

## THE GATHERER: AN ILLUSTRATED RECORD OF INVENTION AND DISCOVERY.

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 submitted.

### A Reservoir Flower-Pot.



bottom are holes, N, in the inner wall, by which the water gets to the earth of the interior.

The woodcut shows a design for a flower-pot which will supply water to the bottom of the earth, and thus tend to make the roots of the plant strike deep instead of spreading over the surface. The walls of the pot are double, and an orifice, O, is provided for filling water into the reservoir or funnel between the walls. Near the bot-

### The Green Ray.

In one of his interesting romances, based on scientific facts and fancies, Jules Verne has called attention to the phenomenon called in France *le rayon vert*. It is a beautiful flash of emerald-green light, sometimes seen when weather and place are suitable, just as the sun sets, and while his upper limb is on the point of disappearing below the sea. A French observer has recently called attention to this phenomenon, which he has seen several times, notably in the Red Sea, during October, and both at the rising and the setting of the sun. He has also seen it when the sun disappeared behind a low mountain, elevated from  $1^{\circ}$  to  $2^{\circ}$  above the horizon. On all these occasions the sky was cloudless, and the air clear but humid. It is disputed whether the green ray is a subjective or an objective phenomenon; but these observations of M. Maubeuge tend to prove the latter theory.

### Paper from Peat.

Paper is now prepared from peat by removing the top surface of the peat so as to get at the fibrous peat, which is dried on trays, then treated so as to separate the clean fibre, which is utilised for the manufacture of the paper pulp. The surface peat can be used for litter.

### A Use for Starch Waste.

Herr Schütze, a German chemist, finds that the sour liquor which is a waste product of starch manufacture, can be utilised by adding milk of lime to it until it is slightly alkaline, and then sour liquor added until it is slightly acid. A precipitate is thus formed which can be used as food for pigs. Analyses of the precipitate show that it contains about one-third of its

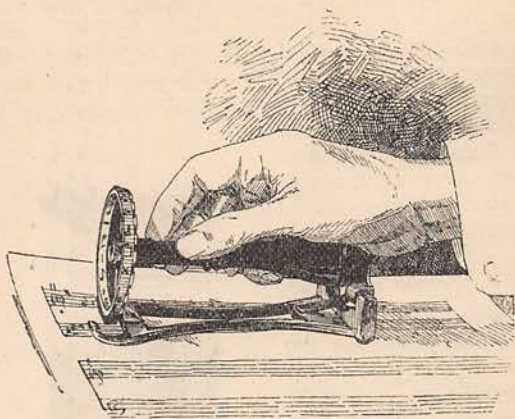
weight of calcium phosphate, the rest being organic matter containing proteine. As manure it is stated to be more valuable than the lime used in its preparation, and would be useful in agricultural districts where the cost of transit would not be heavy.

### Heating Railway Cars by Steam.

On the Boston and Albany Railroad the cars are heated by steam from the locomotive, a plan foreseen by George Stephenson. The American system was introduced also on the Connecticut River Railroad.

### A Magazine Gun.

A new repeating rifle, which can also be used as an ordinary breech-loader, has been tried by the Government authorities at Enfield, and found satisfactory. It is the invention of Herr Joseph Schulhoff, of Vienna. It contains a receptacle for holding ten cartridges, which can be poured into it by one turn of the hand, from a cardboard case. The loading of the repeater is done by four movements, and that for single firing in three. In the repeating action the shots are fired by working a knob handle, and in the single action by a trigger. The cartridges are shaped like small claret-bottles, and 130 of them weigh the same as seventy Martini-Henry cartridges. The cartridge boxes are of cardboard, and can be opened by simply tearing off a piece of paper.



### A New Music-Writer.

The accompanying figure is a representation of a very ingenious little instrument, on the "wheel" principle of the Columbia type-writer, for the writing of musical characters. A good and reliable music-

writer has long been a desideratum; and this appears to be the best of all results hitherto achieved. The machine has the great merit of simplicity, and is so small, even when enclosed in the box made for it, that it could almost be put into an ordinary coat-pocket. Unlike other type-writers, its price brings it within the reach of nearly everybody; and we have no doubt that the fully elaborated and perfect music-writer of the future will be constructed upon the principle of this one, which we recommend to the notice of all amateur copyists.



