

applied to low molecular weight complexes (e.g. of copper) only. Their future application to enzymes might have exciting possibilities but obviously the anisotropy of the spectra would not make matters easy.

Makinen and Wells discuss in some detail use of saturation studies in EPR. Though data are often difficult to analyse, the field is a particularly interesting one, in so far as it can yield information on distances between metal centres in proteins. In suitable circumstances, investigations of relaxation processes can even in principle provide information on structure and dynamics of protein molecules.

The final chapter by Tsvetkov and Dikanov is on variations of electron spin echo techniques. The theory is fairly extensively discussed, with a shorter section on biological applications giving considerable emphasis to the pioneering work in this field of Mims and Peisach. On the whole, to date, spin echo techniques have been relatively little used in the biological field, so that their true potential remains difficult to assess.

*School of Chemistry and Molecular Sciences,
University of Sussex, Brighton BN1 9QJ (Great Britain)*

R.C. Bray

Small Ring Compounds in Organic Synthesis, Volumes 1 and 2, edited by A. de Meijere (*Topics in Current Chemistry, Volumes 133 and 135*), Springer Verlag, Berlin, 1986 and 1987; Volume 1, vii + 163 pages, DM 124, ISBN 0-387-16307-7, Volume 2, vii + 160 pages, DM 128, ISBN 0-387-16662-9

It is about a hundred years since cyclopropane and cyclobutane were first prepared, but it is only over the last twenty-five years or so that their potential in synthetic organic chemistry has begun to be realised. The first section of Volume 1 by Trost makes the reason for their utility clear; the strain inherent in their structures makes these molecules much more reactive than larger ring analogues. Cyclopropyl anions in the form of lithium or copper derivatives, with particular reference to heteroatom substituted compounds, are discussed in detail. Other topics considered include spiroannulation, vinylcyclobutane rearrangements and secoalkylation, and a wide range of synthetic applications is also described. The chapter is well referenced, into 1984. Volume 1 is completed by a chapter by Wong, Lan and Tam, on the applications of cyclobutane derivatives in organic synthesis. This account is organised according to the routes of ring fission, considering reactions in the presence of acids and bases, nucleophiles and electrophiles, thermal, oxidative and reductive ring openings. The points made are well-illustrated with examples drawn from all areas of synthetic organic chemistry. Again the chapter is well referenced, with the papers cited being published into 1984.

The second volume will probably prove to be more interesting to the organometallic chemist. In the first section Krief discusses the synthesis and synthetic applications of 1-metallo-1-selenocyclopropanes and cyclobutanes, and related 1-metallo-1-silylcyclopropanes. These species are particularly nucleophilic and can be used both to prepare a wide range of functionalised cyclopropanes and cyclobutanes, or to prepare homologues by ring expansion processes. Selenium compounds first became widely used in organic synthesis in the 1970's; from this article it is clear that this continues to be an active and developing field. In the final chapter of

Volume 2, Binger and Büch detail the uses of cyclopropenes and methylenecyclopropanes as multifunctional reagents in transition metal catalysed reactions. These processes have been widely researched over the last fifteen years, generally with emphasis on their mechanistic aspects. This review focusses on their preparative applications, and thus a rather wide range of reactions is considered. These include the relatively familiar nickel and palladium catalysed processes involving both cycloadditions and trimethylenemethane intermediates, but also metatheses, carbonylations and rearrangements. Both chapters again are well referenced with material into 1985 being cited.

Both these volumes are well produced with good-quality figures and relatively few errors in either text or diagrams. There is no index, but this is not a particularly serious problem, since the tables of contents provided are very detailed. Both volumes will be of considerable interest to the synthetic organic chemist and the second also holds much for the organometallic chemist. The articles are, however, fairly specialised and the cost high for rather slender volumes, so that I suspect they will generally prove to be a library rather than an individual acquisition.

*School of Chemistry and Molecular Sciences,
University of Sussex, Brighton BN1 9QJ, (Great Britain)*

Penny A. Chaloner