

300

ATLAS
OF
The
Munsell Color System



The Color Atlas

Three Color Scales Unite in a Sphere

A Color Tree Surrounds the Color Sphere

Notation of Colors by Symbols

Charts of the Color System

Balance of Color by a Sphere

THE COLOR ATLAS.

THIS ATLAS CONSISTS OF TWO SETS OF CHARTS, ILLUSTRATING A SYSTEM OF COLOR MEASUREMENT OF WHICH THE FOLLOWING PARAGRAPHS GIVE A DESCRIPTION*

A. THREE COLOR SCALES UNITE IN A SPHERE.

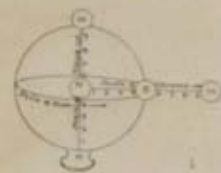
Imagine a colored sphere with white as its north pole, black as its south pole, and its equator ringed about by a circuit of red, yellow, green, blue and purple hues—each of which melts imperceptibly into its neighbors. Fig. 1. Thus the equator forms the horizontal scale of hue *H*.

Imagine each equatorial line as graded upward to white and downward to black in regular measured steps. Each line thus presents a scale of values over the surface, while the axis forms the vertical scale of gray values *V*.

Imagine surface colors weakened by additions of neutral gray as they pass toward to disappear in the vertical axis. The sphere is thus filled with gradations of color—lighter degrees above the equator, darker degrees below; stronger degrees outward, and weaker degrees inward to the axis, where all color is balanced in neutrality. The degree of color strength at any point is known as chroma and is traced by radii at right angles to the axis. It represents the gradual emergence of each hue from grayness. Each radius serves as a scale of chroma *C*.

Every color sensation may be measured and defined by these three scales of hue, value, and chroma. Neglect of either scale—that is, failure to state either the hue, the value, or the chroma of a color—creates doubt and confusion.

2. A COLOR TREE SURROUNDS THE COLOR SPHERE. When all pigment colors of equal chroma thus a sphere would present an ideal of their relations. But pigments are very unequal in strength. Vermilion red, for example, being twice as strong as its opposite complement, blue-green. This is shown in chart 40. The normal scales



COLOR SPHERE

COLOR TREE



of pigment chroma may be treated as branches of a Color Tree whose trunk is the neutral axis, while its branches of various lengths and at various levels blossom out with the strongest colors. This tree is imagined as composed of colored leaves—darker leaves below, lighter leaves above; most chromatic leaves on the surface and grayer leaves toward to the trunk, which is colorless. The tree also encloses the Color Sphere, which would appear were the longer branches hipped off to equal the length of the shortest branch. Fig. 2.

3. NOTATION OF COLORS BY SYMBOLS.

The place of each leaf of the Color Tree is determined by the measured scales of hue, value and chroma. These scales also furnish an expressive notation, made by the five color initials with their combinations and two arabic numbers.

The scale of hue is a sequence of red (R), yellow-red (YR), yellow (Y), green-yellow (GY), green (G), blue-green (BG), blue (B), purple-blue (PB), purple (P), and red-purple (RP). The five principal hues melt imperceptibly into intermediates by ten steps, of which the middle or fifth step is typical of that hue. The scale of value is also divided from 0 (black) to 10 (white), and the scale of chroma likewise from 0 (neutral gray) to 10 (the strongest permanent pigment so far obtained).

A symbol completely describing the character of any color sensation is composed of its degrees of hue, value, and chroma. The symbol for what is commonly known as Vermilion is SR5 ("five red, four over ten")—the numeral before R showing that it is the fifth or typical step of red in the hue scale, without tendency either to yellow-red or purple-red; the apex numeral

showing that its luminosity equals the fourth step in the value scale, and the chroma numeral ten showing that it is of maximum strength. Chart H.

Should the Vermilion be changed by fading or admixture with another pigment, this would appear in the symbol—thus a tinge of yellow in the red is written 6R while 4R indicates a tinge of purple; a slight addition of gray reduces the chroma to R₂, while the addition of white changes the value to R₅. Grouping all these changes in the symbol, 6R₂ shows that the original Vermilion MR₅ is no longer pure, but tinged with yellow, lightened with white, and weakened with gray.

4. CHARTS OF THE COLOR SYSTEM.

The measured scales of hue, value, and chroma are presented in two sets of charts, one made by vertical sections of the Color Tree, and the other by horizontal sections. Figs. 3 and 4.

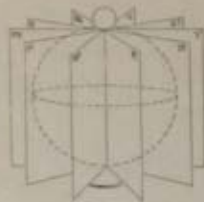
There are eight vertical charts. Chart H is the hue scale arranged as an index for recording colors singly or in groups. Vermilion appears in the column R at the level four and with the chroma symbol ten. Chart F is the value scale upon a lined and perforated card, behind which to test the value of a color sample. Thus Vermilion seen through the perforations is darker than value five and lighter than value seven. It matches value step four. Chart C lists the chroma scale of red, yellow, green, blue and purple as tree branches whose levels and lengths describe the relation of those maxima to the extremes of white and black. Vermilion appears as the strongest red chroma, and the color is written 3R.5.

The five remaining vertical charts are plates passed through the axis on opposite sides of which appear the complementary fields of color. Chart R shows the red field with its complementary field of blue-green. By noting the symbol 3R.5, Vermilion may be balanced with any degree of its opposite blue-green. Chart Y shows yellow with its opposite purple-blue. Charts G, B, and P show green, blue, and purple with their appropriate complements, red-purple, yellow-red (orange), and green-yellow.

There are seven horizontal charts. The axis appears in each as the neutral gray center of a star or radial pattern; the lengths of whose radii indicate the chroma of their hues. Those sections present colors at a single uniform level of value—thus, Chart 50 at the middle of the Color Tree shows only colors which reflect 50 per cent. of the luminosity of white, while Charts 40, 30, and 20 show darker levels, and Charts 60, 70, and 80 show the lighter levels of color.

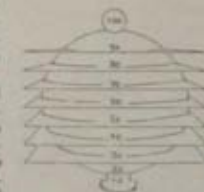
5. BALANCE OF COLOR BY A SPHERE.

The sphere typifies balance of color. White and black balance at the center on middle gray N₅. Balanced colors appear at the ends of any diameter passing through the center of the sphere. Also, a lighter color balances a darker, but when unequal values or chromas are employed the color of weaker chroma must be given the larger area. The symbols on each step of these color charts indicate the proportions needed to produce balance, as suggested in the text to be found on each chart.



VERTICAL

HORIZONTAL CHARTS.



*For full information the reader is referred to the author's "A Color Notation," 34 pages, Boston, 1933.

(Vermilion and the addition of gray in the next illustration of permanent color.)

(See Chapter VI of "A Color Notation.")

Chart H

Scale of Hues.

Index for color notation: hue, value and chroma.

MUNSELL COLOR SYSTEM

ATLAS

COLOR CHARTS.

COMPILED BY S. M. MUNSELL, 1907-1916
 REVISED JUNE 24, 1930

Chart H

SCALE OF HUES



CHART H.

DIREX FOR COLOR NOTATION

The chart suggests all color parts and records each one by a simple NOTATION. The two signs of hue are written RP (red-purple), P (purple), PB (purple-blue), B (blue), BG (blue-green), G (green), Y (yellow), YR (yellow-red), and R (red).

Details at the top of the chart show the Sequence of Hues, arranged in the left from the Sequence of Values and the best neutral printed on each color strip in its column for strength or weakness. The color that reads in vertical lines the column marked 10, is at the value level 4, and reads in column 10. This sign is written 10/4, perceptually as a positive indication and is shown 5/1 at "A Color Notation."

If the chart were kept around the equator of the color sphere having a cylindrical section, it would picture a narrow strip of the globe, each hue taking the place of a meridian and each value level representing a parallel of latitude, while the chroma naturally would correspond to altitude.

When the cylinder cut open on the red-purple meridian (RP) it would spread out to form the Flat Chart, green being on its inner side (yellow and red (value level) to the right, and the red from blue and purple to the left).

Colors shown on this chart from the opposite equator of the color sphere, between which and the neutral gray bands are the intermediate degraded neutral chromas, which appear in the accompanying charts R, Y, G, B, P and 20, 30, 40, 50, 60, 70, 80, 90 of the system.

AVOID DUST, HANDLING AND EXPOSURE TO STRONG LIGHT

Chart V

Axis of the Color Tree.

Value, i.e. the amount of light reflected from pigments,
is the second dimension or quality of color.

