

Scientific Museum.

Spectacles.

A simple Hibernian, who knew not one letter from another, once bought a pair of spectacles to enable him to read; and we must say that there are thousands who, if they do not buy spectacles for the same object as Paddy, yet they have no more knowledge concerning their nature and true office than him. A pair of spectacles is an optical instrument, which is made from a knowledge of the laws of light. The minutest point of an illuminated object darts out its rays in all directions, like the spokes of a wheel, and strike the eye through the whole extent of its outer surface: millions of points of light are discharged upon the eye, and its office is to reduce these rays to order. A ray of light bends when it enters a new substance, if that substance is rarer or denser, than the substance through which it passed before. The eye gathers, as it were, the spreading rays into a bundle, till they meet in a point, like that from which they started. The eye, therefore, bends the rays of light, and brings them to a focus, and the picture of an object must be painted on the retina, at the back of the eye, therefore the rays of light must not be brought together before the retina, nor behind it, but upon it, otherwise the sight will be confounded; it is this confusion of sight which spectacles are designed to correct. In advancing years the eyes lose a part of their bending power, for the ball and crystalline lens get flatter, and their globular shape has a principal share in producing the effect. The rays are not drawn inwards with sufficient force, and arrive at the retina before they can meet in a point. A curved glass operates upon light like the eye itself, but interposed before it does a portion of its work. The rays are bent in passing through the glass, and the eye, which was incompetent to the entire task, is able to complete what the glass begins. When the organ is nearly equal to its duty, a slight curvature, just enough to make good the deficiency, is given to the spectacles, and as the eye fails, their rotundity is increased; an exact proportion is thus kept up between the demand of nature and the supply of art.

Though near objects require spectacles to show them distinctly, those more distant may be seen in perfection without their assistance. Since the rays from a point keep separating as they travel, all which branch out widely, are soon too far asunder to fall within the narrow circle of the eye. The least divergent alone hit it, and these are the easiest reduced to union. But an eye brought close to the object catches the divergent rays at their source, and, if its capabilities are diminished, is unable to master them. Here spectacles are a necessary aid, while the lesser task is readily performed by the naked eye. One of the earliest indications of an alteration in the sight is the holding a book further off than before, to get rid of the unmanageable part of the light.

Some eyes, which are over-round, refract the rays in excess, and bring them to a focus in front of the retina; the result is shortness of sight. The eye must come nearer to what it wants to distinguish, and imbibe those spreading rays which demand an additional bending equal to its own superfluity of power. Hollowed or concave glasses obviate the need for greater proximity. As round or convex spectacles draw in the rays, so these turn them out till their increased divergence is equivalent to the superior force of the eye. Thus spectacles are a remedy for opposite defects. One sees obscurely what is under his nose—another is blind to all that is not.

To Zinc or Galvanize Iron.

Clean the iron well by sulphuric acid and sand, then wash it in clean water; have the zinc melted in a pot, in which should be placed some tallow to keep the zinc from evaporating. Also, put some sal ammoniac in the zinc, and then dip in the iron for galvanizing; some recommend the use of a separate bath of dissolved sal ammoniac, into which the iron should be dipped just before immersing in the molten zinc. Some put the sal ammoniac in

the zinc, and do not use any tallow. The zinc is very volatile, and great care must be exercised, not to let it escape in gas.

Patent Safety Spirit Lamp.

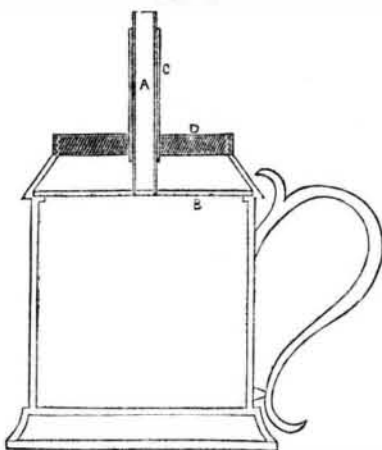
This lamp has an improvement in its construction which makes it perfectly safe for the burning of inflammable fluids. It is the invention of Frank Stewart, M. D., of Philadelphia, and a patent was granted to him, the claim of which was published in our list of July 2nd, Vol. 5. The object of this lamp is to provide a remedy for the numerous and afflicting accidents which are continually occurring through carelessness and negligence of servants and children, by filling up lamps, when ignited, with inflammable fluid. The nature of the improvement is in providing an inner stationary tube, to retain the wick, and to permit the cap of the lamp to be screwed on and off at pleasure, but so arranged, that when the cap is taken off, the flame is at once extinguished.

