

frock that has been worn during the summer would do very nicely. The velveteen is cut quite low in the neck, back, and front, also very much cut away round the armhole; this leaves a narrow strap to fasten on each shoulder with a rosette of narrow ribbon, it is cut in one with the seam under each arm well gored, and is worn without a sash. For example, a pale pink silk under-blouse with petunia-coloured velveteen pinafore, and rosettes to match.

In our next number I purpose giving a sketch of a fancy dress which will serve the double purpose of gracing tableaux vivants or bazaar; also a walking costume for a young lady.

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*Cut paper patterns for making costumes from the original designs published in this article may be had on application to the Author of "Chit-Chat on Dress," care of the Editor of CASSELL'S MAGAZINE, La Belle Sauvage, London, E.C.*

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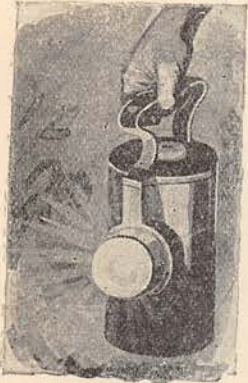
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## THE GATHERER:

AN ILLUSTRATED RECORD OF INVENTION, DISCOVERY, AND 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 New Miner's Lamp.



The electric miner's safety lamp, which is shown in the figure, is a thoroughly handy and practical appliance, introduced recently. It gives a light of one candle-power for eight to twelve hours, at a cost of about 3d. The lamp weighs 4 lbs., and the primary battery it contains can be replenished for another spell of work in two minutes. The materials for charging the battery are arranged in a simple form,

and the lamp is as easily managed as an ordinary safety lamp.

### Wood Ashes for Cattle.

Wood ashes are recommended by an American agriculturist, Mr. J. M. Stahl, as a good medicine for cattle. He keeps the ashes, with charcoal mixed with salt, accessible to his hogs, and he administers them to his horses by putting an even teaspoonful with their oats twice a week, or by keeping the above mixture before them.

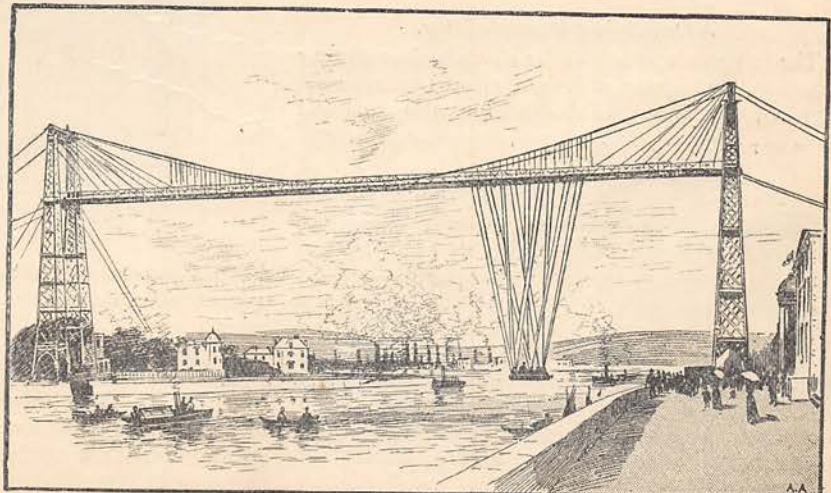
### A Transporting Bridge.

The singular bridge shown in our engraving

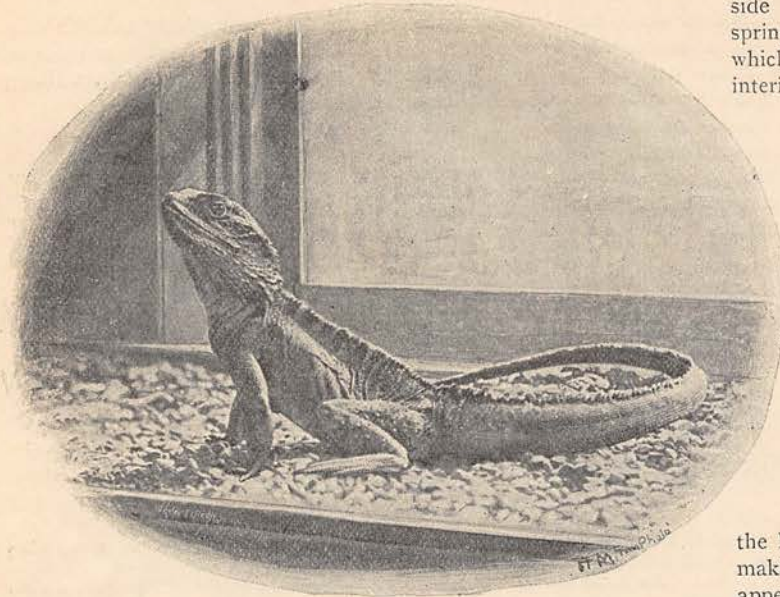
has been erected across the Nervion River, at Las Arenas, near Bilbao, and is the invention of Señor Arnodin, a Spanish engineer. It is really a suspension bridge, but there is no foot or carriage-way in the usual place. In fact, the horizontal platform serves only as a railway, on which a trolley runs, and from this trolley a second travelling platform, or cage, is suspended as shown. Passengers, freight, or cattle are in this way ferried across the estuary of the Nervion without interfering with ships passing up or down.

