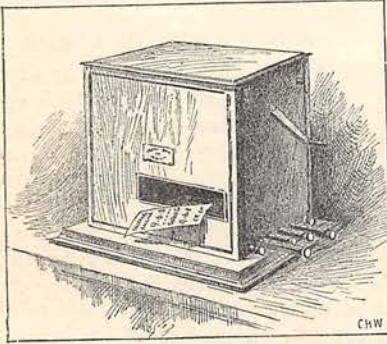


THE GATHERER: AN ILLUSTRATED RECORD OF INVENTION AND DISCOVERY.

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 Cash Register.

The cash register which is represented in the woodcut is only twelve inches in height, and



can be easily worked after a little practice. We need not enter into the mechanical details of its construction, as our object is to bring it to the notice of our readers; but we may say that the only parts accessible to the assistant using it are slides standing for pounds, shillings, and pence, and a small lever handle, as shown. The slides are drawn out to a required number, thus arranging the internal mechanism to print off that amount, and when the handle is turned, a card with the amount printed on it is delivered and given as receipt to the purchaser; it also contains the assistant's name or number, the date, and the number of the check. Inside the machine a similar check is printed for the inspection of the proprietor. The apparatus is useful for corporations and local boards, as well as in shops.

Some Novel Christmas and New Year's Cards.

The custom of confining the subjects of Christmas and New Year's cards to wintry scenes and incidents has of late years fallen into disrepute. This season, however, while the summer and floral subjects are as tastefully and exquisitely prepared as ever, there is a marked increase in the proportion of really seasonable subjects, and landscapes, birds, and children, amid generally snowy surroundings, are frequently met with among the new cards. Messrs. Hildesheimer and Faulkner give evidence of this in the beautiful series of cards designed by Mr. Fred. Hine, whose genuine snow scenes on their novel silver ground produce a singularly clever effect. Other winter subjects, both on land and sea, by Mr. F. C. Price, are remarkable not only, as are all the cards by this firm, for delicacy of finish and careful selection in the design, but also for their shape—that of a palette of tinted card.

With their cards Messrs. Hildesheimer and Faulkner have issued two beautiful Christmas books, printed in colours in the same manner as their cards. The first of these is "Through the Meadows," a pleasant

book of poems for children, by Mr. Fred. E. Weatherly, with coloured illustrations by Miss M. Ellen Edwards, whose work is so familiar to our readers, from her long connection with this Magazine; the vignettes that accompany the coloured illustrations are by Mr. J. C. Staples. The other of these Christmas books is "White Swans," a collection of six tales by Hans Andersen, with illustrations in colours and monochrome by Miss Alice Havers, the artist who is illustrating our story, "A Wilful Young Woman."

Frosted cards certainly give an air of reality to representations of landscapes with crusted snow, or water under the moonbeams on a clear, frosty night. Messrs. Wirths Bros. and Owen send us their cards for the new season, and most of them are frosted. As might be expected, a larger proportion of their cards than is usual are representations of snow and night scenes. But the most interesting and beautiful cards from this firm are two by Mr. Davidson Knowles, one representing a seventeenth-century Christmas, and the other scenes in the life of Shakespeare, with views of his birthplace and the church where he lies buried.

The cards, many of which are frosted by a new machine process, issued by Messrs. Sockl and Nathan are very beautiful and artistic productions, and we regret that we have not space for a detailed notice of them. One hearty word of commendation, however, must be accorded to their old English series.

Undoubtedly the best of this season's cards are those sent us by Messrs. Raphael Tuck and Sons. To mention any special designs among so many excellent and novel ones is almost impossible, but perhaps the palm should be given to a set of four etchings from paintings in the National Gallery by Linnell and Old Crome. The shapes of the cards made by this firm are very good, and the colour-printing is of the best. Among the cards are many printed on satin, and others the shape of easels and screens, and of folding cards too there is a great variety. Some "Angels' heads" by Mr. W. S. Coleman are worthy of special notice, as well as a set of designs by the same artist under the title, "Hail, Christmastide." A new idea is a pair of hand-screens inscribed with seasonable mottoes, and another single screen bordered with swansdown. Even the less ambitious cards by this firm are in good taste, and he must be hard to please who cannot find something to his liking among these beautiful productions.