FIG. 1.

#### A New Stove.

The accompanying figures represent a new stove which has been introduced, Fig. 1 showing it as it stands, and Fig. 2 being a sectional view of its internal construction. From these it will be seen that the fire is placed in a basket which surmounts a hollow cone, by which the air enters to it from below. Another cone above the fire leads away the products of combustion to the chimney, which may be in any position. The air, which enters from below, as shown by the arrows in Fig. 2, is heated, and can, if necessary, be admitted into the room by opening glass doors, which surround the fire. We may also mention that Professor Frankland has devised a fireplace for burning coke and wood, which is practically smokeless. He has privately tested it for some time, and found it remarkably free from smoke.

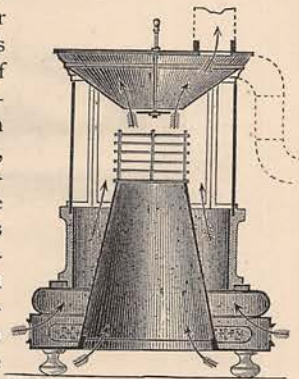


FIG. 2.

#### Photographing by Phosphorescence.

M. Zenger, a French experimenter, has succeeded in utilising phosphorescent substances in order to obtain photographs of unseen objects. M. Zenger observed a bluish phosphorescent light from Mont Blanc after sunset, and he projected the image of the mountain, when thus seen, upon a plate of Balmain's "luminous paint," a well-known phosphorescent substance. The plate thus exposed was afterwards placed in contact with a dry photographic plate in the dark, and at the end of an hour the image of the mountain was obtained upon the dry plate. It follows that the images of objects can, as it were, be stored up in this way, and afterwards fixed by photography. The process may be useful in photographing stars, and perhaps in other ways not thought of at present.

#### Metal-Edged Boxes.

Ordinary card-board boxes are apt to give at the edges, and boxes are now being made with metal edges, an improvement which makes them much stronger, although still light, and suitable for the parcel post. We may also state that metal is being substituted for card-board in book-binding. The metal is in thin sheets, and it is covered with the leather usually employed in such work. The result is a thinner binding than card-board, and known as "British Pellisfort."

#### A Self-Opening Coal-Scuttle.

An automatic coal-scuttle, which opens when the shovel is drawn out, has recently been introduced in several patterns. The mechanism is of a simple character, and the scuttles are of ordinary shape.

#### Pearl-Fishing by Electric Light.

The steam-yacht *Chic*, belonging to Messrs. Alley and McLellan, of Glasgow, has been fitted up with a powerful Brush arc light to fit her for pearl-fishing in South Australian waters. It is expected that the light will penetrate to seventeen fathoms, which is twice the depth that the lights hitherto used have reached. The arc light will be enclosed in a glass globe strong enough to withstand the pressure of the water.

#### Telling Fresh Eggs.

The following is a simple French test for telling whether eggs are fresh or not. Dissolve two ounces of kitchen salt in a pint of water. When a fresh-laid egg is placed in this solution it will descend to the bottom of the vessel, while one which has been laid the day previously will not quite reach the bottom. If the egg be three days old, it will float in the liquid; and if more than three days old, it will float on the surface, projecting above the latter more and more as it happens to be lighter with increased age.