### Lesueur's Lizard.

Visitors to the Reptile House in the Zoological Gardens, Regent's Park, have now, for the first time, an opportunity of seeing this rare lizard from New South Wales. The species made known to science through the specimen brought back by the French



A TRANSPORTING BRIDGE.

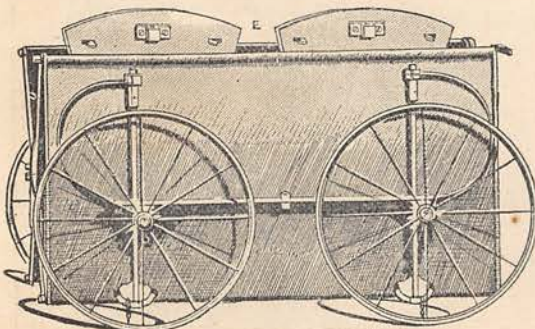


LESUEUR'S LIZARD.

expedition to the Australian Seas in the early part of the present century. In appearance this reptile is not much unlike the Tuatéra Lizard from New Zealand, which lives in the enclosure outside the Reptile House, but it belongs to a much more modern family—the Agamids, which has representatives widely distributed over the Old World. It is about two feet in length, with a large head and long tapering tail. The general colour is dark brown, varied with pale lines, and reddish on the under-surface; the scales on the head are conical, and there are conical tubercles on the head and neck; a crest of short, compressed spines runs down the back, and cross bands of oval, keeled scales run along the sides and the base of the limbs and tail. Like the rest of the family it frequents stony places. It is fed on young rats, mice, and cockroaches, with cherries and bananas for dessert.

#### A Collapsing Perambulator.

The collapsible perambulator which is shown in our engraving is composed of a light metal frame hinged together, and covered with leather, so as to open and close like a purse. The wheels are mounted in out-



A COLLAPSING PERAMBULATOR.

side axle bearings carried by side springs, and two end partitions, E, which are seen projecting from the interior, are fitted into their places when the vehicle is expanded. Obviously, such a perambulator is very conveniently transported or stored up.

#### The Ant as a Gardener.

Herr Alfred Möller, of Blumenau, finds that the leaf-cutting ants of Nicaragua not only cultivate fungi for their maintenance, but by judicious selection have produced a special variety, with swollen lateral knobs. Their fungus bed is enclosed, shaded from the light, and the leaf-cuttings are brought to it for making vegetable mould. The ants appear to live entirely on the knobs of the fungi.

#### A Stair Light.

Persons ascending stairs to their rooms after the gas has been turned off for the night may find the travelling night lamp which we illustrate useful. The



lamp is suspended between two guides by means of a counterpoise in such a manner that when the person, after lighting it, takes hold of the cord, as shown in the figure, the lamp moves up the stairs along with him.

#### The Wembley Tower.

The erection of our English rival to the Eiffel Tower at Wembley Park goes on apace, and the work will probably be completed by the end of next year. Wembley Park lies between Neasden and Harrow, and the

environs of the tower have already been laid out and opened as a pleasure ground for the enjoyment of the people. The design of the tower may be gathered from our illustration. It has a general resemblance to that of Eiffel, but is more pointed and slender. The total height is 1,150 feet—that is, 175 feet higher than the Eiffel Tower. Its weight will be 7,500 tons, which is less than that of the Eiffel Tower; but as Sir

Benjamin Baker, engineer of the Forth Bridge, is superintending the construction for Sir Edward Watkin, there is every confidence in the stability of the structure. The four legs which support it are founded in concrete to a depth of 75 feet, and stand 300 feet apart. The entire work is of steel.