FIG. 1.



Fig. 1 is a perspective view, and fig. 2 is a vertical section, showing the interior. The lamp may be made of any of the known forms. A is the fixed stationary tube, for retaining the wick; it is secured in a cross-bar, B; this bar may be made of brass, and fitted with a thread, and the lower end of this tube may have a screw to fit into the thread, so as to unscrew the tube when a new wick is to be put in; or it may be made with this tube soldered into the bar, B; D is the cap, or cover, it is made to screw on to the neck of the lamp. C is a brass tube soldered into the cap, it is a little wider than the tube A, and is made to slip snugly over it. When the cap has to be removed to fill up the lamp with fluid, it will easily be perceived that by slipping up the cover, the tube, C, will put out the light; this will prevent the filling up the lamp when ignited with fluid.

FIG. 2.



It is well known that camphene gives a most beautiful light, and that it is far more cleanly than oil or candles, and is generally preferred on every account, excepting the danger arising from its use in the common fluid lamps. This danger is entirely obviated by Dr. Stewart, in this his patent lamp. The way to use such lamps is to have a pair—never to use only one, so that when one is filling the other can be burning. The sale of this lamp has at once become extensive, and the patent is valuable because its use will be universal.

More information about rights, &c., will be obtained by letter addressed to Dr. F. Stewart, Seventh street, below Chestnut, Phila.

Improvement in the Method of Mounting Teeth.

For several years past a few dentists among our acquaintance have been in the practice of soldering their artificial teeth, for entire lower sets, to the gold plates with pure tin, using the tinman's soldering iron instead of the blow-pipe. The manner of proceeding is as follows:

First strike up, in the usual manner, a very thin gold plate (No. 30 or 31, will answer) to fit the jaw. When this is done, place the wax upon it and cut it to the right curve and the proper height for the length of the teeth. The teeth are then to be selected and put round upon the wax in the proper position for use; but it does not matter whether, or not, they come down to the plate, provided all that part of them which is exposed to view, when in the mouth, is right, as all below will be filled with tin when the process is completed. Plaster and sand is now to be put on the outside of the teeth and plate, in the same manner as though they were to be soldered in the usual way. When this is done the wax may be cut away, the teeth removed from the plaster and a thin gold back put upon them. In backing them it will be necessary to bend the platina wires together, over the gold, with a common pair of pliers. The backs may now be soldered to the plate, forming one solid mass of tin as high as the wires, and imitating as nearly as possible the form of alveolus which has been absorbed. When this is done the plaster may be taken away and as much tin put upon the front as will restore what has been lost by absorption of gum and alveolar process.

When the piece is properly trimmed and burnished it makes a very strong and natural set of teeth, while the additional weight given to it by the tin keeps it in place better than those made in the ordinary way. Some use silver plate instead of gold and gild the whole by the galvanic process, and we can see no reason why this metal should not answer just as well as gold. We have put in several temporary sets in the above manner, on gold and all have done remarkably well, giving entire satisfaction. This plan of mounting teeth was first practiced, we believe, by Mr. Royce, about eight years since and has been used by him in very many cases, as he alleges, with perfect success.

Mr. George E. Hawes has lately made an improvement upon the above plan by means of which he dispenses with all metallic castings and plates of every kind, using only the pure tin and the teeth. His plan is, after the first cast is procured, which should be made of plaster with a large proportion of sand, to fit to it a piece of tin foil, or plate, as thick as can well be rubbed down to it with a burnisher, and as large as a gold plate would have to be. The wax is then put upon this tin plate and trimmed to the proper curve and height as in ordinary practice. Next, the teeth are to be placed upon the wax and when properly arranged, a strip of wax is put round the bottom of the front side of the teeth and plate. This wax, and that on the backs of the teeth, is then to be carved to represent the natural gums, or so as to form a smooth ridge as high as is desirable. Care must be taken to select such teeth as have their platina pins low, so that they may remain embedded in the wax.

