Phytochemistry, 1973, Vol. 12, pp. 1511 to 1515. Pergamon Press. Printed in England.

PROCEEDINGS OF THE PHYTOCHEMICAL SOCIETY

A Meeting of the Society was held jointly with the British Society of Perfumers at the School of Pharmacy, University of London, on 9 January 1973 when the following papers were presented, under the general title:

Phytochemistry of Plant Perfumes

Biosynthesis of Sesquiterpenoids

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At a symposium on Perfumery held nearly 3 years ago I reviewed[1] the biogenesis of terpenoid essential oils. In that review caution was expressed over biogenetic speculation. Some recent results show that even some of the conclusions reported there were incorrect, even though based on experimental results.

The basic precursor of all sesquiterpenoids is farnesyl pyrophosphate. Study of its biosynthesis has now been completed.[2] However the requirement for 2-*cis*-6-*cis*-farnesyl pyrophosphate in gossypol biosynthesis[3] opens up a number of additional possibilities for the elaboration of sesquiterpenoids. Although a *trans* double bond is first formed isomerization to the *cis* form may involve the corresponding conjugated aldehyde.[4]

A significant revision of previous results is in the biosynthesis of cuparene related sesquiterpenoids.[5] γ-Bisabolene cannot be a precursor of these systems since all three vinyl protons from farnesyl pyrophosphate are retained in the initially formed bicyclic product. An alternative explanation is that the acyclic precursor is cyclized directly to the bicyclic skeleton and there is then a 1,4-hydride shift. Similarly in trichodiene formation after the 1,4-hydride shift there are the methyl migrations. Subsequent formation of the keto group of tricothecolone may involve a 1,2-hydride shift with the isomerization of crotocin.

The classic 'non-isoprenoid' terpene is eremophilene. Petasin, a related compound has been studied. As expected a 1,2-hydride shift was associated with the methyl migrations.[6]

Other recent advances[7] have confirmed previous ideas on the biosynthesis of caryophyllene and tutin. Abscisic acid is an example of an alternative mode of cyclization involving the two isolated double bonds of farnesyl pyrophosphate. The formation of γ-cyclofarnesol, a precursor of siccanin, also involves this type of cyclization in its biosynthesis.

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[6] Brooks, C. J. W. and Keates, R. A. B. (1972) *Phytochemistry* **11,** 3235.

[7] Moss, G. P. (1971–1973) in *Terpenoids and Steroids* (Overton, K. H., ed.), Vol. 1, p. 221; Vol. 2, p. 197; Vol. 3, Specialist Periodical Reports, The Chemical Society, London.