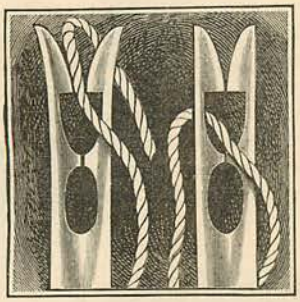
THE GATHERER: AN ILLUSTRATED RECORD OF INVENTION, DISCOVERY, &c.

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 New Needle.



A needle which is easily threaded is shown in the accompanying figure, which shows the new needle highly magnified. The butt of the needle is split so that the thread can be slipped into it without the delicate process of running it through the eye. The ends close together with a spring, and hold the thread when once it is inserted. For persons with weak eyes or unsteady hands it may prove useful.

Three-Handed Draughts.

So far as parlour games are concerned, the old adage that "Two's company, three's none," will soon be obsolete. A new version of the ever-popular game of draughts has recently been patented, which permits of three players taking part in the same game. The board is in the form of an equilateral triangle divided into 81 small equilateral triangles, 45 black and 36 white. Each of the three players has ten pieces, differently coloured, of course, and plays for his own hand against the two other players. The rules and moves are almost precisely the same as in the older two-handed game, from which this new one is a pleasant change.

Pulp Pipes.

Wood pulp is now used in making pipes for conveying anything not of high temperature or strongly alkaline. The pipes are suitable for water and gas distribution, or for holding electric wires. Pulp shingles are also made for roofing, and rendered fireproof by a coat of paint made from iron ores. These shingles are quickly laid, and fastened by nails driven through tinned iron washers about an inch in diameter.

Oxygen and Life.

Dr. Richardson has been making experiments on the effects of oxygen-breathing in animals. He found that such warm-blooded animals as the cat, dog, guinea-pig, and pigeon were excited by breathing currents of pure oxygen. The rabbit and others, however, showed no such effects. When the oxygen, after being breathed from, was purified and supplied again to these animals, they became drowsy. By continuing the process some even died; yet the oxygen seemed to have suffered no change in respect of supporting combustion, and as regards its powers of supporting the life of cold-blooded animals—for example, the frog. When electrified by the discharge from a frictional machine, the oxygen appeared to lose its narcotising power, and recovered its property of exciting warm-blooded animals. It should be mentioned here that electric discharges produce ozone.

Green Paper for Books.

Several of the French railway companies have resolved on having their printing done on green paper instead of white. Their reason for the change is, that black letters on white paper have proved trying to the eyesight of their work-people. Black on green has been recognised as a good combination, many railway tickets being printed in this style. Possibly we shall yet have books printed on greenish paper in preference to dead white.

The Colour of the Eyes.

M. de Candolle, a French investigator, has come to the conclusion from his researches that women have a larger proportion of brown eyes than men. He also finds that when both parents have eyes of the like colour, the chances are 88 to 12 that their children who arrive at the age of ten years (when the colour of the eyes is fixed) will have eyes of the same colour. When the parents have eyes of different colours, the chances are 55 to 45 in favour of brown as against blue or grey eyes in the children. He is also of opinion that the health of the brunette type is, as a rule, superior to that of the blonde type.

Pigeons as Weather Reporters.

Mr. O'Donnell, of the U.S. Signal Service, is experimenting with carrier pigeons, for carrying weather reports between Key West, Florida, and Nassau in the Bahamas. When the birds are trained they are to be given to sea-captains to take to sea and send home again with weather reports. The service is expected to be useful in the West India Islands.

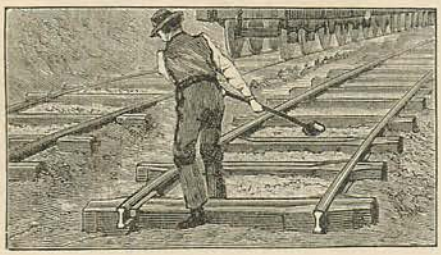
An Apprentices' Exhibition.