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CHART
V

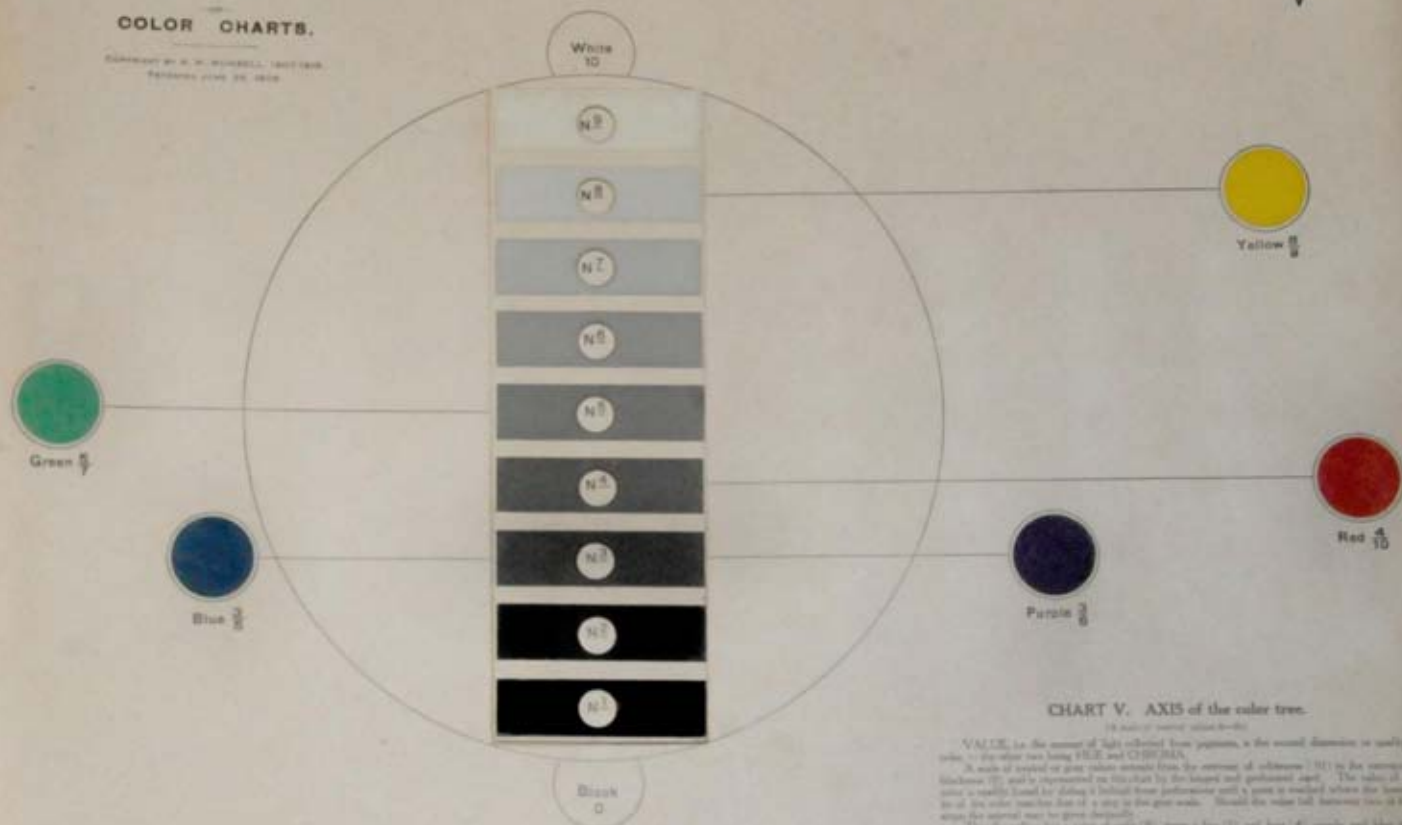


CHART V. AXIS of the color tree.

(A. Munsell, 1907, pp. 10-11)

VALUE, in the amount of light reflected from pigments, is the second dimension in quality of color in this color tree being CHROMA and CHROMA.

A scale of neutral or gray colors extends from the extreme of whiteness (N 1) to the extreme of blackness (N 18) and is represented on this chart by the boxed and graduated steps. The value of any color is readily found by drawing a vertical line perpendicular with a point or marked where the bottom of the color reaches that of a step in the gray scale. Should the color fall between two of these steps the nearest may be given tentatively.

The yellow has a value of eight (N 8), green a five (N 5), red four (N 4), purple and blue three (N 3). Fractional lines appear on parts of this unnumbered scale of value. It is established by a special instrument adjusted to the nature of optical measurements, at the Mass. Institute of Technology, and known as the Munsell Chromometer.

These papers were first put into their VALUE, but also in their CHROMA, as fully shown on Chart C, which explains why the color fractions appearing indicated from the neutral scale are of various length. See chapters II and III of the author's handbook, "A COLOR SYSTEM" (1921) (General edition).

PROTECT THE CHART FROM DUST

Chart C

Chromatic Branches of the Color Tree.

Chroma, i.e. the strength of pigment colors, is the third dimension of color.

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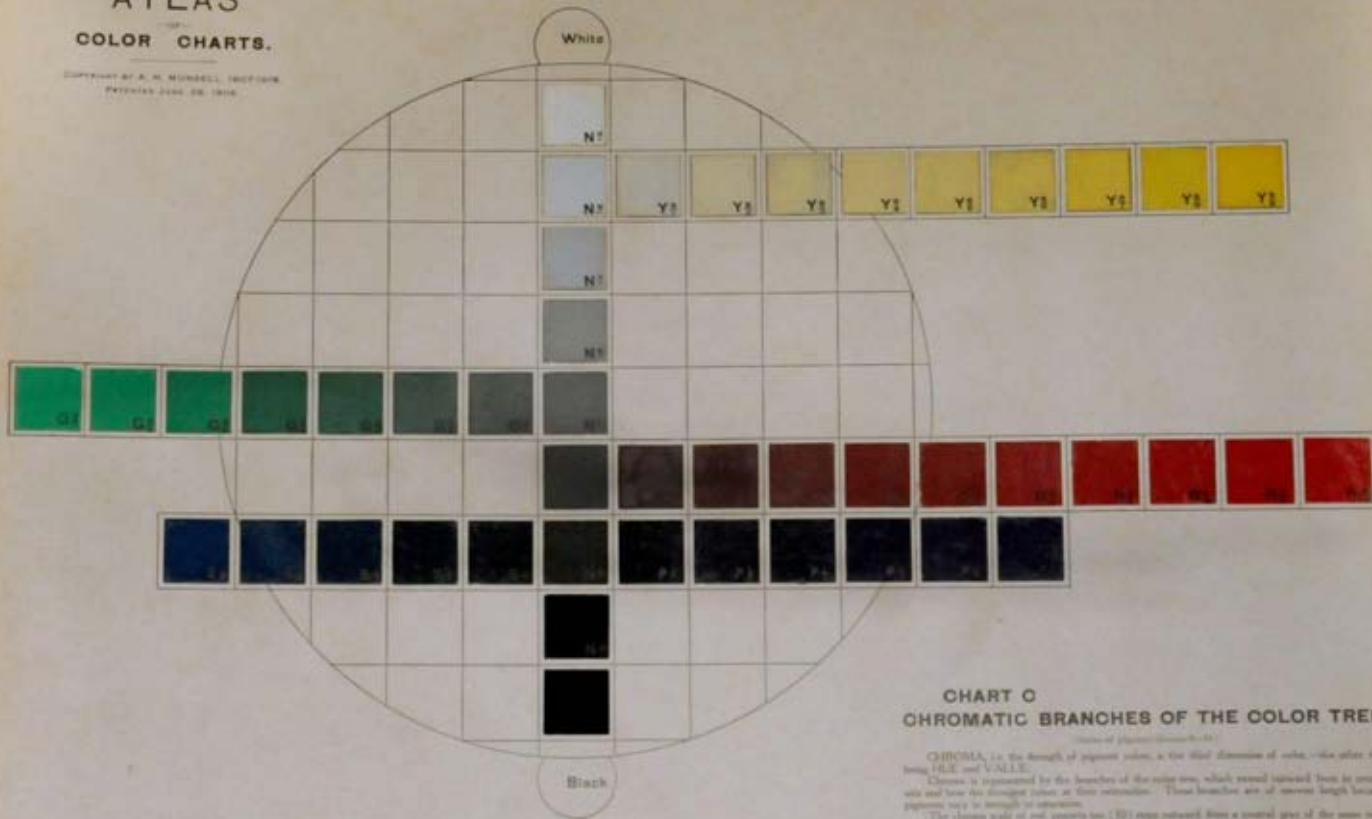


CHART C
CHROMATIC BRANCHES OF THE COLOR TREE

(Scale of Chromatic Branches)
CHROMA, is the strength of pigment color, a line that diminishes of value, the other two being VALUE and HUE.
Chroma is represented by the branches of the color tree, which extend outward from its central axis and have the strongest values at their extremities. These branches are of unequal length because pigments vary in strength of saturation.
The chroma scale of red projects ten (10) steps outward from a neutral gray of the same value (4), while green, blue, yellow, and purple project only 8 steps of chroma. The chroma scale of yellow projects ten (10) steps outward from a gray of the same value (8), while that of blue shows but five (5) steps of chroma.
These scales are not due to personal bias or guess work, but have been scientifically established. They represent the strongest grades of pigments, starting here for the "warm base" and steel grays, including the "cool base" blue and purple. The circle mark line N' is the center of the color system, starting which all colors are laid out.
Reprinted material VALUE and CHROMA, make it possible to define a color with exactness. See chapter VI of the author's handbook, "A COLOR NOTATION" (second edition).

PROTECT THE CHART FROM DUST AND HANDLING.

Chart R

Scale of Chromas. Red and Blue-Green Chart.

This chart presents a vertical plane passed through the axis of the color solid and bearing the complementary hues, red and blue-green.