#### A Marvel in Clocks.

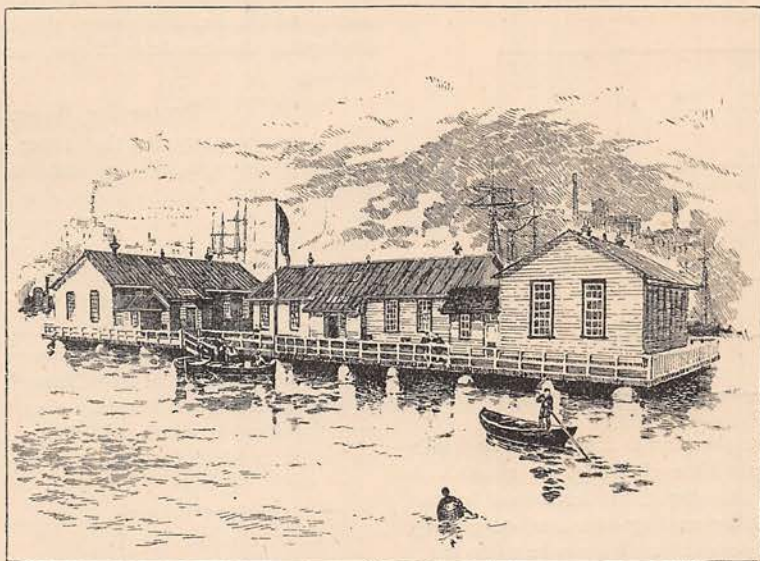
Christian Martin, a famous clockmaker, of Villigen, in the Black Forest, has devised a clock about twelve feet high, and standing in a Gothic case, which

shows the seconds, minutes, quarter-hours, hours, days, weeks, months, the seasons, years, and leap-years, until the last second of the year A.D. 99,999. It also shows the right time by comparison in different parts of the world, the phases of the moon, and a series of movable pictures representing the Creation, and other subjects. It strikes the minutes as well as the quarters and the hours, and that by means of numerous movable figures of an emblematic order. During the night the figure of a watchman comes forward and blows the hour on his horn; while a cock crows at the sunrise, and a cuckoo appears in spring-time.

agitation settles them into their smallest bulk. They are then formed into bundles by mechanical means, compressed, and bound by wire. A firewood bundling machine, worked by a pedal, for smaller requirements, has also been introduced.

#### Electrical Fluorescence.

M. Lecoq de Boisbaudran finds from experiments that several substances yield a bright luminosity when subjected to the influence of the electric discharge in a vacuum tube. Thus, sulphate of lime, when heated red-hot, and supplemented by sulphate of manganese, yields a beautiful green fluorescence. Calcined car-



A FLOATING HOSPITAL.

#### A Floating Hospital.

The accompanying figure illustrates a floating hospital which has been built for the River Tyne Port Sanitary Authority. It is floated on ten cylindrical iron pontoons, each 70 feet long and 6 feet in diameter. These can be detached one at a time for inspection and cleaning. They support a foundation of iron girders, on which the hospital is raised. The latter consists of three main buildings of wood, with additional smaller ones. The main buildings are  $23\frac{1}{2}$  feet wide and 20 feet high. They are fitted up as hospitals, with all the necessary auxiliaries.

#### A Firewood Machine.

A machine has been brought out for cutting up old timber into firewood, and tying it in bundles ready for sale. It consists essentially of a chopping-knife actuated like a mortise chisel. The timber is fed into the machine in lengths of about six inches, and the chisel splits them up along the grain of the wood. They pass out of the machine into a box, which by

bonate of lime gives a violet tinge; sulphate of zinc, after being heated to a dull red, gives a pale rose fluorescence; while carbonate of lime with manganese gives fluorescence *in vacuo* of an orange colour.

#### Luminous Rifle Sights.

Luminous paint has been applied to the sights of rifles to enable them to be used in the dark. The system has been tested recently by the War Office authorities; and it consists in fixing a luminous head over the two sights of the weapon.

#### A Signal Flag-Staff.

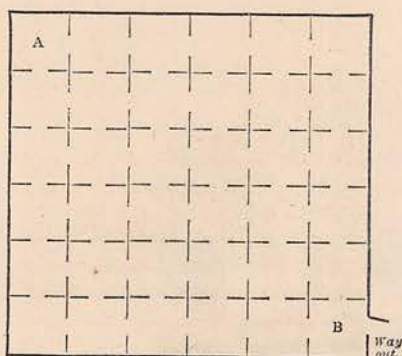
In some of the great shipbuilding yards of the Clyde, a tall flag-staff is erected on a spot where it can be seen from all parts of the works. The various heads of departments have signalling flags assigned to them, and when one of these is seen up, the workman repairs to the nearest telephone and communicates with his chief.

