

TO-DAY AND YESTERDAY.

MY heart goes back to last July,
 The river flowing at our feet,
 And every hour that then went by
 Was full of happiness complete.
 The future lay beyond our ken,
 We knew it not, nor cared to know,
 We lived but in the future then,
 But that was long ago.

Ah me! to-day and yesterday,
 They seem so wide, so far apart;
 Then I was yours, you said, for aye,
 To-day you tear me from your heart.
 Go by! forget me if you will,
 It is too late for wild regret;
 Yet oh that you but loved me still,
 Or I could but forget!

FREDERIC E. WEATHERLY.

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 Safety Candlestick.

Our illustration shows a new candlestick which has recently been patented, and which is so constructed that in whatever position it is held the candle is kept perpendicular. There is no "machinery" to get out



of order, for the main principle of the contrivance is the employment of a ball-joint of the very simplest kind. The advantage which this new candlestick gives in increased safety and comfort is obvious. We should say,

too, that it would be very useful at sea, where a portable light, that will not depart from the perpendicular, is always a desideratum.

Rearing Sponges.

Professor Oscar Smith, of the University of Gratz, in Styria, has discovered a method of growing sponges from the cuttings of living sponges. One experiment produced 4,000 sponges, at a cost of about 225 francs. The Austro-Hungarian Government has officially protected the new industry. We may add that the best sponges come from the coast of Syria and the Grecian Archipelago, while the poorest are from the Bahamas. The tough Tunisian sponge is in common

use. Sponges grown on sandy bottoms are superior to those from muddy bottoms. They are usually taken from depths of fifteen to twenty feet, either by diving, or the harpoon and drag. With the new metal diving dress, called a "scaphandre," the Greek divers can remain for two or three hours at the bottom selecting and gathering the sponges.

An Indicating Target.

A new target, which indicates the value of the last shot without the necessity of a marker, has been brought out. When the shot strikes, a coloured disc appears, which tells the value by its colour. The target has been tried successfully at in-door practice, and it is hoped that a trial at long ranges will be afforded the inventor.

A New Boot.

A boot combining the advantages of rubber and leather has recently been brought out, and is illustrated

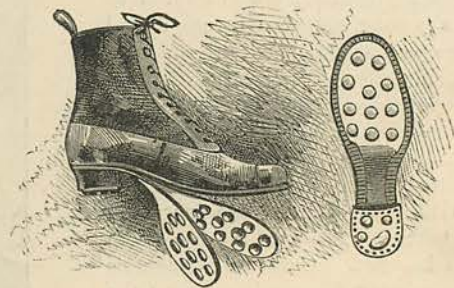
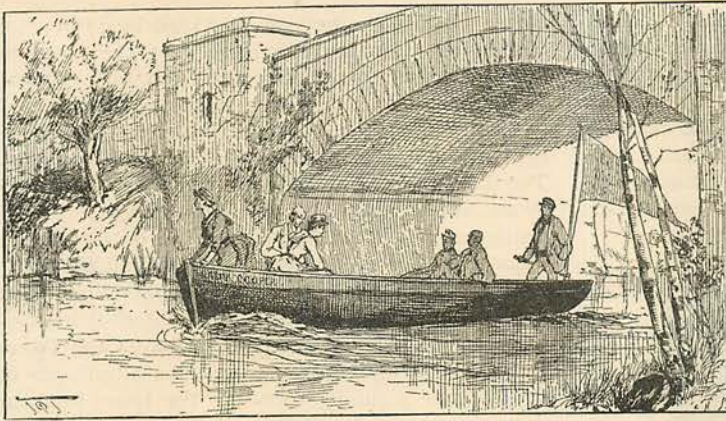


FIG. 1.

FIG. 2.

herewith. Over the inner sole is placed a vulcanised rubber sole, moulded with projecting discs, on which the outer sole fits by means of holes, as shown, the whole being sewn together by hand, or other-



NEW LAUNCHES—FIG. 1.

wise united. The rubber discs project a little from the sole, as shown in Fig. 2, and give an easy, noiseless, and secure tread, while protecting the sole for a time from wear. Military officers are said to speak favourably of the boot, which seems well adapted for pedestrian exercise. We may add that the boot is to be tried by the police of Leeds. Forms are made for the ordinary wear of ladies as well as gentlemen.

A Snow-Shoe Journey.

