

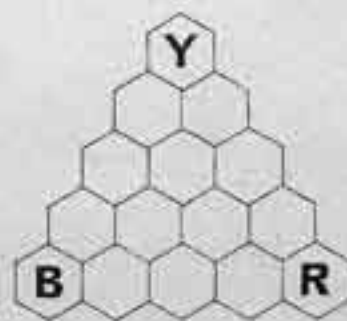
BYRAZ

colour

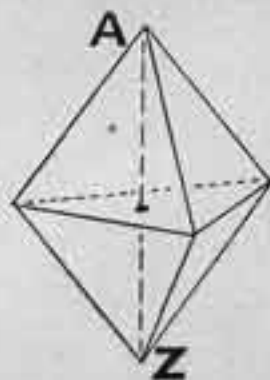
CO-ORDINATING

LOUIS LOYNES

Triangle method
of self-numbering
all colours in
natural sequence



COLOUR LANGUAGE
COLOUR THEORIES
PRISM DIAGRAMS
Goethe *versus* Newton



A GREAT COLOUR HIVE

THE BYRAZ COLOUR HIVE is the answer to the need, long felt in many industries, for a System of arranging the entire realm of colours into ONE GREAT BASIC COLOUR CATALOGUE for Co-ordination, Notation, Identification, Matching, Relating, and Testing; and for a Simple and Universal COLOUR NUMBERING SYSTEM.

EVERY POSSIBLE COLOUR. The Byraz Hive catalogues all colours as a triangular double-pyramid. It is a compact colour phalanstery, with all conceivable colours equally distinct, regularly disposed and evenly graduated; all marshalled together in correct order for easy reference; all tabulated and numbered according to POSITION in the hive and according to COMPOSITION in aspect.

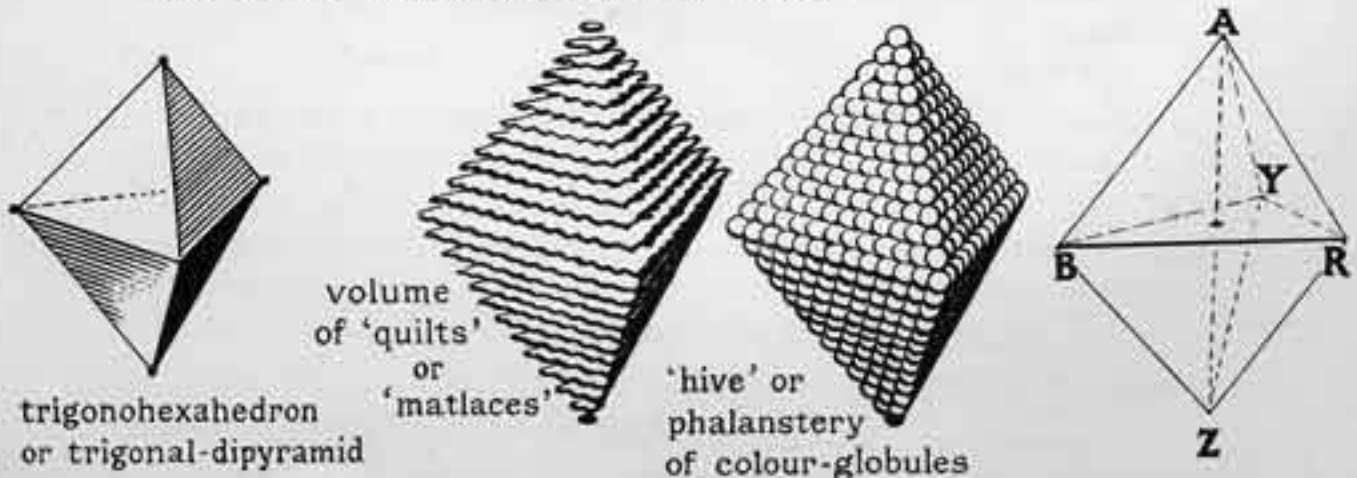
PRIME COLOURS. Five corners hold the five primes,—Blue, Yellow, Red, White, Black. White is at the top corner (apex); black at the bottom corner (zero). A spine or AXIS from top to bottom holds all the greys.