When this process is completed, the whole is to be placed upon the plaster and sand cast, and more plaster and sand poured over it so as to cover with a thick mass the whole of the wax and the teeth. After the plaster has thoroughly hardened, the casts may be parted, and the tin plate and all the wax taken away, and the platina wires, and those parts of the teeth exposed, washed with muriate of zinc. A hole to pour the melted tin into, must now be made at one end of the set and another on the other side for the air to escape from. When completed thus far it is ready for the pouring, and to insure perfect success, the castings should be securely bound together and the whole mass heated to the temperature of melted tin.

Sets of teeth made in this way and having the castings thoroughly gilded, are much handsomer and more natural in their form than

those which have the long teeth and gold backs, they are also stronger, as they are protected both front and back, can be made for one half the expense of the ordinary sets on heavy gold plates, and, judging from the little experience which we have had in making and testing them, as well as the testimony of Mr. Hawes, are equal in every respect, if not superior to those mounted upon gold backs.

[The above is from the last number of the Dental Recorder, a most excellent periodical edited by C. C. Allen, M. D., this city.]

LITERARY NOTICES.

HOLDEN'S DOLLAR MAGAZINE, for October, contains an illustration of the "Suspension Bridge at Niagara River," "The Wife and Child of Ocoela," "Old Newgate Prison," and "The Moniment to Admiral Penn." The matter is entirely original and embraces some fine productions. We heartily commend this cheap publication to the patronage of the community. Messrs. Fowler & Deitz, publishers, 109 Nassau st.

GRAHAM'S AMERICAN MAGAZINE, October number, contains a beautiful line and stipple engraving of "The Slave of the Paclia," also "The Paris Fashions," "The Way to Church," a rural scene,—and some wood engravings of merit. The contents are as usual, choice and entertaining. Dewitt & Davenport, agents. They have, also, PETERSON'S LADIES' NATIONAL MAGAZINE, which is a very fine publication both in matter and embellishments. The terms of these magazines are \$2 per annum.

THE FAMILY MESSENGER AND GLEANER, published by A. B. Hamilton, Philadelphia, at \$1. This highly interesting literary newspaper is about to enter upon a new volume. Our friends will find this an excellent family paper.

ARTHUR'S HOME GAZETTE seems to be rapidly rising into popular favor. T. S. Arthur, the Editor, is too well known to the reading community to require our eulogy.

"THE LITERARY"—Some honest opinions about Authorial merits and demerits, with occasional words of personality, together with Suggestions and Essays, by Edgar A. Poe: published by J. S. Redfield.—This is the third volume of Poe's works issued by the same publisher since the author's death, and is put forth in good style. The work, as the title indicates, is devoted to a review of the present-day authors, to the number of about seventy-five, and forms a very readable book.

Shakespeare's Dramatic Works, Phillips, Sampson, & Co., publishers, Boston; Dewitt & Davenport, New York, Agents.—This number contains the Third Part of King Henry VI., embellished with an engraving of Lady Grey.

NEW PROSPECTUS (OF THE) SCIENTIFIC AMERICAN.

TO MECHANICS, INVENTORS, AND MANUFACTURERS.

The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the SIXTH VOLUME of this valuable journal, commenced on the 21st of September, offering a favorable opportunity for all to subscribe who take an interest in the progress and development of the Mechanics' Arts and Manufactures of our country. The character of the SCIENTIFIC AMERICAN is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

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It also possesses an original feature not found in any other weekly journal in the country, viz., an Official List of PATENT CLAIMS, prepared expressly for its columns at the Patent Office,—thus constituting it the "AMERICAN REPERTORY OF INVENTIONS."

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PREMIUM.

Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—now in press, to be ready about the 1st of October. It will be one of the most complete works upon the subject ever issued, and will contain about ninety engravings.