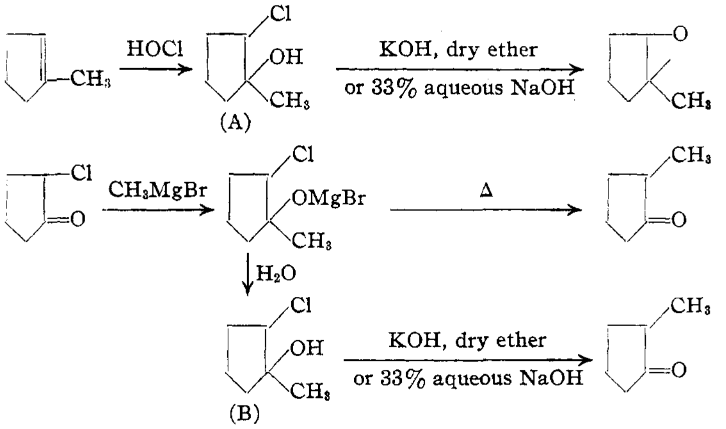
Cis- and *Trans-*Chlorohydrins of Δ^1-Methylcyclopentene

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.

School of Chemistry
University of Minnesota
Minneapolis, Minn.

Received November 2, 1934

---

[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 $\log K - B\mu = (E - E^0)/0.05915 + \log K_{H_2O}$