It is proposed to hold an "Apprentices' Exhibition of Art, Industry, and Invention," in the Queen's Hall of the People's Palace, Mile End Road, E., on December 19th of this year, and following days. An influential Council and Committee have charge of the arrangement, and all boys or girls serving time as bound apprentices within the Metropolitan area are qualified to exhibit. The Committee will also consider special cases of boys and girls serving an apprenticeship to learn their trade, though not legally "apprenticed." The exhibit must consist of genuine handiwork by the exhibitor; but

two or more separate trades may be combined in the same object, provided that due notice and description of the joint work is given in the special Form of Application provided for the purpose. Forms of Application are to be had from the Honorary Secretaries of the Apprentices' Exhibition, Beaumont Trust Offices, Warnford Court, Throgmorton Street, between 10 and 5 daily, except on Saturdays, when the hours are 10 to 2. On Monday evenings they can be had from 8 to 10. These forms, when filled up and sent in, will be dealt with in the order of their arrival. Exhibits must be sent to the People's Palace on or before Wednesday, December 7th, 1887. Each exhibit must have the name and address of the exhibitor attached, and must state the kind of work. All articles properly packed and labelled will be taken free of cost to the Exhibition, if sent through Messrs. Carter Paterson and Co., 128, Goswell Road, E.C., provided a post-card is sent to that firm the evening before the package is ready, asking them to send for it to the exhibitor's address. Prizes will be given on the award of practical judges, regard being had to the age of the exhibitor and the time he has served. These and other rules can be had on application to the Honorary Secretaries as above mentioned.

Smokeless Gunpowder.

A smokeless gunpowder, known as "J. B." (Johnson Barland), has recently been tried by our military authorities with the Martini-Henry, and Martini-Enfield rifles, and other firearms. The powder is not absolutely smokeless, but it is a great improvement on the ordinary kinds in use. This is of course a practical advantage, especially in still weather, when smoke hangs about. Moreover the piece is less apt to foul. The powder in other respects compares favourably with ordinary powder; the inventor claiming for it a flatter trajectory, less recoil, and greater velocity of the shot. It is also held to be less dangerous, and better adapted for transport.

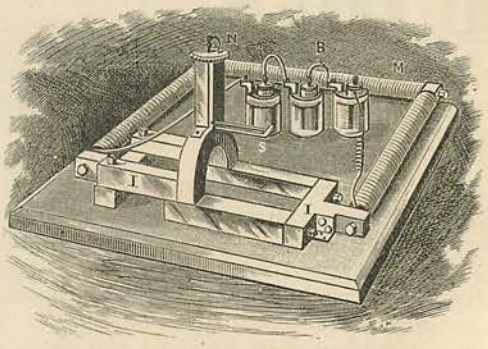


A New Sleeper.

Our figure illustrates in perspective a new form of steel sleeper and chair combined, which was described by Mr. H. White before the recent British Association meeting at Manchester. The sleeper is rolled out of sheet metal in one piece; and it will be seen that the rail is simply keyed into it crosswise. It is claimed that this hollow form can be more firmly fixed in the ballast of the railroad, and that the downward pressure on the sleeper tends to make it grip the rail closer.

A Magnetic Balance.

The figure shows a balance for measuring the magnetic property of iron or other metals. It is the invention of Mr. Edison, and consists of a rectangle of four pieces of soft Norway iron. To the middle of the two short sides are connected the poles of an electro-magnet which magnetise the bars or pieces of iron. From the middle of the longer sides two other pieces or jaws of soft iron curve upwards towards each other, but do not meet. In the opening between these last pieces a magnetic needle is suspended by a torsion wire, and works a pointer on a graduated scale. Like the Wheatstone balance, of electrical science, the magnetic balance does not affect the needle when the sides of the rhomb have equal magnetic properties; but when one of the pieces forming part of the rectangle is replaced by a similar piece of iron having a



different magnetic property, the needle is deflected as shown by the pointer moving up or down the scale as the case may be. In this way different qualities of iron can be tested in order to see whether or not they are suitable for dynamo-machine construction, or other magnetic purposes. The figure shows the bars of iron I I, the electro-magnet M, the battery B, exciting the latter, the suspension of the needle N, and the graduated scale S, over which the suspended magnetic needle-pointer moves when the apparatus is in operation.

