A comprehensive bibliography on color has never been gathered together, despite the great services it would render to historians as well as to scientists. The recent gift to the Art Library by Faber Birren of 226 books on color, and of a fund for additions to the collection, will permit the formation at Yale of a deposit bibliography on color and color theory. With the Birren Collection serving as a core for research and teaching, the deposit bibliography will establish in the Art Library a record of publications on color, subdivided by subject and cross-indexed to facilitate research. The first task, which may be completed by 1977, will be the collating of Yale’s holdings in color in its several collections and libraries, including the important materials in the Medical School and Beinecke as well as the Sterling, Kline, and Art libraries.

The deposit bibliography will be designed to serve not the scientist, whose work requires highly specialized bibliographies, but the historian and general reader who need access to histories of color in the sciences and in painting, textiles, ornamentation, and the like. Within the sciences, emphasis will be given to those fields whose studies of color impinge most directly upon the arts, principally optics, perception, physiology of vision, and psychology, and to those theoreticians like Newton, Chevreul, and Helmholtz, who set standards for the general knowledge of color. Within the arts, principal place will be given to direct discussion of color, for which a thorough listing should be possible.

Where available, listings of holdings in color and color theory from sister institutions in Europe and America will be kept with the deposit bibliography, which will in any case note the locations of the works that are indexed. Contributions of books (several have already been promised) and of bibliographies will be of material help in the development of the deposit bibliography, and sugges-
tions from others will be gladly received by the Birren Collection in the Art Library.

The present essay, the main aim of which is to list the publications in the recent Birren gift, offers some suggestions for subdividing the field of color. Each of its sections begins with a list of references to the appropriate volumes in the Birren Collection, these lists constituting a cross-listing by major subject. Birren Collection books mentioned in the body of each section are indicated by printing the authors' names or the titles in capitals and small capitals. All such references direct the reader to the annotated bibliography.

HISTORIES AND BIBLIOGRAPHIES OF COLOR THEORY

Abbott, A. G.
Bezold, W. von
Birren, F. B.
Blanc, C.
Bouma, P. J.
Déribéré, M.
Elion, A.
Graves, M.

Houston, R. A.
InternationaI Printing Ink Corp.
Kouwer, B. J.
Le Grand, Y.
Linton, W.
Luckiesh, M.
Murray, H. D., and
Spencer, D. A.

Optical Society of America
Polyak, S. L.
Skard, S.
Southall, J. P. C.
Ueda, T.
Weinberg, L.
Wilson, R. F.

Histories of color and color theory are remarkably rare, and are usually devoted to one aspect, not to the whole issue. The writings of scientists in the twentieth century are markedly ahistorical, and can even be considered antihistorical. They tend to be limited to contemporary statements, and when they do look to the past, it is to deal with those aspects which retain validity, omitting outmoded concepts despite their significance to the historian.

Only Faber Birren has attempted to summarize the several aspects of color history, in the sciences, the arts, religion, and popular knowledge. His Story of Color (1941) remains the unrivaled general history, its lay summaries not improved upon in his more copiously illustrated Color, a Survey in Words and Pictures (1963). Le Grand offers a more technical handbook stressing physiology of vision, with an especially good summary of color vision from Thomas Young onward and an extensive bibliography. Bouma concentrates on perception and measurement of color, and provides an excellent short digest of color theory (clear explanations of Ostwald and Munsell), as well as a superb annotated bibliography.
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Surely the best of these general studies of modern color that incorporate a history of color theory is that of K. T. A. Halbertsma, *A History of the Theory of Color* (Amsterdam, 1949), not in the initial Birren gift but since added to the collection. Halbertsma’s old-fashioned system of abbreviated bibliographical references is very awkward to use, but rewards the patient reader. His text is the most thorough analysis ever published of color theory from Newton to the early twentieth century, although his concluding chapters on the twentieth century are rather exclusively oriented toward ophthalmology.

The surprising lack of general histories and bibliographies of color is somewhat compensated for by special studies covering one field. KOUWER is the best general study of color association and synesthesia, with a sensitive and learned study of the language of color in English, French, German, and Dutch. It also has a succinct, but excellent bibliography of eight pages. SKARD is a model bibliography, one that could be emulated by every field of color study. Because the author’s subject, color in literature, ranges so widely, the annotated bibliography has application to many fields. It is subdivided by subject and nation, as well as by individual writers. KLEIN has a modest bibliography by comparison, but is the most thorough history of its subject ever published. Its text and appendices reproduce original documents on color-music, and its illustrations are used to aid a remarkably clear exposition. It is one of many books in the Birren gift that was not in any Yale library (approximately two thirds of the Birren books are new to Yale’s collections).

**MAJOR STATEMENTS OF SCIENTIFIC THEORY**

Bezold, W. von
Boyle, R.
Chevreul, M. E.
Descartes, R.
Goeithe, J. W. von
Henry, C.
Newton, I.
Ostwald, W.
Rosenstiehl, M. A.
Schopenhauer, A.
Voltaire

The Birren Collection brings us two major texts before Newton. The *Descartes* volume incorporates the essence of his writings on color (largely in the *Meteorum*), and Boyle’s *De Coloribus* is a record of his experiments and an early statement of the later common idea that red, yellow, and blue, plus white and black, can suffice for a painter since all colors can be derived from them. The
The later edition of the Philosophical Works, new to Yale’s collections, incorporates a long section (approximately 100 pages) devoted to color.

Mr. Birren’s Newton is Yale’s first copy of the famous Latin edition of 1706, which made readily available to non-English speaking scholars his very controversial ideas on color. The English language Opticks, the second of his three great published treatises, had appeared in 1704. Newton’s essential discovery of the nature of color had been announced in 1672, but knowledge of it had been imperfectly available. His central explanation was that unified light, passed through a prism exhibited the rainbow spectrum of color (others had seen this, but had not explained it), because of the different degrees of refrangibility of the hues. Sunlight was therefore the combination of all the colors, each of which could be shown to exist in a “homogeneous” state that could not be further refracted.

Despite the force of Newton’s own arguments, and his defense by notable figures (the Birren Collection includes the exegesis and defense by Voltaire), his discovery was bitterly contested until the middle of the nineteenth century, partly because it conflicted with what seemed to be common sense and partly because of the confusion between color as a constituent of light, and color in pigments—which do not behave the same way, dependent as they are upon absorption and reflection. Newton’s chief antagonist in the early modern era was Goethe, whose first major publication involving color, the Beiträge zur Optik (1791–92), is represented in the Birren gift in a facsimile edition of 1928. The more comprehensive Farbenlehre (1810; the Birren Collection has a first edition of the Eastlake translation of 1840 of its principal, first half) carried Goethe’s ideas to a more polemical stage, in which extraordinary inventiveness and brilliant powers of observation are placed at the service of a fundamental error: the belief that color originates in black and white. This scientific error, congenial to those who unconsciously wish to subordinate color to the spiritual forces embodied in black and white, was finally laid to rest by the generation of Helmholtz and Maxwell in the middle of the century, although Theosophists and others today continue to support Goethe against the “materialistic” explanation of Newton. Goethe’s stubborn adherence to his wrong, but fruitful theories of color, led to his rupture with Schopenhauer, whose Über das Sehn und die Farben
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(1816; a later edition is in the Birren Collection) disputed the master.

Perhaps the greatest stimulus to a broad appreciation of color in the later nineteenth century was the famous essay of 1839 by Chevreul on the laws of simultaneous and successive contrasts of color. Those phrases are Chevreul’s own, and typify the genius of this pragmatic, empirical scientist. His theories were not correct (like his contemporary Sir David Brewster and others, he failed to distinguish color-pigment from color-light), but his acute observations, grouped under attractively phrased categories, supported a whole range of application to textiles, ornament, interior decoration, and art education. Mr. Birren has given the first edition and the beautiful centennial edition of the famous work, as well as two other publications by the French chemist, and two of the principal English translations (Delf and Spanton). These latter help document the exfoliation of Chevreul’s ideas among artists and designers of textiles and ornament well before the French Impressionists gave Chevreul a notable fame in the art world.

Bezold represents the generation beyond Maxwell and Helmholtz, when the distinction between color-light and color-pigment was at last clearly understood in the scientific world. The great value of dyed cotton textiles, which had accelerated the practical application of the new aniline and other artificial colors, sponsored a growing awareness of color’s importance in the nineteenth century. Bezold is typical of the best scientist-vulgarizers who incorporated the pragmatic findings of Chevreul with the most recent science, in a conscious effort to reach out toward art and industry. His work, typical of his generation, incorporates sections on the decorative and ornamental arts and on esthetic principles in painting, frankly non-scientific concerns which reflect the scientists’ expanded perception of their role in society.

Charles Henry, the mathematician friend of the painters Seurat and Signac, also played a major role in the transfer of scientific concepts of color to the art world. His very rare folios Cercle Chromatique and Rapporteur Esthétique are now at Yale thanks to Mr. Birren. Although they could hardly be called vulgarizations, and are instead characterized by a very abstruse prose, they embody Henry’s influential ideas about the relationships of pure linear direction and color to states of feeling.
NOMENCLATURE AND COLOR STANDARDS

AIMS
Andrews, E. C.  Grégoire, G.
Birren, F. B.  Harris, M.
Bradley, M.  Hayter, C.
British Colour Council  Hesselgren, S.
Bustanoby, J. H.  Jorgensen, C. J.
Chevreul, M. E.  Kornerup, A.
Earhart, J. F.  Lacouture, C.
Field, G.  Loynes, L.
Gerstacker, L.  Mueller, A.
Nordisk Textil Union

The Birren Collection is particularly rich in publications by artists, scientists, and societies that proposed standards and methods by which colors might be classified. The need for these grew because mass production, especially of textiles, benefited from a common reference system which allowed some uniformity of product and economies of reference. Manufacturing aside, artists, scientists, teachers, horticulturists, and others also needed color systems when analyzing color or simply when communicating with others, common language—“pale pink” or even “cochineal red”—being too vague. In the nineteenth century, two realms were particularly important in the growing demand for standardized color nomenclature. One was the textile industry, changing over to printed cotton, an industry so powerful in society because of its rapid mechanization, and the other was the natural sciences, which were also being revolutionized and expanded. Both were dependent upon the increased literacy which also characterized the nineteenth century; hence a new market came into being for books on color standards.