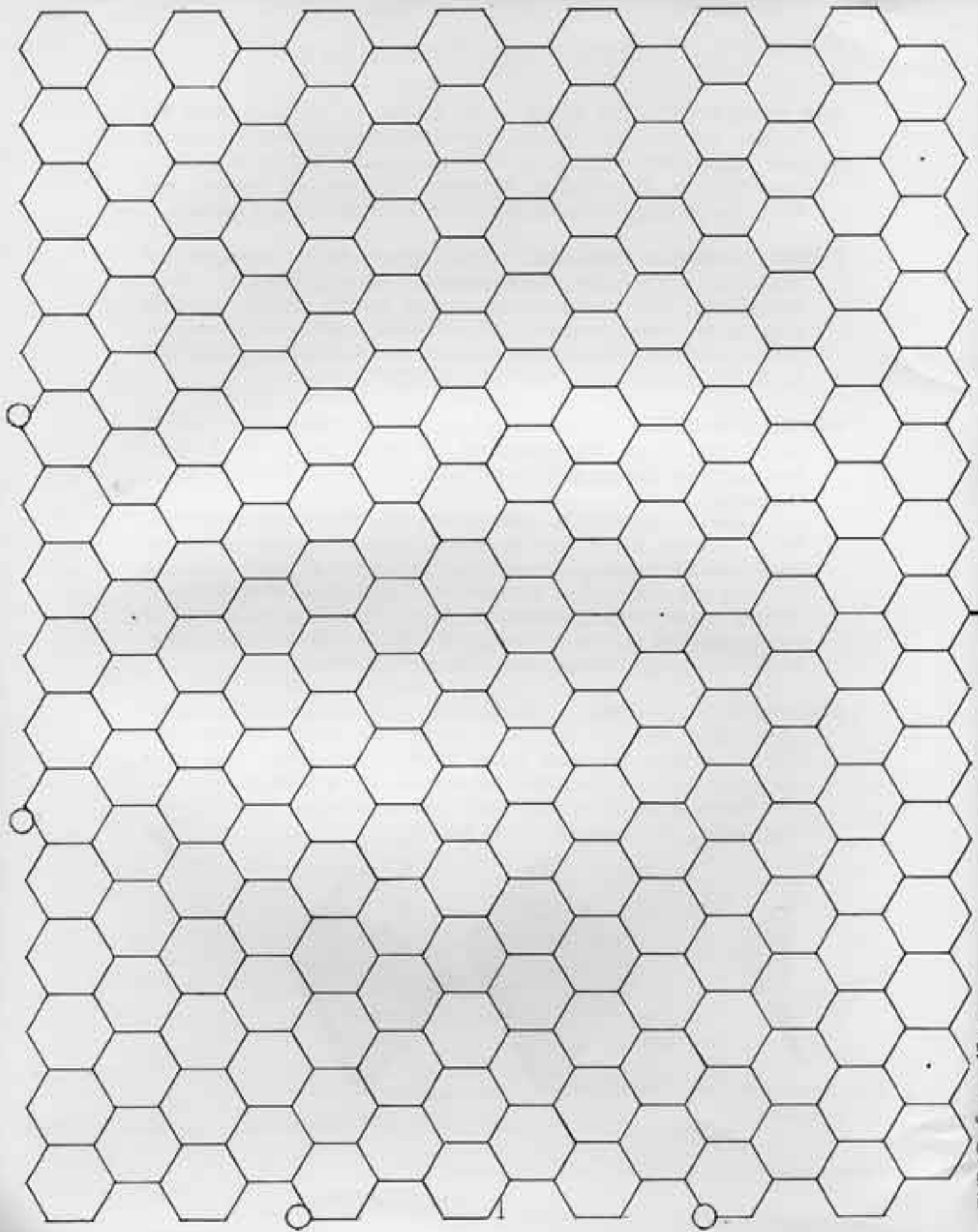
Between the corners lie spots of every conceivable colour spreading throughout the Byraz Hive in natural chromatic order, as though the Primes are radiating out and intermingling into all possible colours.