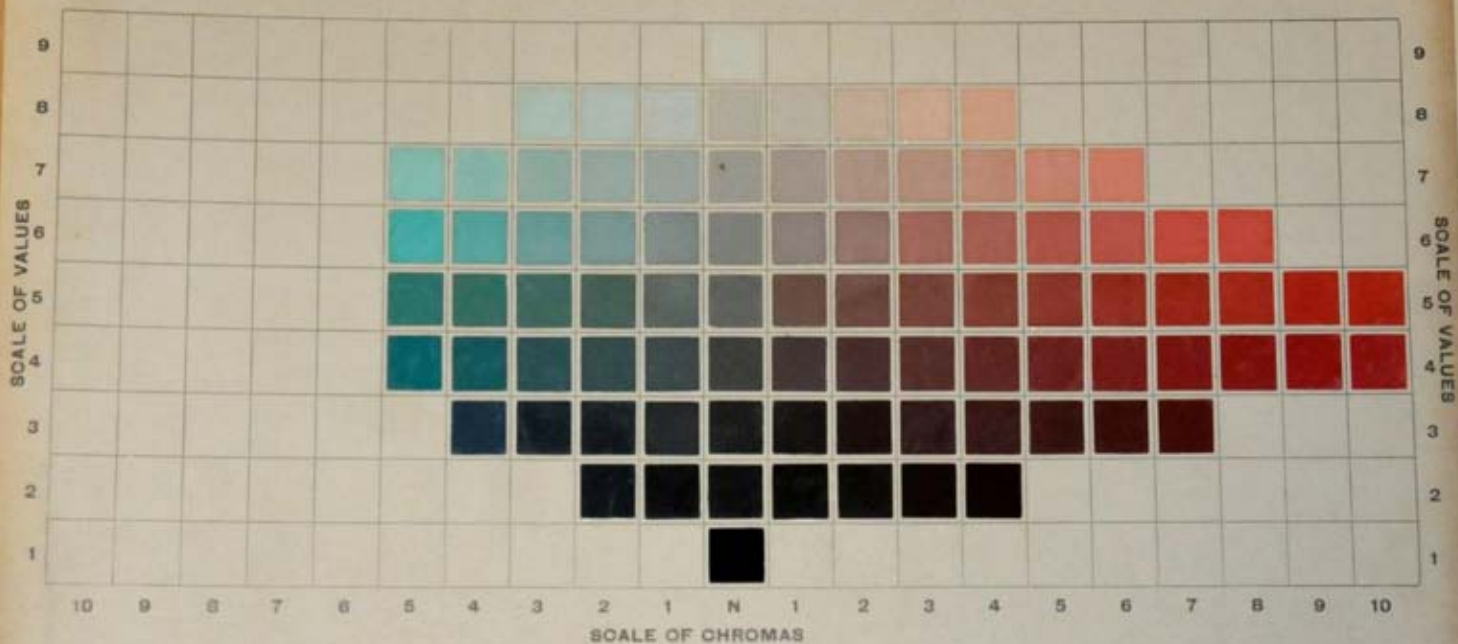
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ATLAS

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CHART
 R



RED AND BLUE-GREEN CHART.

This chart presents a neutral plane passed through the axis of the color solid and having the complementary hue, red and blue-green. This pair of opposites have a difference in relative amount which varies from black to white, and their position to the average or zero tends to make apparent.

VALUES of red and blue-green range normally from black (1) to white (10). CHROMAS or amount of color range from normally less toward gray to the maximum (10).

Each step in these value scales begins an intermediate square describing its light and its strength. Thus R₅ is maximum, the standard red of the system, which includes 100% of chromatic strength and refers 50% of the incident light. Its opposite B₅ indicates the same percentage of light but with 50% of chromas. To balance this pair the gray scale is necessary, as the amount

blue-green is but half as strong as maximum red, twice as much is required for a balance. Attention to these balances leads to pleasing combinations.

Any chosen amount of red and blue-green upon this chart may be balanced by using their opposite, blue light blue-green (B₅) balance dark red (R₅) when the same are arranged in the product of the opposite side-as pairs of light blue-green and heavy-blue pairs of dark red.

Chromas R and B of the handbook, "A Color Notation," describe these balances and their combinations with other hues. The symbol for each color step is its NAME, a measure of its light and strength by which it is to be measured, written, and repeated.

AVOID DUST, HANDLING AND EXPOSURE TO STRONG LIGHT.

Chart Y

Scale of Chromas. Yellow and Purple-Blue Chart.

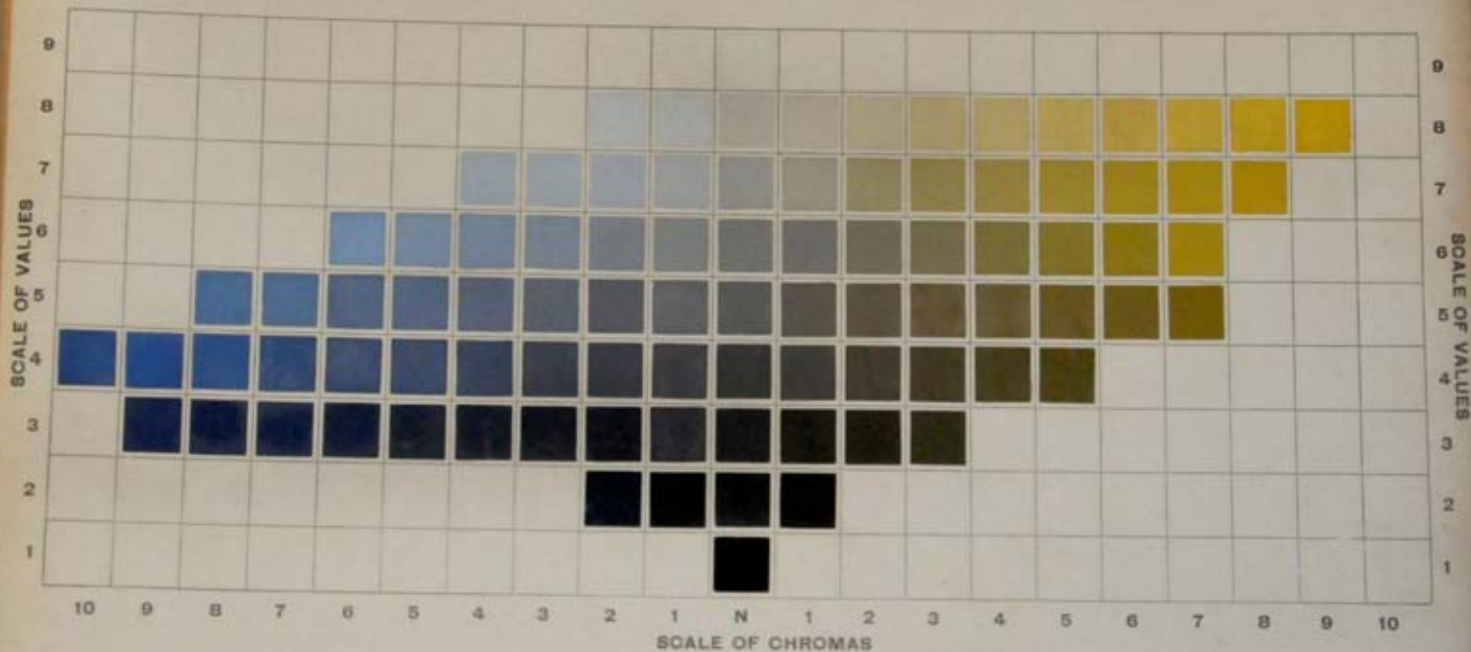
This chart presents a vertical plane passed through the axis of the color solid and bearing the complementary hues, yellow and purple-blue.

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ATLAS
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DESIGNED BY W. M. MUNSELL, BROOKLYN
PUBLISHED JUNE 26, 1903.

CHART
Y



YELLOW AND PURPLE-BLUE CHART.

This chart presents a series of pairs passed through the axis of the color wheel and having the complementary hue, yellow and purple-blue. The pair of opposite hues is shown in regular measured ratios from black to white, and from green to the strong red color made in each extreme.

VALUES of yellow and purple-blue range normally from black (1) to white (10). CHROMAS of opposite or color range independently from neutral gray to the maximum (10).

Each step in these color scales bears an approximate equal distance in light and its strength. Thus (1) is pure yellow, the stronger primary yellow, which attains (10) in chromatic strength and value (10), at the weakest light. In contrast (10) shows the same percentage of light but only (1) of chroma. To balance the pair the area must be inversely as the chroma, i. e.,

purple-blue is but one sixth as strong as pure yellow. It requires nine parts of purple-blue to balance two parts of the yellow. Attention to these measured leads to pleasing combinations.

Any chosen step of yellow and purple-blue from this chart may be balanced by using their opposite, that light yellow (Y1) balances dark purple-blue (PB10), when the areas are inversely as the product of the modulus, viz., having seven parts of light yellow and seventy-two parts of dark purple-blue.

Charts III and IV of the handbook, "A Color notation," describe these balances, and their combinations with other hues. The symbol on each color step is its NAME, a measure of its light and strength by which it is to be measured, written and reproduced.

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Chart G

Scale of Chromas. Green and Red-Purple Chart.

