between two parts of the book, a most inconvenient arrangement.

An authoritative list such as this challenges one to find reactions that were omitted. I was able to find some: the Finkelstein and Menschutkin reactions, the Robinson annelation procedure, and the Wohl-Aue phenazine synthesis. I also found some surprising entries: the "Cope-Mamlock-Wolffenstein hydroxylamine elimination" (this is the Cope amine oxide pyrolysis), the "Lieben" iodoform test, and the "Kriewitz-Prins" formaldehyde-olefin addition. I had never before encountered the names of Mamlock, Wolffenstein, Lieben, and Kriewitz associated with these well-known reactions.

This work suffered a good deal in translation. Some downright mistakes were made, such as cuprous *acetate* for CuCN (twice on p. 395) and an incorrect statement regarding the mechanism of the von Richter reaction (the German edition was correct). Syntax and words strange to English sometimes appear; my favorite is *minuity* in translation of *Kleinheit* (p. 28). Russian names are given only in their German transliteration; thus, the reaction known to American chemists as the Chugaev xanthate pyrolysis is listed only under "Tschugaeff."

The Wagner-Meerwein carbonium ion rearrangement (described only as a reaction of terpenes) and the Whitmore "anionomerism" of carbonium ions are unfortunately presented as separate topics, without cross-referencing.

Although the "dire need for the development of a systematic classification of terminology for organic reactions" is mentioned in the foreword and in the preface, no attention is given to systematic terminology in the book. I am personally disappointed that a method for systematically naming substitution reactions, which I suggested some years ago [*J. Chem. Soc. (London)*, 4717 (1954)], and which is now rather widely employed, was not presented.

The authors describe their book as having become "practically a textbook" of the most important organic reactions. They regard it as a good "summarizing review of organic chemistry" for use, say, by advanced students studying for comprehensive examinations. I do not share this view. Although the statements made, reaction by reaction, concerning mechanisms and synthetic applications are for the most part unobjectionable, they are in nearly every case too brief to convey a proper appreciation of either. Moreover, the attaching of men's names to reactions has only a haphazard relationship to their significance (the reactions' or the men's). Many obscure and trivial reactions are included, and many important ones that happen not to have "names" are omitted.

As a reference work for identifying reactions mentioned by name, this book is obviously useful. But if only one book of this sort can be purchased for a library, this volume should be compared with Gowan and Wheeler's *Name Index of Organic Reactions* (1960), which lists perhaps 40 percent more reactions and which has a format that is in some ways more convenient.

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Applied Botany

Biogeochemical Methods of Prospecting. Dmitrii Petrovich Malyuga. Translated from the Russian edition (Moscow, 1963). Consultants Bureau, New York, 1964. viii + 205 pp. Illus. $27.50.

The term "biogeochemical methods of prospecting" means the search for buried ore deposits by chemical analysis of living plants growing in the vicinity. In most parts of the world, ore deposits directly exposed at the surface have long since been found and developed. The present-day problem is to discover deposits that have been concealed beneath a blanket of soil or plant litter and thus cannot be found by casual inspection.

Malyuga's book is unquestionably the most complete synthesis to date of biogeochemical methods as they have been developed in the Soviet Union. The availability of this monograph in English gives the Western reader an insight into the very large volume of Russian activity that until now could be reviewed only in the Russian-language literature. Malyuga's list of references includes 375 items, of which 258 are Russian. The translation is excellent; the technical language is accurate, and the diagrams are if anything more legible than the original.

Unfortunately, the book suffers from certain fairly serious deficiencies. The text tends to be vague, so that the really significant and important observations, of which there are plenty, are difficult to winnow from the nondefinitive, wordy matrix. The maps and diagrams rarely have a scale of distance. The diagrams and tables are not always cross-referenced in a way that allows one to decipher easily the correlations and understand the interpretations that the author is trying to make. These, however, are technical problems, and Malyuga is not the only Russian author who can be accused of such sins.

The professional exploration geologist, whose eye is caught by the word "prospecting" in the title, will probably be disappointed in the author's uncritical treatment of his data. Only rarely are the plant data compared point-for-point with parallel data on trace elements in soils, and nowhere are they compared with the data of coextensive geophysical surveys. Nothing is said anywhere about the economics of the methods—how many samples or how large an area per man-day. And no legitimate case histories of biogeochemical discoveries, or even of operational field experience, are described. This failure to live up to the promise contained in the title will probably reduce the number of people who are willing to pay the rather shockingly high price that is asked for this volume.

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Mammalian Reproduction

The Biochemistry of Semen and of the Male Reproductive Tract. Thaddeus Mann. Methuen, London; Wiley, New York, 1964. xxiv + 493 pp. Illus. $16.50.

This book is an updating and an expansion of the material first published 10 years ago in *The Biochemistry of Semen*, a book that has been translated into French, Japanese, and Polish. This expanded second edition will receive the same acclaim accorded its predecessor by students of the reproductive processes and of biochemistry, practitioners of animal and of human medicine, and researchers and specialists in fields where a ready reference to the literature on male reproduction is needed. Although the book is primarily concerned with the