The Norwegian Greenland Expedition, which is to attempt the passage across Greenland on snow-shoes this summer, is in charge of Mr. Nansen, Curator of the Bergen Museum, and champion snow-shoe walker of Norway. The party will probably carry their baggage on reindeer-sleighs. It may be remarked that the Norwegian snow-shoe is not, like the Canadian, a thong-racket, but a long, narrow plank of wood curving at the point like a skate-runner.

New Launches.

A new launch, driven by a motor worked by naphtha, has been introduced into London. An alcohol lamp is used to warm a vaporiser where the naphtha is vaporised and employed in lieu of steam. The arrangement is very light—an 18-foot launch, requiring a 2 horse-power engine, weighing only about 200 lbs. An 8 horse-power engine weighs 600 lbs., or about one-fifth the weight of a steam-engine and boiler giving the same power. Moreover, in about two minutes the launch can be got under weigh, and when running at full speed can, it is stated, be stopped in her own length, as the screw, which is three-bladed, can be reversed instantly. A 2 horse-power motor consumes less than a gallon of naphtha per hour. No engineer is needed, as any intelligent and able-bodied person can work the engine after some ten minutes' instruction. The machinery is carried in the stern in a space measuring 18 inches each way; yet it can drive the craft at a speed of six miles an hour. As there are no

furnaces, and as naphtha can be purchased in so many towns, the new launch appears to be quite an acquisition, and will recommend itself for the Thames in preference to the usual steam-launch. It seems also to have the advantage of electric launches in the lightness of the apparatus. Our illustrations show the exterior and interior of the new electric launch built for the Electrical Power Storage Company, and named the *Lady Cooper*, after the wife of Sir Daniel Cooper. The power is supplied by teak accumulator cells of the "E.P.S." (Electrical Power Storage) model. There are 66 cells, supplying the current

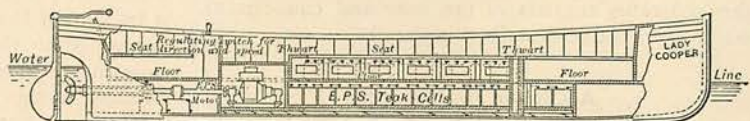
to an "E.P.S." electric motor, which works the propeller as shown. The teak cells are chiefly placed below the floor of the launch, and a switch is provided for regulating the speed and direction of the vessel. The launch is provided with a cabin 7 feet long, and has an electric gong in place of the ordinary steam-whistle. It can, moreover, have an electric search-light when used for searching purposes. The speed attained was $11\frac{1}{2}$ knots on the tideway of the Thames during the Oxford and Cambridge Boat-race day, when it made its first public appearance. It is proposed to establish electric stations at different points on the Thames to supply electricity to the accumulators of these launches as they require it, for it must be remembered that though such an electric launch is very noiseless and emits no steam, the accumulators require recharging.

A New Glass.

A new glass is reported from Sweden. It contains, amongst other elements, phosphorus and boron, and its refractive power is said to be very great, and far superior to that of the existing glass used for microscopes. Hence an increase of microscopic power is expected from it.

Artificial Silk.

Artificial silk has been prepared by Dr. Chardonne, a French experimenter, by dissolving 3 grammes of nitro-cellulose in 100 to 150 cubic centimètres of a mixture of equal parts of alcohol and ether, and adding 2.5 cubic centimètres of a filtered 10 per cent. solution of ferrous chloride in alcohol, and 1.5 cubic centimètres of a solution of tannic acid in alcohol. The filtered liquid is placed in a vertical reservoir, having a blowpipe nozzle of glass in its bottom. This pipe forms an acute cone with an orifice from $\frac{1}{10}$ to $\frac{1}{20}$



NEW LAUNCHES—FIG. 2.

millimètre wide, the thickness of the margin not exceeding $\frac{1}{10}$ millimètre, and opening into a vessel of water acidulated with $\frac{1}{2}$ per cent. of mono-hydrated nitric acid. The fluid in flowing out by pressure hardens in the acidulated water, and the resulting thread is dried rapidly in hot air. The thread can be dyed all colours by soluble pigments. We may mention that Mr. J. W. Swan, the well-known electric light inventor, recently devised a similar process.

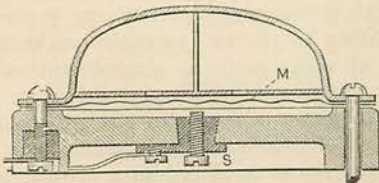


An Automatic Fountain.