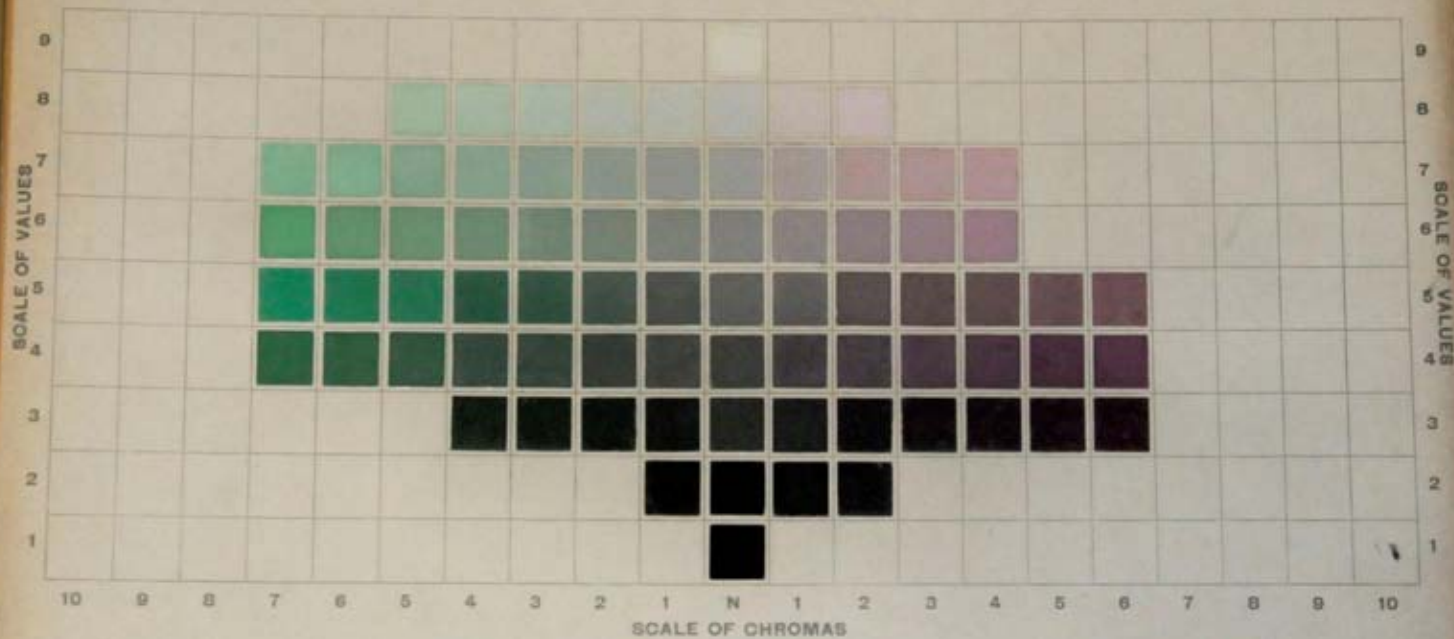
This chart presents a vertical plane passed through the axis of the color solid and bearing the complementary hues, green and red-purple.

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Published 1928 by the author

CHART
G



GREEN AND RED-PURPLE CHART.

This chart presents a central plane passed through the center of the color solid and bisects the complementary hues, green and red-purple. The pair of opposite hues is shown in equal measured units from black to white and from purple to the strong or pure red in this pigment.

VALUES of green and red-purple range vertically from black (1) to white (10). CHROMAS or strengths of color range horizontally from central gray to the maximum (10).

Each step in hue-value series bears an approximate equal distance in light and its strength. Thus (2) is overall green, the strongest prominent green, which exhibits (7) of chromatic strength and about 1% of the incident light. In opposite (8) which is the same percentage of light but only (2) of chromas. To balance this pair the same must be inversely so the chromas 1 to 10, their

red-purple is one seventh less strong than green, seven parts of red-purple will balance six parts of the green. Attention to these measures leads to pleasing combinations.

Any chromas steps of green and red-purple upon this chart may be balanced by using this symbolic, three light green (2) balances dark red-purple (8) when the areas are inversely as the product of the symbols also, four parts of dark red-purple and four parts of light green.

Chapter III and IV of the handbook, "A Color notation," describe these balances and their combinations with other hues. The symbol on each color step is its NAME, a measure of its light and strength by which it is to be measured, written and reproduced.

AVOID DUST, HANDLING AND EXPOSURE TO STRONG LIGHT.

Chart B

Scale of Chromas. Blue and Yellow-Red Chart.

This chart presents a vertical plane passed through the axis of the color solid and bearing the complementary hues, blue and yellow-red.

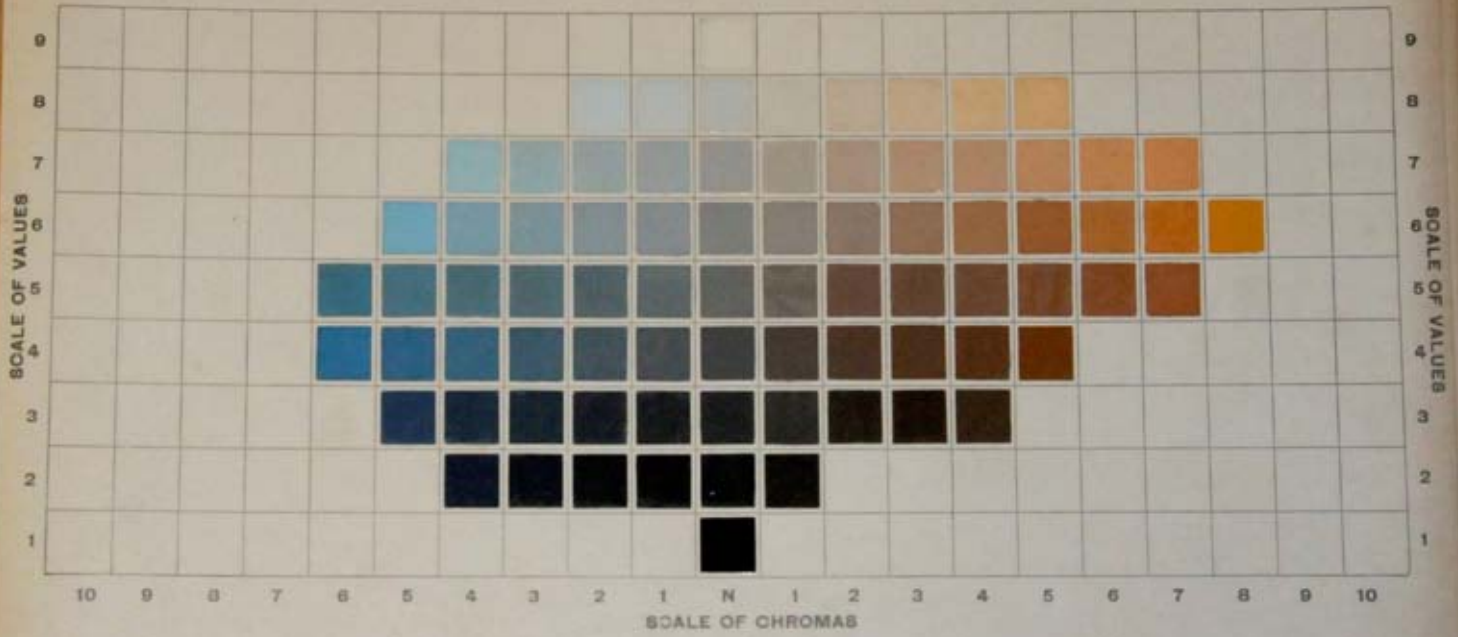
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CHART
 B



BLUE AND YELLOW-RED CHART.

This chart presents a neutral plane passing through the apex of the color wheel and being the complement of blue and yellow and red. The pair of opposite lines is shown in regular measured units from black to white, and these present in the mixing an entire scale of middle grays.

VALUES of blue and yellow-red range vertically from black (1) to white (10). CHROMAS are strength of color, ranging horizontally from neutral gray to the maximum (10).

Each pair of blue and yellow-red lines are approximately equal in weight to light and to strength. The 10 is white, the average percentage being, respectively, 80% of chroma strength and 40% of brightness. The opposite 100 is white, the most saturated light has only 10% of chroma. To balance the pair the area must be inversely to the chroma, i. e., 100

for yellow-red and blue are not too strong that the blue or pair of the yellow-red will balance five parts of blue. Attention is here directed back to primary combinations.

Any chosen mass of blue and yellow-red upon the chart may be balanced by using their symbols: thus light yellow-red (10N) balances with blue (10), either by area or inversely as the product of the symbols are: namely parts of light yellow-red (1000) and two-eight parts of dark blue.

Chart B and C of the handbook, "A Color Dictionary," describe these balances and their combinations with other hues. The symbol on each color may be its NAME, a measure of its light and strength by which it is to be measured, written and numbered.

AVOID DUST, HANDLING AND EXPOSURE TO STRONG LIGHT.

Chart P

Scale of Chromas. Purple and Green-Yellow Chart.

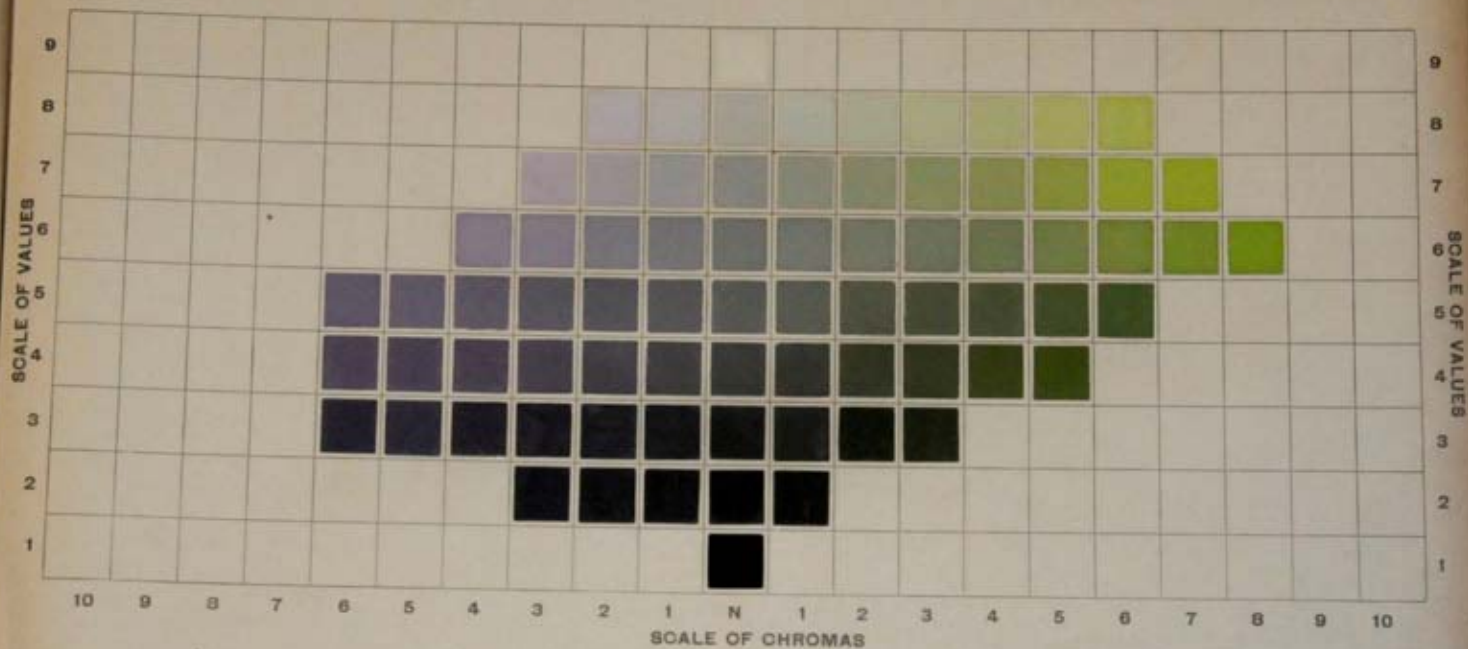
This chart presents a vertical plane passed through the axis of the color solid and bearing the complementary hues, purple and green-yellow.