An Elephantine Building.

The engraving shows a curious building which has been erected on Coney Island, United States, by Mr. J. M. Kirby, as a concert-room and observatory. It is constructed of wood, and covered with sheet tin. The total length from trunk to back is 150 feet; the

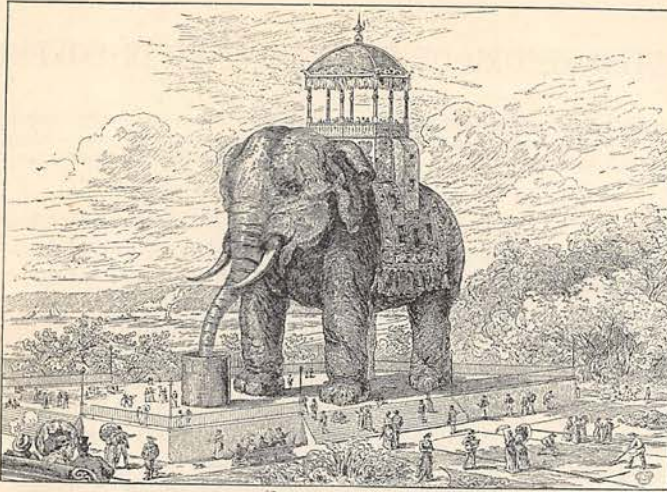


FIG. 1.

platform of the howdah is 88 feet above the ground ; and the total height of the crescent on the flag-pole is 150 feet. The height from ground to body underneath is 24 feet, so that even a "Jumbo" living elephant could walk easily underneath. The legs are 18 feet in diameter, and circular stairs pass up the hind legs, and so on to the howdah. The rooms are named according to their locality in the body, thus : "stomach-room,"

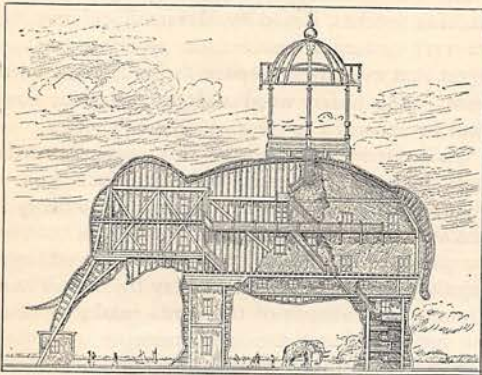


FIG. 2.

"brain-room," and so on. There are 34 rooms in all, including the main hall, which is 80 feet long. It is adapted for concerts. Altogether, the colossus, which is strongly built, weighs 100,000 tons.

A New Window-Sash Fastener.

Our attention has been drawn to an improved kind of window-sash fastener, which seems to be worthy of mention in these pages. It is based on an application of the rack-and-tooth principle, and its method of working is therefore simple enough. The rack, of malleable iron, is let into the head of the window-frame, and the tooth-plate is fixed in the sash-frame. There is a different fastener for each sash ; the tooth in that for the lower sash is actuated by a spring, which is con-

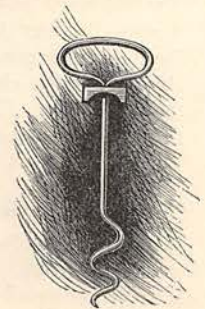
trolled by raising and depressing a ring in the plate ; while the tooth of the fastener for the upper sash slides backward and forward by turning a sort of button sunk in the plate. This appliance is simple in construction, and affords a secure hold for the sashes, either of which, having an independent fastening, can remain open for ventilation at any height, and is not accessible from the outside.

A New Pocket Pencil-case.