The engraving shows an automatic fountain of an ornamental character, suitable for drawing-rooms or conservatories, and capable of containing plants. The action of the fountain is maintained by a hot-air motor, of a harmless character, and fixed in the standard of the fountain.

An Electric Fire Alarm.

A simple electric fire alarm is illustrated in the figure. It consists of a metallic membrane, *M*, which expands with an undue rise of temperature, and, sagging at the centre, makes contact with a screw, *S*,

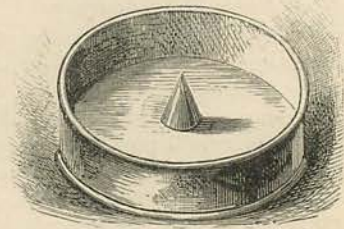


thereby closing an electric circuit, and ringing an alarm bell fixed in any convenient place. The rest of the apparatus consists of the case and connections, which need not be described in detail.

A Cipher Heliograph.

A firm of Parisian opticians have brought out a heliograph which leaves a written record, so that a

cipher message can be sent and read by a "key" at leisure, thus insuring the secrecy of the contents. The transmitter consists of an oil lamp, with its flame in the form of a lens, through which the beam passes to the distant station. A movable shutter cuts off the light at will, in accordance with the code of signals. The shutter is placed in front of the lens, and is moved by means of a key. The key also works a recording instrument, which marks the message on tape. The message is received by a telescope; and all the apparatus is contained on a portable tripod. While upon this subject we may mention some interesting experiments recently made at Simon's Bay, Cape Town, by Admiral Hunt-Grubbe, to test the advantages of signalling at night by reflecting the beam from an electric arc lamp from clouds in the sky. The beam is, of course, directed up on the clouds by a powerful reflector and occultated after the manner of the heliograph, using the Morse code of signals, also used with the heliograph. It was found possible to telegraph in this way to Cape Town, and some trials made by running out to sea showed that the signals could be read fifty miles. At this point the weather interfered; but enough was done to show that, under favourable circumstances, the method may be useful as a night heliograph at sea.



A New Cake-Tin.

The engraving shows a new cake-tin, which insures the centre of the cake being thoroughly cooked without overdoing the outside. The cone in the bottom conveys the heat to the centre, but the hole it makes is not seen from the top of the cake. The conducting shell is of pure copper, and plated to render the surface quite wholesome. These "tins" are made in three sizes, namely, 6, 8, and 10 inches in diameter.

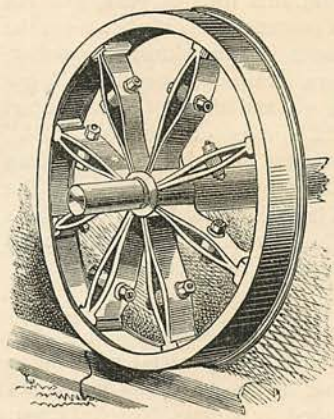
A New Lightning-Rod.

Professor Oliver Lodge, in recent lectures, advocated the use of iron for lightning-rods in preference to copper, now so generally used. He also pointed out that in sudden and violent discharges the ordinary "points" on rods are of little use, and suggested the use of barbed wire along the ridges and eaves of buildings. He argued that the true way to protect a building is to enclose it in a "cage" of conductors connected to the "earth." This is, in fact, what is now done by some of the best makers, the conductors running along the roof. We may add here that Emin Pasha has recently supplied some observations on lightning-strokes in Africa, which go to destroy the

impression that Africa, as a continent, is comparatively free from fatalities due to lightning. In the Lake basin strokes are commonest during the rainy season, but they are very rare in the Soudan. Apropos of the recent theory of Mr. Symons to the effect that "thunder-stones" or missiles falling during thunder-flashes are mythical rather than actual phenomena, Emin Pasha states that the Soudanese believe that "stones" accompany lightning-flashes, and when they find one composed of iron they regard it as a great prize, conferring, when made into a knife or sword, immunity from death in battle. The meteoritic iron is worked by the blacksmiths using milk in place of water, as they consider that water destroys the qualities of the metal. The Soudanese are not the only persons who have worked meteoritic iron into weapons, Mr. Sowerby having presented to the Russian Czar in 1814 a sword made from very pure meteoric iron found in Australia. We may add that four weather-stations have been established in America to investigate the laws of electrical phenomena in the atmosphere, and compare them with the variations of the barometer.