The first such book in the Birren gift is also the rarest, The Natural System of Colours by Moses Harris of about 1766 (which comes with Mr. Birren’s 1963 reprint of it in facsimile). Harris’s system, usually regarded as the first to have a color circle with a full range of color, rests on the three pigment primaries, red, yellow, and blue. These are shown in the center of his circle, overlapping to form black. Around the center are four concentric bands changing from dark to light as the outer perimeter approaches. The two inner bands represent mixtures of two primaries, the two outer bands of three primaries. The whole circle is divided into eighteen radial compartments, each embodying the rational, overlapping pro-
gressions of light and dark and of binary and triadic hues. In 1814, Patrick Syme, "flower painter, Edinburgh; painter to the Wernerian and Horticultural Societies of Edinburgh," published his variation of the earlier system of A. G. Werner (1750–1817), the mineralogist, extending it from 79 hues (based on actual minerals) to 108. The Birren copy, Yale's first, has 108 hand-painted color samples. The Werner-Syme nomenclature, less abstract than Harris's, was more suitable to artists, amateurs, horticulturists, and natural scientists, who could record color notes in nature by reference to a numbered system favoring analogies with natural forms and substances ("64. Lemon yellow. Large wasp or hornet. Shrubby Goldylocks. Yellow orpiment.").

Also new to Yale is Grégoire, a fascinating treatise for which the author acknowledges the collaboration of J. F. L. Mérimée and the natural scientist Mirbel. His purpose, now common to many writers in most Western European countries, was to provide a self-instruction manual as well as a standard. He had published separately a folio Table de couleurs with 1,351 separate colors, and an abridged Table with 343. Either of these, with yet another separate publication, Tableaux numériques, and the treatise, formed a whole system of ingenious simplicity. At its heart is a color wheel showing proportional quantities of yellow, red, and blue in eight zones, plus eight gradations of value from white to black. An equilateral triangle rotated over the wheel will automatically denote a pure triad (whose mixture forms a neutral grey), and complementsaries are opposite one another on the circle. Grégoire foretells later preferences by praising a frank use of color opposites, especially when broken into small zones as in textiles and ornament.

Grégoire's adherence to the conception, already widespread in the eighteenth century (and not a discovery of the Impressionist generation, as is commonly believed), that the three pigment primaries can be used with black and white to generate all colors shared in the rapid popularization of this idea, whose benefits to industry became clear over the century until the economy of three-color photographic reproduction was realized. The relative contributions of art and science in this regard are not clear. The New Practical Treatise (1826) by the painter Charles Hayter (another first at Yale) insists even more strongly than Grégoire on the
virtues of the three primaries, whereas the scientist Chevreul had
a much more complicated nomenclature, and his famous series of
color wheels (Des couleurs et de leurs applications) is actu-
ally rather clumsy to use. One even feels that the insistence of art-
ists like Hayter on the symbolic, at times religious, import of the
three primaries, black, and white, reinforced the move toward the
clarified, basic structure so vital to growing industry.

Rival, frequently parallel systems of nomenclature were wide-
spread by the end of the century. In this country, Milton Bradley
and Louis Prang distributed standardized color materials (papers,
pigments, crayons) keyed to their numbered standards. In England,
the firm of Winsor and Newton (see J. S. Taylor) was the most
famous of many who supplied artists with watercolors and oils
based upon a clear color standard. Of French standards, one of the
most interesting is that of Lacouture, who, in 1890, based his
beautiful plates upon the concept of optical mixture. The engraved
lines bearing the colored inks were nearer or farther apart accord-
ing to the degrees of paleness desired, so that the greater or lesser
amount of white paper showing through (and the greater or lesser
amount of another set of engraved color-lines) would produce the
effect—the colors of the inks themselves not being varied. This re-
markable parallel to Neo-Impressionism did not acquire any popu-
ularity, however, because the algebraic complexity of the author’s
nomenclature offered no compensating advantages.

Twentieth-century standards in the Birren Collection are yet
more varied, and in their more geometric and mass-produced aspect
have much of the feeling of modern technological society, while
retaining a crisp beauty that is in harmony with this century’s ab-
stract art. At the turn of the century, the new processes of photo-
lithography had come into their own and still retained a delicate
physical thickness of surface that affords a tactile pleasure not
found in photo-offset. The natural color standard produced by
Oberthuer and Daubeny in 1905 has this handsome appearance
(the authors record the long tribulations leading to the successful
printing). More direct printing processes with yet thicker inks
could nonetheless produce more saturated colors. The Earhart
Color Plan of about the same year has eight detached color charts
in a platen printing process, which can be slipped in and out of a
sturdy perforated case. The pattern of colors shown in the aper-
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tures conforms to basic lessons in color harmony, the whole (user’s movement included) constituting an unconscious parallel to the machine world, as though the twentieth century were being greeted at its outset by a book-machine. By contrast, the contemporary Jørgensen standard, although it has much of the crisp clarity of Earhart and uses perforated mounts (but rigid ones), is represented in hand-colored plates. The author ground and mixed his own pigments, and used an unexplained painting process to produce bands of two colors, progressing from one pure color through subtle gradations to the other.

The cost of hand-produced colored charts was so great that industrial processes took over most book production by the 1920s. Occasionally one still feels close ties to older traditions, however. The British Colour Council Dictionary of Colour Standards (1934) is rendered in silk ribbons, and the edition of 1952 in woolen yarns, preserving something of the nineteenth-century tradition of illustrating books with actual samples of woven and printed cloths, as well as of the constituent threads. The advantage of actual cloth or thread to the historian, let alone to the contemporary user, is the greater permanency of the color and proof of the nature and quality of the material. There are also valuable lessons in the devices used to put such materials together in book form. Some bindings are made in rings, bolts, or springs (Hesselgren or Nordisktextil Union), and the user’s need to make different arrangements of the individual colors forming a standard encouraged some publishers (Wilson Colour Chart) to make special, removable clasp bindings, although loose-leaf sheers in boxes have represented the most common method. From the earliest standards of the seventeenth century, with their hand-sewn bindings and delicate watercolors, to these modern industrial books, there is a whole history of the rise of industrial production.

The most widely used color standards in the twentieth century are those devised by Albert Munsell and William Ostwald (Faber Birren published in 1969 separate descriptions and abridgments of their methods). Ostwald is represented in the Birren Collection by several publications including the basic Farbenfibel, and Ristenpart has an excellent summary of the ways in which the Ostwald system was employed in industry, with helpful illustrations of the various instruments used in the 1920s.
The richest category in the Birren Collection is that of instruction manuals, and artists' treatises which often double as manuals. For an art historian these are the writings that most readily reveal the shifting interests of artists, and how scientific work has been transmitted to the art world.

The earliest of the Birren treatises are from the seventeenth century. Du Fresnoy appears in a posthumous edition of 1684, incorporating the treatise of 1668, with the translation by the anonymous editor (presumably Roger de Piles) of the Latin verse into French, a valuable glossary of terms, and extended “Remarques” and “Sentiments” of Du Fresnoy on painting and painters of his era. This author enjoyed an immense vogue in eighteenth-century Britain, with editions by Dryden and, later, annotations by Sir Joshua Reynolds. Bound with Du Fresnoy is the less ambitious manual of Grégoire with similarly practical advice on colors, largely confined to discussions of pigments.

Of the eighteenth-century books, the very rare LeBlon stands out. The major publication of the work of Jacques Christophe LeBlon (1670–1741), this 1756 publication incorporates the author's famous Coloritto and the anonymous editor's long account of LeBlon's method of three-color printing. It reproduces the undated first edition's bilingual text (English and French), which was referred to in a London notice of 1731 as having been published several years earlier, and which can therefore be dated circa 1724–28. The Coloritto has a long dedication to Robert Walpole, which informs us that the Frankfort native (pupil of Carlo Maratta) had received a British Royal patent for his revolutionary method of using only the three primary colors to engrave a full range of tones then being applied to anatomical plates under the direction of the
"King’s Anatomist, Mr. St. André." This method is not explained in the Coloritto, but in the later text of the French edition. It rested on the printing of separate impressions of red, yellow, and blue inks in the finely dotted surfaces of mezzotint (aided by burin) which, when superimposed, gave a broad range of hues via optical mixing, the direct forebear of three-color photographic reproduction of the late nineteenth century.

Le Blon’s dedication to Walpole further tells us that the three-color process led him to the central discovery valid for all painting, and the real subject of his treatise, that the three colors "which I call Primitive" can form all other colors, with the aid of black and white. His remarkable text looks forward to nineteenth-century developments in this, for he clearly states several major principles which Seurat and the Neo-Impressionists, especially, were to use. The essential one is that the three primaries if broken into small color particles will form many hues because they mix in the eye. Another is the clear separation between color-pigment and color-light, "material" and "impalpable" colors, and the recognition that the three pigment primaries form black when mixed together, but the prismatic lights form white. And Le Blon also urges the use of yellow for highlights and near surfaces, blue for darker and farther surfaces. It should be stated that, translated into actual oil painting, Le Blon’s principles constitute a basic substructure to which were then added many colors. It required a century before many artists would regard the substructure as sufficient by itself.

The De Lairesse of 1778, going back to the first English edition of 1738, incorporates the more widespread painter’s notion of three primary, "capital" colors, and three secondary, "broken" ones, which were green, purple, and violet (orange replaced violet in later generations). The author recommends what must have been a studio practice of long standing, the painting of "cards" in a broad range of hues, then choosing three among them as "directors" of a given scheme. A century later, these were mass-produced by commercial suppliers, a purpose served also by some of the color standards already discussed.

Artists’ manuals in the nineteenth century are dominated by the British, perhaps because the amateur practice of watercolor developed in England sooner and more importantly than on the Continent, and provided a market for artist-writers. The second quarter
of the century was particularly rich in manuals, and the Birren Collection has four of the principal authors, Field, who will be discussed later, Howard, Hayter, and Hay. Howard seems a bit old-fashioned next to the others, since his book is a series of comments on nature and on specific artists (including Turner), rather than a treatise on theory. His text gives evidence of the British prelude to Impressionism in its division of artists into “Neri,” advocates of chiaroscuro, and “Bianchi,” users of pure color as the principal agent of organization.

The treatise of 1826 by Hayter has already been mentioned, and the Birren Collection also brings to Yale its first copy of the later extension of these ideas. This 1845 publication has very handsome color lithographs involving the collaboration of Owen Jones, among others. Secondary colors are in some cases derived from overprinting of the three primary ones, and “ancient” color is shown to lead toward black, whereas “modern” color insists on white. Hayter’s text (and one color plate) shows the advantage of spinning color discs, in which the three primaries will form white, and he looks forward to later developments also by stressing that “certain colours” of objects, that is, local color, must give way to what the artist actually sees. He must “resign all previous acquaintance with the colours of objects, especially distant ones, and confine himself purely to optical conviction,” a pragmatic emphasis upon visual versus remembered qualities which, together with the aspiration toward light, looks forward to the Impressionists.