The tower will comprise three platforms at heights of 150, 500, and 950 feet, the first being about 200 feet square.

It will contain a concert-hall, shops, restaurants, and side shows. On the second platform there will be similar attractions but on a smaller scale, and on the third a post and telephone office. At the peak there will be a powerful electric searchlight.

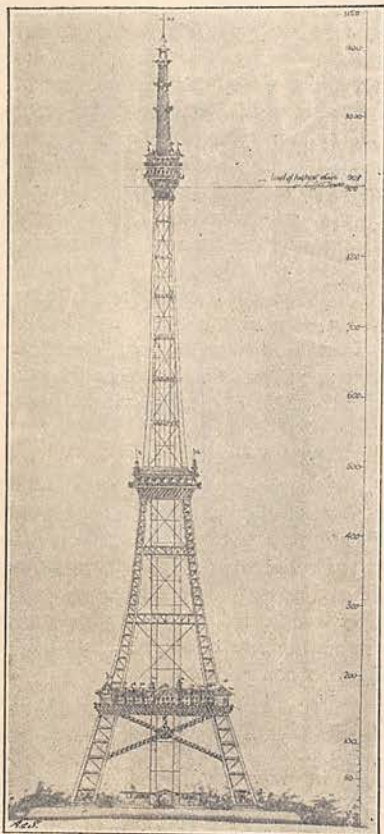
#### A Group of Novelties.

Kitchen, schoolroom, and sick-room are all catered for among the novelties before us this month. For the kitchen we have a new toasting-fork, with six prongs set in a circle, and each provided with a tiny shield to prevent the bread slipping too far from the point. By the use of this new fork the toast is readily turned, and is held so securely that all danger of dropping it is practically at an end.—The "Helping Hand," or "Three-Handed Servant," is the next novelty before us, and this is an ingenious frame of hinged wire, so contrived that by its aid a cook may

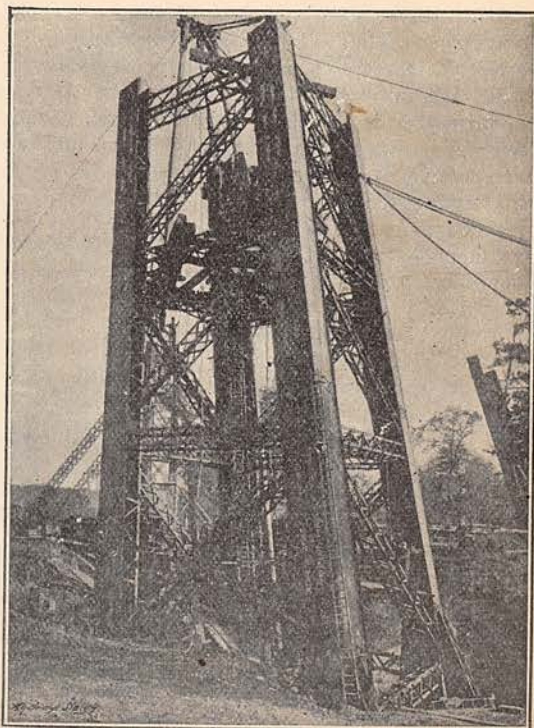
safely and expeditiously lift and turn chops or steaks, cakes, eggs, or potatoes in a hot oven, or pan, or boiling water.—The "Crocodile Candle-Grip" stands next on the list. It is a candlestick which has no fixed socket, but, in place of one, a strong spring claw or "grip," controlled by a simple lever. By means of this device candles of any size desired may be used, and are held firmly without packing until they are quite burned out.—Now is the turn of the schoolroom, for which we have Philips' "Graphic" globe, which is a light and very pretty geographical globe, some four-and-a-half inches in diameter, mounted on a light brass stand. Apart from its clearness and fulness, which is remarkable in so small a globe, its chief recommendation is the low price at which it is sold, which brings it within the reach of every family.—And then for the sick-room we have an improved "Portable Vapour Diffuser," which consists of a telescopic tube, by means of which any ordinary kettle may be converted into a bronchitis kettle at a moment's notice. The perforated funnel at the head of the tube is removable and may be filled with tow or cotton wool, saturated with any medication, should a special vapour be required.