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PUBLISHED JUNE 22, 1930

CHART
P



PURPLE AND GREEN-YELLOW CHART.

This chart presents a vertical plane passed through the axis of the color wheel, and shows the complementary hues purple and green-yellow. The pair of opposites here is shown to require unequal scales from black to white and from purple to the corresponding color in the opposite direction.

VALUES of purple and green-yellow range vertically from black 0 to white 100. CHROMAS of purple range horizontally from neutral gray to the maximum 10.

Each step in these value scales bears an approximate relation to light and to strength. Thus P1 is a measured patch of average brightness, which indicates 50% of the maximum strength and reflects 80% of the incident light. Its opposite G2 reflects the same percentage of light but only 30% of strength. To balance this pair the same area, be it white or the chroma 10, has

green-yellow is one sixth less strong than the purple, six parts of green-yellow will balance five parts of the purple. Attention to these measures leads to pleasing combinations.

Any chromatic pair of purple and green-yellow upon this chart may be balanced by using four weights, three light green-yellow (GV1) balanced with purple (P7), when the same are arranged in the position of the opposite side, six parts of light green-yellow and forty-eight parts of dark purple.

Charts III and IV of the handbook "A Color Notation" describe these balances and their combinations with other hues. The method on each color scale is by Munsell, a measure of its light and strength by which it is to be measured, printed, and reproduced.

AVOID DIRT, HANDLING AND EXPOSURE TO STRONG LIGHT.

Chart 20

Dark Scales of Hue and Chroma, Reflecting 20% of the Incident Light.

This chart is a horizontal section through the color solid, similar to chart 50 except that the shorter radii describe a loss of chroma as colors darken.

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CHART
20

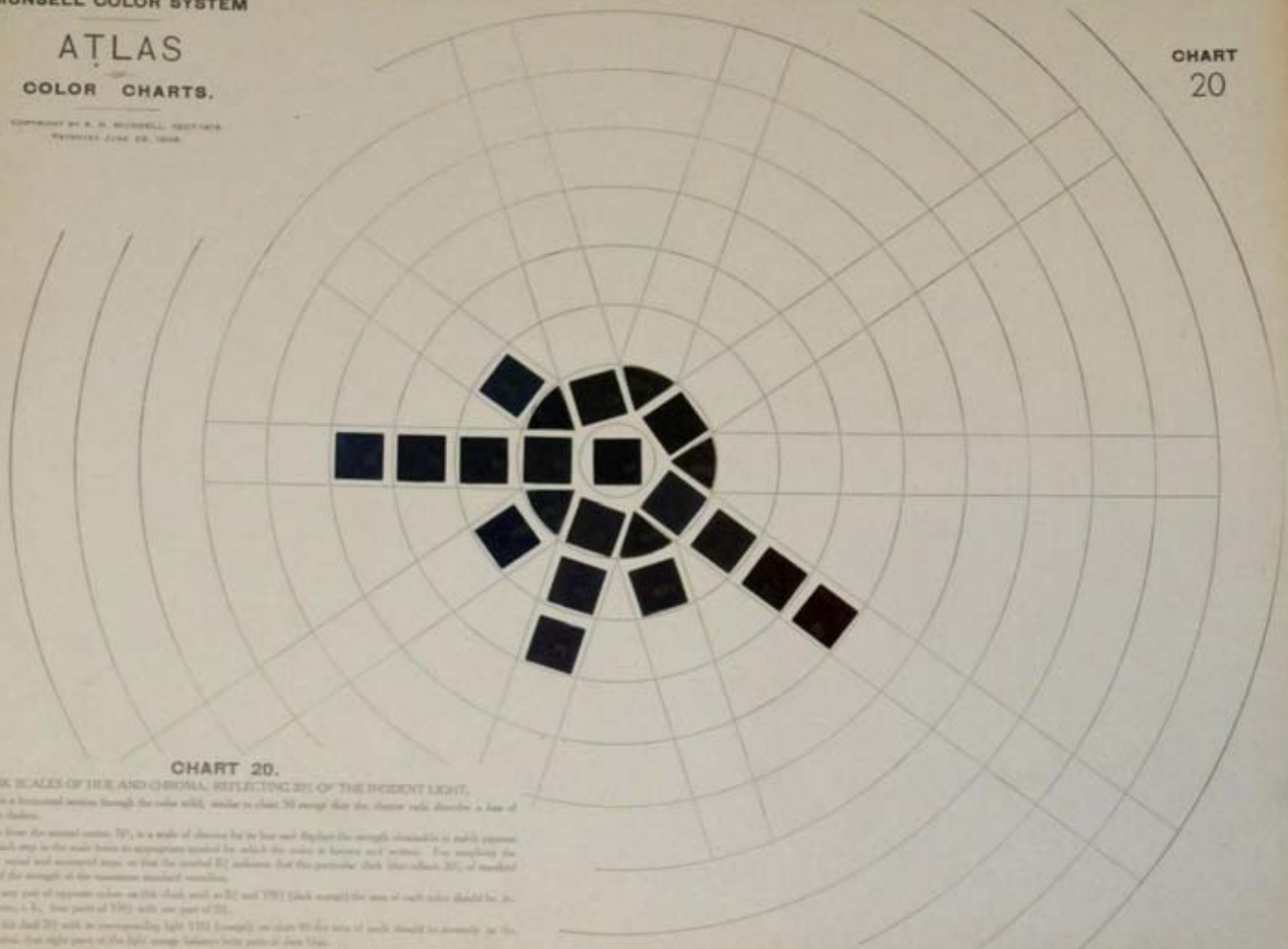


CHART 20.

SCALE SCALES OF HUE AND CHROMA, REFLECTING 20% OF THE INCIDENT LIGHT.

This chart is a horizontal section through the color solid, similar to chart 20 except that the chroma radii describe a line of constant saturation.

Each circle from the central center, 20, is a scale of chroma for its hue and explains the strength standards in each system on this chart. Each step in the scale bears an appropriate number by which the value is known and written. For simplicity the scale is given the usual and accepted steps, so that the central 20 indicates that this particular dark blue color, 20, is made of 20 parts of 20% of the strength of the maximum standard mixture.

To balance any pair of opposite colors see that chart with an 80 and 100 (black except the area of each color should be, respectively, as in chroma, 1, 2, four parts of 100) with one part of 20.

To balance the dark 20 with its corresponding light 100 (except on chart 20 the area of each should be exactly in the proportion of its opposite, that is, eight parts of the light except balance four parts of dark 20).

The suggestions for obtaining approximate groups of color which appear on chart 20 are also applicable from as indicated in Chapters 17 and 18 of the book, "A Color System."

Chart 30

Dark Value Scales of Hue and Chroma.

This chart is a horizontal section through the color solid, similar to that of chart 50 except all its colors reflect 30% of the incident light.

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—
COLOR CHARTS.