A new pencil-case, which by simple pressure at one end will both open and close, has recently been introduced by a well-known patentee. Merely pressing the end of the barrel opposite to the lead will drive the lead out, while a lighter pressure on the same end of the pencil is all that is required to withdraw the lead again. A somewhat similar action to this is that of another new pencil made by the same firm, one pressure on the end of which moves the lead in its holder, just sufficiently for use, so that no time is wasted in adjusting the point.

A Rick Screw.

The figure illustrates a spiral screw which has been introduced for fastening galvanised iron corrugated sheets to hay and corn ricks, in order to roof them : a plan which is now in use. The screw is applied by punching a hole in the iron sheet, inserting the screw, and turning it home. The grooved washer on the screw firmly fixes down the sheet, and prevents rain-water entering by the hole. One hundredweight of the sheets covers from 78 to 100 square feet of ricking.



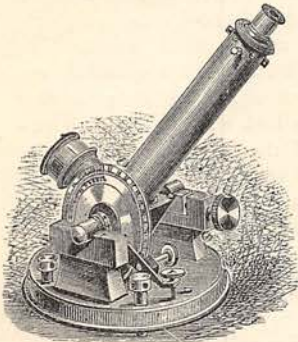
Another Pocket Ambulance.

To provide a ready and efficient means of dealing with those wounds which, only too often, owe much of their danger to their not being immediately attended to, a Birmingham firm has recently patented a small pocket ambulance. It consists of a little metal case, $3\frac{1}{4}$ -in. in length, $2\frac{3}{8}$ -in. in width, and 1-in. in depth, and within this narrow compass are neatly packed a compress for stanching blood, an isinglass plaster, eight feet of antiseptic bandages, a roll of tape for tightly binding a bleeding limb to stop the flow, a small bottle of ammonia to be applied in the case of venomous bites, a sheet of waxed silk, and some safety and surgical pins for securing bandages. If persons holding the certificate of the Order of St. John would only remember to carry such a case as this about with them on

every occasion, no doubt numbers of casualties that would otherwise be called serious, would be kept within the range of the "trifling hurts."

A Domestic Transit Instrument.

Mr. Latimer Clark has devised a convenient transit instrument with accompanying tables, whereby a private individual can correct his clocks and watches with very little trouble. Two forms of the instrument



are made, one for use from a window, and the other standing on its own legs. We illustrate that which can be used from a window.

In taking a transit it is necessary to pick out from the tables a star which passes the meridian or north and south line at a convenient time. The telescope is then set to

the altitude of the star, and a watch kept until it passes the field of view. The instant it traverses the centre cross-hair of the telescopic field the time is noted, and when the necessary corrections have been made according to instructions, it is seen how much the clock or watch is fast or slow. The corrections are for turning sidereal into Greenwich time. The yearly tables issued by Mr. Clark enable the observer to do this with a minimum of trouble, and a knowledge of the names of the stars or their positions in the heavens is not called for.

Electricity from Running Streams.

Running streams are common in the Highlands of Scotland and many parts of Ireland, and it is interesting to find that some of them are likely to be used for driving dynamos to light residences by electricity, or to work small domestic machines. Sir S. P. Grant, of Rothiemurchus, on the river Spey, has introduced eighty Swan lamps into his house, and lights them by an electric current derived from a Phoenix dynamo, which is driven by a turbine made by a well-known

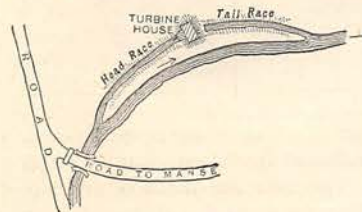


FIG. 1.

maker. The current is first sent into twenty-five accumulators, from which it is drawn to feed the lamps. Fig. 1 shows how the water power is obtained from the stream by a mill-race, which gives the necessary head of water, and on which the turbine-house is situated. The arrows show the direc-

tion of the flow. Fig. 2 shows the interior of the turbine-house, with the turbine, T, and the dynamo, which is driven from the turbine by a countershaft and belting, s. The stream is three-quarters of a mile from the house, and the electric current is conveyed to the latter by wires.

