Palladium in Heterocyclic Chemistry. By J. J. Li, G. W. Gribble. Pergamon: New York, **2000**, hardback € 124.79; ISBN 0-08-043705-2, 432 pp.

Chapter 1 is an excellent account of palladium-catalysed reactions that are now commonly employed in organic synthesis. These reactions include oxidative coupling, cross coupling reactions, Heck reactions, carbonylation, and amination. In each case the mechanism of the reaction was discussed in detail outlining the scope and limitations of these procedures. For each reaction class for which palladium 0 was required an attempt was made to describe how this was generated from the palladium II salt precursor. This is a subject which is often glossed over in research papers and little touches like this I feel make the chemistry more appealing to the mystified novice who is contemplating employing palladium chemistry. There are lots of little pieces of dogma provided which help rationalise the diverse chemistry later described. The analogy of equating ease of oxidative addition of vinyl halides to that of S_NAr displacement was particularly helpful and this goes some way to rationalising why heterocyclic compounds behave so differently from carbocycles and allows a powerful predictive tool for determining regioselectivity in subsequent chapters. The conditions for the various cross coupling reactions Negishi, Suzuki, and Stille are critically compared and contrasted and the authors gave a good idea of which additional functional groups would survive the conditions. The factors which determine what makes a good transfer group in cross couplings is discussed and there are many examples of the more difficult cross coupling reactions involving that of alkyl groups throughout the text. The introductory section on the Heck reaction was excellent. Given that the Heck reaction normally does not produce chiral centres, I felt that the background information provided on the emerging asymmetric Heck reaction merited more than the one paragraph it was given.

The palladium chemistry of ten heterocylic classes namely pyrroles, indoles, pyridines, thiophens, furans, thiazoles, oxaozoles, imidazoles, pyrazines, and pyrimidines are each covered in their own chapter. Each chapter has the same style, an introduction with naturally occurring heterocyles followed by a listing of synthetic pharmacologically active heterocylic compounds with a brief description of their medicinal properties. New palladium-catalysed routes to these heterocycles are given where appropriate, and the palladium-mediated chemistry of these heterocycles follows the same order as the basic chemistry introduced in chapter 1. This style is logical, it is extremely easy to find a desired reaction of a particular heterocycle, but does have the disadvantage that if one reads the book from cover to cover you will develop a feeling of 'déjà vu' in the later chapters. In each chapter the chemistry for making the substrates for the palladium-mediated reactions is also included allowing one to fully evaluate the full feasibility of the approach without going to the original literature. The very liberal use of diagrams, containing basic experimental conditions, is a strong point and I expect these schemes will solicit browsing from chemists looking for some precedent that the chemistry they are contemplating is possible. Throughout the book there are many examples of the heteroaryl Heck reaction, a reaction, which has rapidly evolved from being a curiosity to a now synthetically very useful procedure. At the end of each chapter there is an extensive list of references covering up to and including the year 1999 with nearly 500 references alone for the indole chapter.

In summary this book is easy to read and follow and I believe will be the first point of reference for information regarding the synthesis of heterocyclic compounds employing organopalladium chemistry.

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