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CHART
30

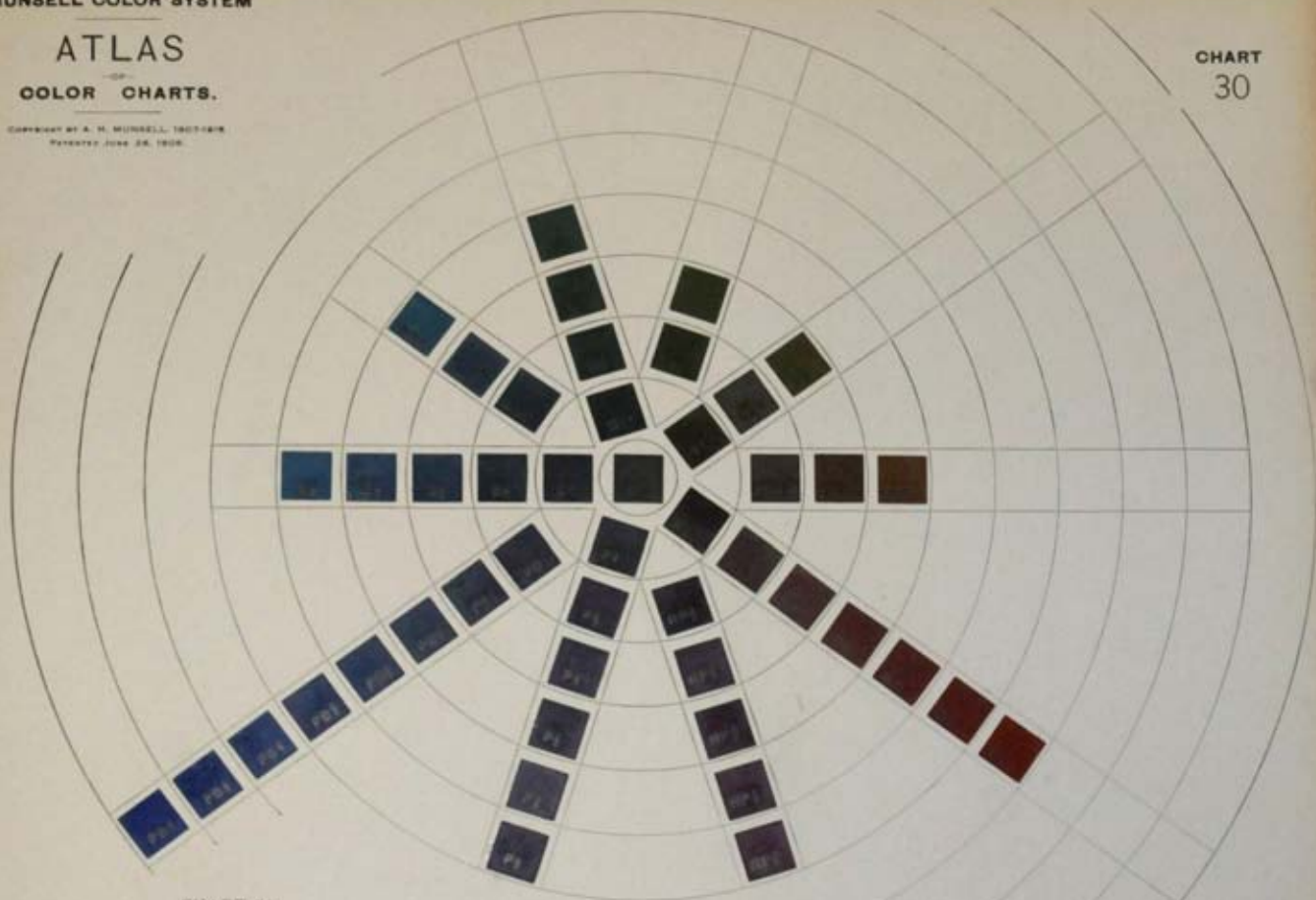


CHART 30.

DARK VALUE SCALES OF HUE AND CHROMA.

This chart is a horizontal section through the color solid, similar to that of chart 30 except that all its colors reflect but 50% of the incident light.

Each radial line is a scale of chroma, whose steps appear written beneath the line. Thus R_5 is the seventh step of red and reflects 70% of the strength of standard illumination; its opposite line—blue-green, has but two steps of chroma at this level, and to balance these narrow chroma, the size of the weaker ones is seven-fifths as great as that of the stronger color.

Each concentric circle traces lines of equal chroma. A sequence of regularly decreasing chroma may be traced thus:—PB, RP, YB, GB, N. The positions on chart 30 may be applied to the chart as indicated in chapters III and IV of a "Color Notation."

AVOID HANDLING AND EXPOSURE TO LIGHT.

Chart 40

Scales of Hue and Chroma, Reflecting 40% of the Incident Light.

This chart is a horizontal section through the color solid, similar to chart 50 except that all its colors reflect 10% less light.

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CHART
40

NOTICE.

Additional steps of purple are made possible
by new color bases which are stable.
Thus one additional step on Chart 40 and
2 steps on Charts 50 and 70 are added.

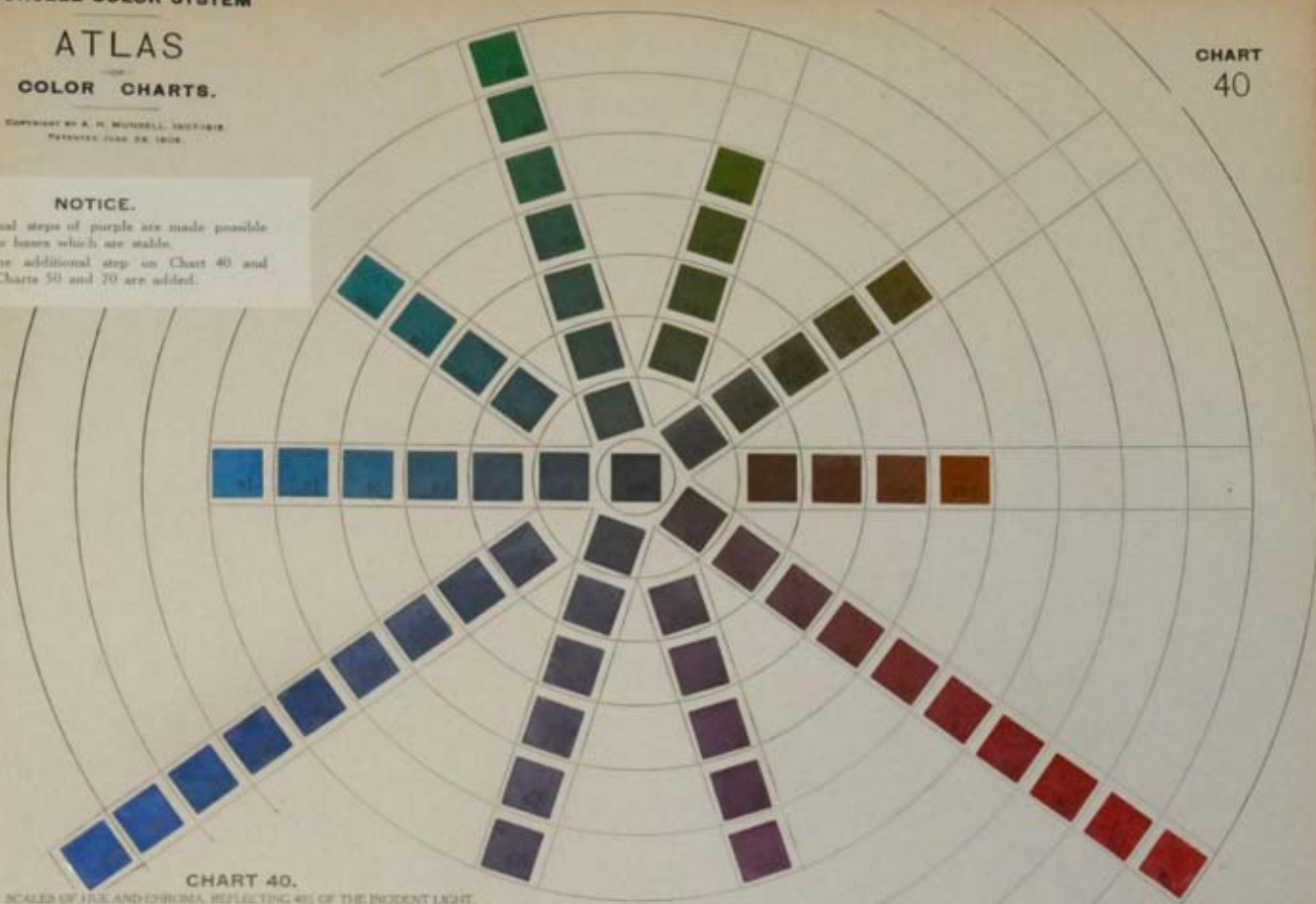


CHART 40.

SCALES OF HUE AND CHROMA, REFLECTING 40% OF THE INCIDENT LIGHT.

This chart is a horizontal section through the color solid, similar to chart 70 except that all its colors reflect 40% less light. It will be noticed by comparison that this weakens the yellow tint, while the tint of purple-blue is greatly increased.

Each of the ten lines radiates in scale of chroma on a radius from the central center (N) to the strongest color obtainable in stable pigment. Thus YR, Y and GT, extend only to the 8th or middle step of chroma, while the grouped PB groups nearly twice as far to

To balance the unequal chroma of any opposite pair, the area must be proportional to the square placed on the color. Thus one part of Y balances two parts of PB. Each successive scale shows equal steps of chroma through the ten lines, and the suggestion for making color specimens which appear on the other charts apply here also. See Chapters II and IV of "A Color Handbook."

AVOID DUST, HANDLING AND LONG EXPOSURE TO THE LIGHT.

Chart 50

Middle Value Scales of Hue and Chroma.

This chart is a horizontal section through the color solid, classifying all colors of Middle Value, by measured scales of Hue and Chroma.

