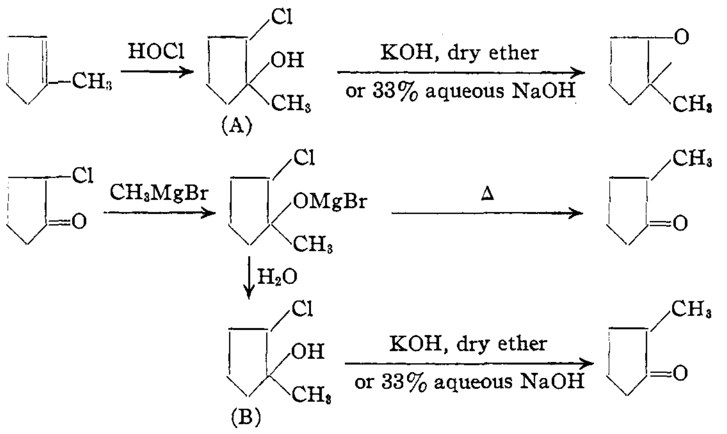
Cis- and *Trans*-Chlorohydrins of Δ^1-Methylcyclopentene

By Paul D. Bartlett and Ralph V. White

The isomeric chlorohydrins (A) and (B) have been obtained by methods parallel to those used in the cyclohexane series,[1] and are found to react as shown.



The (B) isomer alone is new, (A), m. p. 35–37°, having been studied by Chavanne and de Vogel.[2] In two respects these isomers contrast with the homologous compounds, previously described, containing the six-membered ring. (1) There is only one ketone formed from the B isomer, whatever method of dehydrohalogenation is employed, no ring contraction occurring. (2) These isomers show marked differences in their physical properties, which is not the case with the corresponding 6-ring compounds. If such differences (*e. g.*, in boiling point) are assumed due to some interaction of groups[3] in the *cis* compound which is impossible in the *trans*, then the absence of such effects in the cyclohexanes may be connected with the strainless 6-ring, which enables *trans* groups to approach each other as closely as *cis* groups.

Chavanne and de Vogel[2] obtained, along with our "Isomer A," an oil of b. p. 64–67.5° (10 mm.) which they believed to be an isomeric chlorohydrin. We also obtained a lower-boiling fraction (b. p. 38–43°, 8 mm.); it contained, however, 35.74% of chlorine, and did not react with boiling alcoholic alkali in thirty-five minutes. It was therefore not a chlorohydrin, and we believe that "Isomer A" represents the sole product of addition of hypochlorous acid to Δ^1-methylcyclopentene.

Properties of the Isomeric 2-Chloro-1-methylcyclopentanols

Isomer	B. p., °C.	d_{24}	n^{24}_D	Cl, % (calcd. 26.37)
A	61–64 (7 mm.)	1.131[a]	1.477[a]	26.28
B	50–57 (8 mm.)	1.059	1.4709	26.55

[a] Supercooled.

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[1] Bartlett and Rosenwald, This Journal, **56**, 1990 (1934).

[2] Chavanne and de Vogel, *Bull. soc. chim. Belg.*, **37**, 141–152 (1928).

[3] Sidgwick, "The Electronic Theory of Valency," Oxford University Press, 1927, p. 147.

COMMUNICATIONS TO THE EDITOR

THE DETERMINATION OF THE DISSOCIATION CONSTANTS OF WEAK BASES BY THE SILVER IODIDE ELECTRODE

Sir:

Among electrodes of the second kind, sufficiently insoluble in ammonia and organic bases to be used in the determination of their dissociation constants without liquid junctions, the silver-silver iodide electrode offers interesting possibilities. To avoid technical difficulties associated with the use of dilute hydriodic acid, the normal potential (E^0) may be obtained in alkaline solutions. The method is essentially a comparison of the silver iodide and silver chloride electrodes. Preliminary values of E^0 have been determined in borax buffers by reversing the calculation for the ionization constant of boric acid [Owen, This Journal, **56**, 1695 (1934)], and should likewise be obtainable in solutions of a strong base from the ionization constant of water [Harned and Hamer, *ibid.*, **55**, 2194, 4496 (1933)]. Using the cell

$$H_2/NH_4OH(m_1),\ NH_4I(m_2)/AgI,\ Ag$$

in connection with the extrapolation function $\log K - B\mu = (E - E^0)/0.05915 + \log K_{H_2O}$