

dilute solution of protochloride of palladium, a considerable time (about ten minutes) passes before any visible reaction, such as turbidity or blackening of the fluid, usually occurs; but it always does take place, and after the action has continued for a long time, we may even see a deep black flocculent body separate in abundance, which consists of very finely divided palladium, and which, when dried and calcined, is converted without loss of weight into the gray spongy modification, whilst the inner wall of the glass becomes at the same time coated with a specular metallic coat. In a similar way, but in a far higher degree than by pure hydrogen gas, the solution is acted upon by elayle gas and marsh-gas, but is not in the least altered by carbonic acid, oxygen, nitrogen and sulphurous acid gases. Considering the facility with which the decomposition of protochloride of palladium is effected by the above-mentioned gases, this solution stands quite alone. That its reduction by the different gases takes place in a longer or shorter time, appears to depend in part upon the unequal solubilities of the gases in water.—*Jahresber. des Physikal. Vereins in Frankfurt a. M.* 1857—1858; *Dingler's Polyt. Journal*, clii. p. 76.

*Note on the Cause of the Formation of Carbonic Oxide Gas in the Volumetric determination of Nitrogen. By A. SCHRÖTTER.*

Limpricht stated some time since, that metallic copper is capable of reducing carbonic acid to the state of carbonic oxide, and that an error in the determination of nitrogen may arise from this.

The author also frequently observed, that when the copper is heated gas-bubbles again appear, which are not absorbed by potash, although the atmospheric air had been previously almost entirely expelled from the combustion tube. Melsens likewise observed nearly the same phænomena long ago, so that there can be no doubt as to the accuracy of the fact.

The author supposed that the reduction of the carbonic acid was produced, not by the copper, but by the hydrogen mixed with it.

He conducted dry carbonic acid slowly through a hard combustion tube, wrapped in sheet-iron, and filled with bright, thin strips of copper, such as may be obtained by flattening copper wire, which may be in all cases advantageously substituted for copper turnings. The length of the layer of copper amounted to 50 centims.; and it was heated as strongly as could be done with a furnace for organic analysis with unobstructed draught and constant fanning. The heating was commenced as soon as the apparatus was entirely filled with carbonic acid. The gas passing through was for the most part absorbed by potash, and the small quantity left unabsorbed was nothing but nitrogen gas, derived, no doubt, from the atmospheric air which still remained in the apparatus.

This experiment shows unmistakably that pure copper, which has not previously been in contact with hydrogen, cannot decompose carbonic acid when heated to redness.

Fine copper turnings, previously cleaned, were then heated for a