

## THE YEAR'S JEWELS.

BY M. C. GILLINGTON.

OPAL: OCTOBER.

*Hope.*

THE red-breast sings with a plaintive note,  
 The cattle are housed in stall, my dear,  
 The dead leaves float at the rim of the moat,  
 Under the moss-grown wall, my dear ;  
 But your eyes are happy with dreams of spring,  
 As you sit by the hearth to-night,  
 And your opal ring like a living thing  
 Flashes with fitful light !

The dainty blossoms are gone indeed  
 To their home in the darkness deep, my dear,  
 But the hopeful seed for the whole world's need  
 Is laid in the earth to sleep, my dear !

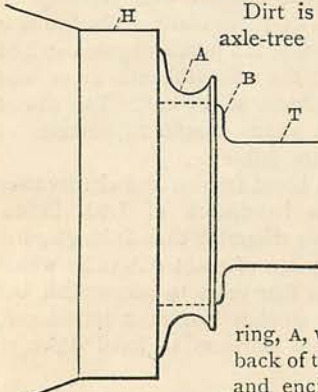
And you gaze deep, deep, in the heart of the glow,  
 On the flickering, dancing flame,  
 And your blushes show what your lips breathe low,  
 As you whisper the one loved name.

Though the dwindling day to the dark decline,  
 And the year be fain to depart, my dear,  
 Sweet visions shine like gems of the mine  
 In the hush of your faithful heart, my dear !  
 Watch yet awhile, and wait—who knows  
 What Fate may have stored for you ?  
 When winter goes, and the leaves uncloze,  
 And beautiful dreams come true !

## THE GATHERER :

AN ILLUSTRATED RECORD OF INVENTION, DISCOVERY, LITERATURE, 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 Dust-proof Axle-tree.**


Dirt is apt to get into the axle-tree bearings of vehicles and produce friction, with consequent heating of parts and, it may be, accidents. To keep the dust out, a Brighton coach-maker has introduced the device which we illustrate. It consists of a metal ring, A, which is secured to the back of the hub, H, of the wheel, and encircles the collar, B, of the axle-tree, T. The invention is a simple one, and the wonder is that it has not been brought out before now.

**A Battery of Filters.**

It may be remembered by our readers that MM. Pasteur and Chamberland brought out a filter for purifying water of organic matter, by forcing it under pressure through porcelain or other porous fabrics of the kind. Hitherto these filters have not been employed on a large scale, but now a battery of them has been installed at the Grand Hotel, Paris. The battery consists of six filters of the ordinary size. Each con-

tains tubes of porcelain resembling hollow candles, into which the water passes from above. Forced through the pores of the ware it falls into a collector in the bottom of the filter. With a head of water from thirty to eighty feet the system works admirably, and the filters are readily cleaned by heating the "candle" tubes so as to burn up the organic matter in their pores.

**A Home Savings Bank.**

Private savings banks which open automatically when a pre-arranged amount has been collected in them are found to be useful ; and one of the latest is shown in our engravings. Fig. 1 gives an idea of the

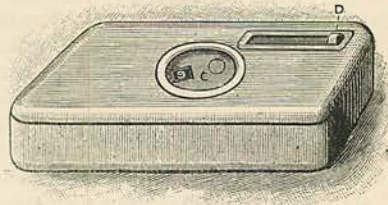
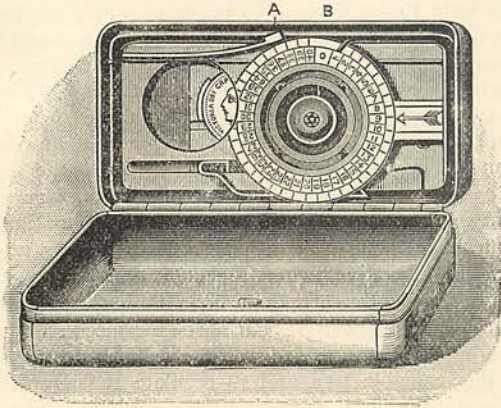


FIG. 1.

outside, and Fig. 2 the interior. Suppose that a person wishes the bank to open when he has put nine sixpences or the same number of half-sovereigns into it, the spring A (Fig. 2) is lifted, and the numbered disc, B, is turned to the right until the arrow points



to nine. The lid is then closed, and the coins are placed in the circle, C. When the pin, D, is pushed to the left, the coin is admitted into the box, and



A HOME SAVINGS BANK.—FIG. 2.

automatically registered. Every time a coin is received in this way, the number shown at C becomes less by one, thus informing the depositor how many more are required before the sum is complete, and the whole can be drawn. Such a contrivance, which only costs a few pence, is not only useful to children, but to adults who require to keep a watch on their expenditure.