The lamps have also been supplied from the dynamo direct, but the accumulators are ordinarily used as regulators, and as very useful things to have as reservoirs of electricity. The stream which works the dynamo

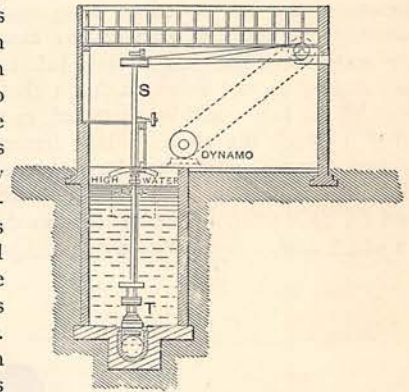
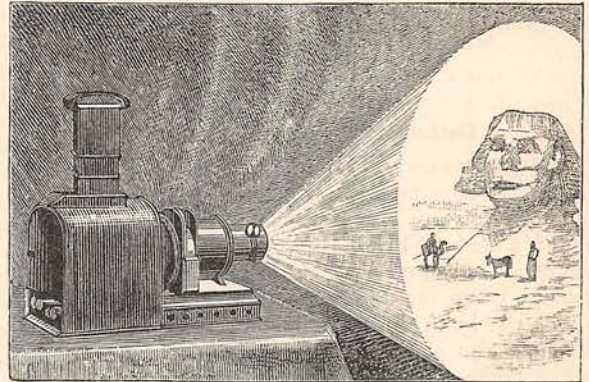


FIG. 2.

also supplies the house with water through a 4-inch iron pipe, which is used as a return wire, thus reducing the initial cost of the installation. It is to be hoped that Sir S. P. Grant's example may be followed by other Highland proprietors.



A New Magic Lantern.

A new magic lantern, which burns mineral oil, or can be fitted with the lime-light without alteration, has been brought out by a leading optician. It has 4-inch compound condensers, a brass stage and sliding front, a portrait lens with rack adjustment, and a four-wick lamp. Altogether, the new lantern is very convenient and compact.

Photographing the Retina.

The retina of the living eye has been photographed by Mr. Webster and Mr. Jackman, using an extra-sensitive gelatine plate. The plate was exposed to the eye by gaslight for twenty minutes, owing to the non-actinic colour of the retina. The picture shows the veining of the eye and also the edge of the "blind spot." Such eye-photographs may be useful in surgery.

A New War-Vessel.

A Scotch shipbuilder has submitted to the Admiralty the plans of a novel war-vessel intended for the defence of the Clyde and other estuaries. The vessel is 150 feet long, 30 feet wide, and is divided into 32 watertight compartments by bulk-heads; the bottom of the hull describes a segment of a circle, allowing the vessel to turn on her axis: and above the water-line she has a steel belt two feet thick and sloping up and down, so that a shot striking the apex of the belt would be shattered, or would glance off if it struck the slopes. Her armament consists of two powerful guns, one placed fore and the other aft. The funnel is made on a telescopic principle, and on deck when in action there would be nothing on which a shot could take effect, except the guns.

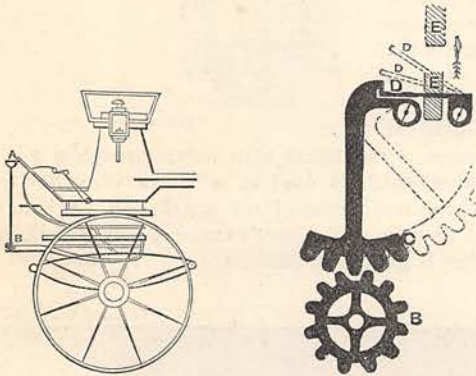


FIG. 1.

FIG. 2.

Detaching Runaway Horses.

An ingenious correspondent has devised the following plan for slipping runaway horses from a carriage, and thus averting a catastrophe. The figures illustrate his method, Fig. 1 showing the carriage and a handle, A, which, on being turned, detaches the run-aways. When the handle is turned it moves the wheel B (Fig. 2), which in turn moves C, and liberates the iron piece D, thus allowing the connecting link of the traces E to slip through and leave the carriage behind. The plan seems well worthy of a trial.