**Watch-Dog Posts.**

The Prussians, who seem to press everything into the service of their army, have now impressed watch-dogs. The "watch-dog battalion" is trained to carry news from the advance posts to the main body in despatches tied round their necks. They are also employed to warn the outposts of an advancing enemy in the night, and to hunt up wounded men or stragglers. The dogs are attached to each company of Chasseurs.

**A Prison Puzzle.**

The following puzzle has been given recently by Mr. R. A. Proctor, the well-known writer on astronomy. He believes it has a solution, but does not give it, therefore it will be all the more interesting to solve.



The figure represents the plan of a prison having cells which communicate with each other, as shown. A prisoner in the cell A is offered his freedom if he can make his way to B by passing once, and once only, through all the thirty-six cells. How is he to do it?

**Use of the Bee's Sting.**

Mr. W. F. Clarke, a Canadian observer, announces that the sting of the bee is employed by that useful insect as a tool in capping the honey-comb, and infusing the formic acid into the honey, which makes it keep well. This observation, if corroborated, would, he points out, explain why honey extracted before the cells are capped does not keep well: the formic acid has not been added to it.

**Health-Plant.**

Many plants—the Eucalyptus, for example—have long been recognised as conducing to the health of those living in their neighbourhood, and recently another health-plant has been discovered in rather an unexpected quarter. That common river weed, the American water-thyme, scientifically known as *Anacharis alsinastrum*, has long been considered as worse than useless—a positive nuisance, choking up ponds and rivers with its speedy growth. A German doctor, however, has discovered that in his district, where malaria and diarrhoea appeared annually in a sporadic or epidemic form, these diseases have gradually decreased since the water-thyme began to infest the

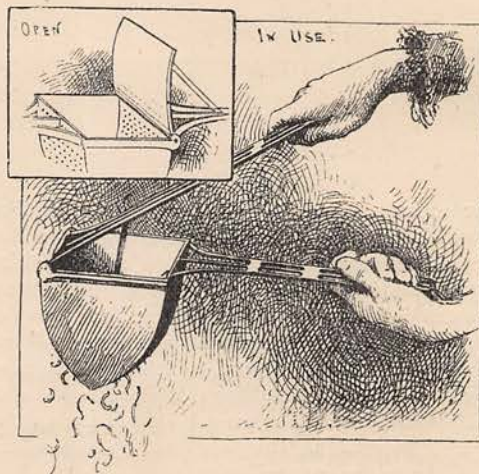
neighbouring marshes and rivers, and may have now entirely disappeared. The plant feeds on decayed vegetable matter, and thus destroys the germs which produce malaria and diarrhoea; further than this, its rapid growth necessitates the frequent cleansing of standing waters, a measure always beneficial to health.

**Straw Shoes.**

Dr. Macgowan, an American, has suggested the introduction of Chinese straw shoes into the nursery for the use of children. They allow of much freedom to the feet, and cost only a few pence. They are made of rice-straw by aged people, too feeble for more active employment. The highest-priced shoes—costing about 6d.—are made of mat-grass (*Arundo mites*) which Dr. Macgowan thinks should be acclimatised in the Southern States, and utilised in mat-making.

**Preserving Ropes.**

It has been suggested that ropes used for scaffolding purposes, especially in localities where the atmosphere is apt to destroy hemp, should be dipped when dry in a bath containing 20 grains of sulphate of copper per litre of water, and kept in this solution about four days. The sulphate of copper absorbed will, it is believed, preserve them from attacks of parasites and rot. We may mention in this connection that old iron ropes which have been used in pit shafting are now utilised at the Cannock Chase Collieries as conductors for conveying electricity to light the mines and works overhead. They are insulated with tarpaulin, and laid in troughs among coal-dust.

