

hard and brilliant, having the formula $\text{As O}_3 + 2 \text{aq}$. If kept at 392° for some time, and then raised to 402° , the liquid becomes pasty, and at length forms a nacreous white mass of, $\text{As O}_3 + \text{aq}$.

The different hydrates, heated to a dull red heat, give the anhydrous acid, which is quite inert, being insoluble in water, ammonia, &c., and not reddening litmus. It gradually liquefies.

Kopp found that if the hands be exposed to the arsenic acid, they at length swell considerably, and serious symptoms may be produced, washing with lime water seems to counteract its effects; the acid could be detected in the excretions, and although no alteration in general health was observed, a very visible increase took place in the weight of the body.

Phosphoric Acid.—Reissig has given a modification of Reynoso's process for the determination of this acid by means of tin; the acid being separated from the oxide by means of sulphuretted hydrogen, and determined by magnesia and ammonia. The process seems to give excellent results, and to be free from some of those objections, which render Reynoso's method inapplicable. Ch. G. 331.

H. C.

ENGINEERING AND ARCHITECTURE.

PRESERVATION OF TIMBER.

Plans for the preservation of timber have frequently attracted the attention of men of science, as wood is the most common material used in the arts, and from the acids contained in the sap, the decomposition of the woody fibre speedily commences, where these remain after the vital principle is extinguished by felling the tree. The method employed to eradicate the sap in the ordinary way is by cutting the tree into planks, and exposing the surface of such to the action of the atmospheric air during the heat of Summer. It is found that, according to the climate, from one to two years' exposure, render planks sufficiently seasoned or free from sap, but for large beams, joists, or girders, three or four years, or even a longer time, is necessary. Expensive means have been adopted in England, France, and on the continent of Europe, to imitate this natural process of drying, by placing the beams and planks in a large chamber of wood or metal and passing a current of air through the chamber by means of a fan at a heat considerably more elevated than the natural temperature. This system, although a very good one, involves too great an expense to render its adoption universal: and the joist or plank has to remain from two to three, or even four weeks under this action of hot air, before it is fully seasoned. Another and greatly simpler plan, adopted with some success, is by laying the trees, when fresh felled, in a running stream, when it is found that, after some weeks of immersion, the current has washed out the sap from the minute pores, and substituted the water of the stream.

The principle adopted in Mr. Kyan's patent process was the exhaustion, by means of an air pump, of a large cylinder, into which the wood to be seasoned was placed, and when fully exhausted, a solution of corrosive sublimate (chloride of mercury,) was allowed to flow in and enter the pores. Another process adopt-