In the next generation of British writers, one continues to feel a modern sense of color that is usually regarded as a prerogative of French Impressionists. The manual by Bacon stresses binary and triadic color harmonies unencumbered by the long disquisitions on esthetics that mark most French treatises, and its plates, although in rather conservative figurative imagery, show color opposites directly opposed, and three-color harmonies, that look forward to Neo-Impressionism and Fauvism. J. S. Taylor’s handbook, in both text and advertiser’s supplement, deals with the durability of pigments when exposed to sunlight, and shows the historian why superior British materials (Winsor and Newton colors, Whatman papers) were imported by the French. Among the numerous twentieth-century manuals, there are several with beautiful plates worthy of special notice. Mention has been made of the standards by Ear-
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HART and JORGENSEN and one should add the contemporary manuals by VAN DER POEL and WARD. VAN DER POEL, whose vulgarization of color theory is up-to-date (and even includes recent Japanese publications), has a striking variety of color lithographs, varying from color-mixing discs, to quadratures that indicate proportional color schemes, and from painterly color notations to "stained" stripes that remind us now of Morris Louis. The color lithographs in WARD are equally attractive, but in floral derivations echoing Art Nouveau.

Other twentieth-century manuals include one by the influential Harvard lecturer in design, Denman Ross. His 1919 manual proposes a reform of the triadic harmonies he urged in his earlier writings in favor of progressions of luminosities, that is, sequences of warm and cool hues. (His student and collaborator, Arthur Upham Pope, is the subject of a current exhibition at Harvard University.) The American Synchromatist MacDONALD-WRIGHT, in his treatise of 1924, concentrated upon color-light as the arbiter of harmonies, in contrast to BIEMA, a Bauhaus disciple for whom the expressive theories of Adolf Hoelzel were all-important. BIEMA has fascinating color charts and other diagrams which wed color and geometry since, like HAY a century earlier, she regarded the two as necessarily related.

PRINTING

Andrews, F. C. Griffiths, T. E. Le BLON, J. C.
CLELAND, T. M. Jacobs, M. TREZISE, F. J.
EARHART, J. F. Kruger, O.

Color in printing is a separate, and quite technical field, whose history could benefit from study of the manuals, standards, and scientific publications already discussed. Not only do these embody the history of color printing in their very production, but also the color plates were frequently made by scientist- and artist-printers working together to solve the problems of permanent inks as well as of visual presentation.

Of the Birren books dealing directly with color printing, the rarest is LE BLON, whose precocious three-color process has been discussed. Among modern books, there are the very beautiful works by EARHART and CLELAND. THE COLOR PRINTER (1892) by EARHART is justly famous for its beauty and its utility. In marvellous
plates often hinting of Art Nouveau, EARHART offered demonstrations of color-mixing, color-harmonies, and color-printing in its various phases, and recorded the actual proportion of inks used. Vignettes, letters, designs, and a whole variety of plates are rendered in most of the common color processes, and some of them are embossed. The later book by CLELAND is also beautiful, but its different purpose is served by a variety of actual colored papers, rather than printed illustrations. JACOBS and KRUGER document photolithography and photo-offset in plates showing the successive stages of each. KRUGER is the more thorough and scientific, JACOBS the more attractive, thanks to its plates which echo the nascent “art déco.”

COLOR-MUSIC

BELMONT, I. J.  
CASTEL, L. B.  
FIELD, G.  
HAY, D. R.  
KLEIN, A. B.  
KRAFFT, G. W.  
WEITBRECHT, J., and  
JUNCKER, G.  
POWELL, A. L.  
RIMINGTON, A. W.  
SINNOTT, S. H.  
STEIN, D. M.  
WILFRED, T.

The virtues of the splendid history of color-music by KLEIN have been pointed to in the discussion of general histories and bibliographies. KLEIN’s book itself reflects the great attraction color-music had in the first quarter of this century. Over the course of the nineteenth century, musical analogies had been used with increasing frequency to explain the intangible qualities of painting, until at the end of the century there was a widespread belief in the interrelationships of color and music.

NEWTON himself, in making the analogy of his seven prismatic hues with the seven notes of the diatonic scale, had sanctioned the close association of color and music. The Jesuit priest CASTEL, like his contemporary LE BLON, accepted much of NEWTON, and carried the musical analogy into practice. His “clavecin oculaire” was somewhat imperfectly described by Telemann but depended upon the projection of colors (apparently lights behind colored cloth or paper tapes) simultaneously with the playing of the individual keys to which they were attached. The basic triad do-mi-sol was blue, yellow, and red; each of the other notes had its color, and the progression of low to high was that of dark to light values. CASTEL’s treatise itself, although it uses the musical analogy to organize color,
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is a broad discussion of color with interesting parallels to Le Blon (who had come to Paris from England in 1638, and whose work may be reflected in Castel). It stresses the three primaries and the degree to which other colors can be derived from them, and includes suggestions for dyeing textiles with only the three primaries. Like Le Blon, Castel also distinguishes clearly between light and dark on the one hand, and pure color on the other. He describes (but alas does not include) his color standard. It included a single woven ribbon progressing through all stages of color, but its most important manifestation was a “cabinet universel de coloris & de clair-obscur.” This was formed of sheets painted in oils, then cut and pasted to form checkerboard charts that made

une tapisserie aussi agréable à l’esprit: car chacun de ses échan­tillons portant son étiquette, c’est-à-dire, son nom, son degré de coloris & de clair-obscur; & la dose des drogues dont elle est le résultat, on peut par la confrontation d’une couleur donnée par la nature ou par l’art, la définir, & même l’imiter fort juste.

This standard, furthering those that seem to have appeared first in the late seventeenth century, foretells those of the modern era in its essential formulation and purpose (to be able to match a given color is one of the chief uses of a standard).

The Birren gift includes a fine edition of the principal exponent of color-music in the first half of the nineteenth century, George Field. The 1845 edition of his Chromatics goes back to his first edition of 1817, but it replaces the hand-painted illustrations with aquatints and stenciled color over aquatint, some of them with the assistance of the noted printmaker David Lucas, and it refers to recent writings of many contemporaries, including Hay and Owen Jones. Field had inherited from the late eighteenth century the two common forms of color schemes, the circle and the triangle. Each shape permitted a continuous zone of color around a center, so that the primaries could be symmetrically disposed with the secondaries between them, and with complementaries (red-green, yellow-purple, blue-orange) opposite one another, while light/dark could be shown in lateral progression from the center outward. Field combines the two in very beautiful plates which show two triangles (the three primaries and the three secondaries) overlapping a common central circle and surrounded by large rings of the three primaries, the whole superimposed over figurative landscapes suitable
to the particular color scheme being presented. A musical clef is part of their presentation, for Field insists upon the interrelationships of music, color, and geometry which reflect, he tells us, "a universal archetype," the underlying harmony of the universe. He follows Goethe rather than Newton in the mistaken notion that color originates in black and white, partly because this belief was more congenial to those concerned with symbolism and spiritual values (for whom Newton had long seemed the antichrist), and has the charming idea that positive and negative electricity are parallel to light and shade, as are the active chemical elements of pigments compared to the passive ones.

At the end of the century, electricity permitted a modernized form of Castel's color organ, in the invention of A. W. Rimington. His 1912 publication, new to Yale, is an improvement over his first description of 1895, thanks to the reproduction of photographs of his own organ and its constituent parts. The later color organ of Thomas Wilfred, whose performances in New York were well known to the avant-garde by the late 1920s, is documented in the Birren Collection by offprints of Wilfred articles, a recent exhibition, and the charming 1930 pamphlet by Powell, who reproduces the interior of the Bal Tabarin in Chicago, designed by Wilfred. Color and music were there coordinated with the aid of twenty-two projectors which provided a changing panorama.

Color has always had a significant place in man's spiritual aspirations. From Newton's time onward, color science seemed to be opposed to religion, but in each generation there have been spokesmen for spiritual conceptions of color, and they have often found confirmation in science for their ideas. The color wheel and the color triangle, for example, had strong symbolic associations by the early nineteenth century. The triangle embraced the number three and its many exfoliations, as well as the aspirations of its upward-pointing form, while the circle was pregnant with connotations of birth and cosmos.
Hope and Atchley document the development in the English church of earlier color symbolism, with citations from many medieval and renaissance documents, reminding us of the depth and extent of color associations in organized religion. They drew much from the earlier account of Rolfe, who stressed medieval England in his valuable century-by-century account.

Exemplars of religious color conceptions include Rolfe's contemporary Major Nickle, whose symbolism is based upon the Bible. Lisle Phillips, more than a generation later, represents the view held commonly since the time of the British conquest of India, that Eastern religions were the true origin and repository of color symbolism (as distinct from Western rationalism, regarded as the developer of form). Schindler and Merry continue the tradition of Rudolf Steiner's Theosophy by attempting to integrate Goethe's ideas of color with those of modern science.

Separate from the realm of religion, although touching its periphery, was the color symbolism in heraldry. The Birren books include Yale's first copy of the engaging treatise by Marc de Vulu­son, regarded as the first historian of heraldry. It deals with the symbolism of color in heraldry and in livery, and incorporates a glossary of flowers, each one given a phrase to indicate its color symbolism (“vostre esprit me plaist” for Bluette perse). The whole history of heraldry is summarized in the Wheeler-Holohan edition of the 1863 manual by Boutell, and in the handbook by Cussans.

The less easily managed fields of the occult and of alchemy are also represented by two modern histories. That of alchemy by Read has never been excelled, and among its many virtues is a clear exposition of the role color played in the search for the Philosopher's Stone. Budge undertakes a broader spectrum of superstitions and religions in the ancient Mediterranean and Arab societies.

Among exponents of occult color, Edwin Babbitt looms large, and Mr. Birren has given the original edition as well as a copy of his reprint of 1967. Babbitt, a major influence upon Theosophy, was an American “magnetist” who wove an inextricable web of science and occult speculation, each seeming to support the other in a persuasive prose. Harmonies of analogy and of contrast mingle with odic colors and spiral atomic forces. The author makes large claims for his chromo-therapy, in which baths of colored light are said to
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have a broad range of application. Bagnall continues the Babbitt tradition by using electricity and magnetism as the chief props of his treatise on body aura.

**PSYCHOLOGY OF COLOR**

Allen, G.  
Alschuler, R. H., and  
Hattwick, L. B. W.  

Birken, F. B.  
Frielings, H. and  
Auer, X.  

Gerard, R. H.  
Kouwer, B. J.  
Scripture, E. W.

