

PREFACE

THIS *Tetrahedron* Symposia-in-Print on Linear Tetrapyrroles arose out of a meeting of the Tetrapyrrole Group held on that subject at Queen Mary College in April 1981. The papers are not the same as those presented earlier, since the subject is moving very rapidly, but the format is the same in that a breadth of coverage has been looked for. It turns out, of course, that this is not difficult to find: the tetrapyrroles (including the linear variety) are naturally of interest to the biologist and medical scientist; they also have properties which fascinate the photophysicist and theoretician. So, in this issue, although the dominant ambience is that of organic chemistry, we have approaches to the linear tetrapyrroles from a variety of directions.

The first two papers are about synthesis. Smith and Kishore have developed earlier studies to provide a very useful approach to model systems. Jackson and his colleagues, on the other hand, describe a total synthetic route to biliverdin IX_β. An important feature of this synthesis is that along the way it provides intermediates with oxygen functions at C-15, which substances should prove useful in biosynthetic studies.

X-ray studies on linear tetrapyrroles are often hampered by a paucity of diffraction data. However, in a study on a bilinone lactam ether at low temperature, Kratky *et al.* present what must be the most accurate set of results so far obtained in this series. The first crystal structures for metal bilindiones (B and Ni complexes) are reported by Bonnett, Hursthouse and their colleagues. In a more theoretical approach in structure, Falk has, for some years past, been publishing in the Austrian literature the results of force field calculations on linear polypyrroles. Falk and Müller now summarize and extend this work. Of course, the calculations require simplifying assumptions for molecules which are really very complex: nonetheless the force field approach holds considerable interest, and the opportunity is afforded here to bring it to the attention of a wider audience.

As for chemical reactions, Küfer and Scheer unravel aspects of the chemistry of the van der Bergh reaction. The other contributions in this area are all photochemical, with reports on the photo-oxidation of bilirubin and pyromethenones (Lightner *et al.*), on the detection of intermediate species in laser-irradiated solutions of biliverdin dimethyl ester (Schaffner *et al.*), and on the activity of various verdin derivatives as quenchers of photo-oxidation reactions (Bois-Choussy and Barbier). Biosynthetic work is represented by studies on bilanes (hexahydrobilins) as intermediates in porphyrin biosynthesis (Battersby *et al.*), while Rajananda and Brown make an experimental contribution to the much-debated mechanism of haem catabolism.

Phytochrome chemistry is one of the most active areas in this field at the present time, and the Symposia-in-Print ends with contributions, one from Gossauer, and one from Thümmeler and Rüdiger, on this topic. It seems to me that a solution to this chemical puzzle—at least to that part of it which concerns the chromophoric photo-interconversion—must now be close at hand.

Nomenclature in the tetrapyrrole series is rather confused. As editor I have felt it best to concentrate on the chemistry, and allow authors to use the nomenclature they prefer. So both Fischer and IUPAC nomenclatures will be found here. I have, however, stipulated that the 1-24 numbering scheme, which is recommended by IUPAC and is shown in the Appendix (p. 1953), be used throughout. To avoid unnecessary duplication of structural formulae, the Appendix also contains a set of commonly encountered structures which may be referred to in any of the papers. The structures are designated by a number, preceded by L (for *last* page, where they appear in this issue).

Finally, let me say that this is very much an *international* symposium, a feature which has given me great personal satisfaction.

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