NEW BOOKS

V. Gold and D. Bethell (editors)

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Reviewed by L. I. Belen'kii

This volume of the well-known publication contains four reviews that deal with different divisions of organic chemistry, including those that include a large amount of material pertaining to heterocycles.

The first paper of the collection was written by Hine (USA) and is devoted to the principle of least movement of the nuclei as a part of the Rice–Teller principle, which regards as preferable those elementary reactions that include the smallest number of changes in the positions of the atoms and their electron configurations. It is well-known that the second part of this generalization has been discussed in detail in recent years in connection with the Woodward–Hoffman rules. Hine's review directs the reader's attention to the effect of the first group of factors mentioned above on the occurrence of various radical and heterolytic reactions. The examination of the changes in the C–N bond length upon conversion of imidazole to the imidazolium ion as the reason responsible for some of the peculiarities of imidazole as a base as compared with pyridine, in which such changes are not observed, may serve as an example.

In a lengthy paper written by Thomas (Great Britain) with the participation of Morsi (Egypt) and Desverne (France) a large amount of extremely interesting material (more than 200 citations) on topochemical phenomena observed during reactions in the solid state, particularly with respect to the preparation of some chiral compounds with the primary formation of one enantiomer, the change in the reaction pathways as a function of the orientation of the molecules in the crystal, etc., is correlated. Many of the indicated reactions were studied for heterocyclic compounds, e.g., in the pyridine and thiophene series.

The effects of ion pairs in the reactions of carbanions, including several heterocyclic carbanions (1,3-dithiane, oxazoline, and pyridine derivatives), are examined in a paper by Hogen-Ash (USA). The last review of the collection, which was written by Brandstrom (Sweden), is devoted to the mechanisms of reactions with the use of phase-transfer catalysts, viz., quaternary ammonium salts, which are finding increasingly extensive application in preparative organic chemistry. The collection as a whole is of considerable interest to a large number of organic chemists.

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