

ART. XLV.—*On the nature of the action of Light upon Silver Bromide*; by M. CAREY LEA, Philadelphia.

WHEN silver bromide is exposed for a moment to light, it undergoes no visible change, but has acquired the property of passing to an intense black when treated with pyrogallie acid and an alkali.

As to the nature of this black substance, there has existed considerable diversity of opinion. In a paper published on the subject about a year since by Captain Abney, F.C.S., he expressed the opinion that it was an oxide of silver.

Some years since, while investigating the action of light upon silver iodide, I succeeded in proving that the black substance, which is produced when silver iodide is exposed to light in presence of silver nitrate, contains iodine, and is, therefore, either a sub-iodide or an oxy-iodide. The quantity obtained was too small to enable me to ascertain which. When this black substance was treated with nitric acid, normal yellow silver iodide was left behind, and silver was found on solution.

I have recently applied the same treatment to the bromine compound with similar results. I find that when silver bromide is treated with pyrogallie acid and alkali after exposure to light, the black substance which remains contains bromine, and is resolved by nitric acid into normal silver bromide (left behind as a pale yellow film) and silver, which passes into solution. It is therefore either a sub-bromide or an oxybromide, not an oxide, probably the former.

The existence of these compounds is evidently an argument for doubling the atomic weight of silver, as has recently been proposed on other grounds.