

THE ADDITION COMPOUNDS OF HYDROGEN CHLORIDE WITH ETHER
AND ACETONE:—By D. McINTOSH, M. A., D. Sc., Dalhousie
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In a paper¹ published recently in the Bulletin of the Chemical Society of Japan, Hirai has given the results of a repetition of the work of Maass and McIntosh² on the ether-hydrogen chloride system, and finds only one compound, instead of the three obtained by them. As Archibald and McIntosh³ have isolated and analysed one compound not found by Hirai I have examined this system again by the method of thermal analysis, and have, I believe, proved that all three compounds are formed.

The freezing-points of the various solutions were determined in a modified Beckmann apparatus with a magnetic stirrer and a platinum resistance thermometer. The materials used were carefully purified and all solutions were made by weight. The method is described in the papers to which reference has been made.

These solutions, as Maass and McIntosh have shown, may be cooled many degrees below their true freezing-points before crystallization takes place. This supercooling can be prevented by "inoculating" the solutions with a minute amount of the ether-hydrogen chloride or bromide complex. This causes precipitation of the $C_4H_{10}O-HCl$ or $C_4H_{10}O-2HCl$ compounds; the $C_4H_{10}O-5HCl$, which is also formed, can be separated only by cooling and prolonged stirring.

The results show maxima in the curves corresponding to the three compounds mentioned. It seems that in Hirai's experiments sufficient care was not taken in preventing supercooling.

¹(1926) 123.

²J. Am. Chem. Soc. 35 (1913) 535.

³J. C. S. 85 (1904) 919.

Hirai has also examined the system acetone-hydrogen chloride, and reports but one compound, $C_3H_6O \cdot HCl$, while Archibald and McIntosh have made and analysed the compound, $(C_3H_6O)_2 \cdot 5HCl$.

A few measurements were made of this two component system, and the existence of Hirai's compound and of the more complex one confirmed. These solutions, too, show the phenomenon of supercooling to a remarkable degree, and precipitation of the simpler body can be brought about by the hydrogen chloride or bromide salt.