#### Advances in Photography.

An apparatus for photographing the sea bottom has been introduced by M. Louis Boutan. The camera is adapted for several exposures, and enclosed in a metal box provided with glass windows, and mounted on a weighted tripod for standing firmly on the sea bottom. In depths up to six feet the camera takes photographs by direct sunlight with an exposure of about ten



THE WEMBLEY TOWER, AS IT WILL APPEAR WHEN COMPLETED, AND SHOWING COMPARATIVE HEIGHT OF THE EIFFEL TOWER.



THE WEMBLEY TOWER, SOUTH VIEW.



PHOTOGRAPHING FIVE POSITIONS AT ONCE.

minutes ; and the best images are got by placing a blue glass in front of the lens and using a small diaphragm. At greater depths the apparatus is planted by a diver, and a flash light is made by blowing magnesium dust into the flame of a spirit lamp fed by a stream of oxygen gas contained in a reservoir. The powder is projected into the flame by pressing an indiarubber ball. We may add that Mr. Shaw, an American photographer, has devised a simple means of taking five views of the same person at different angles on the same plate and in one operation. It consists in forming the background by two plane mirrors inclined to each other at an angle of  $45^{\circ}$ . As shown in our illustration, the sitter is placed at the junction of the mirrors. Two extra views of her are given by her reflection in each mirror, which, with the direct image, make five in all. Of course, such a photograph is a better souvenir of the person than a single view, and it may be useful from an artistic or a scientific point of view.

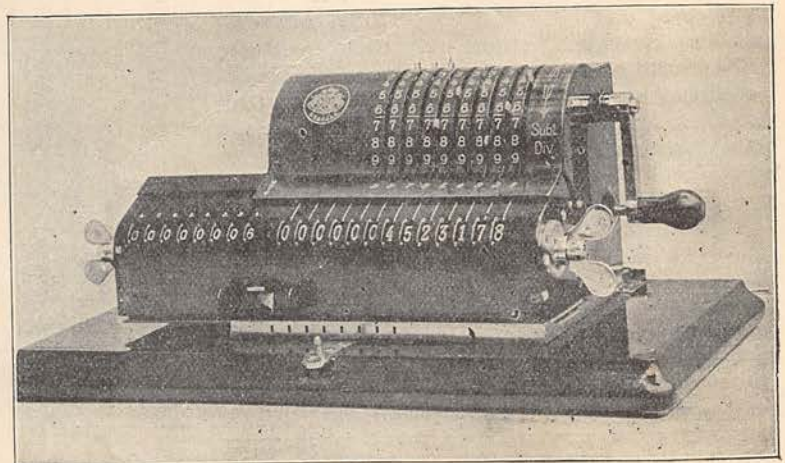
#### A New Calculating Machine.

Our illustration represents a new calculating machine—the "Brunsviga"—for adding, subtracting, multiplying, dividing,

and also extracting roots, which, in point of simplicity, compactness, and ease of working, is a great improvement on its predecessors. It is only 12 inches long, 5 inches broad, and 6 inches high, so that it can stand on the desk or table for use at any time. It gives products up to thirteen, and a larger size, for special use, up to sixteen figures. We need not describe the mechanism in detail, but we may mention that the elaborate wheels of the older machines are replaced by a single barrel with projecting pins, which actuate toothed wheels and move the figures, something after the manner of a musical box. For addition and multiplication, the handle is turned in one direction, and for subtraction and division it is turned in the other. The problems are set by movable keys, and the products are shown in the apertures seen on the base of the machine. They are quite reliable, and the machine checks itself. Decimal fractions are, of course, computed in the same way as integers. Business men and statisticians, electricians and engineers, public companies and schools, will find this machine of great service.

#### Silk from Wood.

Silk is now manufactured from wood at Besançon in France. The process was first shown at the Paris Exhibition of 1889, but since then it has been much improved by the inventor, M. de Chardonnet. The wood is reduced to pulp like that employed in making satin paper, then dried in an oven, and afterwards plunged into a mixture of sulphuric and nitric acids, then washed in several water baths and dried by means of alcohol. The product is dissolved in ether and alcohol, and the resulting collodion is purified in a filter, then drawn through a die into fibres, which are washed in water, and when dry resemble ordinary silk. To render this artificial silk unflammable it is passed through a solution of ammonia.



A NEW CALCULATING MACHINE.