Any and every colour is composed of portions of these Primes in varying proportions of mixture, for, as every artist knows, any colour can be analysed out into a mixture of so-much blue, so-much yellow, so-much red, and perhaps some white or some black.

PLANES OF COLOURS. The double-pyramid is built-up of triangular planes of colours, set one above another like quilts. Twelve quilts pile up to Apex-white and twelve down to Zero-black. The quilts are constructed of colour-spots set together like a honeycomb.

Each spot is slightly and evenly different in colour from its neighbour-spots. There are no colours missing.

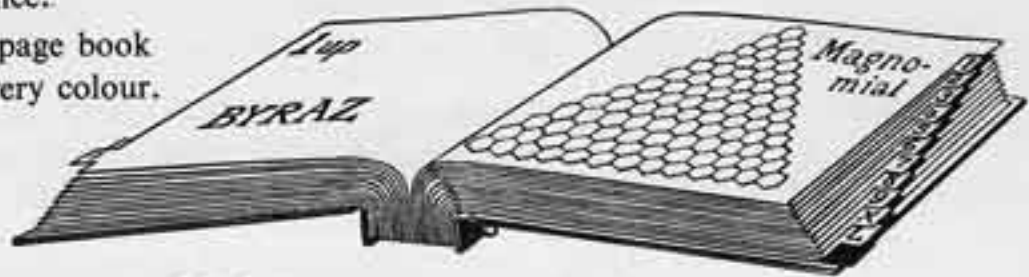




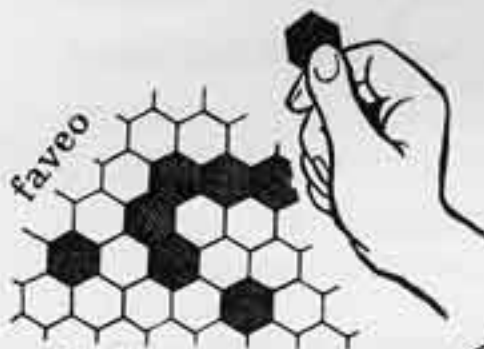
BYRAZ CATALOGUE

COLOUR CATALOGUE. The Byraz Hive has its practical use in the form of an Album, like a Stamp Album. On each page is a Quilt of Colours. The Album serves as a Colour Catalogue for reference at a glance.

A 25-page book holds every colour.

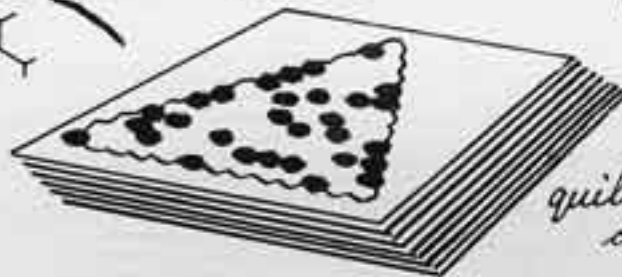
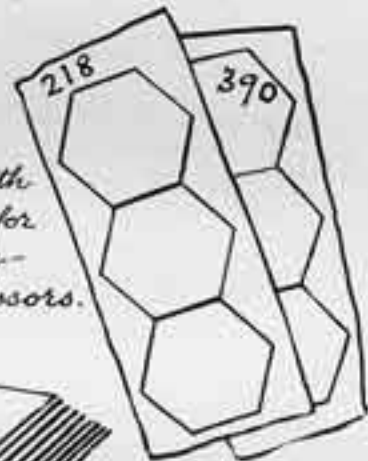


Anyone can build these Byraz Catalogues with ease. The sheets are loose-leaf, printed with hexagon-mesh pattern. Hexagon spots (wafers like stamps) are cut from coloured papers and set into place with rubber-gum.