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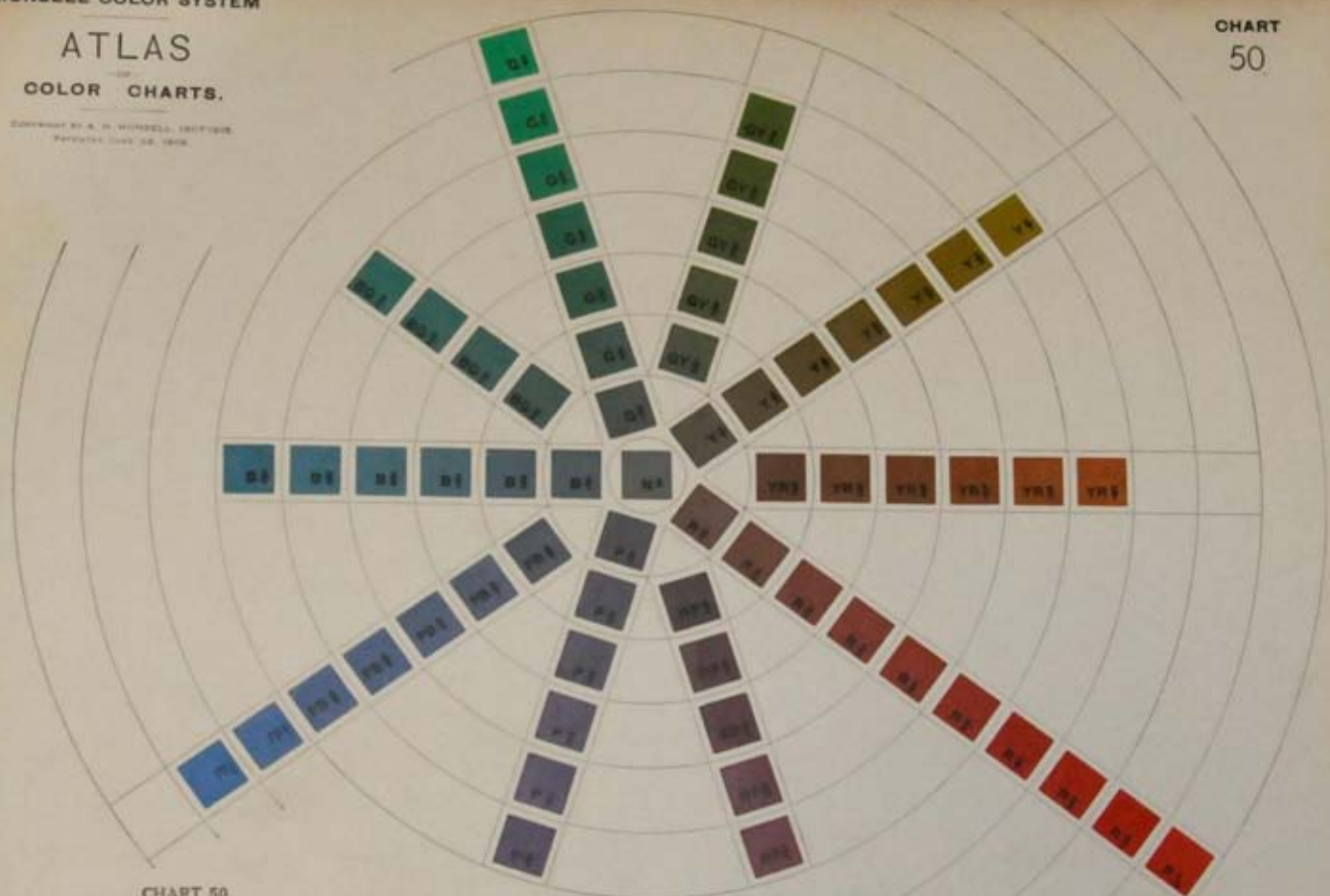


CHART 50

MIDDLE VALUE SCALES OF HUE AND CHROMA

This Chart is a horizontal section through the center of the Color Solid, classifying all colors of MIDDLE VALUE by measured units of HUE and CHROMA.

Each color is a SCALE OF CHROMA starting from the neutral center N. It has a regular increase in the chroma of its primary hue, and hence approximate regularity. Thus R1 indicates that the red spot, which it is placed within 10% of standard white and 50% of the strength of standard saturation.

Each circle which lies from the neutral center is a SCALE OF HUE. It is a series of ten measured hues, read in order and clockwise. The regularity appears in these gradations: — R; YR; Y; GY; G; BG; B; PB; P; RP; which is a balanced circle of hues reflecting 50% of standard white and 10% of the chroma of standard saturation.

A BALANCE of opposite hues which neutralized and enhanced one another, is obtained by equal areas of equal chroma — such as R2G1 and B1 — or by comparing areas of unequal chroma, such as nine parts of R2G1 with two parts of B1.

A SEQUENCE of increments have combined with increasing chroma to equal addition in hue from R to G to Y to B, so the differences may be divided into P, C, G, R, — to show the qualitative and quantitative composition of this chart by measured intervals, since an orderly succession of colors, and any selection — straight or irregular — is a good index in the various methods. See Chapter III and VI of "A COLOR NOTATION," by the author, which describes the nature and use of these charts.

AVOID HANDLING and EXPOSURE TO LIGHT or DUST.

Chart 60

Scales of Hue and Chroma Reflecting 60% of the Incident Light.

This chart is a horizontal section through the color solid, similar to chart 50 except that all its colors reflect 10% more light.

MUNSELL COLOR SYSTEM

ATLAS
COLOR CHARTS.

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CHART
60

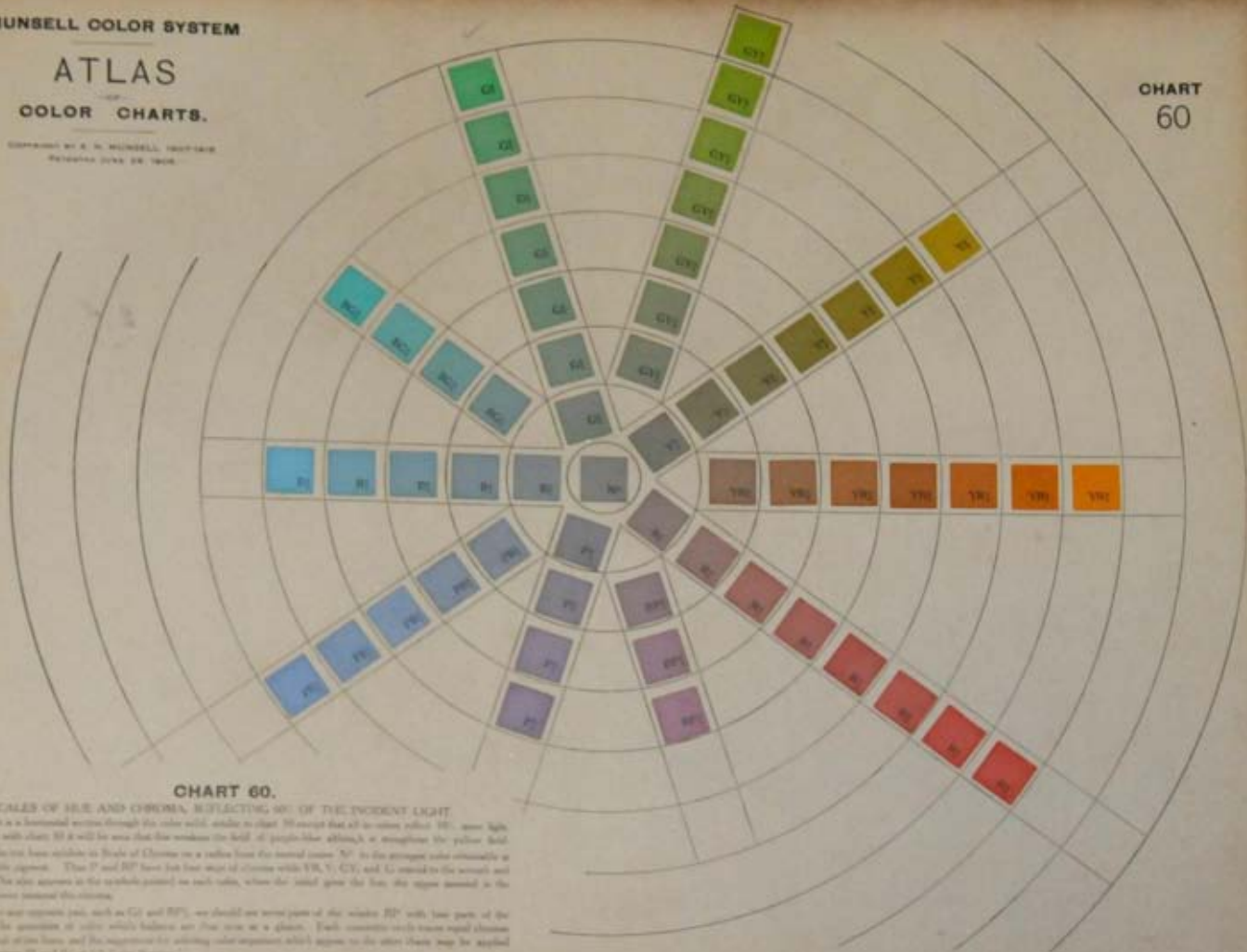


CHART 60.

SCALES OF HUE AND CHROMA, REFLECTING 50% OF THE INCIDENT LIGHT

The chart is a horizontal series through the color wheel, under a chart. It is so arranged that all in color reflect 50% of the light. By comparison with chart 53 it will be seen that the weaker the field of purple-blue, although it strengthens the yellow field.

Each of the ten lines radiates as Scale of Chroma on a radius from the central point 'N' to the strongest color attainable at the limit of visible spectrum. The 'P' and 'RP' have but four steps of chroma with 'YR', 'Y', 'CY' and 'L' extend to the neutral and right edge. The also appears in the scale placed on each tube, where the initial gives the hue, the upper numeral is the color and the lower numeral the chroma.

To balance any opposite pair, such as 'G' and 'RP', we should use some part of the weaker 'RP' with two parts of the stronger 'G'. The position of color which balance are first seen at a glance. Each successive scale shows equal chroma through the usual white lines, and the suggestion for adjusting color argument which appears in the other charts may be applied here. See Chapters 33 and 34 of 'Color Notions'.

AVOID DUST, HANDLING AND LONG EXPOSURE TO LIGHT

Chart 70

Light Value Scales of Hue and Chroma.

This chart is a horizontal section through the color solid, similar to chart 50 except that all its colors reflect 70% of the incident light.

