

Protection against Damp, Rust, &c. By JOHN MURRAY, F. S. A.,
F. L. S., &c.

I FIND that if linen or woollen cloth be immersed in water, saturated with *quick-lime and sulphate of soda*, and then carefully dried, delicate steel instruments folded up in it, even if themselves damp, are effectually preserved from rust or oxidation. The rust of iron is found to contain a carbonate of that metal, and the aqueous particles of "wet," and "damp," are, it is proved, decomposed by the contact of iron at all temperatures, and with increased effect at an elevated one; hence, the formation of rust, or oxidation, &c. It is probable that the caustic lime not merely absorbs any minute quantity of carbonic acid present in the air, and by damp brought into more immediate contact with the iron or steel, but also absorbs the first portions of present damp; perhaps, too, caustic lime may even take up *oxygen*.

The efflorescent sulphate of soda does not attract humidity, but rather casts it off, parting even with its own water of crystallization.

It is evident that an envelope of cotton or woollen cloth, saturated as described, would not only be a protection against damp in the case of steel, plate, &c., but also of equal value for the preservation of deeds, &c., whether on paper or parchment.

Steel articles, &c. may be very well preserved, if buried in powdered quick-lime.

From a number of experiments I have made by suspending, by means of a silk, &c. thread, finely polished and magnetized steel bars in *lime water*, so as to float freely in this medium, from the point of suspension, I have concluded that it points out an admirable method by which the magnetic virtue may be preserved for an indefinite period. A ring of iron, inclining to the "angle of no attraction," pointed out in Mr. Barlow's Researches, might surround the phial or little glass globe, and the cardinal points be engraved by a diamond on a circular line, externally. Under these circumstances, poised in a uniform medium of unvarying density, no atmospheric mutations would disturb it, and the finely polished steel needle would be preserved even free from oxidation, the fatal antagonist to magnetism.

On the relative quantity of Steam condensed in vessels with bright metallic and blackened surfaces. By R. W. Fox, Esq. Vice President of the Royal Geological Society of Cornwall.

Two cubical vessels of tin plate, of which the surface of one was bright, and that of the other covered with lamp-black, were connected with a steam boiler, by tubes so inclined towards the latter, as to allow all water resulting from condensation in the tubes, to return to it. The vessels were of equal dimensions, four inches side, and