hypotheses is introduced, but it is not followed dogmatically. Instead, the treatment centers on four basic "principles": equilibrium, maximum, polarity, and energy. Each is discussed under alternative hypotheses and from different points of view.

This is sound pedagogy. It does little good to proceed in such matters as if there were a single best set of extra assumptions. But it does not disguise the fact that doing potential theory probabilistically can lead to complications. A famous probabilist was once heard to say that studying Hunt-style potential theory is a good way to grow old before one's time, and there is no doubt a grain of truth in the remark. The present book, however, succeeds to a remarkable degree in rejuvenating the subject. In any case one cannot cease to marvel at the dexterity with which its author walks the highwire between probability and analysis.

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Combinatorial integral geometry with applications to mathematical stereology, by R. V. Ambartzumian, John Wiley & Sons, Somerset, New Jersey, 1982, xvii + 221 pp., $45.00. ISBN 0-4712-7977-3

In 1890 J. J. Sylvester, still creative at age 76, published a paper [7] entitled *On a funicular solution of Buffon's "problem of the needle" in its most general form*. The work is headed by the phrase "quaintly made of cords" from *The Two Gentlemen of Verona*, and is replete with well-executed drawings resembling complicated block and tackle devices. Although Sylvester's ropes serve him better than those of Shakespeare's Valentine, the mathematics suffers from the vagueness ever present in early writings on measure and probability.

To get a rough idea of the type of problem considered by Sylvester, suppose that a number of needles of various lengths are welded into a fixed planar configuration and then are "tossed at random" onto a plane ruled by equally spaced parallel lines. Calculate the probability that some single line will cross all of the needles.

The present book, *Combinatorial integral geometry*, by R. V. Ambartzumian, places the work of Sylvester in a rigorous setting while broadly extending the key idea in his paper. The main body of this book is based entirely on topics taken from the author's works; the order of the chapters seems to be generally in the chronological order of appearance of the corresponding research. Before proceeding, let us introduce a bit of formalism, simple by hindsight today, but denied Sylvester.

In E^2 an oriented line is determined by a unit normal $\mathbf{u}$ and a signed distance S to the origin. Thus $S^1 \times R$, conveniently realized as the cylinder $r = 1$ in E^3, is established as a natural coordinate system for the oriented lines of E^2. The usual surface measure on the cylinder transfers as a motion