**A Fruit and Vegetable Press.**

The figures illustrate the use of a strainer or press for preparing fruit, potatoes, and other vegetables for the table. The article is simply placed in the cup, when open, and the two handles brought forcibly together by hand, as shown. This press obviates the use of a cloth in straining fruit for the manufacture of jellies, jams, or liquors. It also frees potatoes from specks and shreds of skin; moreover, it is said to render watery potatoes mealier.

### A Petroleum Geyser.

The Tagrieff petroleum fountain which burst out on October 5th last, at Baku, in Russia, is believed to be the largest known. It spouted to a height of 224 feet, and delivered nearly 500 tons of oil an hour, or about 11,000 tons a day. The roar of the gas from the orifice is said to be terrific.

### "Humour in Arcadie."

To the Editor of CASSELL'S MAGAZINE.

SIR,—I was much interested in your articles on "Arcadie," and, having spent all my life there, some amusing incidents are called to mind by your papers.\*

I was only the other day speaking to a man who had planted some vegetable-marrow seed for the first time. Seeing the plants throw the seed out of the ground, he replanted them, thinking he must have sown the seed the wrong way.

One day a friend of mine met a man returning from rabbit-shooting, and asked what sport. "Very good," was the reply. "I left you a couple." Being new to the chaff of the district, my friend took the answer seriously, and invited the sportsman to accompany him to a neighbouring inn, where they partook of refreshment together—of course at my friend's expense. On arriving home, the new-comer made every inquiry about the rabbits, but found no trace of them. Meeting the sportsman a few days afterwards, he inquired where he left the rabbits for him, receiving only the disappointing reply, "Oh, I left them for you—in the holes."

I went into the house of a sick friend some years since to transact business with him, and was amazed to find, when I got into his bed-room, that the neighbours had persuaded the wife to prop his mouth open with a cork, wrapping some wire round it and fastening the wire at the back of the head, to prevent lock-jaw. My friend was suffering from rheumatic fever. This occurred in the cathedral city of Lichfield.

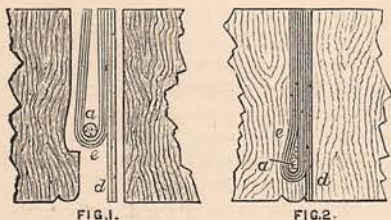
Yours truly,

Fazeley, Nov. 1, 1886.

THOMAS WOOLLEY.

### A New Joint for Woodwork.

The accompanying figures illustrate a system of jointing woodwork, which consists in soaking a long piece of canvas and lengths of spun cotton yarn in a



special kind of vegetable gum, to form the material of the joint. These strips are folded into as many plies as are necessary, then applied to one edge, and held

there until the other plank is pushed up and nailed home. Figs. 1 and 2 show how the deck joint of a boat is made by this method. One plank has a plain edge, and the other has a cavity cut in it. The plies of canvas, *e*, have in them a flexible core, *a*, and a two-length ply of canvas, *d*, completes the material of the joint, which is simply made by closing up the planks in the ordinary way. For thin decks the core, *a*, is dispensed with. This joint requires no caulking: it gives and takes with the swelling and shrinking of the wood, and has been tried on the decks of the steamship *Glengarry*.

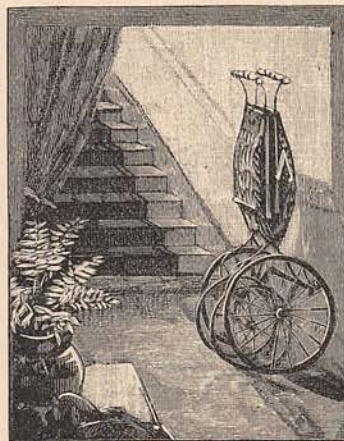


FIG. 1.

### A Collapsing Perambulator.

The figures illustrate a German baby carriage which can be closed up into the form shown in Fig. 1. The sides of the carriage are of lined cloth on a frame of wrought iron and cane, so constructed as to fold up



FIG. 2.

and open out in the manner shown in Fig. 2. The weight is also comparatively small, being from 26 to 37 lbs. according to the size.