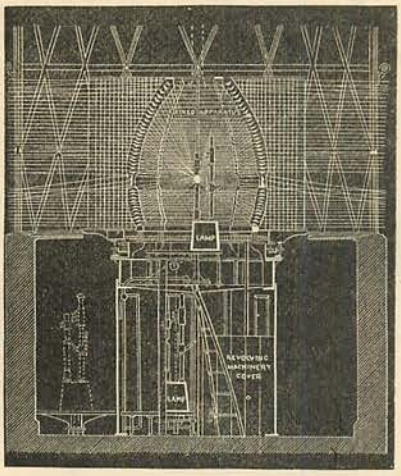
Some New Christmas Card Designs.

Christmas and New Year Cards seem likely to be as popular as ever this season, judging from the preparations Messrs. Marcus Ward and Co. have made. Very quaint are some of their designs this year, notably some of pretty little children and flowers, called "Tiny Tots." The popular hamper designs of last season have apparently suggested other novelties in the same field, and now we have a "Christmas-box" which opens to reveal birds; "Potted Fowl," represented by a jar which conceals some chickens or a fowl; and Christmas and Golden Eggs, which when cracked disclose pretty groups of birds and quaint figure subjects. "Time Flies" is the title of a series of cards shaped like watches, whose works are ousted by pretty views. Plates and envelopes both play parts among

the new designs, and in the name-cards there are some striking novelties, specially some cards whose corners are daintily embossed with delicate designs. Raphael's Florentine Madonna has been reproduced to give a fine design for a handsome card, distinguished, as are all Messrs. Marcus Ward's cards, by great finish in production.

The Isle of May Lighthouse.

The electric light supplied to the Isle of May Lighthouse in the Frith of Forth consists of a single arc lamp of the Serrin-Berjot type, with a shunt applied, after the manner employed by Dr. Hopkinson, to direct a large proportion of current to the lower carbon. The carbons are of the Siemens soft graphite-cored sort, which prevent cratering at the sides. They are 40 millimetres in diameter; but in thick weather, when two dynamos are used, they are 50 millimetres in



diameter. The waste of the carbons is about two inches an hour; and the power of the arc is estimated at from 12,000 to 16,000 candles when one machine, as is ordinarily the case, is running. The lantern is a dioptric apparatus made in Birmingham, and working on the principle of darkening certain sectors by diverting the light from them into the adjoining ones, so as to reinforce the light of the latter. The light is visible for 20 miles, and the gleam on clouds has been seen 50 miles. The power of the beam is estimated at 3,000,000 candles with one dynamo at work, and twice that with both. There are four flashes every half-minute; and it is intended to dip the light in foggy weather from the horizon to a point a few miles off. The accompanying figure shows a section through the lantern, with the electric lamp inside the dome of lenses; a spare lamp being kept below. The fine lines radiating from the electric arc are the rays of light, which, upon traversing the dioptric glasses, are sent out in parallel beams over the water.

A New Pneumatic Bell.

Pneumatic bells, that is to say, bells working by compressed air, are very simple and convenient in houses and offices; the bell being rung by compressing a small air-bag or balloon. Our illustrations show the operation of one recently introduced by a well-known inventor. In Fig. 1, by compressing the air-ball A in the hand, air is forced through the tubing T into a bellows B, which is expanded, as shown by the dotted lines. On releasing the ball from the hand it resumes its original shape, the air returns through the tube, and the bellows collapses again. The power exerted in compressing A is thus transferred to B, and caused by a simple mechanism to strike the bell. This mechanism is shown in Fig. 2. When the bellows B expands it lifts a curved lever, turning on a centre *c*, and a point *p*. On this lever moves a tooth-shaped piece S, which turns the pinion and wheel shown, thus causing a double fly-hammer H to revolve and strike the bell-gong G. The toothed piece S is pivoted at *c'*. The collapse of the bellows releases the piece S, which turns on its own centre *c'*, which is drawn out and away from the pinion. The teeth of the piece S are in this way one by one continually drawn back and disengaged from the pinion until it returns to its position, as shown in the figure, and is ready for further action. It will be seen that the mechanism is simple and not likely to get out of order. Fig. 3 shows the manner in which the bell can be applied