#### The Cave-Dwellers of Mexico.

Mr. Carl Lumholtz, who has been exploring the old cave-dwellings of New Mexico, has now published an account of his researches, from which we gather that the most remarkable caves he visited are situated at the headwaters of the Piedras Verdes river, 6,850 feet above the sea-level. They open in the walls of a cañon from 100 to 200 feet above the river and some of them are 50 feet from floor to ceiling. They contain villages or groups of deserted houses built of ground porphyry, some of which are three storeys in height and provided with small windows, cruciform doors, and stone staircases. Large ollas, or jars, curiously decorated, and a great quantity of potsherds were found. On the shady side of the cañon the caves were reserved for sepulture, and the bodies in them had become mummified by the saltpetre of the rock. Photographs were taken of these and, in some instances, the hair, eyebrows, and features were nearly perfect. The hair is softer and wavier than that of the Red Indian, and the features resemble those of the existing Moqui and Zuni tribes, who have a tradition to the effect that they formerly came from the South. The Moqui Indians are so unlike the ordinary Indians of the North that the American trappers used to call them Welsh Indians, and believed them to be the descendants of the followers of Prince Madoc. It is certainly singular that the Moquis weave a striped blanket which is similar in the wool

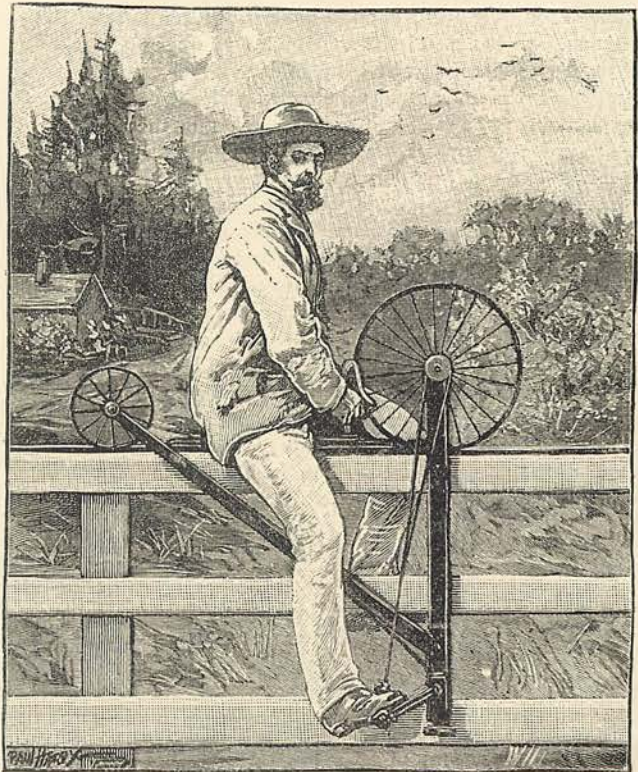
to the old Welsh blanket. They are not the only Indians, however, who have been taken for the descendants of the mythical Welsh discoverers of America. The same origin was claimed for the Mandans, among others, because they appeared to be of fairer skin than the generality of the Indians. The occurrence of albinos amongst the Moquis might help to account for the supposition.

#### Bees and their Wax.

According to Mr. A. T. Cook, of the Agricultural College, Michigan, bees require eleven pounds of honey in order to enable them to secrete one pound of wax. Other observers—for example, Huber, Viallon, and Hasty—have given both higher and lower estimates. Full particulars of the experiments of Mr. Cook will be found in the 26th Bulletin of the United States Department of Agriculture.

#### A Bicycle Railway.

Between Mount Molly and Smithfield, New Jersey, U.S.A., there is a railway for bicyclists which will be understood from our illustration. The single rail is mounted on a fence, and the bicycle is inverted in the manner shown. Each passenger is his own locomotive, and thus combines exercise with travel. There is no danger of falling off and no trouble about steering, so that the passenger can freely look about him and enjoy the air. It is proposed to double the track for going and coming passengers, and to provide stations at intervals with supplies of vehicles.

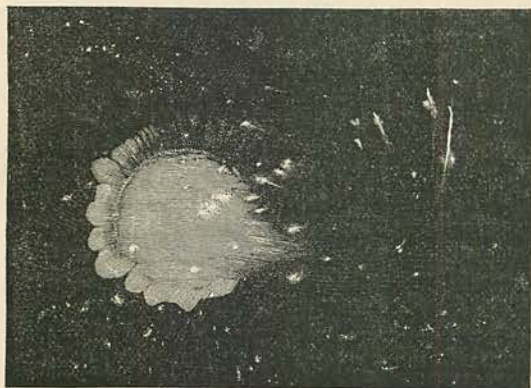


A BICYCLE RAILWAY.



