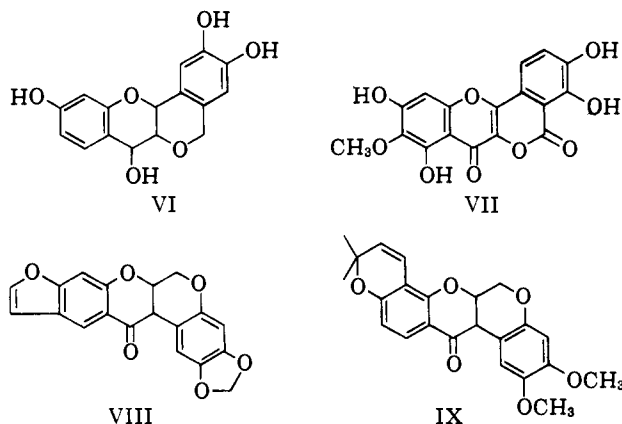


cyclization of an alkoxy group with an aromatic nucleus. This type of cyclization also raises some attractive speculations on the biogenetic origin of some "uncommon flavonoid compounds." In view of the present results it should not be difficult to envisage that the biosynthesis of peltogynol⁸ (VI), a constituent of the heartwood of *Peltogyne porphyrocardia*, and distemonanthin⁹ (VII), a pigment from *Distemonanthus benthamianus*, arise from the well-known uncyclized flavonoid leucofisetinidin and quercetagenin by an analogous process.



The co-occurrence of 2-methoxyisoflavonoids and rotenoids such as the rotenones dolichone¹⁰ (VIII) and α -toxicarol¹¹ (IX) is again very interesting from a biosynthetic point of view. Whether isoflavonoids are the precursors of rotenoids, *via* oxidative cyclization, or *vice versa*, is still open to further investigation. Nevertheless, oxidative cyclization presents an alternative possibility to the rotenoid biogenetic scheme offered by Grisebach and Ollis.¹²

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New Synthesis of Phenylcyclopropanes

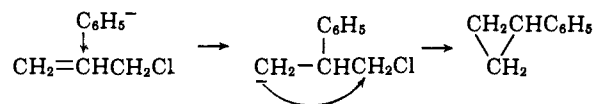
Sir:

The addition of phenyllithium to allylic chlorides in ether has been found to form phenylcyclopropanes in addition to the allylbenzenes. The ratio of the cyclopropane to the phenyl olefins varies with the structure of the allylic halide. Ratios of cyclopropane to olefins of 13:87, 19:81, and 40:60 were obtained by gas chromatography for the products from allyl chloride, crotyl chloride, and 1-chloro-5,5,7,7-tetramethyloctene-2, respectively. The cyclopropanes can be separated

from the olefins by oxidizing the latter with potassium permanganate. Phenylcyclopropane and 1-phenyl-2-methylcyclopropane were identified by comparing their migration times on a Carbowax column, and infrared and n.m.r. spectra with authentic samples. The structure assignment of 1-phenyl-2-(2,2,4,4-tetramethylpentyl)cyclopropane, which boils at 89–90° (0.29 mm.), depends on analysis (*Anal. Calcd.* for C₁₈H₂₈: C, 88.45; H, 11.55. Found: C, 88.29; H, 11.62), the n.m.r. spectra which showed no vinyl hydrogens, and the infrared spectrum which showed absorption for the cyclopropane ring at 9.72 μ .

This coupling reaction has been studied previously only with crotyl chloride and has been reported to give olefins.¹ Repetition of this work, in which the crotyl chloride was added to excess phenyllithium in ether, and examination of the products by gas chromatography indicated that 1-phenyl-2-methylcyclopropane was also formed under these conditions to the extent of 21%.

The reaction responsible for the formation of the cyclopropanes is probably similar to an S_N2' reaction with attack of the phenyl carbanion occurring on the β -carbon atom instead of the γ -carbon. The resulting anion then undergoes an intramolecular reaction with displacement of the halogen. The yields obtained would indicate that steric factors are more important



than the type of carbanion formed.

The extent to which this reaction occurs with other basic reagents is being studied further.

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Partial Head-to-Head Polymerization of Propylene Oxide by Stereospecific Catalysts

Sir:

Natta¹ has recently suggested the possibility that non-crystalline polymer chains may arise not only from atactic stereochemistry but from structural irregularities as well. We wish to report here that our investigation of the degradation of amorphous fractions of poly(propylene oxide) prepared by certain catalysts which simultaneously produce isotactic polymers demonstrates that the irregularities in structure preventing crystallinity are largely, if not entirely, units with head-to-head structure.

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