Steel Wheels.

The figure illustrates one of the steel wheels for tramways and light railways now made at Sheffield.



The tyre is rolled of best steel, and the spokes, of the form shown, are fixed in place and tightened there by the bolts passing through their bulging portions. The form admits of new tyres replacing the old ones when worn out, by an experienced workman, without machine work or long delay.

Fresh Air for Long Tunnels.

An inventor has devised a plan for supplying fresh air to railway carriages in underground railways. It consists in providing a collapsible reservoir of compressed air attached to the vehicle, with pipes for conveying the air to the interior, and a distributor to disperse it. The plan reminds us of the advantages which compressed air engines have in place of steam for underground lines. With these the exhaust air could be breathed, and there would be no smoke. We may mention, however, that the Metropolitan District Railway Company are said to be contemplating the introduction of electricity as the motive-power on their lines; and in such case the atmosphere will be improved, since no smoke or steam will be given off.

Cousin to all the World.

If Mr. Henry Kendall, the author of "The Kinship of Men" (Kegan Paul, Trench, and Co.), is to be believed, there is no need of the "one touch of nature" to "make the whole world kin." He traces our relationship to one another, not to a common stock, but in each case from an actually living individual backwards. Some of the results are most startling; as, for instance, the calculation that the normal increase of ancestry up to the thirty-second generation shows that each living man has 4,294,967,296 ancestors. After that, who can doubt the kinship of the world?

Some New Music.

Every one is on the look-out for new music. The popular pieces so soon become hackneyed, that we are always obliged to be on the look-out for fresh and taking pieces. Foremost among popular writers of songs is Mr. F. E. Weatherly, so well known to all our readers. Messrs. Boosey and Co. send us, in an attractive parcel of new music, two new songs of Mr. Weatherly's. One, "My Southern Home," is very effectively set by Mr. J. L. Molloy; the other one, "The Goodwin Sands," is set by Stephen Adams, who gives us a very dramatic rendering; but we confess that it is not quite equal, in our opinion, to other songs from this composer. Mr. F. J. Davis's "Forty Sailors' Songs," which are set to music by Mr. Ferris Tozer, for the same publishers, are no doubt capital for their purpose. The "Diamond Music Books" are marvels of cheapness; and the "Cavendish" series are admirable for their excellent get-up as well as the high quality of the music.

The Prince of Orange.

Nine-tenths of us owe our impressions of William of Orange to Macaulay and his "History," and we are chary of welcome to a new biography of the warmly-greeted invader prince. But Mr. H. D. Traill's contribution to Messrs. Macmillan's "Twelve English Statesmen" is worthy of its great subject, and of its predecessors in this series. It is clear and impartial throughout, and admirable as affording a picture of William the Third's period. In a by-path of history is another work which is now before us—Mr. Henry J. Swallow's "Catharines of History" (Elliot Stock). The work is intended as a gift-book for presentation to ladies whose Christian name is Catharine or Kate. We suppose the idea is that the lady is to emulate her namesakes, but these were of such varying fortune and fate that it would be possible to please all tastes.

A New Instruction Book.

A new instruction book, by Mr. Adrian De Lorme, has been published by Messrs. Duff and Stewart, under the title of the "A B C Instructions for the Piano-forte." It lays claim to greater simplicity than the majority of such works, and certainly puts the elementary facts of music in as clear a form as would seem possible. The same publishers send us new editions

of favourite airs by Spohr and Mendelssohn, and a well-marked gavotte by Cecil Nielson, entitled "Gwendoline," very suitable for young performers. A series of new operatic arrangements of the usual kind, by Mr. A. De Lorme, and a capital "March of the Pilgrim Fathers," by E. L. Hime, also reach us from the same firm. Ciro Pinsuti's last song, "Rest to the Weary" (Messrs. E. Ascherberg and Co.), if not the best he has written, certainly deserves the success he predicted for it. Mr. Carl Kiefert's "Bulgarian Patrol" is pretty and effective of its style; and Leopold Godowsky's "Moto Perpetuo" for the pianoforte is skilfully written and excellent as a study. Mr. Edwin Ashdown sends us a parcel containing specimens of his beautifully printed and cheap editions of "Standard Musical Works," and four simple and brilliant drawing-room pieces by Sydney Smith. A charming little song from the same publisher is Mr. Michael Watson's setting of "Little Lady Bountiful," while the "Arabian Serenade," written and composed by Mr. Michael Watson, is an effective song for a male voice. The various numbers of Messrs. A. Hammond and Co.'s "Academic Edition" prove it to be a very useful series. A collection of Marches (No. 15 in this series) ought to be in very general request. Two little pieces for the piano, by Mr. Alfred Sargent, "Un Soir d'Avril" and "Loin du Pays," are both very melodious.

