

offices at Washington, that no communications of a particular nature are to be received, unless written upon paper of a certain size. In England all law papers and documents, are upon the same kind of paper.

I shall feel much gratified, should you deem this subject of sufficient importance, to have the attention of the Institute called to it; for I do not remember to have seen, at the last exhibition, among the numerous and striking proofs of our progress in manufactures, a single specimen of writing paper.

I am, dear sir,

Very truly, yours, &c.

EDWARD D. INGRAHAM.

*Peter A. Browne, Esq.*

*On removing the points of broken drills and taps from articles of silver or brass, and of spikes from brass cannon, &c.*

TO THE EDITOR OF THE FRANKLIN JOURNAL.

SIR,—I was particularly pleased with your method of “dividing plates of hardened steel,” in the last number of the Franklin Journal, and perhaps another instance of the advantage which the mechanic may derive from a knowledge of chemical science, may prove equally acceptable to your numerous readers of that class.

When doctor Hare’s compound blow-pipe was first introduced, I constructed one. In drilling the silver nozzle, the drill broke at the moment it was about perforating the end, and a piece of the drill, of about one eighth of an inch in length, remained in the hole. As I had succeeded in drilling the other hole, the accident was particularly mortifying. Being unwilling to destroy the nozzle, on which I had bestowed considerable labour, it occurred to me to try whether diluted sulphuric acid (oil of vitriol) would not dissolve the broken part of the drill. For the experiment, I, at night, put the nozzle into a wine glass, covered it with water, and added sulphuric acid by drops, until I perceived a succession of globules of gas arise from the hole, and left it until sun rise next morning, when I had the satisfaction to find the steel entirely dissolved, and with a fine pointed punch I finished the orifice of the nozzle.

This winter, I had occasion to turn three brass balls, one inch in diameter, and which were tapped half an inch deep. As I am not a professional mechanic, I, from a deficiency of tools, often find it necessary to make one tool answer as many purposes as I can, and on the present occasion, finding I could center the tap, with which I screwed the balls, in a chuck, I undertook to turn them on that, as a substitute for an arbor. With care, two were finished; but with the last, I suffered the turning tool to catch one of the corners of the square part of the tap, and broke it off even with the circumference of the ball. As I had a pressing occasion for the ball, and had no other cast, I immediately put it in the bottom of a broken oil flask, covered it with water, and added about one sixth part of sulphuric

acid, (oil of vitriol,) and placed the capsule on a stove, with a handful of ashes interposed as a substitute for a sand bath: other business requiring my attention, I did not examine it until after three or four hours, when I found the tap entirely dissolved without the least injury to the threads of the screw.

I think it probable, that the above method would be found sufficient to unspike brass cannon, and thus supersede the necessity of remelting them, or of spoiling the touch-hole in the ordinary way of drilling. For this purpose, a flat bar of wood, three or four feet longer than the gun, would be required. At the distance of the touch-hole from the back of the chamber, place on the wooden bar, a lump of fat-lute; bees-wax, made soft by an admixture of oil; a cone of lead to enter the touch hole, or any other substance which would resist the action of sulphuric acid. By using the lower edge of the muzzle of the gun as a fulcrum, and depressing the projecting end of the bar, the lute would cover the touch-hole, or the cone enter the same, and render it sufficiently tight to prevent any liquid passing down. A cup, of wax, should then be raised around the touch-hole on the outside of the gun, of sufficient capacity to contain a pint, or more, of diluted sulphuric or muriatic acid, and if the experiment were made in a temperate atmosphere, I think the gun might be rendered serviceable without any other injury than it received from driving the spike.

H. W.

---

*Observations upon Rail-roads. By E. HAZARD, Civil Engineer.*

TO THE EDITOR OF THE FRANKLIN JOURNAL.

DEAR SIR,—When travelling upon some of the rail-roads in England, I noticed that the wheels did not appear to bear hard against the sides of the rails, even where there were short turns in the road. This led me to an examination of the cause, which, as I have not seen it mentioned in any publication on the subject, I will now state. The wheels of the carriage are wedged on the axletree at such a distance apart that there may be an inch play between the flanches of the wheels, and the rails. The journals, or round parts of the axletrees, are an inch longer than the brass boxes in which they work, so that the axletree may move an inch endwise, before the shoulders come in contact with the box which is attached to the wagon body. These two circumstances are sufficient to prevent the lateral friction, where the road is nearly straight; but, in addition to these, where the road winds considerably, the rail farthest from the centre of the curve is placed *higher* than the other, the middle of the curve being the highest point, and from that gradually descending both ways, till it becomes level with the other rail at each extremity of the curve. The consequence of this is, that the load, as the road bends, slides on the axletree towards the centre of the curve, and when the box comes in contact with the shoulder of the axle, assists the exterior rail in turning the wagon from the direct line; so that the rail in fact has *only* to throw the axle over, without any part of the load.