Mosaic Glass.

The silver medal of the Inventions Exhibition was conferred on the patentees of a new form of decorative glass-work, which is very suitable for use in windows and doors of private houses, where, from the size of its constituent parts, it is more convenient than the ordinary stained glass, with its larger pieces of glass and thicker leads. In the new process the design is traced on paper, and the requisite pieces of glass to form the pattern are then carefully laid upon it as closely together as possible, the interstices being filled with molten lead, which in the process of cooling adheres to the glass. The small size into which the glass may be cut makes it possible to execute far more elaborate designs by this process than were at all

practicable under the old one within the space ordinarily to be found in the window or door of a private house.

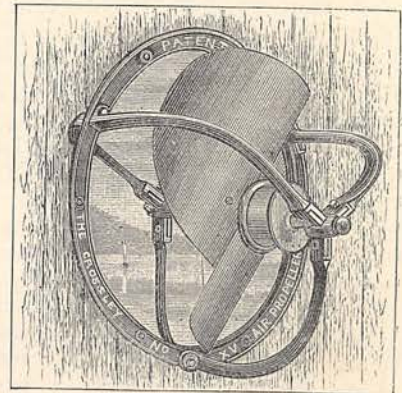
Improved Locks and Keys.

Locks made by an American manufacturing company are now being very largely used for every class of fittings in offices, public buildings, and domestic purposes on this side of the Atlantic. These locks combine great neatness of appearance and finished workmanship with the decided advantage of extreme portability of the keys, and additional security against their being opened by any unauthorised person. The keys of these "Yale" locks, as they are called, are corrugated, and no two of them are alike, so that it is impossible to open a lock with any but its own key. The corrugation of the key, too, renders the production of false keys a very difficult if not an insuperable task. The keys for large locks—such as street-door latches—are not more than two inches in length, and at their widest part, which is that outside the lock, are not more than one inch.

An Air Propeller.

The air propeller which we illustrate below is designed for rapidly moving large volumes of air at low pressure, in order to cool and ventilate houses, factories, mines, and tunnels, or for drying purposes. The number of applications which such an apparatus may have is very great, especially in crowded cities, and in tropical or in wet climates, where the heat of the sun has either to be tempered or assisted by the evaporation of air currents. The fan is of simple and ingenious construction, as will be seen from the engraving; and it can be driven by any kind of power, manual, steam, or electric. The power required is small, and the inventor claims an efficiency of at least 40 per cent.

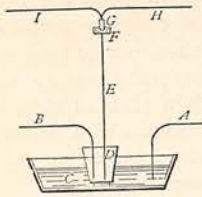
over what has hitherto been considered the best large-volume fan. According to the figures given by him, this new fan delivered 759 cubic feet per minute, whereas the best work of other fans is



465 cubic feet per minute. One of the propellers was at work at the International Inventions Exhibition at South Kensington. The fans are made of any size from 12 inches in diameter upwards. It would be a great advantage if ventilators of this kind were more generally used in flour-mills, factories, and workshops where the air is heavily charged with dust and effluvia.

The Hell Gate Fuse.

The figure illustrates the method adopted at Hell Gate to fire the cartridges and explode the mine. Here A represents the positive wire from the electric battery, and B is the negative wire, resting in a tumbler, which stands in a trough of mercury C, into which A dips. The battery circuit is therefore interrupted by the glass tumbler D. An iron rod E rests on the bottom of the tumbler, and runs to an exploder of fulminate of mercury G, connected by wires H I to an auxiliary electric battery. Now the current from this battery fires the exploder, which thus breaks the tumbler and allows the wire B to fall into the mercury, thereby completing the circuit of the main battery, and firing the dynamite forming the mine.