The Handiest Form for Stories.

Single-volume stories succeed and are read where in less portable form they would be passed by. Foremost among publishers of stories in this form are Messrs. F. V. White and Co., who send us the Hon. Mrs. Fetherstonhaugh's clever "Dream Faces," and Sir Randal H. Roberts's "Curb and Snaffle;" as to the latter, we must say that in our opinion the ending is not very satisfactory, and gives a want of artistic finish to the story. The same publishers send us, too, "The Confessions of a Publisher," by the author of "Bootles' Baby," and "A Glorious Galop," by Mrs. Edward Kennard, both of which are good. Another very readable story from the same source is "The Mystery of a Turkish Bath," by "Rita."

Musical Novelties.

The growing practice of taking the words of well-known hymns and setting them for solo singing is one that has not a little to commend it. The latest example is Mr. Michael Watson's rendering of "There's a Friend for Little Children," issued by Messrs. Patey and Willis. It is not, as might be supposed, set for children's singing, but is a somewhat elaborate rendering of the well-known lines. From the same publishers and composer is "The Sea Bird's Message," a pretty and easy song, with a bright refrain. Mr. F. N. Löhr has set for Messrs. Patey and Willis two songs of Mr. F. E. Weatherly's, one of them, entitled "Another World," being a really fine song, with plenty of scope for expressive singing. We do not approve of those sensational pieces of musical clap-

trap known as "Musical Panoramas," but we suppose that there must be some demand for works of such very doubtful musical value, or they would not continue to pour upon us. The latest example of this style of composition comes to us from the London Music Publishing Company, Limited, under the title of "The Nile Expedition." It consists of the usual jumble of popular airs, rolling drums, and blaring trumpets; and if any of our readers are in want of a specimen of this class of music they could not do better than try this one. The same publishers have been much more fortunate in an unambitious but tuneful little song, entitled "Tiny Feet," the music of which is by Mr. Morton Elliott.

Painting in Water-Colour.

Messrs. Cassell have just issued a tenth edition of Mr. R. P. Leitch's admirable "Course of Water-Colour Painting," illustrated by four-and-twenty coloured plates. This work forms a very useful guide to the student in localities where regular oral tuition is not to be had. Students who wish to avail themselves of this work's suggestions during the present open season should do so at once, or they will be too late.

"Sunny Fields and Shady Woods."

The title of Madame de Gasparin's volume is decidedly in her favour at this time of year, and the charming variety of its contents certainly bears out the title. Some of the stories in the volume are wonderfully touching. Messrs. Sampson, Low, and Co. are the publishers of this work, and also of the ever-useful "Handbook to the Charities of London, 1888." Another work from the same publishers is an African romance, entitled "Ulu," by Joseph Thomson, the travelled author of "Through Masai Land," and Miss Harris Smith. Mr. Thomson is on his own ground here, and, needless to say, he has succeeded.

What to Play and Sing.

Young players will find a very useful addition to their collection of music in two "Albums for Violin and Pianoforte," published by Messrs. Novello, Ewer, and Co., who are also the publishers of a well-known series of "Primers," which now scarcely need commendation. Three numbers of the "Albums for Pianoforte," containing the *compositions* by H. Kjerulf, include some delightfully quaint work. Of Mr. F. H. Cowen's "Six Vocal Duets" we need only say that they are too well known to require notice. Messrs. Enoch and Sons send us some songs that should be popular; first is a pathetic song written and composed by Lord Henry Somerset, and entitled "Pray for Me." "The Angel Came" is a lovely little rendering by Mr. F. H. Cowen of words by Mr. G. C. Bingham. "Parted or Near," and "Seven Bonny Maidens," are both songs by Mr. F. E. Weatherly. The former is given a simple and melodious setting by Mr. Frank L. Moir, who also gives an effective violin accompaniment to the song. The latter is an amusing little comic song set by Mr. J. L. Rœckel.