### A Telescopic Vessel.

A submarine torpedo and search-boat, the *Nautilus*, has been devised by Messrs. A. Campbell, E. Wolessley, and C. E. Lyon, which is raised and lowered in the water by expanding or contracting in bulk, or in other words, by altering its power of flotation. This

\* CASSELL'S MAGAZINE, July and September, 1886.

is effected by sending out or in telescopic chambers projecting from the vessel. The boat is propelled by electricity stored in accumulators; and she is lighted by the same means. A supply of compressed air is provided for the men on board. As tried recently at the West India Docks, the vessel seemed to work satisfactorily. In this connection we may mention a novel man-of-war about to be built in America. She is to be fitted up with three pneumatic guns, each 70 feet long, and throwing dynamite cartridges. These guns are expected to prove effective at a distance of three miles. The dynamite cartridge is a thin copper can containing 200 lbs. of dynamite, and fitting to the bore of the gun. A wooden shaft is to be attached to it to steady the missile in its flight. The ship will have a speed of 20 knots an hour, and will be propelled by twin screws.

#### A Signalling Street Lamp.



FIG. 1.

The accompanying illustrations represent a lamp-post which has been introduced into the town of New-haven, Connecticut, by Mr. Brewer and Mr. W. C. Smith. The body of the post contains a telephonic apparatus, as shown in Fig. 1, and also a simple device for raising and lowering a screen of red glass round the flame of the lamp above. The screen can be worked by electricity from the police station, so that when informa-

tion is wanted from any particular policeman he can be called in this manner to the telephone at night. For instance, if a theft has been committed in any part of the town, all the policemen can be informed of it, so as to co-operate in the capture of the thief. The red lights can also be used for visual signalling between neighbouring policemen. Fig. 2 shows the lamp as in use.

#### A Test for Pepper.

Unclean pepper berries are believed to cause the prevalence of sand in pepper. The following simple test, given by Mr. Winter Blyth for pepper-buyers, may therefore be useful:—Buy an ounce of chloroform at the chemist's, and a large test-tube. Fill the test-tube half full with chloroform, and add about half a tea-spoonful of pepper. Having corked the test-tube, shake it once or twice. All the pepper will float on the top of the chloroform, while the sand will sink to the bottom. In this way the buyer can judge of the quality of the pepper.

A SIGNALLING STREET LAMP.  
FIG. 2.

### OUR JUBILEE COMPETITION.



THIS being the year of Her Majesty's Jubilee, the Editor offers a Prize of Five Guineas for the best

#### JUBILEE NATIONAL ANTHEM

adapted for use at Jubilee celebrations, and to contain not more than three verses, to be sung to the tune either of "God Save the Queen" or of "Rule, Britannia," at the option of the competitor. All MSS., duly authenticated in accordance with Rule 3, must be sent to the Editor not later than March 31st, 1887.

The following are the conditions under which this Prize is offered:—

1. Every Reader of the Magazine is eligible to compete for this Prize.
2. The Editor cannot undertake to answer inquiries having reference to the treatment in detail of the subject of the Competition. *The description given is sufficient for the purposes of the Competition, and the rest is left to the judgment and discretion of the competitors.*
3. Each MS. must have inscribed on it, or otherwise securely attached to it, the name and postal address of the author, together with a declaration that the work is *original and entirely the sender's own*, to be signed by the author and countersigned by some other trustworthy person, *i.e.*, a magistrate, minister of religion, or householder, with the postal address in both cases.
4. The copyright of the Prize work will become the property of the Proprietors of this Magazine.
5. Should the two best works in the Competition prove of equal merit, the Prize may be divided at the discretion of the Editor. The Prize may be withheld in the event of no composition being thought worthy of that distinction.
6. The Editor will not be responsible for loss or miscarriage of any work, and all letters or packets must be *prepaid*.
7. *The Editor cannot undertake to return unsuccessful MSS.*—copies should therefore be retained by the senders.
8. Every MS. must be sent before the date named above as the latest day, addressed—The Editor of CASSELL'S MAGAZINE, La Belle Sauvage, London, E.C., and must have the words "Jubilee Anthem Competition" in the top left-hand corner of the envelope or wrapper.