



M A R T I N
G A R D N E R



The



Universe

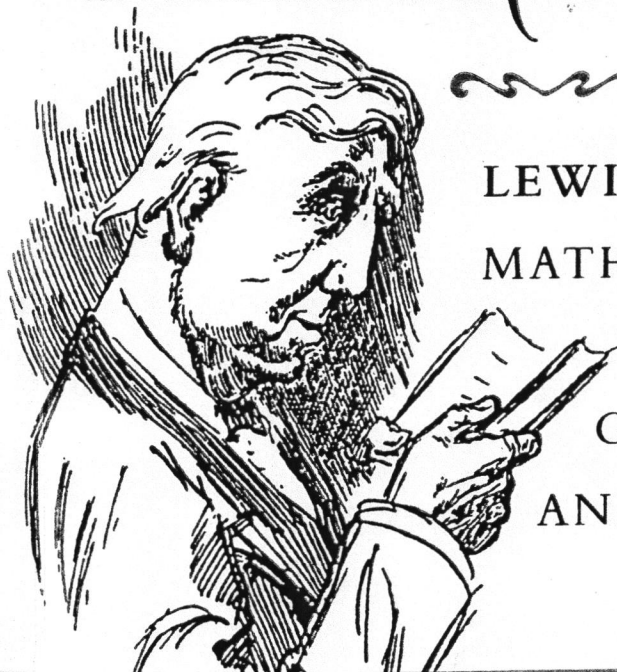
in a

Handkerchief



LEWIS CARROLL'S
MATHEMATICAL

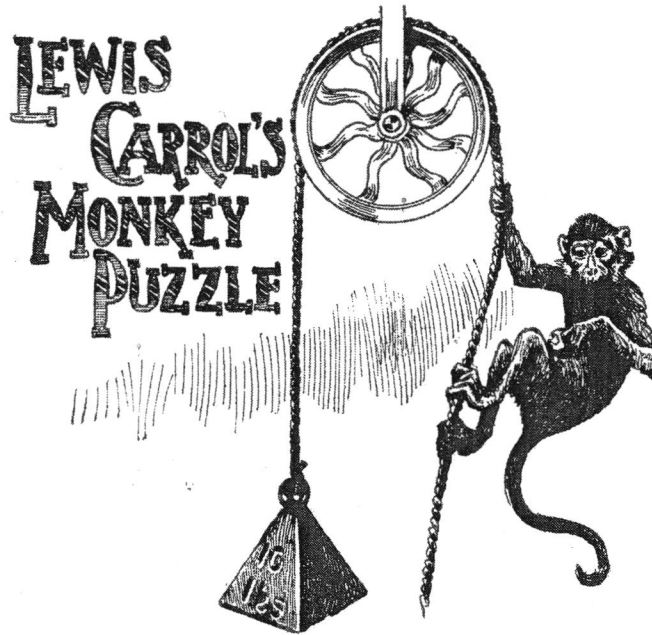
RECREATIONS,
GAMES, PUZZLES,
AND WORD PLAYS.



symbolic logic one can simply list the eight possible combinations of lying and truth-telling for the three men, then explore each combination, eliminating those that lead to logical contradictions.

Carroll was fond of devising puzzles based on truth-tellers and liars. Many can be found in *Lewis Carroll's Symbolic Logic*, edited by the late William W. Bartley, III. Some of them are almost as bewildering as the clever truth/lie puzzles presented by mathematician and Carrollian Raymond Smullyan in his many puzzle books.

A problem in physics, hotly debated in Carroll's day, involves a monkey clinging to one end of a rope. The rope goes over a pulley with a weight on the other end that is equal to the monkey's weight. The monkey and the weight are at the



An illustration from Sam Loyd's *Cyclopedia of Puzzles* (1914).

same distance below the pulley. If the monkey climbs the rope, what happens to the weight? Carroll's diary on December 21, 1893, describes the problem, then adds: "It is very curious, the different views taken by good mathematicians. Price says the weight goes *up*, increasing velocity. Clifton (and Harcourt) that it goes *up*, at the same rate as the monkey, while Sampson says that it goes *down!*"

The correct answer, ignoring friction, is that regardless of how the monkey climbs—it may even let go of the rope and grab it again—the weight and monkey always stay at the same level. You can see this demonstrated by an exhibit in Chicago's Museum of Science and Industry.