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The young man's book of amusement

Halifax, 1848

On the selection of objects for the Kaleidoscope

[urn:nbn:de:bsz:31-100120](https://nbn-resolving.org/urn:nbn:de:bsz:31-100120)

require 33,264 days, or 91 years and 49 days, to exhaust its variations.

On the selection of objects for the Kaleidoscope.

Although the Kaleidoscope is capable of creating beautiful forms from the most ugly and shapeless objects, yet the combinations which it presents, when obtained from certain forms and colours, are so superior to those which it produces from others, that no idea can be formed of the power and effects of the instrument, unless the objects are judiciously selected.

The objects which give the finest outlines by inversion, are those which have a curvilineal form, such as circles, ellipses, looped curves like the figure 8, curves like the figure 3, and the letter S; spirals and other forms, such as squares, rectangles, and triangles, may be applied with advantage. Glass, both spun and twisted, and of all colours and shades of colours, should be formed into the preceding shapes; and when these are mixed with pieces of flat-coloured glass, blue vitriol, native sulphur, yellow orpiment, differently coloured fluids enclosed and moving in small vessels of glass, &c., they will make the finest transparent objects for the Kaleidoscope. When the objects are to be laid upon a mirror plate, fragments of opaquely-coloured glass should be added to the transparent fragments, along with pieces of brass wire, of coloured foils, and grains of spelter. In selecting transparent objects, the greatest care must be taken to reject frag-

ments of opaque glass, and dark colours that do not transmit much light, and all pieces of spun glass or coloured plates should be as thin as possible.

Solar Microscope.

Make a round hole in the window-shutter, about three inches in diameter, and place it in a glass lens of about twelve inches focal distance. To the inside of the hole adapt a tube, having at a small distance from the lens, a slit, capable of receiving one or two very thin plates of glass, to which the object to be viewed must be affixed by means of a little gum water, exceedingly transparent. Into this tube fit another, furnished at its anterior extremity with a lens half an inch focal distance. Place a mirror before the hole of the window shutter on the outside, in such a manner as to throw the light of the sun into the tube, and you will have a solar magic lantern. The method of employing it is as follows: having darkened the room, and by means of the mirror reflected the sun's rays on the glasses in a direction parallel to the axis, place some small object between the two moveable plates of glass, or affix it to one of them with very transparent gum water, and bring it exactly into the axis of the tube; if the moveable tube be then pushed in or drawn out till the object be a little beyond the focus, it will be seen painted very distinctly on a card or piece of white paper, held at a proper distance; and will appear to be greatly magnified. A small