

Book Review

An Introduction to Color, by Ralph M. Evans

Published (1948) by John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 324 pages + X pages + 3-page general bibliography + 12-page index. 269 illustrations + 15 color plates. $7\frac{1}{2} \times 9\frac{3}{4}$ inches. Price, \$6.00.

Color may be defined as a hue of the rainbow or spectrum, or as a tint produced by a mixture of such hues, or as a paint or a pigment, or in various other ways for ordinary usage. To the scientist, however, color has a more specific meaning depending upon its use and application.

To the physicist color is one of the characteristics of the radiant energy known as light. He is concerned with the properties of light in terms of wavelengths or frequencies, and with its intensity, both absolute and comparative. He has devised many instruments, such as monochrometers, spectrophotometers, radiometers, photoelectric cells, and the like, and employs many different light sources for the emission of light, all for the purpose of describing and defining light and color in terms of his accepted constants such as lumens, foot-candles, ergs, joules, and so forth.

The psychophysicist, on the other hand, takes the "color" of the physicist and relates it to the sensitivity of the human eye. In so doing he evaluates the physicist's "color" in terms of an average observer usually by the use of mechanical means. He is interested in the entire system composed of the light source, the radiant energy, and the human eye.

The psychologist studies the action of the mind in perceiving and interpreting light and color, and explains, for example, why the same physical light is not always seen as the same color.

Some time ago the Committee on Colorimetry of the Optical Society of America, recognizing the complexities and interrelationship of the many variables involved in the field of color, tabulated them in chart form under the head of physics, psychophysics, and psychology. For the first time, however, to this reviewer's knowledge, a book written by an expert in the field has been published in order that the reader interested in color may understand, correlate, and interrelate all of these many variables.

It would be difficult to find a man better suited for the task than Mr. Evans. An authority in the field of color, he has for many years been conducting research on visual effects in photography, and has delivered many lectures, and written numerous papers on the subject of color. His first book on the subject is a milestone.

In "An Introduction to Color" Mr. Evans covers the physics of color in the first six chapters with headings as follows: Chapter I, "Color and Light"; Chapter II, "The Physical Nature of Light"; Chapter III, "Light Sources"; Chapter IV, "Illumination"; Chapter V, "Colored Objects"; Chapter VI, "The Physics of Everyday Color." Without delving too deeply into the subject, the reader is given a brief but adequate grasp of the basic physics of light and color.

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The psychophysics of light and color are discussed in Chapter VII, entitled, "Color Vision," including a brief review of the elementary physiology of the eye and the functions of the various brain centers. Mr. Evans discusses light and color as evaluated by the eye as a fixed sensitivity receptor.

Having treated the physical and psychophysical aspects of light and color in earlier chapters, Mr. Evans then directs his attention to the psychological aspects of vision. In Chapters VIII through XI, entitled, Chapter VIII, "The Visual Variables of Color"; Chapter IX, "Perception and Illusion"; Chapter X, "Brightness and Perception"; Chapter XI, "Color Perception," Mr. Evans reveals the part which the mind plays as the final interpreter of light and color phenomena. He makes clear why the same physical light can appear different to the eye under different conditions and in different environments. Illusions and other unexpected phenomena which exist in the form and shape of objects can also exist in light and color, and some of the bases of their interrelationship are shown in these chapters.

In the subsequent eleven chapters of the book Mr. Evans warms up to problems which are more purely those of color such as the measurement of color, the specifications of color, a thorough review of the various color systems, their assumptions, tools and methods of use and application, color differences and color names, additive and subtractive mixtures of colors, and transparent and nontransparent color mixtures (paints). The author uses the same approach in discussing these problems as he did in considering the relationship of the physics, the psychophysics, and the psychology of light and color.

In the last three chapters of the book the role of color in photography, art, design, and abstraction is studied and interpreted in the light of the previous chapters.

The book is extensively illustrated, and noteworthy are the clear explanations and titles of the many graphs and pictures. "An Introduction to Color" treats difficult subjects with clarity and simplicity. Definitions and usages of words unique to their field of science are adequately explained.

The author's emphasis through explanation and re-explanation, even if sometimes repetitious, will be helpful and pleasing to the many teachers and students who will unquestionably use this book for study and reference purposes.

The absence of much of the mathematical background of the many concepts discussed will be of benefit to the relatively untrained reader interested in color, and will not prove a serious deficiency for the trained scientist.

The book is highly recommended by this reviewer for the serious worker in any field in which color is an important factor, and is a "must" for the artist, technician, and scientist in color photography and related arts.

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