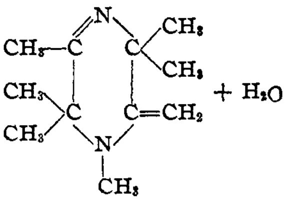

It is believed that the reduced conjugation in the ring is the cause of this reaction, which does not occur in the case of 1,2,5-trimethylpyrazinium iodide. It is to be noted that the same reduced conjugation occurs in 1,2,5-trimethyl-6-keto-1,6-dihydropyrazine-methyl iodide, which by the action of alkali yields 1,2,4-trimethyl-5-methylene-6-keto-1,6,4,5-tetrahydropyrazine.[2]

It seems likely, in view of the above results, that the last compound is yielded by an enolic change similar to that already mentioned and that the reduced conjugation is the important factor in its production.

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PRELIMINARY NOTE RELATING TO STUDIES ON KRYPTON AND XENON

Sir:

A research project having to do with the purification and properties of krypton and xenon has been in progress during the past four years. Some rather novel results have been obtained to which the authors desire to call attention at this time since the work has been interrupted on account of unavoidable delays attendant upon moving into a new building. A more complete report will follow at an early date.

Liquid air residues, mainly oxygen, were treated by cooled charcoal in a manner which concentrated the krypton and xenon considerably. The excess oxygen and other reactive gases were removed by suitable reagents and the remaining inert gases were separated by repeated fractional distillation. Finally about 70 cc. of krypton and 30 cc. of xenon were obtained in a condition of very high purity.

One of the first things investigated was the melting point. Krypton gave an exceedingly sharp melting point at $-156.6°$ with a corresponding vapor pressure of 558 mm. Note a difference of about 12° from the $-169°$ previously accepted as the melting point.

Xenon was harder to deal with in that it failed to give the sharp melting point that had been noted with krypton. Its behavior indicated the possibility of a transition point quite close to the melting point. The

[2] Gastaldi and Princivalle, *Gazz. chim. ital.*, 59, 791 (1929); Princivalle, *ibid.*, 60, 296, 298 (1930).

melting point may be given, however, as $-111.5 \pm 0.5°$ with a corresponding vapor pressure of 600 ± 20 mm. The accepted value for the xenon melting point is approximately $-140°$.

The processes of purification were checked by frequent density determinations and the densities of the best samples of krypton and xenon were rather carefully determined. The method employed was to collect a sample of the gas at a known temperature and pressure in a calibrated bulb, which was then weighed against a counterpoised bulb.

Density determinations made in connection with the fractionation work seem to indicate that the present accepted densities for krypton and xenon are too low. The value found for the heaviest krypton fraction was 3.733 g./l. and that for the heaviest xenon fraction 5.887 g./l. These figures would correspond, respectively, to atomic weights of 83.6 and 131.4 if Watson's [*J. Chem. Soc.*, **97**, 833 (1910)] corrections are employed. No effort has yet been made to make final density determinations and these will be reported later.

Much of the work of extraction and purification followed the lines indicated by earlier investigators, but a number of new methods were used which will be reported in the more complete paper.

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NEW BOOKS

Optical Activity and High Temperature Measurements. By F. M. Jaeger. McGraw-Hill Book Company, Inc.. 370 Seventh Avenue, New York, 1930. 450 pp. 137 figs. 15.5 × 23.5 cm. Price, $4.00.

This volume contains the lectures delivered at Cornell University by Professor F. M. Jaeger during the second semester of 1928–1929 under the George Fisher Baker Non-Resident Lectureship in Chemistry. There are three series of the lectures. The first deals with the spatial arrangement of atomic systems and optical activity; the second with the methods, results and problems of precise measurements at high temperatures; the third with the constitution and structure of the ultramarines. Taken as a whole the lectures furnish a systematic presentation of investigations carried out by Professor Jaeger and his co-workers at the chemical laboratory of the University of Gröningen.

The first lectures of the first series cover the principles of symmetry as applied to atomic systems, discussing the work of Pasteur, van't Hoff and Le Bel. The remaining lectures of this series are concerned chiefly with the optical activity of complex salts, many of them essentially inorganic. These latter lectures are of particular interest as demonstrating the wide-