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BOOK REVIEW

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S. VAJDA. *Patterns and Configurations in Finite Spaces. Number 22 of Griffins Statistical Monographs and Courses*. Hafner Publishing Company, New York, 1967. vii + 120 pp. $4.95.

S. VAJDA. *The Mathematics of Experimental Design. Number 23 of Griffins Statistical Monographs and Courses*. Hafner Publishing Company, New York, 1967. vii + 110 pp. $4.75.

Review by A. HEDAYAT

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These two companion volumes are intended to cover only the combinatorial aspects of the construction of designs, without regard to their practical applications, analysis or indeed other usefulness.

Patterns and Configurations in Finite Spaces (**1**) contains four chapters. Chapter I, briefly, covers finite groups, permutation groups, algebra $A[s]$, finite fields, Hadamard matrices and difference sets. Chapters II and III deal with some fundamentals of finite planes and finite spaces of higher dimensions. Configurations are the subject of Chapter IV. Examples and problems with their solutions are provided throughout the text.

The Mathematics of Experimental Design (**2**) has five chapters. In Chapter I, Introduction, the concepts of finite groups, finite fields, finite projective geometries, finite Euclidean spaces and difference sets are very briefly discussed. This introductory review makes this volume almost independent of the preceding one. Chapters II and III are concerned with the construction of balanced incomplete blocks (BIB), orthogonal Latin squares and orthogonal arrays. Methods of construction of partially balanced incomplete blocks are given in Chapter IV. Chapter V discusses partially balanced incomplete block designs with two associate classes, covers group divisible designs, triangular association scheme, and Latin square type design. Again examples and problems together with their solution are given throughout the book.

The subject-matter covered by these two books is probably adequate as an introduction to the combinatorial aspects of design of experiments. The level of both books is such that a fairly broad readership could benefit from them. The mathematical knowledge assumed is very little indeed. Some knowledge of college algebra and some familiarity with the geometrical concepts, together with a sincere interest in the subject are certainly sufficient.

The major defect in these two books is the lack of precision—there are incorrect statements in definitions and theorems. The theorem of Pappus on page 32(**1**) as