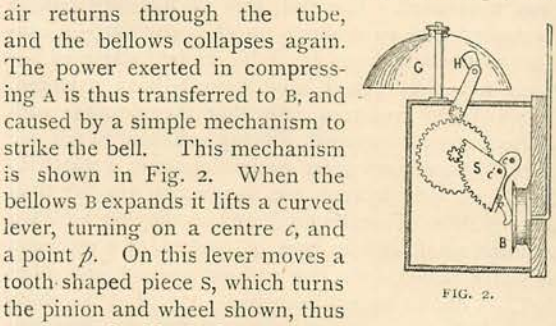


FIG. 1.

FIG. 2.

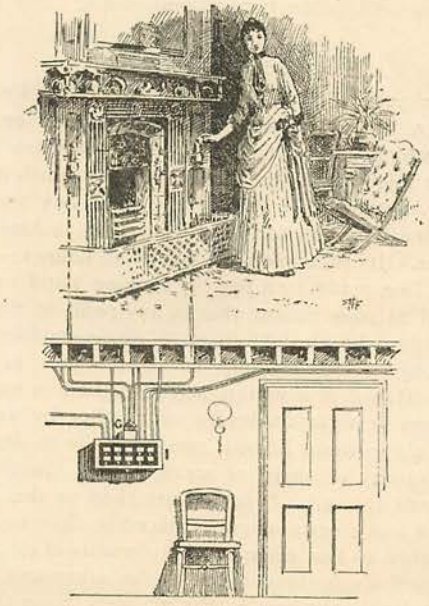


FIG. 3.

to a room; the bell-handle on either side of the fire-place serving to compress the air-ball; and the connecting tube to the bell and indicator in the distant room is also shown. In the latter place G is the gong-bell, and I an indicator which tells the room from which the call is made.

Some Novelties for Home Use.

A short time ago we noticed an indicating door-bolt, which automatically recorded outside a door whether the occupant of the room was "engaged" or not. We have now before us another bolt somewhat similar in construction, but provided with a spring which insures the bolt being shot completely each time it is used. The indicator of this new bolt is enamelled, and so requires no glass covering—a consideration where doors are liable to be "slammed."—Some new fire-lighters have recently been patented, for which the inventors claim that they do away with all necessity for firewood, it being sufficient to put one of the lighters among the coals and apply a match to it. These new lighters are very much smaller than most of those generally used, and, as they burn for ten minutes, small articles may be cooked, or a saucepan of water boiled, over one without coal or any other fuel.—A double-lipped saucepan—one, that is, which has two lips on opposite sides of the pan—has just been brought out, and should be very useful to cooks and housekeepers.

A Wire House.

A house of wire lathing is one of the curiosities of the Manchester Exhibition. The architect is Mr. G. F. Armitage, and the wire lathing is stated to resist fire. This wire lathing can be applied to ordinary wooden beams; and it can be used for the partitions by itself; while wire cloths of various kinds form part of the same invention. It will be seen that the cottage is neat in appearance, and, if fire-proof, it has at least one substantial property to recommend it.

The Writing Telegraph.

