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The young man's book of amusement

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Experiments With The Magic Latern

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EXPERIMENTS WITH THE MAGIC
LANTERN.

THE construction of this amusing optical machine is so well known, that to describe it would be superfluous; particularly as it can now be purchased at a very reasonable expense, at any of the opticians: but as many persons who have a taste for drawing might not be pleased with the designs to be had at the shops, or might wish to indulge their fancy in a variety of objects, which to purchase would become expensive; we here present our readers, in the first place, with the method of drawing them, which will be succeeded by a plain description of some very diverting experiments.

Phantasmagoria.

In the optical deception called Phantasmagoria, the object increases in brightness as it diminishes in size, or as it seems to retire, till it finally verges into a luminous point; a mode of disappearance so unexpected as to destroy the illusion it is designed to produce. This defect Mr. William Ritchie proposes to avoid by the following method, by which the disappearance of the objects may be rendered more in

accordance with what is supposed to take place, under the circumstances intended to be represented.

He proposes to supply the light by a portable gas lamp, with apparatus for increasing or diminishing the supply of gas to the burner at pleasure, which, by a peculiar stop cock, might very readily be accomplished. Then, by diminishing the light gradually, the brilliancy of the figure might be reduced as it retires, its lineaments would become shadowy and obscure, and at length vanish into thin air, as it is expected a phantom would do.

Of Painting the Glasses.

You first draw on a paper, the size of the glass, the subject you mean to paint: fasten this at each end of the glass with paste, or any other cement, to prevent it from slipping. Then with some very black paint mixed with varnish, draw with a fine camel's hair pencil, very lightly, the outlines sketched on the paper, which, of course, are reflected through the glass. Some persons recommend writing ink, and a common pen with a fine nib: but this, even if it succeeds in making a delicate black outline, is sure to be effected by damp or wet.

It would improve the natural resemblance, if the outlines were drawn with a strong tint of each of the natural colours of the object; but in this respect you may please your own fancy. When the outlines are dry, colour and shade your figures; but observe, to

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temper your colours with strong white varnish. A pleasing effect will be produced, if you leave strong lights in some parts of the drapery, &c. without any colours. The best colours for this purpose are transparent ones; opaque or mineral colours will not do. The following are in most repute.

For Pink and crimson.	Lake or carmine.
Blue.....	Prussian Blue.
Green.....	Calcined verdigris, or distilled ditto.
Yellow.....	Gamboge.

To facilitate the Painting on Glass, by laying on Mezzotinto Prints, for Magic Lanterns, &c.

Cut off the margin of the print you intend to use, and lay it in a flat vessel of hot water; let it remain on the surface till it sinks. Take it out and press it between cloths or papers, so that no water may appear on the surface, but the print be quite damp; then lay it, face uppermost, on a flat table, and have ready a piece of crown glass free from blemishes; lay some Venice turpentine all over on one side of it with a soft brush, hold it to the fire that it may be quite equal and thin: then let it fall gently on the print. Press it down, that the turpentine may adhere to the print; also press the print with your fingers, from the middle to the edges of the glass, that no blisters may remain. Wet the print now with a soft cloth, and rub it gently with your finger,

and the paper will peel off, leaving the impression on the glass. When it is dry, wet it over with oil of turpentine till it is transparent, and set it by to dry, when it will be fit for painting.

The colours used for the painting are the usual transparent oil colours.

Subjects for magic lanterns may be painted by these who cannot paint in oil, on thin paper in water colours, and afterwards varnished to make them transparent.

New Construction of Magic Lantern Sliders.

A very beautiful mode of exhibiting an optical fountain is described below.

Take a frame of brass, of the same size and thickness as a magic lantern slider, and introduce a number of pieces of twisted glass, so that they may all be made to revolve in conjunction by turning a handle provided for the purpose. If the frame be now introduced into the lantern, and a painted plate of glass representing a fountain be placed in the front, it will be found, that when the twisted glass is turned, streams of water will appear to ascend on the screen in the most perfect way possible.

To represent a Storm at Sea.

Provide two strips of glass, whose frames are thin

enough to admit both strips freely into the groove of the lantern. On one of these glasses paint the appearance of sea from a smooth calm to a violent storm, (see Fig. 15.) Let these representations run gradually into each other, as in the figure; and you will of course observe, that the more natural and picturesque the painting is, the more natural will be the reflection.

On the other glass, (Fig. 16.) paint various vessels on the ocean, observing to let that end where the storm is, appear in a state of violent commotion, and the vessels as if raised on the waves in an unsettled position, with heavy clouds about them.

