

BOOK REVIEWS

John Grant McLoughlin

The Countingbury Tales: Fun with Mathematics

By Miguel de Guzmán, translated by Jody Doran, published by World Scientific, 2000

ISBN 981-02-4033-3, softcover, 121 pages, US\$21.00.

Reviewed by **Sarah McCurdy**, student in the Faculty of Education, University of New Brunswick, Fredericton, NB.

This entertaining little book is composed of nine short chapters, each of which presents a mathematical puzzle or phenomenon. Most of the “tales” are well known, such as an examination of the four colour map problem or the game of solitaire. The sections are generally accessible to a motivated or guided high school student and any mathematics undergraduate. The book would be a valuable resource for a high school mathematics teacher looking for enrichment material or a source of projects. The chapters often guide the reader through a problem, encouraging him or her to pause and work through the details of an argument. The tone is friendly and playful as the reader is encouraged step by step, but this easy manner can lead to a casual attitude towards definitions of new terms and ideas.

Miguel de Guzmán starts his book by commenting that many profound ideas in mathematics are born out of curious games and puzzles which are passed from one person to another. Mathematicians play around with ideas and observe orderly patterns, and this can often lead to new branches of thought. Citing the Königsberg bridge problem, as well as Pascal's and Fermat's investigations of probability as examples, de Guzmán states “games and beauty are found in the origin of a major part of mathematics.” Thus, he proposes to teach some aspects of mathematics through similar games and observations. This promising idea leads to four sections on games (Nim, Solitaire, Leap Frog, and a domino-laying game), two on graph theory topics (the Four-Colour Problem and the Königsberg bridges), and, somewhat surprisingly, two that demonstrate some geometrical oddities of ellipses and parabolas. The remaining chapter, “The Mathematician as a Naturalist,” details the observations that can be made to deduce the five Platonic solids. In all these sections, curiosity is the prevailing attitude, and de Guzmán uncovers surprising facts with verve.

What makes these tales shine is the inclusion of historical background. The majority of the chapters describe a puzzle and the historical setting in which it was introduced or investigated. The characters are briefly sketched as well-rounded people, not just as mathematicians. These people are portrayed as curious problem-solvers who collaborate with others. Their hard work and dedication are mentioned, emphasizing that mathematics is a process which rewards persistence.

The chapters are diverse in level. Some are above high school level, such as the chapters on conics sections; one of these has, in its opening paragraph, the sentence, "Remember: an ellipse is a set in the plane made up of all the points the sum of whose distances to two fixed points, the foci, is constant." This is a fact which many high school students and even some first-year university students do not have at hand. Other chapters need virtually no outside information and serve as the pleasant introductions they were intended to be. The chapter on Nim, however, lacks a proper explanation of binary notation and the nimsum that is essential to the analysis of the game.

Generally, the chapters contain work for readers to do themselves. Even more valuable are the hints for further work, which would usually be a good jumping-off point for independent study or a project. In fact, as a source of project ideas, the book is ideal. The topics are not those generally studied in school, and the book usually provides enough background and a "hook" to get students started. Unfortunately, some of the vocabulary is non-standard, which might cause students to hit a few snags as they proceed from the chapter to their research. As well, the book is desperately in need of a glossary to accompany the new terms which are used but not well explained or defined. These two problems could be addressed by the teacher acting as a resource, which would also clear up the few places where the translation is awkward.

Overall, this is a useful book that enlivens some branches of math not normally addressed in schools. The book is accessible and interesting in most places. It can move quickly at times, but the reader is rewarded when he or she works through the problems and ideas presented.

The Contest Problem Book VI: American High School Mathematics Examination (AHSME) 1989–1994

Compiled and augmented by Leo J. Schneider, published by the Mathematics Association of America, 2000

ISBN 0-88385-642-5, paperbound, 212 pages, US\$25.95.

Reviewed by **John Grant McLoughlin**, Faculty of Education, University of New Brunswick, Fredericton, NB.

The book features a comprehensive set of problems and detailed solutions for each of AHSME contests 40 through 45 inclusive. Select comments on the distractors along with detailed answer and response distributions are included with the various sets of problems. The book concludes with three additional features/chapters, namely, an insider's look at the problems, some helpful tools for problem solving, and finally, a classification of the problems by topic. The book is well suited to those seeking problems to use with contest preparation or independent problem solving development of keen high school students.