Some years ago Mr. A. E. Cowper, an English engineer, brought out a "telegraphic pen," or telegraph which wrote a fac-simile of the sender's autographic telegram at the distant place to which it was sent. Another apparatus of the kind has recently been brought out by Mr. Hart Robertson, an American inventor. Its principle of action is as follows:—Any curved line made by a pen in running hand can be referred to co-ordinates, that is, any point of the line can be fixed by straight lines or distances from two fixed co-ordinates or lines at right angles to each other. Hence, if a writing-pen is caused to move in two lines at right angles to each other by varying forces along these lines, it can be made to describe every variety of curve or straight line. In the new apparatus the writing-pen is attached to the armatures of two electro-magnets placed at right angles to each other, so that when varying currents of electricity are sent through these magnets, the armatures, being attracted more or less to the magnets, move the pen up and down or along, and the combination of these two separate motions causes the pen to describe any figure desired—in fact, to write running hand. This is the receiving part of the writing telegraph. The transmitting part varies the electric currents in two wires going to the two electro-magnets. In writing the message by the transmitter the pencil or style used is caused to vary the resistance in the two circuits of the wires and magnets. It does so by varying the pressure on a pile or series of thin discs of carbon. It is well known that pressure varies the electric resistance of a series of carbon contact pieces as in the carbon microphone. There are therefore two sets of these variable carbon resistances, one in circuit with each line-wire and electro-magnet. By a simple mechanism the sender of the message in writing it out is caused, by means of the movements of his stylus or pen on the paper, to exert more or less pressure on these two carbon resistances, and thus vary the current in the distant electro-magnets. The magnets thereupon exert a varying force on the pen at the receiving station, and cause it to make a copy of the autographic message sent. The attempt to supply a simple copying telegraph is praiseworthy; and it is stated to be working on the "Exchange" system in New York. Fig. 1 shows the transmitter, consisting of the two sets of carbon discs, C C, at right angles to each other, in ebonite cases. A screw, S S, is provided to each set to regulate their pressure. The rod R, which carries the pencil or stylus P, is pivoted at its corner end, and has pressure-points opposite the pile of discs. As the operator writes with the stylus, the pressure-points vary the resistance of the carbon discs and the current traversing them. Fig. 2 is the receiver, consisting of two electro-magnets E E, at right angles, and at the point where the poles would reach if extended is a carrying-rod for the armatures A A. Near where the rod is pivoted at the bottom, a spring wire is inserted so that the armatures quickly respond to the varying attractions of the electro-magnets. The armature-rod carries at its extremity the writing-pen P, which records the message on a band of paper, moved along by clockwork.

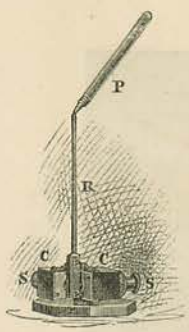


FIG. 1.

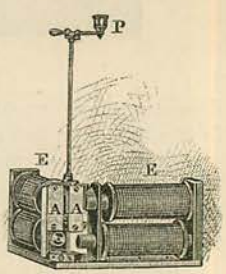
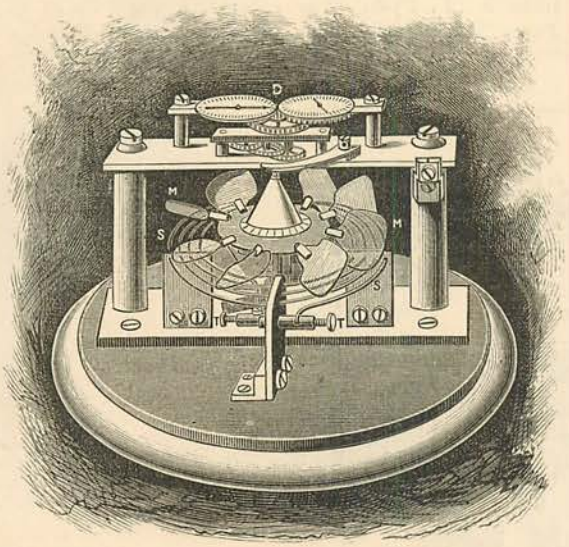


FIG. 2.

An Automatic Straw Binder.

One of the most interesting implements at the American Exhibition was a sheaf-binder in which straw formed the tie in place of wire or twine. Without going into the details of the machine, which are ingenious and effective, we may state that the straws for binding with are supplied separately to the

machine, in lengths of twenty-two inches ; a loose bundle some ten inches in diameter serving to bind the sheaves of an acre of crop. Strong rye-straw having the ears chopped off is preferred, but wheat or other straw can be used, provided it is clean and strong. The sheaf is bound by a weaver's knot. The machine will also bind with twine should the straw available prove weakly.