Occult and non-scientific uses of color could be examined with profit by modern psychology, but its secular development and fundamental lack of historical orientation have left that to others. There are some exceptions, notably Jung, and anthropologists (Yale’s Professor Harold Conklin among them) have studied non-scientific color in African, Latin American, Oceanic, and other cultures, but it is fair to say that the psychology of color is dominated by contemporary research and theory, especially concerning perception. Kouwer, discussed in the opening section, has shown the richness of literary evidence of color symbolism, and histories of experimental psychology, all too rare, have given some place to color.

Among early attempts at a psychology of color, the treatise by Grant Allen, first published in 1879, has special interest because of its application of Darwinian evolution to theories of color-sense. Allen began with a chapter on color in his *Physiological Aesthetics* (1877), and subsequently expanded his ideas while making close studies of British flowers. He believed man’s color-sense to be the last stage of an evolutionary chain of relationships that linked the colors of flowers to insects and birds, thence to mammals and man. The 1892 edition, claiming the support both of Darwin and Herbert Spencer, counterattacked the theories of Hugo Magnus (*Die geschichtliche Entwicklung des Farbensinnes*, 1877) which said that man’s color-sense had evolved within historic times, as witnessed by the absence of extended color names in the literature of antiquity. It was a lively controversy of the 1880s that involved the French scientist A. Espinas, as well as Allen’s compatriots William Gladstone and James Sully.

The latent romanticism of Allen’s generation gave way to the pragmatic work of experimental psychologists, who dominated the field by the end of the century. Yale’s Professor E. W. Scripture,
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following in the wake of the noted German psychologist Wilhelm Wundt, published his *Thinking, Feeling, Doing* in 1895. His illustrations include views of Yale laboratories and equipment, and fascinating forms relating to perception, and he has two chapters devoted to color. He used the new color cone based on the modern spectral curve, a correction of the old triangle which did not account for the fact that from a common white center, the several hues do not require the same number of graduated steps to reach full saturation.

**PERCEPTION AND VISION**

<table>
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The study of perception has been allied with psychology, but the differentiation and specialization among modern sciences let one regard it as a separate area, frequently attached to psychology, but often also to the physiology of vision. Such is the case with Szokalski, one of the rarer of the scientific writings in the Birren gift. This memoir of 1841 is given mostly to color blindness and the pathology of color vision, but also includes the recently published observations of Chevreul on simultaneous and successive contrasts of color. Szokalski shows that if the primitive sense of a color can be altered by the choice of hues placed near it, then the artist can govern our feelings, exercising "une influence morale" which the twentieth century would call "psychological effect."

Color perception was commonly studied by the end of the century as part of experimental psychology, and it had been shown to be of use to industry. Color blindness was an obvious liability for railway employees, and lack of color sensitivity, although not so severe as color blindness, was a disadvantage in several aspects of textile production. J. E. Jennings offered a general manual of color perception whose crudest purpose was to eliminate color-blind employees on the railways, but whose general aim was to give railway doctors sound advice on color vision. The illustrations of testing materials in the advertising supplement showed the relatively sophisticated devices available to doctors at low cost. The book by Pierce
and others of four decades later shows the continued relevance of such studies, this time sponsored by the National Institute of Industrial Psychology. By this time the study of the way the eye moves, and of the range of color in the visual field, had been more precisely mapped. Brombach stresses the measurement of the visual field, and his beautiful spider-web illustrations separately document the fields of left and right eyes.

CHILDREN AND COLOR

Beginning with Pestalozzi in the late eighteenth and Froebel at the beginning of the nineteenth century, children were treated as worthy of study in their own right. Froebel’s famous progressive methods included some attention to color, but it was only toward the end of the century that color in children’s education took on a special role. Mass education provided a need and a market for color materials, and several suppliers established international reputations for their staples. Milton Bradley and Louis Prang were the chief figures and rivals in this domain. Each supplied standardized colored papers, crayons, and other materials keyed to easily understood standards, and each produced whole kits of materials that were adopted by entire school systems by the 1890s. The advantage to the schools was economy and an integrated range of materials complete with manuals that a teacher could use, even though untrained in color. Both Bradley and Prang encouraged use of boxes of solid geometric shapes, of sticks, and of colored papers that could be employed in the form and color exercises that had grown from the Froebel kindergartens. Prang tended to stress association with poems, songs, and natural objects, whereas Bradley was more given to parallels with science. (Bradley also distributed several kinds of instruments used to spin color discs.) Both published works by disciples and associates (Van Helden, Snow and Froelich), and Bradley in particular sponsored a range of books on form and color exercises, clay modeling, and paper cutting (the Knife Work in the Schoolroom has a different ring now), and published books by and about his hero Froebel. Many of the “object lessons,” form
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and color exercises, reappeared later in the Bauhaus, and the transfer from children's instruction to art schools (via such educators as Franz Cizek and Adolf Hoelzel) is attracting a growing number of historians of abstract art.

Paralleling Prang and Bradley were the studies of children's perception by psychologists. The work of their contemporary James Mark Baldwin led onward to Piaget, and child development, such a major part of twentieth-century psychology, has given significant place to color perception. In the Birren Collection the major text of this kind is that of Alschuler and Hattwick, which includes case studies and quantitative analyses of children's art and color.

MEDICINE, AND BIOLOGY

Bernstein, J. Kluever, H. Podolsky, E.
Blum, H. F. Kronfeld, P. C. Polyak, S. L.
Detwiler, S. R. McHugh, G. and Southall, J. P. C.
Ellinger, F. Polyak, S. L.
Guille, S. Kuhn, H. S.
Hall, P. Papyrus Ebers

To the lay historian, and to non-specialists interested in color vision, the most accessible sciences are psychology, including studies of perception, and optics. Modern biology and medicine, although vital to the understanding of the physiology of vision, are more highly specialized, and less susceptible of good vulgarization, requiring a specialist's apprenticeship before the requisite minimum of knowledge can be acquired. This is cause for regret, because the physiology of color vision came into its own in the twentieth century, as a result of the following sequence.

Before Newton, color was conceived of as the physical property of the objects it clung to. Newton showed it to be a quality of light which, however, left color as a physical existence outside the human mind. Beginning with John Dalton and Thomas Young, color was increasingly understood as a phenomenon of the retina itself, not an exterior reality, and this gave a boost to the study of the eye's structure. Pragmatic medicine discovered rods and cones in the retina before there was a satisfactory explanation for them. Psychology of color vision next entered this fascinating sequence and said that color had to be a function of the mind, interpreting the im-
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impact of light upon the retina. Ewald Hering, for example, working in the last quarter of the nineteenth century from the vantage point of psychology rather than medicine, proposed the waxing and waning of certain substances in the retina which the mind, via the optic nerve, interpreted as color. Medicine, with chemistry and psychology as allies, then uncovered the actual substances that alter under light's impact, and gave satisfactory explanations of the different functions of color-sensitive cones and light-sensitive rods. The whole evolution runs parallel to the subjectivity of the modern mind: color has changed from an exterior, physical reality to a retinal phenomenon to a mental operation.

It would be virtually impossible to isolate a bibliography for medicine and biology as these pertain to color and color history. Mention has been made of Halbertsma's superb history, with its concentration upon ophthalmology. Among the Birren books, the most useful are the monograph by Polyak, with a major history of the physiology of the eye and a massive bibliography of 130 pages, and the book edited by Kronfeld and his associates (with a short historical summary, again by Polyak). Otherwise one looks to a medical library, and here Yale is fortunate since the historical collection of its Medical Library is one of the best in the world. The researcher can find there both contemporary and older materials, properly indexed, and dealing with such subjects as early anatomy, which bear upon the history of color.

OPTICS, PHYSICS, CHEMISTRY

Boyle, R.  
Chaptal, J.  
Eddington, A. S.  
Horns, A. H.  
Lockyer, J. N.  
Michelson, A. A.  
Newton, I.  
Read, J.  
Southall, J. P. C.  
Tyndall, J.  
Wood, R. W.

These sciences also defy ready indexing for the purposes of color and color history, since color is seldom isolated in writings in these fields, and one must use a general science library. Optics was of greatest importance for color history before the physiology of the retina came to dominance, and both Boyle and Newton have been introduced in an earlier section, but of course it has continued to be vital to the understanding of color since then. Among Birren books Lockyer documents the special field of spectrum analysis and wave theory, as does the more famous Michelson, whose published lec-
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tures have the added virtue of illustrating the instruments he used. And each in his own generation, Tyndall, Wood, and Southall deal with color as one aspect of optics. Southall exemplifies the twentieth century in his merging of medicine with physics in order to study color vision.

Chemistry has direct application to color history because of the pigments, dyes, and inks used by artist and industry. The chief value of the Birren Collection in this regard lies in the artists' manuals, the standards, and the books on printing, many of which record the actual materials used. Some of them also have illustrated advertising supplements which give further technical information about inks and pigments and some (like J. S. Taylor) offer documentation about the permanency of pigments for which chemistry had been a necessary aid. A few of the Birren books (Heliot, Chatel, Ristenpart) deal with the chemistry of dyes, but these properly form part of the section on textiles.

One more science needs to be given a separate role in the evolution of color—the study of plants and animals. The important work of Moses Harris, previously referred to, depended in part upon his devotion to insects. The Birren Collection includes his rare Exposition of English Insects, with the author's own beautiful plates, colored by hand. In the same generation, the Viennese Schiffermueller and the French Buffon also made important contributions to color theory as the result of working with insects, plants and animals.

In the nineteenth century, the great upsurge of landscape painting, in harmony with the popularity and importance of the natural sciences, meant increased contact between artist and scientist. Some artists, like the American Martin Heade in the Amazon, had major roles in documenting natural forms, and scientific expeditions customarily included artists. Observation of natural color phenomena underlay some of the scientific work of Chevreul, for example,
as well as the art of innumerable painters. The British painter John Constable, the French landscapist Théodore Rousseau and the American Frederick Edwin Church were all apt pupils of the meteorological sciences.

Among Birren authors, Grant Allen has been referred to for his Darwinian theories of the evolution of man’s color sense, which he based upon his studies of flowers and insects (Colour of Flowers as Illustrated in the British Flora of 1882 is the proper companion of his better known Colour-Sense). Abbott Thayer was an artist who made significant contributions to science in his theories of Concealing-Coloration in the Animal Kingdom, a book graced with beautiful color lithographs. Thayer is one of the few ever to win an argument with Theodore Roosevelt, who in 1896, had disputed the first announcement of his theories, and his central discovery of counter-shading (light underportions, dark upper-bodies for fish, animals, and birds) is still valid today. Other Birren books take up the theme of protective coloration: Fox and Vevers, Portmann, and Townsend.

It should be noted that the study of natural color has had an effect upon color standards: in the Birren Collection, Oertthuer and Dauthenay, and Wilson (Horticultural Color Chart) compiled evidence for their standards by the study of flowers, and horticultural societies sponsored their publications.

