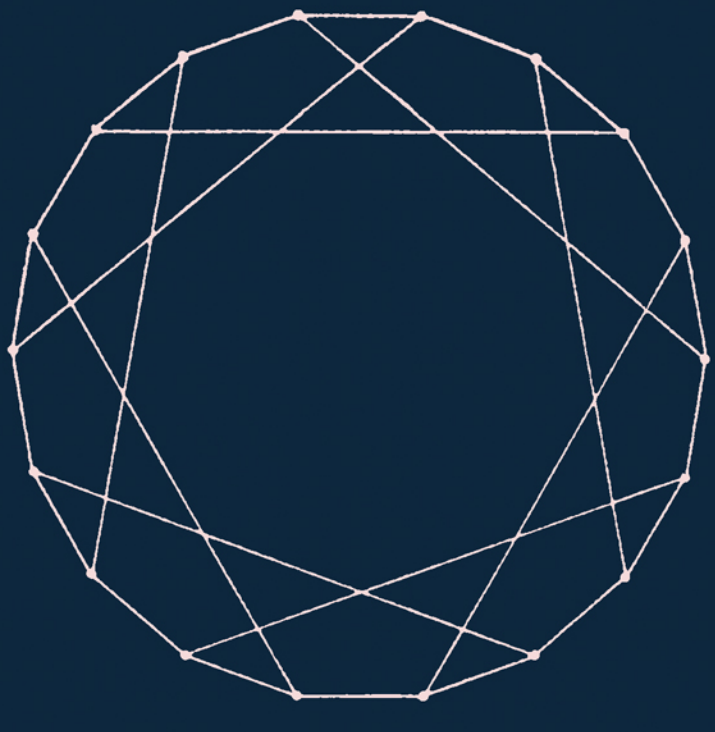
ZERO-SYMMETRIC GRAPHS

TRIVALENT GRAPHICAL REGULAR REPRESENTATIONS OF GROUPS



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Dedicated to Ronald M. Foster

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PART III GRAPHS OF TYPE ^3Z

Preface

At the Conference on Graph Theory and Combinatorial Analysis held at the University of Waterloo in 1966, Ronald Foster presented a *Census of trivalent symmetrical graphs*, a draft of which was distributed to a dozen colleagues. ("Symmetrical" means edge-transitive as well as vertex-transitive.) In the same year, in a letter to the first author of this book, Foster suggested the study of those finite trivalent graphs whose automorphism group acts regularly on the vertices, coining for them the term "0-symmetric." Loosely speaking, these are trivalent graphs that are just vertex-transitive, in the sense that they have no further symmetry.

In 1975, in *Notes* distributed again only to a reduced number of friends, he began the study of these 0-symmetric graphs and also of the "t-symmetric" graphs, which represent an intermediate class between the 0-symmetric and the symmetrical. In particular, he studied the most numerous family of 0-symmetric graphs, those whose automorphism group is isomorphic to a dihedral group. In Table 22.1 we list, from Foster's work, the 350 graphs of this type having not more than 120 vertices (the upper limit we have fixed, somewhat arbitrarily, for this study). For these and other contributions, the authors dedicate this book to him.

We also wish to acknowledge the contributions of Mark Watkins, who found the first examples of the graphs studied in Sections 23 and 24.

From the preceding it should already be clear to the reader that the aim of this book is to describe all of the 0-symmetric graphs with not more than 120 vertices that we have found during several years of intensive search. In spite of our intentions, we very likely have overlooked some 0-symmetric graphs or erroneously included some that are not 0-symmetric because of a hidden symmetry. We will be most grateful if a reader finding any omission or error would communicate the facts to any or all of the authors.

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