# BOOK REVIEWS

## JOHN GRANT McLOUGHLIN

*Teaching Statistics: Resources for Undergraduate Instructors*
edited by Thomas L. Moore, published by the Mathematical Association of
America (MAA Notes Series, #52), 2000,
ISBN 0-88385-162-8, softcover, 222+xii pages, $31.95 (U.S.).
*Reviewed by* **C.L. Kaller**, *retired Professor of Mathematics, Kelowna, BC.*

This instructors' handbook is an eclectic collection of articles (some published for the first time, but many reprints of previously published articles or commentaries on such articles) on a number of aspects of introductory undergraduate statistics instruction. It is a compendium of information intended to be regarded essentially as an instructors' manual for teachers of statistics courses to undergraduate or even senior secondary school students. Particular targets of this volume are those teachers of statistics courses who have limited formal training in that discipline.

The volume consists of articles in six categories:

1. Hortatory Imperatives [of data-based statistical instruction]
2. Teaching with Data [in classroom settings]
3. Established Projects in Active Learning [with usage guidelines]
4. Textbooks [with detailed textbook selection procedures]
5. Technology [resources available for classroom presentations]
6. Assessment [of student achievement].

The motivation behind the choice of articles in each of these categories is relevance to what the editor feels is the current (2000) thinking about just what constitutes acceptable statistics instruction, particularly when such instruction is provided by teachers whose formal professional training in statistics is somewhat limited. The editor points out that the volume is far from an all-inclusive presentation of resources and ideas on statistics education; it is his stated hope, however, that the material will provide direction to readers and to have them keep alert to other instructional resources constantly being developed.

Laudatory as is the intent of the editor in publishing the contents of this handbook to help the classroom statistics instructor, this publication is not without some irritating editorial flaws giving this reviewer the distinct impression that the volume was thrown together in a hasty rush to the printers. Grammar, spelling, consistency and format have not received the careful editorial attention expected in an MAA publication. Indeed, on the back cover of the book (as well as elsewhere inside) even the word *statistics* is misspelled!

Very irritating is the sloppiness in grammar, especially in the use of the word *data* which appears inconsistently presented as both a plural and a singular noun. Indeed, within the same paragraph in the volume, this word appears as a singular noun in one sentence and plural in another, and authors inconsistently refer to *these data* and *this data* quite interchangeably. Careful editing of the articles accepted for this publication would at least have resulted in consistently using (incorrectly, asserts this reviewer) the word *data* in singular form if it were impossible to use it correctly as a plural noun.

In the editor's own contribution (on page 31, *Implications for Statistics Teaching*) it is stated that "Statistics faculty need to learn new skills. We now have to grade grammar and writing style as well as statistical thinking." In a volume intended to give advice and guidance to statistics teachers, it is regrettable that the editor/author failed to take his own pronouncement to heart to produce a better quality contribution to the *MAA Notes Series*.

---

*Gardner's Workout: Training the Mind and Entertaining the Spirit*
by Martin Gardner, published by A.K. Peters, 2001.
ISBN 1-56881-120-9, hardcover, 319 + xi pages, $35.00 (U.S.).
*Reviewed by* **Edward J. Barbeau**, *University of Toronto, Toronto, Ontario*.

Martin Gardner has been part of my mathematical environment since I discovered his *Scientific American* columns as an undergraduate and was captivated by his easy style and elegant problems. Even though he has been succeeded by others in *Scientific American*, he has remained very much in view through appearances in television specials, issues and reissues of his essays, continuing interest of others in problems that he was the first to publicize and articles in a number of journals.

This book is an anthology of 34 articles and 7 reviews that have appeared, mostly during the 1990s, in *Quantum*, *Math Horizons* and other journals of general mathematical interest. An article on Kasparov's defeat by *Deep Blue* first appeared in *The Washington Post*; four reviews of books were published in *The Los Angeles Times*; an essay on the growth of recreational mathematics appeared in *Scientific American*, although that was a "heavily revised and cut version" of what appears in this book. Despite the variety of topics, there is a linkage from many essays to the next that provides a coherent flow of ideas for the reader who, like myself, progressed from end to end. Prominent are articles on number play, geometry, graph theory, artificial intelligence, puzzles, games and tricks.

Occasionally Gardner becomes more serious. In a pair of articles on artificial intelligence, Gardner dissents from the views of those who would see us on the threshold of reproducing human thinking, and puts forward his belief that the mind is on a much higher plan of complexity and is qualitatively different from anything that has been produced so far on computers. A

review of the 1997 *NCTM Yearbook,* an algebra text and the PBS videoseries *Life by the Numbers* in *The New York Review of Books* provides the occasion to vent his displeasure at the "fuzzy new math". He skewers it for its faddishness and dilution with much that is mathematically irrelevant. If the *Yearbook* is any guide, reformers seem to be completely ignorant of fascinating and challenging mathematical material available in a number of fine books published in recent years by established mathematicians. It is hard to argue with his assessment of the PBS series as "high on special effects, low on mathematical content". This is an important article, that well deserves its more permanent place in this volume.

Those who want to enliven the modern school classroom will find many riches in this book. Four successive chapters treat, in whole or in part, magic squares, with some new material. A prize of $100 has not yet been claimed for a $3 \times 3$ magic square whose entries are all squares. There are many squares that almost do the job, but getting the complete solution is equivalent to finding rational points on certain cubic curves. There are numerous dissection problems, a genre which I have found encourages my own undergraduate students to think of geometry in more structural terms. A *Quantum* article deals with decomposing both squares and equilateral triangles into three similar parts, all three of which, two of which and none of which are congruent. Is it true that there is a unique solution to the triangle problems with one and no congruent pairs of parts? In the magazine, *Cubism for Fun*, Gardner offered a $50 prize for anyone who could, for any integer $n$ exceeding 1, cover the surface of a cube by $n$ congruent polygons without overlapping. In an addendum, he tells us that this was won by a reader, Anneke Treep, who without any technical complications applied the right perspective and degree of imagination.

Other problems, however, are definitely not for the classroom. Consider the problem, due to Gardner himself from the initial chapter of the book; it asks for the minimum area of a surface placed inside a transparent cube to render it opaque from any direction. The best answer seems to be **4.2324**. "I believe the opaque cube problem to be extremely difficult," he writes, "it is keeping me awake at nights."A substantial essay treats minimal Steiner trees (spanning trees of minimum length) on a rectangular array of nodes, and includes a table of the best known results for $n \times n$ when $2 \le n \le 14$.

The pace is varied by a discussion of directed graphs to analyze propositional calculus, and by some word play. Can you provide a square array of nine letters for which, each row, column and diagonal, spell out a word? Or provide a chain of words, each altered by a single letter from its predecessor, that converts BLACK to WHITE?

The effectiveness of this book derives in large part from the passion with which Gardner shares his mathematical enthusiasm and on the breadth and erudition of his discussions. This is another winner!