## A Topographical Rule.

The ingenious device which we illustrate is the invention of Captain Delcroix, and will be found useful by intending travellers, settlers, officers of the army,

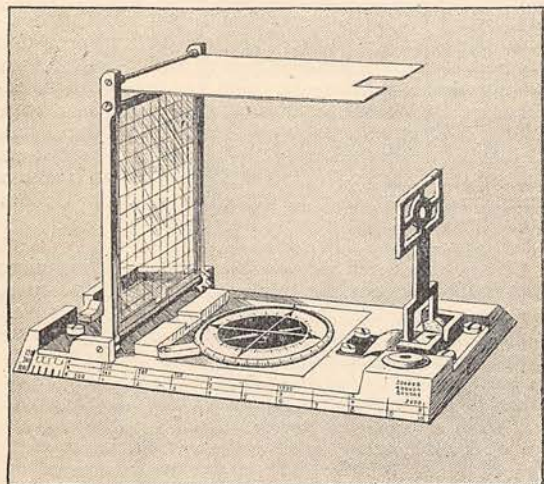
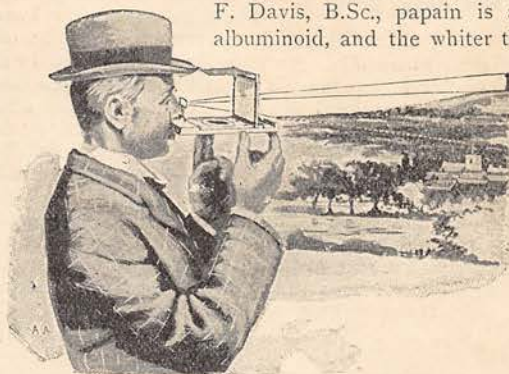


FIG. 1.

and amateur surveyors. By its means distances can be estimated, levels and angles taken, slopes estimated, and sketches made. It consists essentially of several graduated scales and a magnetic compass, with attached sights and mirrors (see Fig. 1), and it is used as shown in Fig. 2. The details of its construction and mode of action are too technical to be given here, and our object is chiefly to bring the little instrument under the notice of the reader.

## Papain.

The papaw, or *Carica Papaya* plant of South America and the West Indies, is one of the Parsifloræ, and grows to a height of nearly twenty feet. It is herbaceous, and shows a tuft of palmate leaves at the top of its stem from which the papaw fruit depends. The fruit is edible; but the remarkable thing about the plant is that its leaves and trunk contain a milky juice which is able to make the toughest meat tender, and the leaves are also used for soap in washing. Papain, a chemical product from these parts of the plant, is the active principle of the juice obtained by treating it with alcohol, dehydrating the resulting precipitate, and extracting with water at a temperature of  $36^{\circ}$  to  $40^{\circ}$  C. According to Mr. F. Davis, B.Sc., papain is an albuminoid, and the whiter the



A TOPOGRAPHICAL RULE.—FIG. 2.

sample the more energetic it is in its digestive action on fibrin. He finds that papain is a digestive in neutral and weakly alkaline media, but its action is stopped by a mere trace of hydrochloric acid. Contrary to another experimenter, he does not find it capable of digesting living tissue.

## PRIZE COMPETITIONS.

## AWARDS.

WE have much pleasure in presenting the Awards in the Short Story and the Holiday Competitions, which were announced in the last Volume. Judging by the number of competitors and the high quality of the work submitted, both of these Competitions have proved very satisfactory. We hope the New Series (of which full particulars are given on the next page) will prove equally attractive and stimulating to our readers.

## HOLIDAY COMPETITION.

The First Prize of £5 is awarded to

The Rev. R. C. MACLEOD, Bolney Vicarage, Hayward's Heath.

The Second Prize of £4 to

WILLIAM SEDDON, 34, City Road, Higher Openshaw, Manchester.

The Third Prize of £3 to

S. ST. JOHN GARD, Westbourne House, Dudley, Worcs.

HONOURABLE MENTION is accorded to

HARRIETT E. D. MILLS, 8, Florence Terrace, Falmouth, and

JOHN T. RODGERS, 223, Cable Street, St. George's-in-the-East, London, E.

## SHORT STORY COMPETITION.

The First Prize of £10 is awarded to

AMVAS SELWYN, care of S. E. RICHARDSON, Esq., Warrington Road, Newcastle-on-Tyne.

The Second Prize of £8 to

BESSIE E. DUFFETT, Mead Vale, Redhill.

The Third Prize of £6 to

ELIZA TURPIN, Forestdene, Magdala Road, Nottingham.

We hope to announce in our next number the results of the COOKERY RECIPE and the THREE-PART STORY Competitions, the manuscripts of which are under consideration as we go to press.