importance. He succeeds in reaching the reader because of his complete familiarity with the many languages of this polyglot subject, switching from one language to another often enough to enable any serious reader, regardless of background, to follow the trend of the argument.

It should not be inferred that all readers will find this an easy book to read. As a case in point, the author refers to the MacAdam limits of the color solid without further explanation. Readers who have been softened by the kind of systematic development of a subject that is found in most textbooks might be tempted to read no farther. In the opinion of this reviewer this would be a mistake, because the treatise is so broad in its scope as to preclude formal elucidation of all the details. In the particular instance cited above, the context makes clear that there are established limits to the size of the color solid in the case of nonluminescent reflecting surfaces, and a reference to MacAdam's original paper provides the reader with a ready means of supplementing his knowledge if he so desires.

The book is divided into three parts, the first of which reviews certain basic facts concerning the eye, the various aspects of color, the operations of color-matching in a physical sense, and the effect of these matches on both normal and abnormal observers. Part II is entitled "Tools and Technics" and deals principally with spectrophotometers, colorimeters, color atlases, and color languages. Part III, on the "Physics and Psychophysics of Colorant Layers," clarifies the concepts of gloss, opacity, hiding power, etc., and then poses the practical problem of color-matching, demonstrating the use of the Kubelka-Munk analysis in this connection.

This volume is remarkably free from errors of fact, the most serious error noted by this reviewer being the implication that six cameras instead of only three are required for correct color rendering in an idealized color television system.

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Mathematics: Its Magic and Mastery. 2nd ed. Aaron Bakst. New York: Van Nostrand, 1952. 790 pp. $6.00.

This book, originally published in 1941, now appears in a second and revised edition. The material covered is essentially high school mathematics and mechanics. Many entertaining facts and parlor tricks are included; but the assertion on the jacket that "Einstein's concept of relativity and the theory of the expanding universe are explained so simply that they can be readily appreciated by any layman" is amazing, for these matters actually receive no more than a mere mention—say, about 10 words.

The author states in the preface that "no proofs of any kind are used in the unfolding of the mathematical processes and properties." Fortunately this program is not strictly followed, for mathematics without reasoning is no longer mathematics. Its "magic" may remain, but its "mastery" is out of the question. Indeed, the author frequently does give reasons for his statements, although they are often diffuse and lacking in precision. Thus in "How to Make Money in the Box Business" (p. 568 *et seq.*), the author spends several pages in finding out which of the two positive quantities, $k^2/16$ or $(k^2/16) - a^2$, is the larger. Essentially the same question arises in the problem of sawing out the biggest beam from a given log of radius r. Three pages (574–76) are devoted to this problem without a really sharp proof. If x, y are the beam's dimensions and A its section area, we have

$$A^2 = x^2y^2 = x^2(4r^2 - x^2) = (2r^2)^2 - (x^2 - 2r^2)^2.$$

A is evidently a maximum when the subtracted quantity is zero; that is, when $x = r\sqrt{2}$. This clear-cut result involves no more algebra than that actually used in the book and occupies but one tenth the space.

In this revised edition some errors still remain. A very curious one appears on page 349 in connection with the value of a lottery ticket—computed as the price paid for the ticket times the probability of winning a prize. Again, on page 701, the foot-pound is regarded as the unit of force.

The book concludes with an appendix that gives a serviceable outline of elementary algebra, geometry, and trigonometry. Four-place tables of logarithms, squares, square roots, sines, cosines, and tangents are also included, as well as a comprehensive index.

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Structural Chemistry of Inorganic Compounds, Vol. II. Walter Hückel; trans. and rev. by L. H. Long. Amsterdam-Houston: Elsevier, 1951. 653 pp. $13.50.

The purpose of this treatise, as stated in Volume I (Science, **113**, 253 [1951]), is to provide inorganic chemistry with a basis for its systematization: "Namely, a structural and constitutional theory in one embracing representation." In this volume the author discusses the volatile inorganic molecules, crystal structure, silicate chemistry, metallic substances, and the chemical reaction in inorganic chemistry.

After studying the two volumes, the reader is still looking for the "one embracing representation." The closest approach to a basis for systematization is the emphasis on bond types and interatomic distances, but there is not even a table of bond energies, and the thermodynamics of inorganic chemistry is completely neglected.

As a summary of the literature on the structure of molecules and crystals, the volumes are to be commended. The discussion of ionic radii and lattice forces in Volume II is good, and the comparison of the values given by Goldschmidt, Pauling, and Zachariasen is useful. Unfortunately, the reference to the work of Zachariasen is to his 1931 paper and does not include his revised values.

In the treatment of the strength of acids and bases