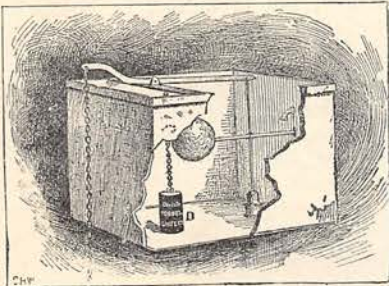


A Magnetic Umbrella.

During a recent trip of the steamer *Princess Beatrice* between Larne and Stranraer, the man at the wheel observed a curious disturbance of the compass needle, which was afterwards traced to the magnetic influence of an umbrella carried by one of the passengers. The deviation was so serious that the steersman reported to the mate that he could not keep the vessel to her course. The matter is, therefore, one worthy of scientific investigation. Umbrellas with steel ribs are liable in these days of powerful dynamos and electric lights to become magnetised without the owner knowing it; and a magnetic umbrella may, as the case appears to prove, have a disturbing effect on a ship's compass in proximity to it. It follows that some care may have to be exercised in the carrying of umbrellas on board steamers, unless they have been tested and found to be non-magnetic. We may also add that an electrician recently found that the iron wire placed round the rim of his hat to strengthen it, had a disturbing effect on the indications of a galvanometer of low magnetic influence with which he was making some electric measurements.

A Porous Disinfector.

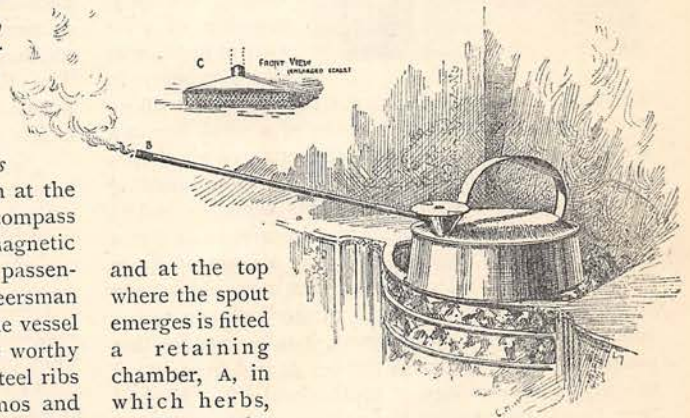
Disinfectors bought in tins and bottles are sometimes apt to be wasted, and the new porous form is certainly more convenient. It consists of a porous vessel containing the disinfectant (permanganate of potash for example), and this is suspended in the water. In a short time the water decomposes a quantity of the crystals, and the liquid



oozes out and impregnates the water. The device is especially useful in disinfecting the water of cisterns, flushing tanks, and water-waste preventers. The figure shows how it is applied, D being the porous vessel hung from the chain.

New Bronchitis Kettle.

Those who suffer from bronchitis, asthma, and any of the other chest or throat affections to which the changeable English climate makes them liable, will be glad to hear of a new kind of kettle which has been devised for use in the sick-room. The accompanying woodcut renders description almost unnecessary, and it will be sufficient to point out what are the salient features of this appliance. The vessel is made of tin,



and at the top where the spout emerges is fitted a retaining chamber, A, in which herbs, soothing mixtures, and the like are placed, flannel or cotton wool being used when these are of a liquid nature. The spout proper rises out of the retainer, and an extra length of pipe may, if necessary, be added at the joint B. The spout is also provided with a rose, C, which will no doubt be found a valuable adjunct for securing the diffusion of the vapour. If a fire is not available for immediate use, an ordinary spirit-lamp can be employed. This kettle seems to be a useful and simple apparatus.

MUSICAL PRIZE.

"WHEN MARTENS FOLLOW SPRING."

Of the many Compositions sent in for this Prize, there were three which possessed signal merit, and the judges had considerable difficulty in deciding which of the selected three should have the award. Looking, however, to all the requirements of the Competition, it was finally decided that the Prize should be awarded to

Dr. T. R. G. JOZÉ, Dublin;

Honourable Mention being accorded to

Mr. C. H. H. SIPPEL, Reading.

Mr. A. E. FISHER, Toronto, Canada.

We hope to publish Dr. Jozé's setting in an early number.