other. As the apparatus is very sensitive, these are rather tendencies to movement or change, than actual changes. If an accident should happen, if one or both of the carbons should break, the current is suddenly interrupted, the magnet ceases to act, the oscillator rises, and allows the train to start and replace the carbons in their proper positions. The play of this apparatus is so steady and easy that it will work with the alternating currents from the electro-magnetic machine. The lamp is lighted or extinguished the moment the current is established or interrupted. The lamp, therefore, becomes very suitable for telegraphic signals or for light-houses, in which, by these means, the flashes may be obtained without any mechanism for rotation.—*Academy of Sciences of Paris.*—*Cosmos.*

Mode of Etching on Glass.

A painter at *Bourg-en-Bresse* in France, reports to the *Cosmos* the following singular and valuable experiment: He traced upon a piece of glass a design in white-lead mixed with linseed-oil, and when it had dried, he laid it for a few minutes over a vessel in which hydro-fluoric was generating. When the glass was removed, it was found that the parts of the glass covered by the white paint were etched, while those uncovered had not been attacked. Should this observation be confirmed, it would seem to open a new field to glass-etchers.

*Loss of Light by Glass Shades.** By WILLIAM KING.

SIR:—Having recently tried some experiments, for the purpose of ascertaining the amount of light lost by the use of various descriptions of glass shades, I thought that the results obtained might not prove uninteresting to some of your readers, more especially as it is a subject of practical importance, and does not seem to have attracted the notice which it deserves.

The following table exhibits the amount of light lost by the use of the various shades therein enumerated:—

Description of shade.	Loss of light.
Clear glass,	10·57 per cent.
Ground glass (entire surface ground),	29·48 “
Smooth opal,	52·83 “
Ground opal,	55 85 “
Ground opal, ornamented with painted figures, the figures intervening between the burner and the photometer screen,	73·98 “

As the large amount of light lost by the use of a clear glass shade excited some surprise, a sheet of common window glass was placed between the burner and the photometer screen, when it was found that 9·34 per cent. of the light was intercepted, thus confirming the result obtained by the employment of a shade of clear glass.

I may state that the shades were selected from a large number, and great pains were taken to obtain an average specimen of each kind.

Liverpool, Feb. 24, 1880.

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