placed on a table carried by a wooden pendulum about eight or ten feet in length. Under the table is a short elliptical pendulum, capable of adjustment and of considerable weight. This pendulum also moves the table, and the combination of motion produced by the two pendulums moving the card under a stationary pen over the card gives rise to the complicated figures which are so much admired.

#### A Side Sash Fastener.

The sash fastener shown in our woodcuts prevents the window from shaking or rattling, and also allows it to be opened two or three inches for ventilation. It is also burglar-proof when open or shut, and can be worked when the blinds are down. The angle pieces, A, in Figs. 1 and 2 are fixed to the upper sash, the piece, B, carries a screw, C, whose head or shoulder-piece screws into a counter sunk in the jaw piece, D, which is fitted to the heading of window-frame, F. A small stud, E, holds the fastener back when out of use. These fasteners are made in two forms, that shown in Fig. 2 having a sliding rod, G, enabling the window to be fastened while open to a width of as many as three inches.

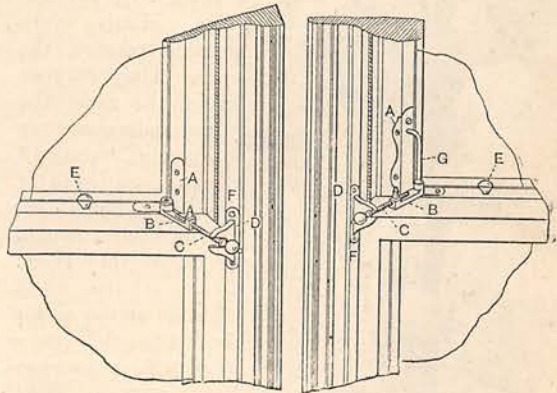


FIG. 1.

FIG. 2.

#### Curing An Electric Shock.

M. d'Arsonval, the well-known French electrician, has shown that persons "electrocuted," or apparently killed by an electric shock, can be brought back to life by artificial respiration and friction, as in a case of drowning. His theory was recently confirmed at St. Denis, Paris, where a man was accidentally shocked by an electric lighting current, and although half-an-



hour elapsed before the means of restoration could be applied, he was able to walk in an hour, and was little the worse for his experience.

---

### GARDENING IN SEPTEMBER.

---

**C**HRYSANTHEMUMS must not be crowded too closely. Give them ample room to develop, and about the middle of the month house them in the greenhouse. It is not safe to leave them in the open after this time, as one sharp early frost will destroy the results of a year's labour. Never let the plants become dry at the root. A check of any kind to the growth is fatal to a good display of the graceful flowers. When housed give the plants as much air as possible, and a position not too far from the glass, otherwise the growth will get leggy. Give liquid manure three times a week. Plant Carnations, and if the directions given in respect to layering were followed, there will be good stock to put out now in loamy soil from which wireworms are carefully eradicated. One of the greatest pests to the Carnation is wireworm. It is an insidious foe that wrecks fairest promises of a beautiful display. Weeds must be kept down, and a good "weed killer" will soon remove blemishes. A dressing of salt on a dry day will work wonders; but be always careful not to let such materials, especially the advertised "weed-killers," touch plants or grass verges.

To get rid of earwigs on Dahlias, place pieces of bean stems about the plants, or a pot, in which there is a little hay, on the stake. Early every morning examine the traps. They harbour during the night the marauders, and are quickly "settled." Grapes, especially those in a house containing plants, should be cut as they ripen. There is too much moisture in the air for the berries to remain in condition for any length of time. Plant Strawberries in well-prepared soil. The British Queen is the best variety, but too uncertain. President and Sir Joseph Paxton are more reliable, although the fruits are unfortunately without the rich, piquant



COX'S ORANGE PIPPIN.

flavour of those of British Queen. Towards the end of the month, if possible, put on a little fire-heat at nights in the greenhouse. Plants at this time are rapidly going to rest. Such flowers as Tuberos Begonias must not receive so much water as the foliage dies down. It must be withheld gradually.

---

### CHRYSANTHEMUM COMPETITION.

---

**N**O flower is more popular than the chrysanthemum in the autumn and winter months; and of recent years cultivators of the gay Eastern plant have greatly multiplied. We feel sure that a garden competition of this kind amongst our readers will be welcome; and to further the love for the chrysanthemum we offer prizes to embrace both classes of cultivators—professional and amateur.

We offer two prizes—1st Prize, £2; 2nd Prize, £1—for 12 single blooms of different varieties: 6 Japanese and 6 incurved, distinct; open only to trade growers. Each set must have attached to it a declaration, signed by the competitor, to the effect that the chrysanthemums were grown entirely by the sender. The twelve blooms must be packed in a box (preferably of tin), and reach the Editor by the first postal delivery on NOVEMBER 10th, 1894.

We also offer two prizes to be competed for by amateurs—1st Prize, £2; 2nd Prize, £1—for 6 cut blooms of different varieties: 3 Japanese, 2 incurved, and 1 pompon or single; or a mixture. By amateur we mean those who do not trade in flowers or plants of any kind. Each set must have attached to it a declaration signed by the competitor, and countersigned by some responsible person, to the effect that the chrysanthemums were grown entirely by the sender without professional assistance. The six blooms must be packed in a box (preferably of tin), and reach the Editor by the first postal delivery on NOVEMBER 17th, 1894.

All flowers must be clearly and as far as possible correctly named; quality to be the point to decide the awards; and should be addressed to *The Editor of CASSELL'S MAGAZINE, La Belle Sauvage, Ludgate Hill, London, E.C.*

The exhibits will be judged by one of the leading authorities on the subject. All other details are governed by our General Rules for Competitions as published last December, p. 80.

---

### SIX-PART STORY COMPETITION.

---

**T**HE FIRST PRIZE of £50 in this Competition has been awarded to

LILIAN IRENE TURNER,  
Lindfield,

Milson's Point Railway,  
Sydney, N.S.W.

Owing to the large number of MSS. received, the Award is not yet quite completed; but we hope to be able to announce the names of the winners of the Second and Third Prizes in our next issue, the contest for the Second Prize being unusually close.