

ADDITION OF TELLURIUM COMPOUNDS TO DOUBLE BONDS

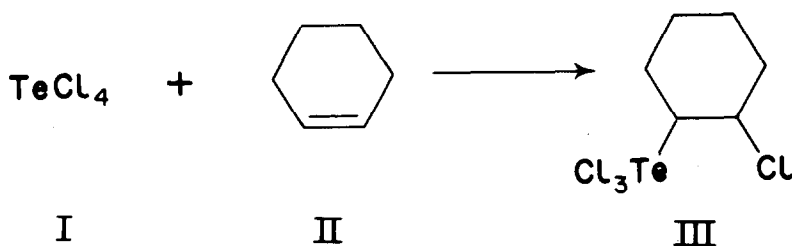
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(Received 19 May 1959)

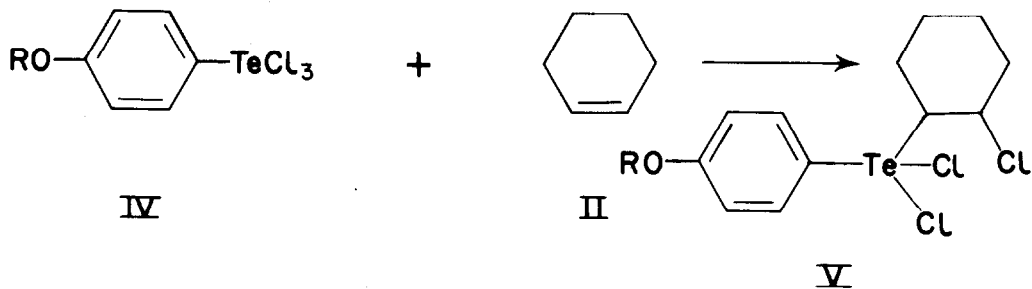
WE have found that tellurium compounds undergo addition reactions with unsaturated compounds thus representing a new type of electrophilic reagents for double bonds.

Tellurium tetrachloride (I) reacts violently with cyclohexene giving a well crystallized compound, whose analysis showed it to be 2-chlorocyclohexyl tellurium trichloride (III) [m.p. 111-114° (with decomposition); Found: Te, 36.08; $C_6H_{10}TeCl_4$ requires Te, 36.29].



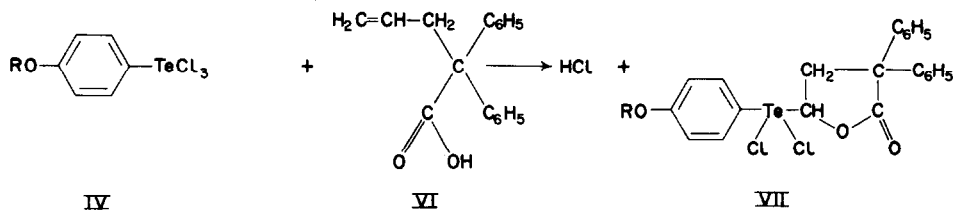
When this reaction is done under carbon tetrachloride it proceeds smoothly and the yield is increased.

p-Ethoxyphenyl tellurium trichloride¹ (IV: R = C₂H₅) does not react at room temperature with cyclohexene, the starting material being recovered unchanged. However, when the reaction is performed with boiling cyclohexene a solid residue of p-ethoxyphenyl-2-chloro cyclohexyl tellurium dichloride (V: R = C₂H₅) is obtained, which after crystallization from ethanol melts at 97-98°.



(m.p. 97-98°; Found: Te, 29.32; C₁₄H₁₉OTeCl₃ requires Te, 29.18).

When the double is activated by the participation of a carboxyl neighbouring group² the reaction can be performed at normal temperature.



¹ G. T. Morgan and H. D. K. Drew, *J. Chem. Soc.*, 2307 (1925).

² R. T. Arnold and K. L. Lindsay, *J. Amer. Chem. Soc.*, **75**, 1048 (1953);
R. T. Arnold, M. de Moura Campos and K. L. Lindsay, *Ibid.*, **75**,
1044 (1953).

Thus 2,2-diphenyl-penten-4-oic acid (VI) and compound (IV: $k - \text{CH}_3^3$ or C_2H_5) yield the correspondent 2,2-diphenyl-5-(p-alcoxyphenyl-dichloro tellurium)-4-pentano lactone (VII). (VII (R = CH_3) m.p. 178-181°; Found: Te, 22.89; $\text{C}_{24}\text{H}_{22}\text{O}_3\text{TeCl}_2$ requires Te, 22.91 and VII (R = C_2H_5) m.p. 193-196°; Found: Te, 21.85; $\text{C}_{25}\text{H}_{24}\text{O}_3\text{TeCl}_2$ requires Te, 22.35).

Other tellurium compounds are also being tried out and the results of these experiments will be reported later.

Analogous compounds of type (VII) having a sulphur atom instead of tellurium have been obtained⁴ and preparation of similar compounds with selenium in the molecule is in progress.

³ R. T. Morgan and R. E. Kellet, J. Chem. Soc. 1080 (1926).

⁴ M. de Moura Campos, J. Amer. Chem. Soc. 76, 4480 (1954).