You then pass the glasses slowly through the groove and when you come to that part where the storm is supposed to begin, move them gently up and down, which will give the appearance of the sea and vessels being agitated; increase the motion till they come to the height of the storm. You will thus have a very natural representation of the sea and ships in a calm and storm; and as you gradually draw the glasses back, the tempest will subside, the sky appear clear, and the vessels glide gently over the waves.

By the means of two or three glasses, you may also represent a battle on land, or a naval engagement, with a variety of other pleasing experiments.

The Solar Magic Lantern.

Make a box, a foot high, eighteen inches wide, and
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about three inches deep. Two of the opposite sides of this box must be quite open, and in each of the other sides let there be a groove wide enough to admit a stiff paper or pasteboard. You fasten the box against a window on which the sun's rays fall direct. The rest of the window should be closed up, that no light may enter.

Next provide several sheets of stiff paper, blacked on one side. On these papers cut out such figures as your fancy may dictate; place them alternately in the grooves of the box, with their black sides towards you, and look at them through a large and clear glass prism: and if the light be strong, they will appear painted with the most lively colours. If you cut on one of these papers the form of a rainbow, about three quarters of an inch wide, you will have a very good representation of the natural one.

For greater convenience, the prism may be placed on a stand on the table, made to turn round on an axis.

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*To produce the appearance of a Spectre on a
Pedestal in the middle of a Table.*

Enclose a small magic lantern in a box, (see Fig. 17) large enough to contain a small swing dressing-glass, which will reflect the light thrown upon it by the lantern in such a way, that it will pass out at the aperture made at the top of the box, which aperture should be oval, and of a size adapted to the cone of light to pass through it. There should be a flap with

hinges, to cover the opening, that the inside of the box may not be seen.

There must be holes in that part of the box which is over the lantern, to let the smoke out: and over this must be placed a chafing-dish of an oblong figure, large enough to hold several lighted coals. This chafing-dish, for the better carrying on the deception, may be inclosed in a painted tin box, about a foot high, with a hole at top, and should stand on four feet, to let the smoke from the lantern escape.

There must also be a glass planned to rise up and down in the groove *a, b*, and so managed by a cord and pulley *c, d, e, f*, that it may be raised up and let down by the cord coming through the outside of the box. On this glass, the spectre, (or any other figure you please,) must be painted in a contracted or squat form, as the figure will reflect a greater length than it is drawn.

When you have lighted the lamp in the lantern, and placed the mirror in a proper direction, put the box on a table, and setting the chafing-dish in it, throw some incense, in powder, on the coals. You then open the trap-door, and let down the glass in the groove slowly, and when you perceive the smoke diminish, draw up the glass that the figure may disappear, and shut the trap-door.

This exhibition will afford a deal of wonder; but observe, that all the lights in the room must be extinguished; and the box should be placed on a high table, that the aperture through which the light comes out may not be seen.

Shadows.

Behind a transparent screen of white cloth, place a *very powerful* light, from which as the performer, whose image is formed on the screen, recedes, his figure will attain to gigantic proportions; again, when he approaches, and is between the light and the screen, his figure will be more accurately defined; by jumping over the light, he will appear to ascend to a great height, and disappear. By nimble and grotesque movements and attitudes—by the judicious introduction of any animal, &c.—the effect may be considerably heightened, and much laughter be excited.

This amusing optical exhibition was successfully employed at the Royal Gardens, Vauxhall, where it excited great applause.

Chinese Shadows.

This ingenious instrument consists in moving, by pegs fastened to them, small figures cut out of paste-board, the joints of which are all pliable, behind a piece of fine painted gauze, placed before an opening in a curtain, in such a manner as to exhibit various scenes according to pleasure; while the opening, covered with gauze is illuminated, towards the apartment where the spectators sit, by means of light reflected back from a mirror, so that the shadows of

the pegs are concealed. When it is requisite to cause a figure to perform a variety of movements, it is necessary to have several persons, who must be exceedingly expert. When a snake is to be represented gliding, the figure which consists of delicate rings, must be directed, at least, by three assistants.

This amusement, which one can hardly see the first time without pleasure, is a Chinese invention. Many years ago, Chinese boxes were seen, on which such moveable figures were apparent only when the box was held against the light. In China, these shadows are used at the well known feast of lanterns.

There are many other pleasing Experiments which might be made with the Magic Lantern, but the limits of our work will not permit us to specify them, without excluding many other equally interesting subjects of a different nature.