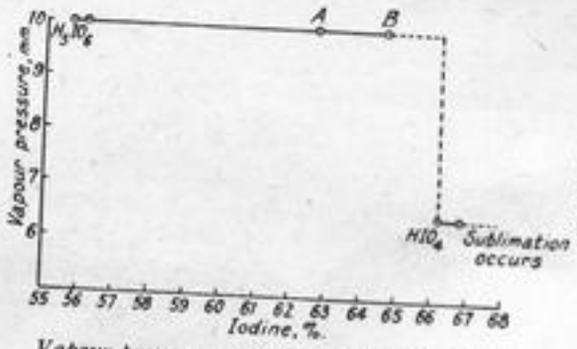
these two acids, and also the points obtained with two products made by partially dehydrating the para-acid at 100° in a vacuum desiccator. The composition of the residue in the bottle *B* was determined by an estimation of iodine by method (3) of Part I.

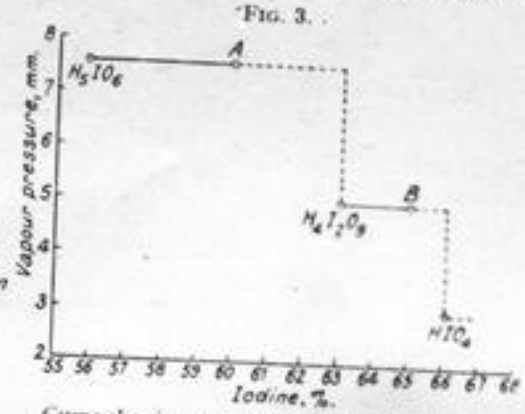
Dimesoperiodic Acid, $H_4I_2O_9$.—Lamb (*loc. cit.*) attempted to prepare mesoperiodic acid, H_3IO_5, by dehydrating paraperiodic acid at different temperatures and pressures. In all experiments, he found that the point corresponding to the hydrate H_3IO_5 was passed without the least indication of the formation of a definite compound. His observations have been confirmed in so far as the meso-acid is concerned, but we have found that a definite point is reached which corresponds to the formation of another hydrate, *dimesoperiodic acid*, $H_4I_2O_9$.

FIG. 2.



Vapour-pressure curve of paraperiodic acid and metaperiodic acid at 100°.

FIG. 3.



Curve showing vapour pressure by dehydrating paraperiodic acid at 85°. Points A and B were obtained from samples prepared at 85° in a vacuum desiccator.

Paraperiodic acid was heated in the vacuum desiccator at 80° for 15—45 hours and the loss of water determined, since no sublimation occurred at this temperature.

Time of heating, hours.	Wt. of H_5IO_6, g.	Wt. of $H_4I_2O_9$ formed, g.	Loss of wt. due to H_2O, g.	
15	1·0768			