**Curious Lightning.**

The phenomenon of "ball lightning" is now admitted to be electrical, although Faraday and other great electricians have denied its electrical origin. Hundreds of well-attested instances have been observed



and chronicled of recent years in every part of the world. It usually appears during a thunderstorm, or when the atmosphere is highly charged with electricity, and the apparent size of the globe of light, which is never very brilliant, varies from an inch to several feet in diameter. Either it bursts with a loud explosion, which may prove destructive, or it silently vanishes in the air. Owing to its rarity there has hitherto been no photograph of the phenomenon; but our illustration is believed to represent a case which happened last summer, on July 17th, about a quarter-past ten in the evening. It was seen by Mr. Dunn, of Newcastle-on-Tyne, from the window of his residence in Westmoreland Road, which overlooks the valley of the Tyne. A thunderstorm was raging over the town and the ball of fire suddenly appeared over the river, moving as fast as a man can run. It seemed about two feet in diameter, and when it came opposite the house it stopped and vanished. About this time Mr. Dunn called to his son to expose a plate in his camera, and the cap was removed for an instant. The result was the picture which, by permission of Mr. Cowper Ranyard, we have engraved. The peculiar streaks and patches on the photograph are not, it is asserted, due to imperfect development, and similar luminosities have been observed on a lightning photograph before. The principal blotch of light is certainly very curious, and a part of the spherical outline can be traced within a kind of aura or nimbus on the left.

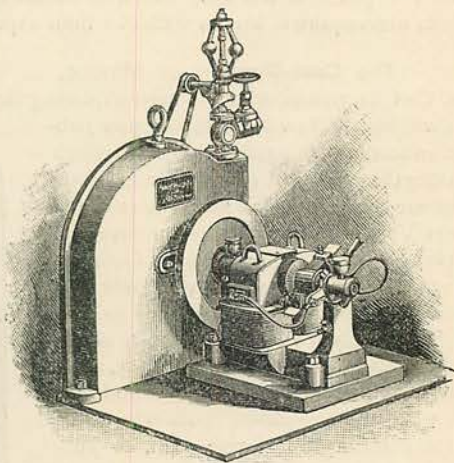
**Bassine: A New Brush Fibre.**

The continued high price of Brazilian bass, or piassaba, for brush-making, is the cause of frequent experiments being made with new materials as substitutes for true bass. A most successful new introduction has been Lagos bass, referred to in these columns a few months since; the newest, however, is a fibre which seems to have been christened "bassine," and is obtained from the Palmyra palm (*Borassus flabelli formis*) of India and Ceylon, from which island the

fibre, already seen in the London market, comes. Its value is not more than half that of Lagos bass, as it is said to lack straightness, but from some experiments that were to be made—the result of which we have not heard—it was supposed that this defect would be overcome, and by proper dressing Palmyra bass, or bassine, would, for wear, be found equal to the best Brazilian. The fibre is obtained from the sheathing leaf stalks, and though the palms grow in immense numbers in India and Ceylon, it is one of the most valuable palms known, being one of the chief permanent sources of food to the people, as well as for timber for fences, the leaves for plaiting into baskets, trays, etc. In Elavativu, where the collection of this fibre has been recently carried on to a large extent, some thousand young palmyras have been sacrificed; it therefore became necessary to stop the reckless destruction of this valuable tree and to regulate the new fibre industry, so that it is probable the supply will always be limited.

**A Water Dynamo.**

The dynamo shown in our engraving is specially designed for household purposes, and is driven by water having a pressure of 10 lbs. to 60 lbs. per square



inch. The water motor and the dynamo are mounted on the same bedplate, and the motor can be utilised for other purposes than driving the dynamo, by disconnecting it. The power of the motor is about two indicated horse-power, and its efficiency is estimated at 80 per cent.