A Simple Electric Meter.

The meters for measuring the supply of electricity to electric lamps and motors, as gas-meters measure the consumption of gas, are chiefly magnetic or chemical—that is to say, in the magnetic ones the meter is actuated by the electro-magnetic effects of the current, and in the chemical ones by the electro-chemical effects. Such meters are, however, not well adapted for measuring alternating currents—in other words, currents that rapidly change in direction. The new meter of Professor Forbes which we illustrate is very simple in its action, and is capable of measuring both continuous direct currents and alternating currents. It consists simply of a spiral of iron wire, S S, having a resistance of a fraction of an ohm. This spiral is fitted with terminals, by which it is connected in circuit with the current to be measured. The current in flowing through it generates heat, which causes air currents to rise from the wire and turn the mill-wheel or vane of mica, M M. This vane consists of a disc of mica with flies attached to its edges by pith cylinders. It is exceedingly light, and pivoted on a steel point by a cup of ruby. The rotation of the vane under the updraught of heated air turns a simple clockwork and moves two hands on dials, D, which indicate the revolution of the wheel. There is very little friction, and according to Professor Forbes the revolutions indicated on the dial measure the current in ampere-hours. The whole is enclosed in a glass case to keep off extraneous air currents. An instrument such as that illustrated, designed for measuring the supply of twenty electric incandescent lamps, will start with half the current required for one lamp, and will register correctly, according to Professor Forbes, from one lamp up to twenty.

For Girls and Maidens.

Lady Bellairs gives some sound, practical advice in her new book, "Gossips with Girls and Maidens" (Blackwood). Especially "to those about to marry" is this new work to be commended, and if its precepts were but faithfully followed out, we should undoubtedly see, and hear of, fewer imprudent and unhappy marriages. Parents on the look-out for a gift for their daughters cannot do better than give them Lady Bellairs' book.

Preparing for 1888.

For "all sorts and conditions of men," there are diaries to be found among those prepared by Letts's Diaries Co. (Cassell). Clerical and Commercial Diaries are provided for those who need such, while the ladies have a diary all their own and a "Housekeeper's Diary." If some of the diaries are so large as to be fitted to cope with the demands of an extensive business or practice, there are others so tiny that they may easily be carried in the waistcoat pocket. Where all are good it is difficult to make a selection, but the elegant little "Waistcoat Pocket Remembrancer," to which we have just referred, certainly deserves a special word of praise, as do also the "Ladies' Diary" and the "Card Case Almanack." Excellent features in all Letts's Diaries are the spaces for "Memoranda from 1887" and "Memoranda of Things Lent."

"Christmas in Prison."

All who remember our recent article describing an interview with the Rev. J. W. Horsley, will be glad to have an opportunity of hearing more of his work through his "Jottings from Jail" (T. Fisher Unwin). Some of Mr. Horsley's sketches are wonderfully pathetic, notably that of "Christmas in Prison." From the same publisher come three volumes by our valued contributor, the Rev. E. J. Hardy, M.A., better known as the author of "How to be Happy though Married." The first volume is a popular edition of this now famous work, the second is "Manners Makyth Man," written in the conversational and anecdotal style so familiar to our readers, a style which Mr. Hardy carries most successfully into his third volume—this time of sermons—entitled "Faint yet Pursuing." Any one of these books would make an excellent and acceptable Christmas present.