**TEXTILES, DYES, ORNAMENT**

Beaumont, R.  
Bezold, W. Von  
Castel, L. B.

Chaplet, J. A. C.  
Chevreul, M. E.  
Foley, E.  
Heliot, J.

Mairet, E. M.  
Ristenpart, E.  
Wilkinson, J. G.

From Aristotle to Chevreul, examination into color phenomena has been prompted by weaving and dyeing cloth. Individual threads, when woven together, often produce unanticipated color effects that do not seem inherent to the constituent colors. A fine weave of equal amounts of intense red and intense green can produce a rather inert, brownish result, for example, and there are many effects of iridescence, luster, and other “impalpable” or “mental” colors, as they were called in the eighteenth century. Following the British conquest of India, the printing of cotton textiles became one of the principal industries, first of Britain, then of France and other coun-
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tries, and here also the study of color was essential, from chemistry of the dyes to theories that would explain the results.

Thanks to the Indian origin of dyes, methods, and patterns, there gradually grew up the widespread idea that the Orient was the source of color knowledge, conceived of as mysterious and less susceptible of scientific analysis than light and dark, and form. Hence the most abstruse of occult theories, common studio lore, and the dye and textile industry all formed a mutually supporting relationship. One of the leading examples of their multiple ties is Georges Seurat, whose Neo-Impressionism had as sources, besides up-to-date scientific theory, the writings of Chevreul based on textiles, those of Jules Persoz (Traité . . . de l'impression des tissus, 1846) devoted to dyed cotton, and what Seurat called "oriental precepts."

In the domain of textiles, the Birren Collection has two eighteenth-century publications. The treatise by Castel, so important for color-music, is constantly supported by references to textiles, and includes a recommendation for dyeing cloth with the aid of the three primitive colors only. Hellot, a contemporary, provided a practical manual on dyeing cloth, and his joint membership in the science academies of Paris and London shows the importance given to such researches. Chaptal, Napoleon's minister, published another technical manual after the turn of the century.

Chevreul is the great figure to reckon with in the nineteenth century's association of color and textiles. His life was spent as chemist to the national tapestry works, and the majority of his publications on color sprang directly from the processes of dyeing and weaving. The Birren Collection is not only rich in French editions of his work, but also in the early English translations, which played a major role in the rapid spread of interest in color at mid-century. Owen Jones's famous color scheme for the Crystal Palace of 1851 was based in part upon Chevreul's principles, and a number of contemporaries (including the ubiquitous Mrs. Merrifield) used a knowledge of Chevreul to evaluate the color of the displays in the great exposition. Chevreul's major treatise of 1839 had dealt with much more than textiles, and covered the whole range of ornament and design, from interior decoration to architectural color and the arrangement of gardens. J. G. Wilkinson's book of 1858 represents the broad impact of Chevreul in England in a decade when many were calling upon their countrymen to recognize the hitherto
neglected role of color in life. Wilkinson’s book uses assertive maxims to put forward his favored “harmony of contrasts” and “harmony of analogy,” with special attention to gardening and ornament. His plates emulate the color-lithographs of Owen Jones’s *Grammar of Ornament* (1856).

**FASHION, INTERIOR DECORATION, INDUSTRY**

| Bezold, W. von | Clifford, C. R. | Jennings, A. S. |
| Birren, F. B. | Gillum, L. W. | Luckiesh, M. |
| Burris-Meyer, E. | Gloag, J. | Sloan, R. F. |
| Chekin, L. | Hay, D. R. | Vanderwater, F. N. |
| Chevreul, M. E. | Hempstead, L. | Wilson, R. F. |

The influence of Chevreul in the nineteenth century was partly owing to the utility of his ideas for the entire clothing industry, as well as for home furnishings and decoration of private and public spaces, to all of which he had addressed himself in portions of his long treatise of 1839. The sheer commercial value of these goods meant that applied science (especially the chemistry of dyes), color theory, and the design of fabrics and papers formed a necessary union. Many of the general scientific handbooks and standards, like those of Bezold and Rosenstiehl, dealt with color in relation to decoration and industry. In this century Faber Birren stands out as the principal author and color consultant in this realm, including the application of the psychology of color to public buildings. It is true that the average fashion book is apt to put off the serious reader, but these works are often more than records of the tastes of their day. Clifford in 1907 wrote intelligently of all aspects of color, including psychology, relevant to household decoration (his plates have a handsome Mackintosh flavor), and the prolific Burris-Meyer, in her *Historical Color Guide* (1938), produced one of the last of the truly handsome fashion books. She used intense, pure colors that were inked directly with rollers on stiff paper, then cut and mounted.

**MISCELLANY**

| Breckenridge, R. F. | Gourmont, R. de | Moreau-Vauthier, C. |
| Freed, J., and Singer, H. | Horns, A. H. | Piot, R. |
| Gatz, K., and | Lawrence, F. S. | Solon, L. V. |
| Wallenfang, W. O. | | |
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The historical study of color in architecture is a major subject, but one seldom dealt with in separate publications (Solon's study of Greek polychromy is the only historical work of this kind among the Birren books), and a color bibliography will have to await the work of a young generation of historians now studying the polychrome architecture of Hiittorff and others in the nineteenth century. Among the more curious books in the Birren Collection one might mention Remy de Gourmont's Symbolist stories, each devoted to one color, embodiments of the fin-de-siècle love of synesthesia, and the handsome collaboration of Freed and Singer. This book uses cloth, paper, and other substances to form separate textures for each basic color, so that blind people can use touch to differentiate the elements of the compositions.

**ANNOTATED BIBLIOGRAPHY OF THE BIRREN COLLECTION**

**ABBOTT, ARTHUR G.** The Color of Life. New York, McGraw-Hill, 1947. xxi, 3-294 pp., illus., plates (some color), index, bibliography. 23.5 cm. General vulgarization.


**ATSCHELLER, ROSE H., and HATEWICK, LA BERTA WEISS.** Painting and Personality, a Study of Young Children. Chicago, 1948, 2 vols. I: xi, 3-263 pp. II: vi, 265-590 pp., illus. (some color), index. 25 cm. Major scientific study of children's art, with case studies and quantitative analyses.

**ANDREWS, EMORY C.** Color and Its Application to Printing. Chicago, Inland Printer Co., 1911. [xii], 13-123 pp., illus., 3 color plates. 23.5 cm. Three 4-color process plates by Fairthorn Co., Chicago.


**ATCHLEY, E. G.** See Hope, W. H.

**AUER, X.** See Frielings, H.

**BAEBIT, EDWIN D.** The Principles of Light and Color: including among Other Things the Harmonic Laws of the Universe, the Etherio-atomic Philosophy of Force, Chromo-chemistry, Chromo-therapeutics, and the General

* Works by a single author are arranged chronologically by date of first edition.
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Philosophy of the Fine Forces. . . New York, Babbitt and Co., 1878. xii, 1-560 pp., illus., plates (some color), index. 14.5 cm. 4 color-lithographs with letterpress.

———. Edited by Faber Birren. New Hyde Park, University Books, 1967. xix [xx-xxvi], 1-271 pp., illus., plates (some color). 14 cm. A reprint of the original edition with the major modern biography of Babbitt by Faber Birren.


Bagnall, Oscar. The Origin and Properties of the Human Aura. New York, E. P. Dutton, 1937. vii [viii], 1-197 pp., illus., index. 22.5 cm. With electricity and magnetism as chief props, a pseudo-scientific treatise on body aura.


Belmont, I. J. The Modern Dilemma in Art; the Reflections of a Color-music Painter. New York, Bernard Ackerman, 1944. xi [xii-xvi], 17-287 pp., index, plates (1 color). 23.5 cm.

Bernstein, Julius. The Five Senses of Man. New York, D. Appleton & Co., 1881. (International Scientific Series, vol. XXI.) xvii [xviii], 1-304 pp., illus., index. 19.5 cm. Originally Les sens (1876), and first English edition the same year. Vulgarization on a high level of all pertaining to sight, including color perception.

Better Vision Institute, Inc. Why We See like Human Beings. New York. Better Vision Institute, 1936. [i-viii], 1-128 pp., illus. 21 cm. Popular summary.


Birren, Faber. Color in Vision. Chicago, C. V. Ritter, 1928. viii [ix-x], 1-21 pp., 1 hand-painted color chart. 23.5 cm. Author's own "Visual Tetrad Color Chart" based on Hering's four "psychological" primaries.

———. Color Dimensions. Chicago, Crimson Press, 1934. [x], 1-57. [58-60] pp., illus., 1 folding color plate. 28.5 cm. Establishes Birren Color Equation, method of indicating hue, white and black, derived from Ostwald but with improvements in nomenclature. Incorporates history of color theory and good summaries of major elements of color.

———. Monument to Color. New York, McFarlane, Warde, McFarlane,
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1938. [x], 11-97, [98-100] pp., illus., color plates, index. 31 cm. 16 color engravings by Hurst Engraving Co., Rochester.


——. Character Analysis through Color. Westport, Crimson Press, 1940. [viii], 9-80 pp., front. 20.5 cm. 12 colored papers in envelope. Popular associationism. (Published under the pseudonym Martin Lang.)


——. Character Analysis through Color. “Written especially for Paint Merchandizing Council,” 1942. [1-16] pp., 1 color plate. 15.5 cm.

——. Selling with Color. New York, McGraw-Hill, 1945. x, 1-244 pp., illus., index, bibliography. 21.5 cm.


——. Your Color and Your Self, the Significance of Color Preference in the Study of Human Personality. Sandusky, Ohio, Prang & Co., 1952. [x], 11-124 pp. 21 cm.

——. Selling Color to People. New York, University Books, 1956. [xiv], 15-219 pp., illus. (some color). 26 cm. Valuable section on color systems and standards, including those distributed commercially.


——. See also BABBITT, F. D., HARRIS, M., ROOD, O.N., SLOAN, R. P., WILSON, R. F.

Blanc, Charles. The Grammar of Painting and Engraving. Chicago, S. C. Griggs & Co., 1879. 3d edition. xx, 1-139 pp., illus., 1 chromo-lithograph, index. 23 cm. Originally published, 1867, as Grammaire des arts du dessin. Although not so stated, the final third only of the original treatise, the best-known statement of the Beaux-Arts esthetic, incorporating a clear definition of optical mixing of colors based on Chevreul and Delacroix.

Blum, Harold Francis. Photodynamic Action and Diseases Caused by Light. New York, Reinhold, 1941. (American Chemical Society Monograph Series.) xii [xiii-xiv], 3-309 pp., illus., index, bibliography. 23.5 cm. Sponsor’s advertising supplement (6 pp.).


Boutell. See WHEELER-HOLOHAN, V.