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17·12,
+ $9O_2$,

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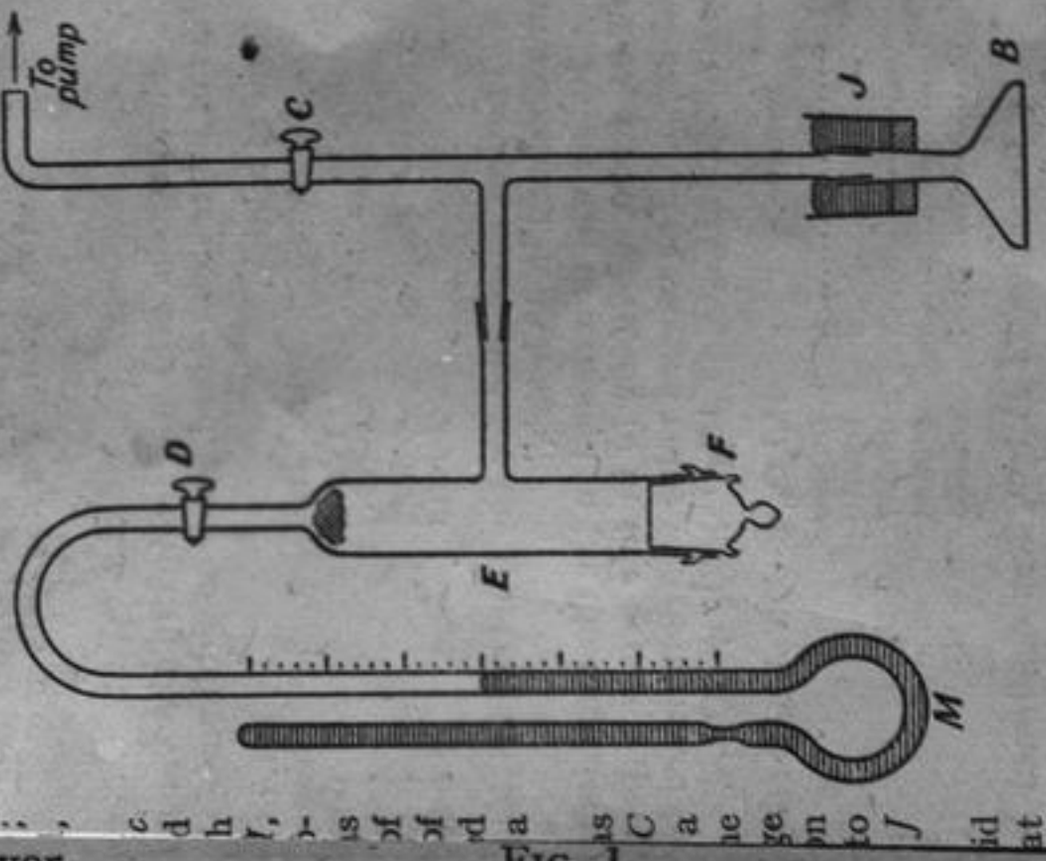
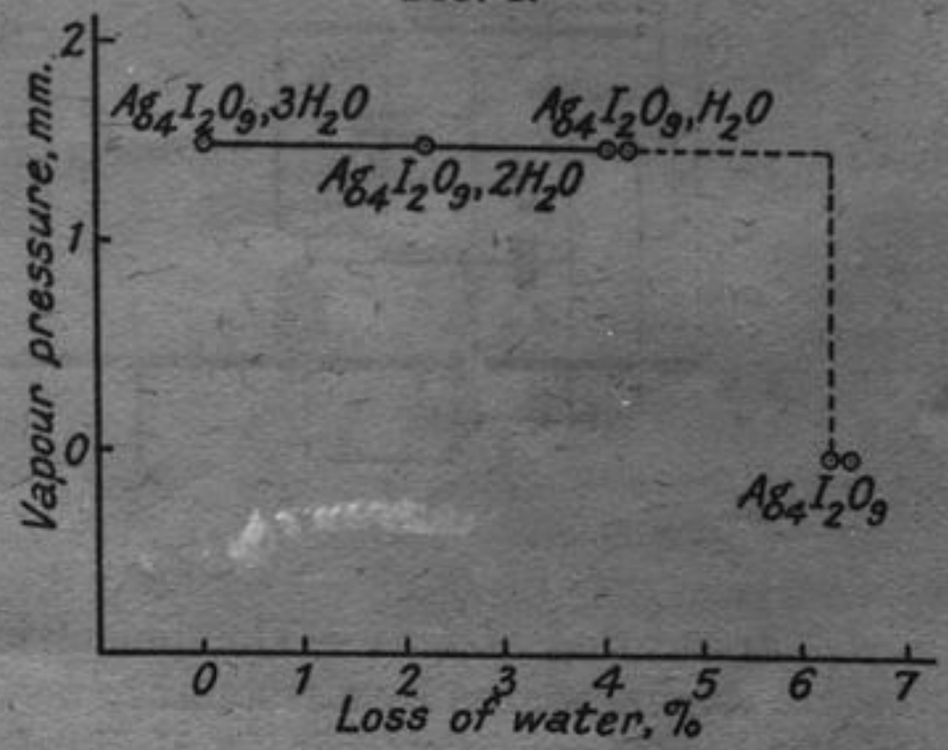
FIG. 1.

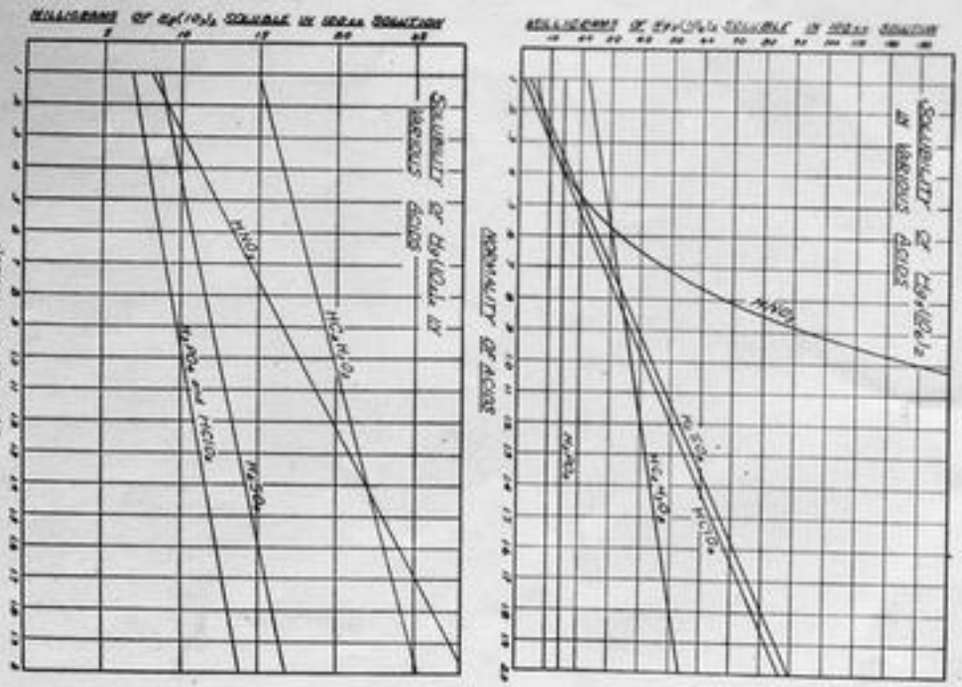


he two acids gave a vapour pressure of 10 mm. paraperiodic acid completely in this apparatus ding to attack of the mercury in the pump and acid also took place, a few bubbles of gas being

FIG. 1.



Vapour pressures of silver salts at 90°



Solubility Data of Mercuric Periodate and Iodate in Various Strengths of Various Acids at 25° C. (Data by G. Frederick Smith and A. K. Johns.)