**Strange Hallucinations.**

A statistical inquiry into the nature and frequency of those hallucinations of the senses experienced by persons otherwise healthy and sane has been made, and the results were communicated to the recent Congress of Experimental Psychologists. It is doubtless this order of mental phenomena which has given rise to the belief in ghosts. The vision is, in fact, what we commonly understand by a ghost. It sometimes appears by night, sometimes in broad day; it is often surrounded with light, but occasionally it is to

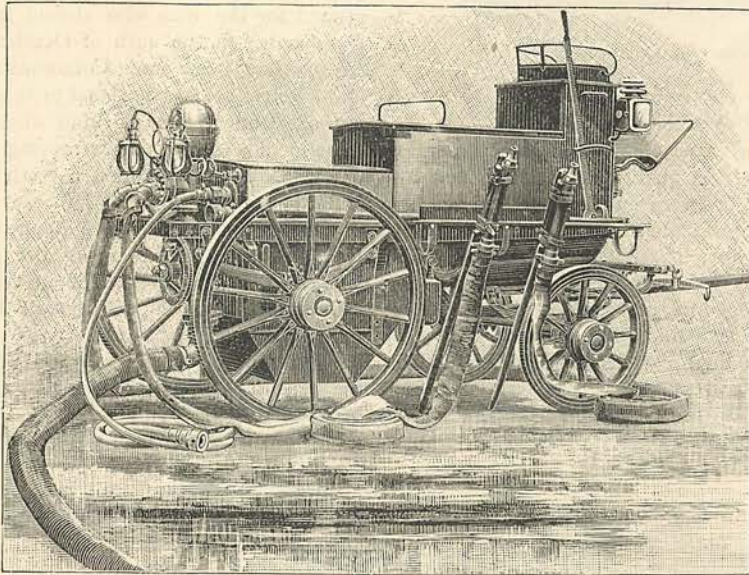


all appearance solid and of a life-like character. Moreover, it happens now and then that more than one person sees it. Of course by seeing it we mean that the apparition is apparently outside the observer, and not visible merely in the mind's eye. It assumes to his eyes at least an objective existence, like that of a reality. Many stories of the kind are current in private families and have never been published; but the particulars accurately described would be serviceable to the cause of psychology, and those who are acquainted with such instances may be recommended to communicate the facts to the Psychical or Psychological Society, under the veil of privacy if they prefer it. We are able to give some of the more striking instances recorded in the statistical inquiry which has been instituted. On the night of November 17th, 1890, Mr. S. Walker-Anderson, of Tickhill, Bawtry, Yorkshire, then in Australia, woke up in bed and distinctly saw the figure of his aunt, Mrs. Pickard, standing with her arms down near the foot of the bed, and dressed in an ordinary black dress, such as he had seen her wear many times. She looked older and stouter than when he had last seen her three years before, and moved her lips as though she said "Good-bye," then vanished by degrees. There was a lamp in the room, and he was fully awake. He had not been anxious about her, but on seeing the vision began to fear that she was dead and took a note of the time, which was about midnight. The mail brought news of her death at 11 a.m. on the 17th November. The Rev. Matthew Frost, of Bowers Gifford, Essex, states that on the first Thursday of April, 1887, while sitting at tea with his back to the window and talking to his wife, he plainly heard a rap at the window, and looking round said to his wife, "Why, there's my grandmother." He went to the door and even round the

house, for he felt sure his grandmother was about, but could see no one. On the following Saturday he received news that his grandmother, who lived in Yorkshire, died about half an hour before he heard the raps. Miss P——, mistress in a high school, was walking by herself to the school on April 6th, 1887, after 8 o'clock in the morning, and distinctly saw her father. Three days before she had a presentiment of coming trouble and could not stay alone. Two telegrams to the school announced her father's illness and death on April 6th. The visual hallucinations recorded were not confined to known or living persons. Some were unrecognised, some incompletely developed, some of a religious or angelic character, some grotesque, horrible, or monstrous, others were figures of animals, lights, and inanimate or indefinite objects, while touches, as well as voices, sounds, and visions, were observed. The most remarkable fact brought out by the inquiry is that only a comparatively small percentage of these hallucinations were coincident with some actual event, such as the death of a friend.

#### An Electric Fire-Engine.

The fire-engine which we illustrate has been introduced by a firm of well-known electrical engineers. The frame of the machine is similar to that used by the Metropolitan Fire Brigade, but the steam-engine and boiler have been replaced by an electric motor which actuates the pump. The electricity is derived from the street electric mains by means of pillar contacts, which may be compared to hydrants. The motor is of the usual Siemens type, shunt-wound, and takes a current of 215 ampères at a pressure of 105 volts. With this supply of energy the pump sends a jet of water from a 1-inch nozzle to a height of 100 feet. The pressure of the water was 75 lbs. per square inch.



AN ELECTRIC FIRE-ENGINE.

(From a photograph. By permission of Messrs. Siemens Bros. & Co.)