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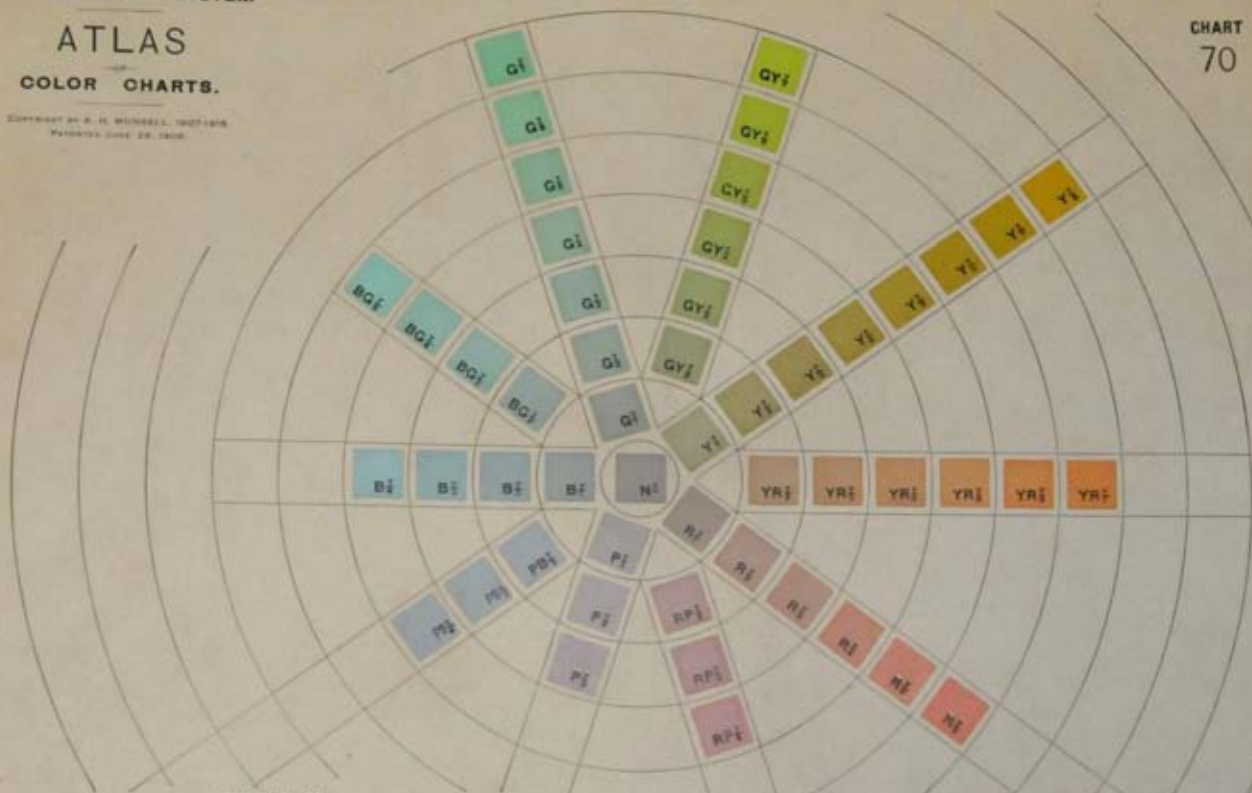


CHART 70

LIGHT VALUE SCALES OF HUE AND CHROMA.

This chart is a horizontal section through the color solid, similar to that of chart 70 except that all of its values reflect 70% of the incident light.

Each radial line is a MUNSSELL TOP CHROMA, starting from the neutral center N₁. It shows a regular increase of strength in its outward line, and each one takes an appropriate notation. Thus B₁ indicates that the red spot which it is placed reflects green, violet of standard white and six tenths of standard violet, its opposite or complement. Blue-green (BG₁) is slightly weaker at this level, as appears in the adjacent 2 notches below the line, and in likewise the pair, one pair of blue-green should be used with four parts of the red.

Each chromatic circle shows lines of uniform chroma, the two inner circles being complete with the system of 100, which are written B₁, YR₁, Y₁, GR₁, G₁, BG₁, B₁, PB₁, P₁, RP₁, showing that hue, value and chroma are equal.

The third circle is intended for uses of a purple blue. In the fourth circle is brightest purple in this chroma. The fifth circle has an approximation from blue-green to red; in the sixth blue-green dominates; the seventh only primary green, yellow-green, yellow and yellow-red, while the eighth circle is represented by yellow alone.

This circle shows the average strength of differences in the field of the color solid and should be compared with chart 70 across the relations of strength and weakness are revealed.

For a study of balance and sequence in this chart see Chapters III and IV of "A Color Notation" by the author.

ALWAYS MANAGE THE ANDY CHARTS BY THE

Chart 80

Light Scales of Hue and Chroma, Reflecting 80% of the Incident Light.

This chart is a horizontal section through the color solid, similar to chart 50 except that the relative chromas change as their hues approximate to white.

ATLAS
COLOR CHARTS.

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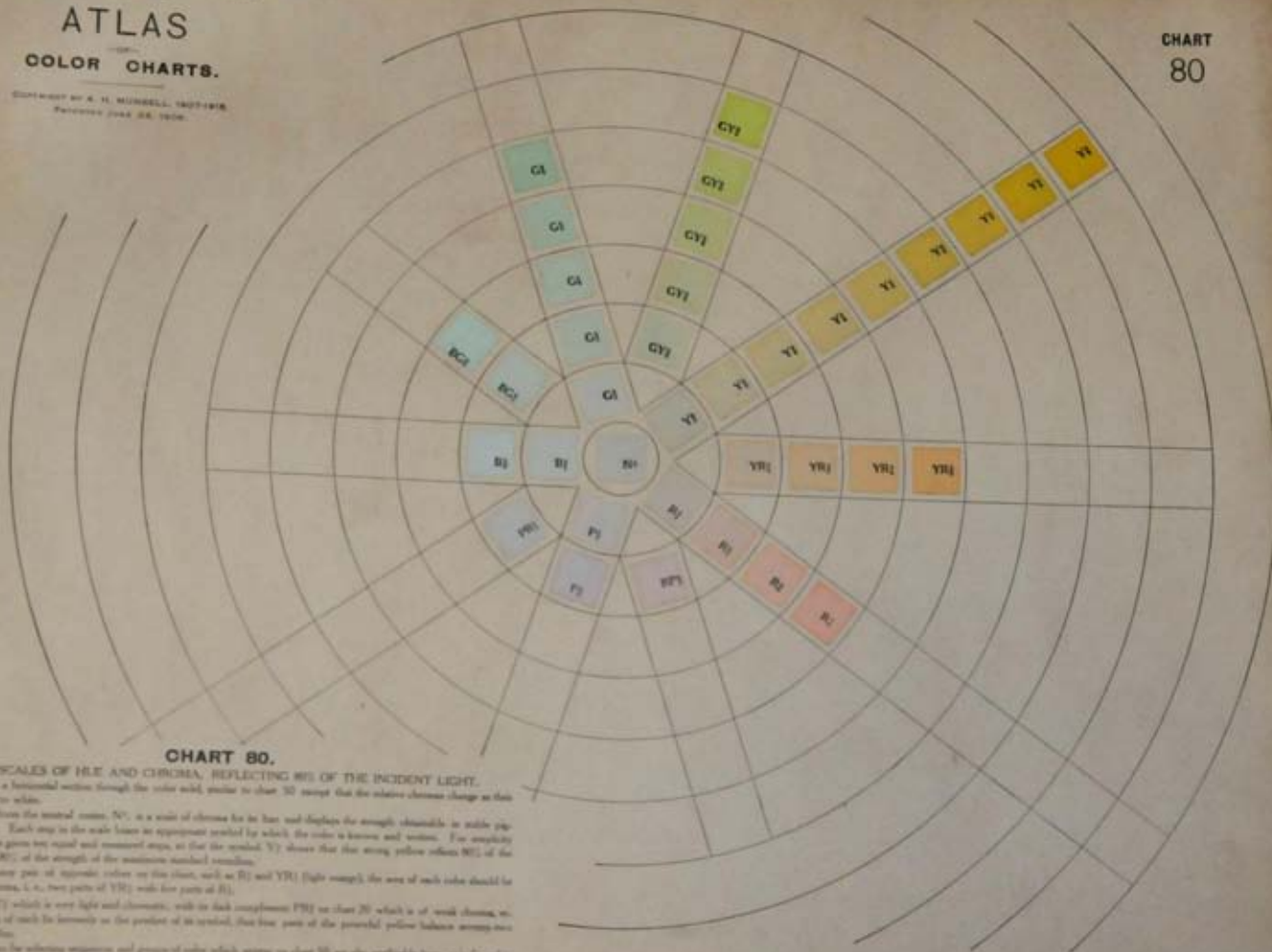


CHART 80.

LIGHT SCALES OF HUE AND CHROMA, REFLECTING 80% OF THE INCIDENT LIGHT.
 This chart is a horizontal section through the color solid, similar to chart 31 except that the relative chroma change as they have approached to white.
 Each scale from the neutral center, N, is a scale of chroma for its hue and displays the strength obtainable in white pigment at this level. Each step in the scale bears an equivalent weight by which the color is known and written. For simplicity the chroma scale is given in equal and constant steps, so that the neutral Y, shows that this strong yellow reflects 80% of the parallel light and 80% of the strength of the maximum numbered standard.
 To balance any pair of opposite colors on this chart, such as R and YR, (light enough) the area of each color should be inversely as its chroma, i. e., two parts of YR, with five parts of R.
 To balance Y, which is very light and chromatic, with its dark complement PB, on chart 31 which is of weak chroma, requires that the area of each be inversely as the product of its spectral, that four parts of the powerful yellow balance twenty-two parts of the dark blue.
 The suggestions for selecting mixtures and groups of colors which appear on chart 31 are also applicable here, as indicated in Chapters III and IV of the handbook "A Color Notation."
 AVOID DUST, HANDLING AND EXPOSURE TO STRONG LIGHT.