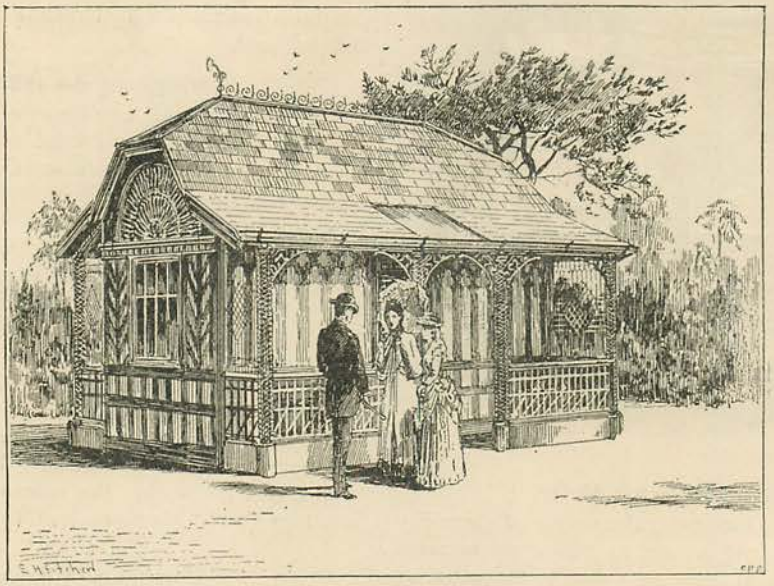
Christian Name Cards.

We noticed last Yuletide some cards specially made for enclosing visiting cards—either ladies' or gentlemen's. Now we have another novelty to chronicle, in the shape of "Christian name cards," brought out by Mr. J. F. Bennett. The new "cards" are really pretty satin tablets framing the sender's Christian name, and providing a space for the

recipient's name. Messrs. Wirths Bros.' cards are excellent specimens of workmanship. Their beautiful designs are admirably rendered, with exquisite finish, and the results are distinctly above the average. The "frosted" cards are prepared by a machine process of Messrs. Wirths', and most successfully present moonlight, sunset, and snow effects. One of the quaintest and most original designs from this firm is entitled "Ringing the Christmas Bells," and shows a band of merry kittens playfully tugging at a bell-rope, up which some of them are climbing.

—— "arrayed in its robes of russet and scarlet and yellow,
Bright with the sheen of the dew,"

and wonderfully add to the interest of the poem-picture. "Oranges and Lemons," from the same firm, is a pretty collection of children's verse-games, cleverly illustrated in colour by T. Pym. "Bubbles" is another excellent work for children, with humorous illustrations of frogs and mice; and a third, and equally good one, is "Skipping Time," also with pictures by T. Pym. For older folk are "Paths of Peace," an exquisite little book of verse by Frances Havergal, and a pretty little illustrated edition of Longfellow's "Norman Baron."



A WIRE HOUSE. (*See p.* 62.)

"Celebrities of the Century."

In "Celebrities of the Century" (Cassell) we have a "Dictionary of Men and Women of the Nineteenth Century," telling us, in a nutshell, how and why they became celebrated. No library will, in future, be complete without this handy Plutarch of the nineteenth century. Asterisks mark the celebrities who were living when the work went to press, but, as we run over its pages, we are reminded that the Great Reaper has been busy among us, even in the short time that has elapsed between the revision and publication of the work, and in the gifted authoress of "John Halifax, Gentleman," has taken from us one who will assuredly occupy no mean place among the literary "Celebrities of the Century."

Leaves from Acadia.

Who does not love "Evangeline," Longfellow's beautiful story of an oft-told wrong? It was a pretty thought that led Messrs. Marcus Ward and Co. to issue an edition of this gem, decorated with tastefully executed facsimiles of the leaves of "the forest primeval." They lie before us, each—

CONVERSATION COMPETITION.

The Editor has pleasure in announcing the Award in this Competition. Fifty-one competitors responded to the invitation given in our September number, and after careful consideration of all the MSS. submitted, the PRIZE OF THREE GUINEAS *is awarded to*

J. BIBBY, 3, Lower King's Cliff, Jersey.

Honourable Mention is accorded to the work of three other competitors:—

Cornelia M. Phillimore, Bedford Park, W.
Mrs. Oscar Wilde, Chelsea, S.W.
Ernest Glanville, Church End, Finchley.

The Editor hopes to publish the Prize Paper in an early number of the Magazine. The Editor would remind unsuccessful competitors that he cannot undertake to return their MSS.