### A Grindstone Rest.

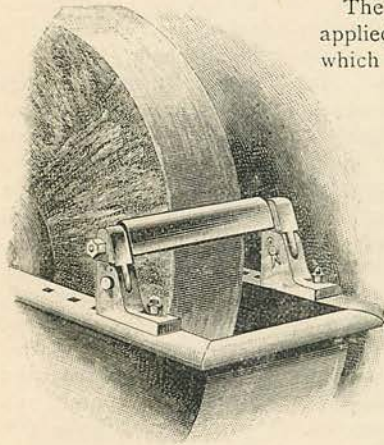
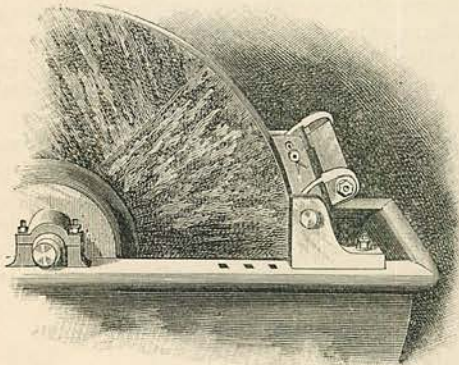


FIG. 1.

The rest for a tool applied to a grindstone, which we illustrate, is quite safe. So long as a downward pressure is applied, as in the case of grinding tools for turning and planing, the rest keeps firm, as in Fig. 1; but should the operator accidentally slip his fingers between the rest and the stone, and suddenly

snatch them away, the rest takes the position of Fig. 2, and allows his fingers to be withdrawn before they are injured.



A GRINDSTONE REST.—FIG. 2.

### Food and Oxygen.

According to the experiments of Dr. Marcet, a French physiologist, the quantity of air inhaled by different persons, in order to supply the system with oxygen and produce a certain amount of carbonic acid, varies very considerably. Three persons with ages from twenty-three to sixty years required 9'29, 10'51, and 11'30 litres of air respectively to produce 1 gramme of carbonic acid. He also finds that, during the first hour after a meal, the quantity of carbonic acid exhaled goes on increasing, and reaches a maximum in three or four hours after the meal, then falls off again. It is therefore clear that plenty of fresh air is desirable for three hours or more after a meal.

### A Third Volume

of "Cassell's Storehouse of General Information" has just been published, carrying on the work from *Castro* to *Deodar*, with the same completeness, as well as

accuracy, which were the distinguishing features of the former volumes. Handy in size, clearly printed, and abundantly illustrated, this encyclopædia ought to prove both popular and serviceable.

### "Voces Populi."

If by any chance, when Macaulay's New Zealander visits the ruins of London he should find any of our books surviving, and among them a copy of Mr. Anstey's "Voces Populi," he will be able to reproduce the exact conversational style of the latter end of the 19th century. Everybody knows the sketches, which have been appearing in Mr. *Punch's* pages, and many of our readers will, no doubt, be glad to have the second series, as it is now published in volume form by Messrs. Longmans, with Mr. Bernard Partridge's admirable illustrations. More truthful, accurate, and witty word-pictures it would be almost impossible to find than these of Mr. Anstey's.

### A Character Sketch of Columbus.

"The Career of Columbus," by Mr. C. I. Elton, Q.C., published by Messrs. Cassell, is professedly more of a study of the man and his character than a record of his voyages and his privations. This year, the four-hundredth anniversary of his first great voyage has been celebrated, and it is therefore the more interesting to see what manner of man he was and to what influences he was subject. Here is Mr. Elton's account of the close of the first voyage, when the goal was almost in sight. The men were inclined to mutiny. "Then," says Mr. Elton, "they suddenly changed their minds. There were green rushes floating, and the men on the *Nina* saw a dog-rose briar covered with bloom, and a little stick with curious carving. Now they were all racing to earn the reward for the man who should first see land. On the evening of the 11th of October, after the *Salve Regina* had been sung, Columbus said that he would add a velvet coat as a special prize of his own. Looking out from the poop-cabin about ten o'clock, he thought that he saw a light moving up and down and vanishing sometimes, as if a torch was being carried about in a village. He called others to look at it, but they could not be quite sure about the matter. About two o'clock in the morning the *Pinta* fired a gun. The coast had been seen about two leagues off by a sailor called Roderigo de Triana. Being now arrived, the ships all lay by, and it seemed a long time before the morning came. The *New World* was found, and the reward was afterwards adjudged to Columbus, because he had been the first to see the light in the midst of the darkness." We learn much from our author of the traveller's life at Lisbon and on the Gold Coast, which did so much to prepare him for his explorations, and we get graphic pictures of him at home and under every aspect of his fortunes. All of this is alike profitable and interesting, along with the details of his travels, which are being called up by this year's anniversary.