Brandt, Herman F. The Psychology of Seeing. New York, Philosophical Library, 1945. xvi, 1-240 pp., illus., index, glossary, bibliography. 21.5 cm.

Breckenridge, Robert F. Modern Camouflage. New York, Farrar & Rinehart, 1942. x, 3-280 pp., illus., index. 22 cm. Accompanied by "Color Card for Camouflage Finishes," Air Corps Bulletin No. 41, September 16, 1940, 8 inked samples mounted on 1 plate.


---. Coronation 1937, British Traditional Colours, Souvenir in Connection with the Coronation of His Majesty King George VI and Her Majesty Queen Elizabeth. Text by Robert F. Wilson. London, British Colour Council, 1937. [i-vi, 1-28 pp., text on right page only], plates. 30 cm. 13 plates with 50 cloth samples.


Brombach, T. A. Visual Fields. Fall River, Mass., 1936. Distinguished Service Foundation of Optometry. io, 11-228 pp., illus., plates (some color). 23.5 cm. Many 3-color lithographs over engravings.
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**Bryant, Joshua.** Bryant's Treatise on the Use of India Ink and Colours. London, Ackermann's Repository of Art, 1807-08. [1-2], 3-22 pp., illus., plates, some color. 28 cm. 10 color aquatints, 6 black-and-white aquatints, 1 hand-color over aquatint, nearly all "R. Ackermann's Repository," 1807 or 1808, by J. Bluck and Harraden after Bryant, W. H. Pyne, and others.

**Budge, Sir E. A. Wallis.** Amulets and Superstitions. London, Oxford University Press, 1930. xxix, 1-543 pp., illus., index. 25 cm.

**Burrus-Meyer, Elizabeth.** Color and Design in the Decorative Arts. New York, Prentice-Hall, 1935. xx, 3-572 pp., illus., plates (some color), index. 23.5 cm. 66 mounted color-paper samples and 1 Munsell scale of 20 color-paper samples on 2 plates, accompanied by 1 perforated card.

--- Historical Color Guide. New York. William Helburn, 1938. x, [1-64] pp., illus., plates (color). 23.5 cm. 150 color samples on 30 plates, inked directly with rollers on heavy paper, cut and mounted for this edition.

---. This Is Fashion. New York, Harper & Bros., 1943. viii, 3-409 pp., illus., color plates, index. 25 cm. Many plates with mounted paper samples.

---. Contemporary Color Guide. New York, William Helburn, 1947. ix [x], color plates. 23.5 cm. 210 mounted color samples on 30 plates.

---. Decorating Livable Homes. New York, Prentice-Hall, 1947. 2d edition revised. xi [xii], 1-468 pp., illus., index. 23.5 cm. Originally published, 1937.

**Bustonby, J. H.** Principles of Color and Color Mixing. New York, McGraw-Hill, 1947. xi [xii], 1-131 pp., illus., plates (some color), index. 26 cm. Author's own system in a "how-to" text.

**Byraz. See Loynes, L.**


---. See also Krafft, G. W.

**Chapital de Chanteloup, Jean Antoine Claude, Comte de.** Principes chimiques sur l'art du teinturier-dégraisseur. Paris, Chez Deterville, 1808. [xii], 1-69, [70-72] pp., 1 engraving. 19.5 cm. Technical treatise on removing stains, restoring colors, etc.


---. [Japanese translation of above.] Tokyo, Hakuyosya, Ltd. 1-252 pp., illus., color plates, index. 21.5 cm.

The Yale University Library Gazette

pp. 22.5 cm. Atlas: 40 plates with commentary. 28.5 cm. 34 stencil color over lithograph, some signed “Lith. Kaeppelin, 17, Quai Voltaire, Paris.” 2 color engravings, 1 with stencil portion, 1 signed “H. Legrand sc.”; 3 black-and-white engravings, 1 black-and-white lithograph. 9 unnumbered colored papers.


———. The Principles of Harmony and Contrast of Colours, and Their Applications to the Arts . . . New Introduction and Summary, translated by Charles Martel [pseud. of Thomas Delf]. London, Bell and Daldy, 1870. 3d edition revised. xvi, 1-465 pp., color plates, index. 18.5 cm. 15 color lithographs.


CHURCH, ARTHUR HERBERT. Colour, an Elementary Manual for Students. London, Cassell & Co., 1907. viii [ix-xii], 1-192 pp., illus., color plates, index. 19 cm. Enlarged and altered version of 1871 publication. 6 chromo-lithographs by “Vincent Brooks, Day and Son.”

CLARK, J. S. See PRANG, L.

CLELAND, T. M. A Grammar of Color, Arrangements of Strathmore Papers . . . according to the Munsell Color System. Mertineague, Mass., Strathmore Paper Co., 1921. Introduction by A. H. Munsell, [1-6], 7-28 pp., illus., plates (many color). 33 cm. Many colored paper samples, both bound in and in separate slipcase with perforated cards.

CLIFFORD, C. R. Color Value. New York, Clifford & Lawton, 1907. [ii], 3-95 pp., illus., 1 color plate, index. 23.5 cm.


CORNELLE, JEAN BAPTISTE. Les premiers éléments de la peinture pratique. Paris, Chez Nicolas Langlois, 1684. [i-x], 1-96 pp., illus. 17.5 cm. Bound with Du Fresnoy, L’art de peinture (1684). Hand-painted cover and end-papers signed “FMB 1903.”

CUSSANS, JOHN EDWIN. Handbook of Heraldry. London, Chatto & Windus,
The Faber Birren Collection on Color

1893. 4th edition. xiv, 13-353 pp., illus., 1 color lithograph, index. 19.5 cm. Publisher's advertising supplement (32 pp.). Originally published, 1869.

DAUTHENAY, H. See OBERTHUER, R.

DAVIES, A. M. H. See PIERCE, W. O'D.

DELF, T. See CHEVREUL, M. E.

DÉRIBÈRE, M. La couleur dans les activités humaines. Paris, Dunod, 1955. viii, 1-242 pp., illus., plates (some color), index. 24.5 cm. Sophisticated vulgarization.


DETWILER, SAMUEL R. Vertebrate Photoreceptors. New York, Macmillan, 1943. x [xi-xii], 1-184 pp., illus., bibliography. 22 cm.

EARHART, JOHN FRANKLIN. The Earhart Color Plan. Cincinnati, The author [ca. 1905?]. [1-5], [1-2], color plates. 30.5 cm. 8 color plates with perforated case and masks, 1 color wheel with perforated masks in slip case. Color printing by the Feicke Printing Co., Cincinnati, using platen printing presses. Inks by Ault & Wiborg, also of Cincinnati.

——. The Color Printer, a Treatise on the Use of Colors in Typographic Printing. Cincinnati, Earhart & Richardson, 1892. [1-6], 7-137 pp., illus., plates (many color). 28 cm. 90 multi-color plates in various techniques.


ELIOT, ALEXANDER. Sight and Insight. New York, McDowell, Obolensky, 1959. viii, 3-196 pp., index. 22 cm. Popularization.


FIELD, GEORGE. Chromatics, or the Analogy, Harmony and Philosophy of Colours. London, David Bogue, 1845. Revised edition. xviii, 1-263 pp., illus., plates (some color), index. 23 cm. Several hand-colored stencil over engravings. Frontispiece and 1 plate, aquatints signed by David Lucas after Field. Originally published, 1817.


FOX, H. MUNRO, and VEVERS, GWYNNE. The Nature of Animal Colors. New York, Macmillan, 1960. [x], 1-246 pp., illus., color plates, index. 22.5 cm.

FREED, JEANETTE, and SINGER, HENRY. A Picture Book in Color for the Blind. Philadelphia, Privately published, 1949. 20 plates in various media (cloth,
paper, etc.), each color given a different texture, with Braille and letterpress commentary. 22 cm.


Froehlich, H. B. See Snow, B. E.


———. See also Schindler, M.


Graves, Maitland. Color Fundamentals. New York, McGraw-Hill, 1957. xii, 1-203 pp., illus., plates (some color), index. 25 cm. General vulgarization that has been especially popular in art schools.

The Faber Birren Collection on Color


Hall, Percy. Ultra-violet Rays in the Treatment and Cure of Disease. St. Louis, C. V. Mosby Co., 1928. xxi i, 1-236 pp., illus., index. 22 cm.

Harris, Moses. The Natural System of Colours, Wherein Is Displayed the Regular and Beautiful Order and Arrangement Arising from the Three Primitives Red, Blue and Yellow, the Manner in Which Each Colour Is Formed, and Its Composition, the Dependence They Have on Each Other, and by Their Harmonious Connections Are Produced the Teints, or Colours, of Every Object in the Creation, and Those Teints, tho' so Numerous as 660, Are All Comprised in Thirty-three Terms Only. Leicester-Fields, Laidler's Office [ca. 1766]. 1-8 pp., 2 color plates, 36 cm. 2 hand-colored engravings (color much deteriorated).

— An Exposition of English Insects with Curious Observations and Remarks, Wherein Each Insect Is Particularly Described; Its Parts and Properties Considered; the Different Sexes Distinguished, and the Natural History Faithfully Related. The Whole Illustrated with Copper Plates, Drawn, Engraved, and Coloured by the Author. London, Printed for the Author and sold by Messrs. Robson and Co., New Bond Street, and Messrs. Dilly, Poultry, 1776. viii, 9-166, [167-170] pp., illus., plates (some color), index. 28 cm. 51 hand-colored engravings, 3 black-and-white engravings, 1 color-lithograph signed 1834 bound in.

Harvey, E. Newton. Living Light. Princeton, Princeton University Press, 1940. xv [xvi-xviii], 3-328 pp., illus., index, plates (1 color), bibliography. 23-5 cm. On animal and natural luminescence. Autographed by author.

Hattwick, L. B. W. See Alschuler, R. H.

Hay, David Ramsey. The Laws of Harmonious Colouring, Adapted to Interior Decorations, etc., to Which Is Now Added an Attempt to Define Aesthetic Taste. London, W. S. Orr & Co., 1844. 5th edition. 3-103 pp., illus., plates (some color). 23 cm. Author's advertising supplement (8 pp.). 5 plates with mounted color samples over engraving.

Hayter, Charles. A New Practical Treatise on the Three Primitive Colours, Assumed as a Perfect System of Rudimental Information; Simplifying Their Universal Powers, in Regular Order of Gradation, into Colourless Darkness When Equilaterally Concentrated; Their Variations from One Colour to Another, by Their Circular Communion; Their Expansion by the Power of Light; and Their Effects under the United Influence of Light and Dark.

