

science news

March 29, 1969 **25c**
vol. 95 no. 13, pp. 297-320

AMAZONIAN ECOLOGY:

- the mess
- the victims

The Shipbuilding Revolution

Letter from Tokyo
steel and nuclear power

Behind tic-tac-toe . . . bigger mathematics

The Master Book of Mathematical Recreations

FRED. SCHUH

Why do dice games work? How is it possible to perform card tricks? Why is binary system analysis applicable to match stick games? Is it possible to win consistently at tic-tac-toe? How can probability theory be applied in choosing among several possible answers to a puzzle? The answers to these questions are found in *The Master Book of Mathematical Recreations*—the most complete and penetrating examination ever prepared on the mathematical bases of games, puzzles and recreations, card tricks and similar material. Professor Schuh has proved that pocker dice, decimation problems, match stick puzzles, geometric transformations and dozens of other games and effects are thoroughly grounded in mathematics—and that the mathematics involved is even more interesting than the games themselves.

Professor Schuh devoted most of his life to this carefully planned, exhaustive survey of mathematical amusements, the greatest work that has ever appeared in the history of the genre. In many instances his work was the pioneer and much is still unique. Here is only a partial list of the puzzles, games and mathematical effects which he considers:

domino puzzles
games of encirclement
sliding movement puzzles

subtraction games
puzzles in mechanics
subtraction games

games with piles of matches
puzzles with 8 dice

road puzzles with concentric circles
tic-tac-toe (26-page analysis of
all moves)

One of the most interesting and valuable sections is an extended discussion of methodology for solving puzzles and problems—a profound examination of almost every possible technique.

For puzzle enthusiasts there are scores of new puzzles, games based on mathematics and special effects . . . almost a lifetime of material. Solve Schuh's puzzles with your own tactics, or follow his definitive solutions. (Do not confuse this book, however, with ordinary puzzle collections. Although hundreds of puzzles are given, this material is systematized, organized in terms of the math involved, and thoroughly explained.) For mathematicians, teachers and general readers interested in math, this is an eye-opening survey of a field of applied mathematics that is seldom explored . . . easy ways to learn aspects of elementary math, unusual shortcuts, stimulating, novel approaches to aspects of higher mathematics, all clearly explained.

Translated (1968) from the Dutch by F. Gobel. Edited by T. H. O'Beirne.
195 figures. xvi + 430pp. (22134-2) \$3.00

THE PHYSICS AND CHEMISTRY OF SURFACES, Neil K. Adam. Basic survey and coordination of research data in the field, with a wide coverage ranging from theoretical concerns in physical chemistry, to core data on experimental techniques, to results of interest in chemistry. A standard work in the literature of modern chemistry. 62 figures. x + 436 pp. 6½ x 9¼. (62006-9) \$4.25

STRING FIGURES AND HOW TO MAKE THEM, Caroline Furness Jayne. Easy-to-follow instructions for "cat's cradle," "Jacob's ladder," and 105 other figures, with all loops and inter-twinnings carefully illustrated. Hours of fun for beginners and experts alike. 950 illustrations, 17 plates. 430pp. (20152-X) \$2.25

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Amazonia is suffering from the depredations of encroaching civilization. Eroded river banks are only one sign; eroding life forms are another. p. 312 (photo: Chris Weathersbee)

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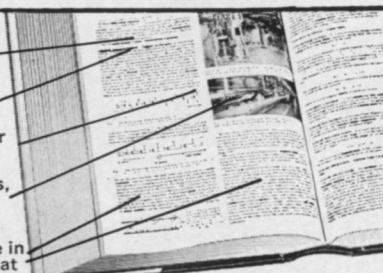
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