

or phantasmagoras; all of the latter having the appearance of mere superficial painted pictures, or transparent paintings, while the spectroscope one resembles, in every point, a solid object, the projections, indentions, and shadows of the limbs, drapery, &c., being strictly those observed in nature, which gives it a very mysterious reality under the circumstances in which it is seen. The effect may be still further heightened by applying to the instrument the principle of the phantasmagoria; that is, the power of apparently projecting the images among the spectators. The emergence of a skeleton forms an admirable subject, and by fantastically moving its bones during the period of its dilatation, the effect is terrific in the extreme.

All the figures ought to be painted with white lead mixed with very thin size, in order that as much light may be reflected therefrom as possible; and the inside of the box should be covered with black velvet to prevent any false glare.

The Bengal fire mentioned above, is composed of purified nitre, eight ounces; brimstone three and a half ounces, red sulphuret of arsenic two ounces, all ground together in a mortar to a very fine powder, and afterwards put into a bottle, to preserve it from the air and moisture.

Lond. Mechanics' Mag.

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*Description of a Self-Registering Pendulum for indicating the inclination of Ships under sail, etc. By A. G. EYDE, Lieutenant Royal Navy.*

The very rudely constructed instruments placed on board ships to ascertain the degrees of inclination under canvas, or from lurching in a sea way, caused me to give my attention to the subject, as far back as the year 1836, and I had an instrument constructed, on improved principles, with self-registering hands, so that the maximum inclination could at any time be known. This, in a dark night with heavy squalls where the attention of the officer of the watch is required to shorten sail, could not be obtained; but the self-registering pendulum may be referred to after all is made snug aloft, and the maximum degree of inclination may be obtained.

Several of these instruments have been made from time to time, and supplied to her majesty's ships, on the application of their captains for them; the general reports of their usefulness have been acknowledged.

Subsequently to this I have made still further improvements by adding a register to mark the number of oscillations a ship would make in a sea way; taking a starboard and port lurch to constitute a roll.

The advantages which suggest themselves in making these additions to the pendulum are as follows:—

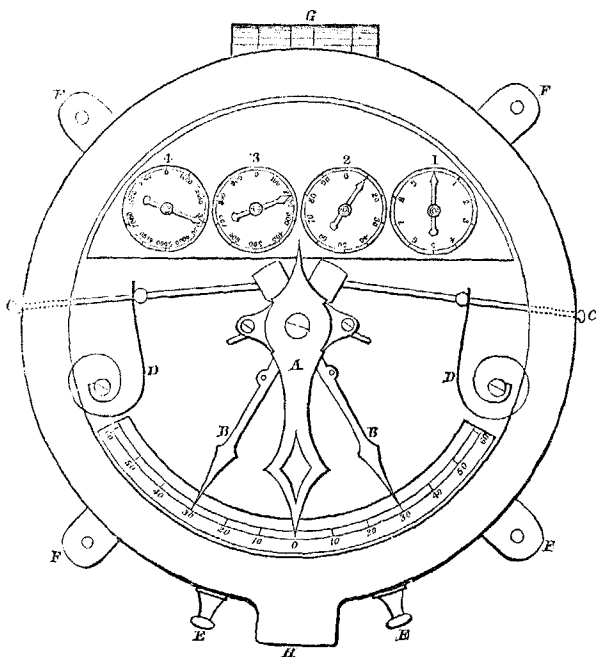
*An accurate account of the stability of a ship, connected with the number of rolls made in a given space of time.*

I apprehend if these instruments were supplied to an experimental

squadron of ships, their relative qualities could be much better obtained; at present we say one ship rolls more quickly than another, but our comparison may, in many cases, prove erroneous; but with the self-registering pendulum these requisites are actually pointed out, and relieve us at once of all doubts.

I would, therefore, submit that columns should be introduced in a ship's log book for registering the inclination and number of rolls made in every hour, or at any other convenient interval.

The accompanying sketch of the dial of the proposed pendulum will give some idea of it, but to draw plans and elevations of the machinery, at the back, sufficient to elucidate its construction would be occupying too much of your space; on which I fear I have already drawn rather largely.



A, the oscillating hand; B B, self-registering hands, moved by a pin at the back of A; C C, spring rods for resetting self-registering hand at zero; D D, springs attached to rods C C; E E, short bolts for securing the balance at the back, when the instrument is to be removed, or not required for use; F F F F, lugs for securing the pendulum to the wheel stanchion, or any other convenient place amidships; 1, 2, 3, 4, dials decimally divided, on which the number of rolls are registered; No. 1, having made one revolution, No. 2, marks one division, and so on with Nos. 3 and 4.

The figures represented by the dials are as follows:—beginning with No. 1, 10, 100, 1000, and 10,000. In reading off, therefore, if the number of rolls exceed 1000, we shall commence with No. 4, for

example, 3210, No. 4, will show on its dial 3000, No. 3, 200, No. 2, 10, and No. 1, at zero.

The whole is protected by a glass cover, G being the hinge, and H the lock.

Should you consider the foregoing description likely to prove interesting to any of your numerous readers, you will oblige me by giving insertion to it in one of your future numbers.

Lond. Naut. Mag.

### BESSEMER'S Patent Gold Paint.

Since the appearance of this highly ingenious gentleman's specification, the writer has taken some little pains to hunt out whatever literary information is to be had upon the subject of *bronzes*, and has been surprised to find that little, or nothing, is to be found in books upon the subject. The writer has analyzed a specimen of rich copper colored bronze powder said to be of French manufacture, and he finds it is merely composed of copper and zinc, alloyed and colored by cinnabar in a state of extremely fine division. Some vegetable coloring material (lake, probably,) is also present. This bronze powder, therefore, seems to be only Dutch gold powdered and colored.

Before Bessemer's specification had been published, the writer had also analyzed his preparation, and found it to consist of

Copper,	. . . . .	77.50
Zinc,	, . . . .	21.91
Lead,	. . . . .	0.19
Tin,	. . . . .	Traces.
Iron,	. . . . .	0.21
		<hr/>
		99.81
Loss,	. . . . .	0.19
		<hr/>
		100.

The amount of iron present, which then surprised him, is now seen obviously enough to be derived from this mode of grinding the metals on steel surfaces.

The probable working proportion of the alloy is most likely 70 copper, and 30 zinc, the difference being volatilized (of the latter) in the fusion. The nearest atomic alloy to this is that ( $3\text{ Cu} + \text{Zn}$ ) of 3 atoms of copper, and 1 of zinc, which is, by weight, 74.58 copper, and 25.42 zinc. This is the alloy of common rolled sheet brass.

In the proceedings of the Royal Irish Academy, for last year, will be found a paper by Mr. R. Mallet, of Dublin, describing the proportions of brass found in a very unusual state of aggregation, viz., ground under the brass bearing of a heavy shaft into an impalpable powder, precisely similar to Bessemer's, and afterwards aggregated, and become perfectly hard, coherent, and capable of being filed with metallic lustre, *but having a jet black fracture*; the aggregation