———. An Introduction to Perspective, Practical Geometry, Drawing and Painting; New and Perfect Explanation of the Mixture of Colours, with Practical Directions for Miniature, Crayon and Oil Painting, in a Series of Familiar Dialogues between the Author's Children, and Letters Addressed to His Pupils. London, Samuel Bagster & Son, 1845. 6th edition. xiv, 1–76 pp., illus., color plates. 22.5 cm. New drawings for this edition by John Hayter, engraved in wood by “Mr. Kirchner.” “The publishers are indebted to the skill and experience of Owen Jones, Esq. for the production of the beautiful coloured plates.” Each of 5 color lithographs signed “London. Bagster and Sons.”


Hicks, M. D. See Prang, L.


Hjorns, Arthur H. Metal-colouring and Bronzing. London, Macmillan, 1892. xv [xvi], 1–336 pp., index. 18 cm. Methods of coloring metals.

The Faber Birren Collection on Color

Houston, R. A. Light and Colour. London, Longmans, Green, 1923. xi [xii], 1-179 pp., illus., 2 color plates, index. 22.5 cm. Excellent lay summaries of contemporary practice and theory of color, including photochemistry, electricity, photography, psychology, and color-music.


International Printing Ink Corporation [i.e., Interchemical Corp.]. Three Monographs on Color. New York, International Printing Ink Corporation, 1935. 3 vols. I: Color chemistry. [iii], 4-18 pp. II: Color as light. [iii], 4-21 pp. III: Color in use. [iii], 4-18, [19-29] pp., 3 loose perforated cards. All vols. illus. 28.5 cm. General summaries for the layman.

Jacobs, Michael. The Art of Colour. Garden City, Doubleday, 1923. xiv [xv-xvi], 1-99 pp., illus., plates (some color), glossary. 28 cm.

Jennings, Arthur Seymour. Paint and Colour Mixing, a Practical Handbook for Painters, Decorators, Artists and All Who Have to Mix Colours. . . New York, Painters’ Magazine, 1910. 4th edition, with color plates redone. x, 1-100 pp., color plates, index. 22 cm. 2 publisher’s advertising supplements, 1 illustrated (4, 19 pp.). 300 color samples mounted on 14 plates, hand-painted in oil and watercolor. A recipe manual of actual mixtures, for which manufacturers and types of pigments are listed, by the editor of the Decorator. The illustrated advertisements are valuable sources for painters’ supplies and books.


——. Philadelphia, F. A. Davis Co., 1905. 2d edition revised. xii, 1-132 pp., 1 color frontispiece, index. 22.5 cm.

Jones, O. See Hay, D. R.


Juncker, G. F. W. See Krafft, G. W.

Klein, Adrian Bernard. Colour-music, the Art of Light. London, Crosby
Lockwood & Son, 1930. 2d edition with own preface. xvi, 1-287 pp., illus., plates (some color), index, bibliography, appendices. 25.5 cm.


KORNERUP, ANDREAS. AIMS: Advanced Ink Mixing System. Copenhagen, Danish Paint and Ink Research Laboratory, affiliated with the Danish Academy of Technical Sciences, 1968. [1-16] pp., 64 color plates with perforated overlay. 30 cm.

KOUIER, BENJAMIN J. Colors and Their Character, a Psychological Study. The Hague, Martinus Nijhoff, 1949. viii, 1-191 pp., illus., index, bibliography. 24 cm.

KRAFFT, GEORG W., WEITBRECHT, JOMAS, and JUNCKER, GOTTLIEB, F. W. Sermones in solenni academiæ scientiarum imperialis conventu die XXIX aprilis anni MDCCXLII. St. Petersburg, Typis Academiæ Scientiarum, 1742. [viii], 1-51 pp., 2 plates. 23 cm.

KRAUSE, A. C. See KLUEVER, H.

KRONFELD, PETER C., McHugh, GLADYS, and POLYAK, STEPHEN L. The Human Eye in Anatomical Transparencies. Rochester, Bausch & Lomb, 1933. xi [xii–xvi], 3-99 pp., illus., plates (some color), index. 29 cm. Printed color transparencies over color plates. Short history of color by Polyak, an excellent lay history.

KRUGER, OTTO. Die lithographischen Verfahren und der Offsetdruck. Leipzig, F. A. Brockhaus, 1916. viii, 1-180 pp., illus., plates (some color), index. 23.5 cm. 21 photo-lithographic and offset color plates, showing successive stages in printing, emphasizing techniques and machinery.


LACOUTURE, CHARLES. Répertoire chromatique, solution raisonnée et pratique des problèmes les plus usuels dans l’étude et l’emploi des couleurs. Paris, Gauthier-Villars et Fils, 1890. xi, 3-144 pp., color plates. 31.5 cm. 20 color lithographs based on optical mixtures signed “chromolith. G. Severyns” [Brussels], and 1 perforated card. The author’s principal intention was to offer a complete nomenclature for color, for which very handsome color lithographs were made under his direction. The ink for any one hue was kept absolutely constant, the different tones being obtained by a nearer or greater distance of the engraved lines from which the lithographs were made. The greater or lesser quantity of white showing between the lines caused the changing tone. The author asserts that these are the first plates so printed.

LADD-FRANKLIN, CHRISTINE, and others. Colour and Colour Theories. New York, Harcourt, Brace & Co., 1929. xv [xvi–xviii], 3-287 pp., illus., plates (some color), index. 22.5 cm. Appendix of articles by other authors. Book features author’s own theory of color sensation, concentrated upon color perception.

LA FARGE, JOHN. Considerations on Painting, Lectures Given in the Year

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Lairesse, Gerard de. The Art of Painting in All Its Branches, Methodically Demonstrated by Discourses and Plates, and Exemplified by Remarks on the Paintings of the Best Masters: and Their Perfections and Oversights Laid Open. Translated by John Frederick Fritsch, Painter. London, S. Vandenberg, 1778. [xx], 1-504 pp., illus. 24 cm.

Laurence, Frederick S. Color in Architecture. New York, National Terra Cotta Society, 1924. [viii], 9-64 pp., illus., plates (some color). 31 cm. Chiefly on contemporary uses of colored terra cotta in building.

Leblon, Jacques Christophe. L'art d'imprimer les tableaux; Coloritto, or the Harmony of Colouring in Painting; Opérations nécessaires pour graver et imprimer des estampes à l'imitation de la peinture. Paris, Lemercier, Nyon, Lambert, 1756. xxv, 26-180, [181-192] pp., illus., plates (1 color), index. 20 cm. 1 plate hand-painted over color aquatint. The second and most famous of the three texts is printed in both English and French.


———. Visual Illusions. New York, D. Van Nostrand, 1922. ix [x], 1-252, 1-29 pp., illus., index. 23.5 cm. Publisher's advertising supplement (3 pp.). Preface signed, 1920.

———. Light and Color in Advertising and Merchandising. New York, D. Van Nostrand Co., 1923. xvi, 1-268 pp., illus., plates (some color). 21 cm. Plates include 1 embossed lithograph, with color-printed cloth attached.

———. Light and Work. New York, D. Van Nostrand, 1924. xvi, 1-296 pp.,

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illus., 2 color plates, index. 23.5 cm. Publisher's advertising supplement (5 pp.). 32 color samples mounted on two plates.

———. Color and Colors. New York, D. Van Nostrand, 1938. ix [xiv-xii], 1-206 pp., illus., index. 23.5 cm. Populization.

———. Light, Vision and Seeing. New York, D. Van Nostrand, 1944. 2d printing. xiv, 1-123 pp., illus., index. 22 cm. Populization.

——— and Moss, Frank K. The Science of Seeing. New York, D. Van Nostrand, 1937. viii [ix-x], 1-548 pp., illus., index. bibliography. 21 cm. Vulgarization, a bit more scientific than Luckiesh's other work.

MacDonald-Wright, Stanton. A Treatise on Color. Los Angeles, The author, 1924. 1-34 pp. [32-34 in typescript], color charts. 30.5 cm. 3 charts colored in hand over photo-copy of 1924 plates. Copies of correspondence of author with Faber Birren concerning revisions inserted.

McHugh, G. See Kronfeld, P. C.

Maier, Norman Raymond Frederick, and Schneirla, T. Principles of Animal Psychology. New York, McGraw-Hill, 1935. xiii [xiv-xv], 1-529 pp., illus., index, bibliography. 23.5 cm.


Merry, E. C. See Schindler, M.

Michelson, Albert Abraham. Light Waves and Their Uses. Chicago, University of Chicago, 1903. [xiv], 1-166 pp., illus., plates (some color), index. 23 cm. Lectures at Lowell Institute, 1899 (University of Chicago Decennial Publications, 2d series, vol. III). 3 chromo-lithographs. Illustrations are of the actual instruments used by the famous scientist.

Minnaert, Marcel G. J. The Nature of Light and Colour in the Open Air. Translated by H. M. Kremer-Priest; revised by K. E. Brian Jay. New York, Dover, 1954. xi [xii-xiv], 1-362 pp., illus., index. 21 cm. Publisher's advertising supplement (6 pp.).


Munsell, A. H. See Andrews, E. C., and Cleland, T. M.

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illus., plates (some color), index. 28.5 cm. College-level vulgarization. Revised edition published 1952.

MYERS, C. S. See PIERCE, W. O'D.


NORDISKTEXTIL UNION. The Scandinavian Colour Book (Standard Farvekort). Copenhagen, A. Barding, 1956. 8 pp. descriptive text, 1,728 colored felt samples mounted on 87 plates in 3 vols., with perforated cards, in ring-binders. 23 cm.


OPTICAL SOCIETY OF AMERICA. COMMITTEE ON COLORIMETRY. The Science of Color. New York, Thomas Y. Crowell, 1953. xiii [xiv–xvi], 3-385 pp., illus., color plates, index, glossary, bibliography. 25.5 cm. No editors listed; contributors noted in preface. Lay vulgarization whose value is in its excellent glossary-index.

OSTWALD, WILHELM. Die Farbenfibel. Leipzig, Unesma, 1930. 14th printing. vii [viii], 1-47 pp., illus., plates (some color). 23 cm. Publisher's advertising supplement (3 pp.). Originally published, 1916. Many samples of colored papers.


———. Die Harmonie der Formen. Leipzig, Unesma, 1922. xi [xii], 1-117 pp, diagrams. 22.5 cm. Publisher's advertising supplement (3 pp.).

———. See also JUDSON, J. A. V., and RISTENPART, E.

PAPYRUS. The Papyrus Ebers, the Greatest Egyptian Medical Document. Translated by B. Ebbell. Copenhagen, Levin & Munksgaard, 1937. [x], 11-135 pp. 27 cm.

