

to this cause is of the order of magnitude of 5 or 10 per cent. Convection currents during the fixing of bromo-iodide emulsions seem to harmonize with the view that, broadly speaking, the silver bromide dissolves before the silver iodide. It is probable that immediately after the disappearance of the last traces of opacity during fixing, the whole of the silver has been converted into the very soluble double thiosulfate.

Active Modifications of Hydrogen and Nitrogen Produced by Alpha Rays. F. H. NEWMAN. (*Phil. Mag.*, March, 1922.)—When an electric discharge passes through nitrogen or hydrogen it is found that these gases are absorbed when certain elements are present in the tube. At least in part the absorption is due to chemical action and seems to be caused by the production of active modifications of the gases. The present Lord Rayleigh found nitrogen drawn from the discharge tube to possess active properties and concluded that the active form was atomic in composition. Wendt has shown that the electric discharge in hydrogen at low pressures develops a modification of that element in which the molecule consists of three atoms. On the other hand, it is known that in a general way the chemical effects of alpha rays resemble those of the silent discharge. It seems, therefore, not unlikely that nitrogen and hydrogen under the action of these rays would comport themselves as they do when traversed by the electric discharge. The experiment has been tried by Mr. Newman and he finds that nitrogen after bombardment by alpha rays from polonium is little by little absorbed when sodium, potassium, sodium-potassium alloy, sulphur, phosphorus, iodine, arsenic, magnesium or mercury are present in the tube. The disappearance of the gas could not be due to occlusion, for upon heating it was not set free. This also indicates that any compounds formed are quite stable. After hydrogen had been treated in like manner it, too, was absorbed by sodium, phosphorus or iodine. Upon heating, however, it was re-liberated, indicating either occlusion or the formation of unstable compounds. A chemical test proved hydrogen sulphide to be formed when sulphur was in the hydrogen tube.

Neither ultra-violet light nor the radiation from polonium exclusive of alpha rays was competent to produce the same results as those achieved by the alpha rays.

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