PETERS, WILLIAM. Colour Vision. London, Edward Arnold & Co., 1912. xi [xii], 1-108 pp., illus., index. 22.5 cm. Synopsis of then current scientific ideas on color perception, with some discussion of major nineteenth-century scientists.

PHILLIPS, LISLE MARCH. Form and Colour. London, Duckworth & Co., 1915. vi, 1-24 pp. 23 cm. General commentary on color from vantage point of Eastern mysticism (here equated with color) and Western rationalism (here equated with form).

PIERCE, WATSON O'DELL, et al. The Selection of Color Workers, Being a Research into the Practical Methods of Measuring the Ability to Discrimi-
nate Fine Shades of Color [begun by A. M. Hudson Davies and A. Stephenson, completed by Pierce, chapter 2 by Charles S. Myers], London, Pitman, 1934. xi [xii], 1-134 pp., illus. 22 cm. Publisher’s advertising supplement (30 pp.). Project of National Institute of Industrial Psychology.

Piot, René. Les palettes de Delacroix. Paris, Librairie de France, 1931. [x], 1-100 pp., illus., plates (some color). 14 cm. Signed by the author.


Polyak, Stephen Lucian. The Retina. Chicago, University of Chicago, 1941. x, 1-607 pp., illus. (1 color), index, bibliography. 27 cm. Major history of the physiology of the eye, and bibliography of 130 pp. Principally human retina, but also ape and monkey.

———. See also Kronfeld, P. C.


Powell, A. L. The Coordination of Light and Music. Cleveland, General Electric, 1930. 1-24 pp., illus. 16.5 cm. Current designs, including those of Thomas Wilfred, for theaters, cinemas, restaurants, and concert halls.

Prang, Louis, Hicks, Mary Dana, and Clark, John S. Color Instruction. Suggestions for a Course of Instruction in Color for Public Schools. Boston, Prang Educational Co., 1893. x, 1-187 pp., illus. 19.5 cm. 2 copies. 2 charts of mounted paper samples (lacking in both copies).

Prang, L. See also Bezold, W. von, Freeman, L., and Snow, B. E.


Rimington, A. Wallace. Colour-music, the Art of Mobile Colour. New York, Frederick A. Stokes [1912]. xx, 1-185 pp., plates (some color), appendix. 20.5 cm. Prefatory notes by Sir Hubert von Herkomer and Dr. W. Brown, dated July 1911.

Ristenpart, Eugen. Die Ostwald’sche Farbenlehre und ihr Nützen für die Textilindustrie. Leipzig, Theodor Martin’s Textilverlag, 1926. Text: [1-51], 5, 7-71 pp., illus. 21 cm. Illustrated publisher’s advertising supplement (17 pp.). Atlas: i black-and-white, 15 color charts by Alexander Edelmann, Leipzig, in fold-over case. 31 cm.

Rolfe, Clapton Crabb. The Ancient Use of Liturgical Colours. Oxford, London, Parker & Co., 1879. xii, 1-227 pp., 1 folding chart. 23.5 cm. Publisher’s advertising supplement (8 pp.).

Rood, Ogben N. Modern Chromatics, with Applications to Art and Industry. Edited by Faber Birren, New York, Van Nostrand Reinhold, 1973. 16, 11-237 pp., illus., plates (some color), index. 22.5 cm. Originally published in 1879. Rood’s treatise was translated into French in 1881 and acquired some of its fame thanks to its adoption by Georges Seurat and the Neo-Impressionists. Mr. Birren’s edition reproduces the original in facsimile, and his introduction offers new information about Rood.

Rosenstiehl, M. A. Traité de la couleur au point de vue physique, physiologique et esthétique comprenant l’exposé de l’état actuel de la question de
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Harmonie des couleurs. Paris, H. Dunod et E. Pinat, 1913. xv, 1-277 pp., illus., unpaginated comments on 14 color plates, index. 25 cm. 1 plate of wool samples dyed by Amédée Jolly. Paris; 6 chromo-lithographs by Maison Monroq, Paris; 6 "papiers peints" by J. Zuber et Cie, Rixheim, which the author states were especially made for his purposes because the chromo-lithograph process "est impuissante à reproduire certains effets de vigueur dans les valeurs." This book expands upon the author's important brochure, Les premiers éléments de la science de la couleur (Mulhouse, 1884), which had helped spread knowledge of Maxwell color discs, the adjustable colored discs which when spun at high speed form a single color. Rosenstiehl's book, published at the height of Cubism, was the acknowledged inspiration for the color system of Julie Beaudeneau which, in turn, was used by Jacques Villon (communication from Daniel Robbins).


Sargent, Walter. The Enjoyment and Use of Color. New York, Scribner's, 1913. xi [xii], 1-274 pp., illus., plates (some color), index. 21 cm. Autograph letter from author to F. Birren, 1925, inserted.


Schreiber, T. C. See Maier, N. R. F.


Schepore, Edward Wheeler. Thinking, Feeling, Doing. New York, Meadville, Pa., Chautauqua-Century Press (Flood and Vincent), 1895. xii [xiii-xiv], 15-304 pp., illus., 1 color front., index. 20 cm.


Skard, Sigmund. The Use of Color in Literature. Offprint of The American Philosophical Society, vol. XC, No. 3 (July 1946), pp. 163-249, index, bibliography, 27.5 cm. The best bibliography ever assembled for the subject, annotated and subdivided by subject and nation.

Sloan, Raymond P. Hospital Color and Decoration. Chicago, Physicians'
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Record Company, 1944. xv [xvi], 1-253 pp., illus., 2 color plates, index. 15 cm. Introduction by Faber Birren. 60 Devoe and Reynolds paper samples on 2 plates.


Société Française des Chrysanthémistes. See Oberthur, René.


Southall, James P. C. Introduction to Physiological Optics. New York, Oxford University Press, 1937. x, 1-426 pp., illus., plates (some color), index. 25 cm. A vulgarization of high quality.

Spanton, J. See Chevreul, M. E.

Spencer, D. A. See Murray, H. D.


Stephenson, A. See Pierce, W. O'D.


Taylor, John Scott. A Descriptive Handbook of Modern Water-colour Pigments, Illustrated with 72 Colour Washes Skilfully Graduated by Hand on 46
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Tyndall, John. Light and Electricity. New York, D. Appleton & Co., 1885. 8, [9-11], 12-194 pp., diagrams. 20.5 cm. Publisher's advertising supplement (10 pp.). First published, 1871.

Ueda, Takeo. Shikisshōsetsu [Color Control]. Tokyo, Gihōdō, 1953. [x], 1-281 pp., illus., plates (some color). 22 cm. Many color-paper samples mounted on offset color plates.


Vanderwalker, Fred Norman. The Mixing of Colors and Paints. Chicago, Frederick J. Drake & Co., 1924. [vi], 7-292 pp., illus., 1 color plate, index. 19 cm. 12 paper samples mounted on 1 plate. Devoted to actual color mixtures and application to interior decoration.

Van Helden, Caroline West. A Note on Color for Teachers of Elementary Schools. Springfield, Milton Bradley Co., 1902. [viii], 9-48 pp., illus., color plates. 25.5 cm. 11 color-lithographs, and 90 paper samples mounted on 1 plate.

Vever, G. See Fox, H. M.

Ateneo, 1947. xv, 1-74, [75-76]. 1-12 pp., illus., color plates, appendix. 32 cm. No. 1217 of undetermined number of copies. 38 perforated color plates and detachable perforated cards in screw binding. The authors' nomenclature, with conversion tables for Ridgway (1886) and Saccardo (1891).

Voltaire. Eléments de la philosophie de Newton, mis à la portée de tout le monde par M. de Voltaire. Amsterdam, Étienne Ledet & Co., 1738. [i-ii], 3-399, [400] pp., illus. 20 cm.


Wallenfang, W. O. See Gatz, K.

Walls, Gordon Lynn. The Vertebrate Eye. Bloomfield Hills, Mich., Cranbrook Institute of Science, 1942. xiv [xv-xvi], 1-785 pp., illus., bibliography. 24 cm. College-level vulgarization with extensive bibliography on ophthalmology and retinal structure.

Ward, James. Colour Harmony and Contrast. London, Chapman and Hall, 1903. x, 1-140 pp., illus., color plates, index. 25 cm. 16 color lithographs by V. Brooks, Day & Son.

Weinberg, Louis. Color in Everyday Life, a Manual for Lay Students, Artists and Artists, the Principles of Color Combination and Color Arrangement. . . . New York, Moffat, Yard & Co., 1918. xvi, 3-343 pp., illus., paper samples. 22 cm. 29 paper samples in attached envelope. Curious vulgarization with plates on color associated with form, on "masculine" and "feminine" color.

Weitbrecht, J. See Krafft, G. W.


Werner, A. G. See Syme, P.


———. The Projected Setting. Offprint of Educational Theatre Journal, VI, 2, May 1954, pp. 136-144, 2 illus. 25.5 cm.

Wilkinson, Sir John Gardner. On Colour and on the Necessity for a General Diffusion of Taste among All Classes, with Remarks on Laying Out Dressed or Geometrical Gardens. London, John Murray, 1858. xvi, 1-408 pp., illus., color plates, index. 22.5 cm. 5 color lithographs, signed I.G.W., and 3 hand-stenciled color over lithographs, signed West & Co.
The Faber Birren Collection on Color

WILLIAMS, W. An Essay on the Mechanic of Oil Colours, Considered under These Heads, Oils, Varnishes and Pigments, with Respect to Their Durability, Transparency, and Force, in Which is Communicated Some Valuable Secrets, Particularly a Method of Preparing the Oils, so as to Give Them a Strong Drying Quality, Perfectly Limpid and Colourless; a Finishing Oil Varnish, and Other Useful Vehicles for Every Branch of the Noble and Liberal Art of Painting. . . . Bath, S. Hazard, 1787. 58 pp. 22 cm.


——. Colour and Light at Work. London, Seven Oaks Press, 1953. xi [xii], 1–148 pp., illus., 12 color plates, index. 22 cm. Publisher's advertising supplement, illustrated in color (4 pp.). 2 copies, 1 inscribed by author to Faber Birren. On the practical application of color to industrial design.


——. See also BRITISH COLOUR COUNCIL.


WRIGHT, WILLIAM DAVID. The Measurement of Colour. London, Adam Hilger, 1944. vii [viii], 1–223 pp., illus., plates (some color, part. fold.) index. 22 cm. Recently reprinted (1969), this study gives a clear, if rather technical exposition, of the trichromatic system of color measurement, as well as of colorimetry, spectrophotometry, etc., and includes discussion of Munsell and other color systems with applications in industry.

——. Researches on Normal and Defective Colour Vision. St. Louis, C. V. Mosby Co., 1947. xvi, 1–383 pp., illus. (some color), index. 26 cm.