*lighting
with coloured
paper flakes.*

*two slips of
coloured-paper,
rubber-stamped with
hexagon-outlines for
cutting out colour-
flakes with scissors.*

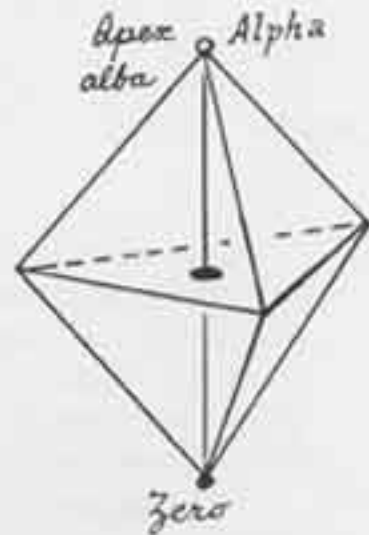
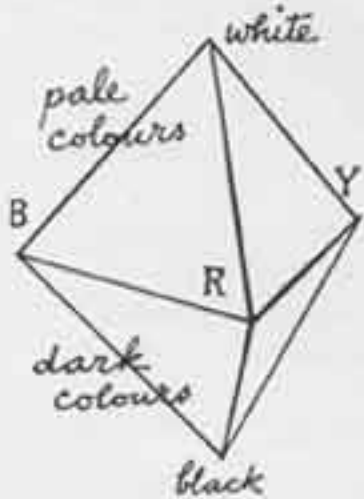
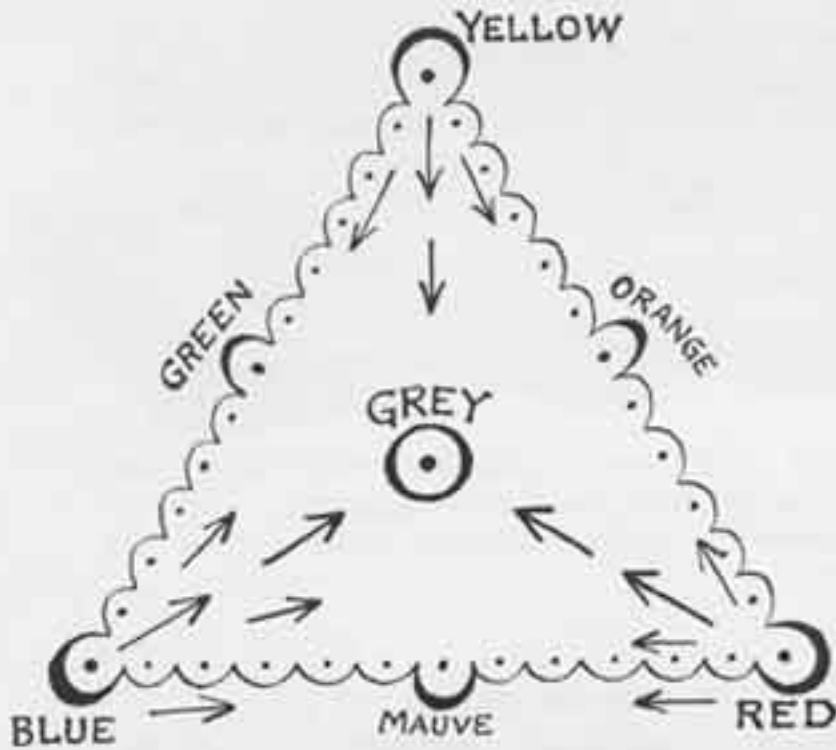


*quilts under
construction.*

Long before a Catalogue is half completed it will have served as a training in the understanding of Colours ; and as a basis for all discussions and matchings of Colours ; a most useful instrument in an Art Studio or an Animation Cartoon-Film Studio ; in a Paint warehouse, in a Fabrics warehouse, in a Printing works, in Art Schools, and in Embroidery and Tapestry Circles.

The Byraz Colour System is simple in essence ; in the next chapters it is detailed out for enthusiasts.

DISPOSITION TO THE EYE



DISPOSITION BY ASPECT

ALL THE BRIGHT COLOURS are spread on the OUTSIDE or skin of the Hive. Blues, seagreen, green, yellows, marigold, orange, poppy, reds, pinks, crimson, rose, purples, mauves, violets, light-blues, dark-blues, pale-greens, dark-greens, and so on.

These are the pure vivid hues, here called **HUCIDS**.

THE DULL COLOURS are all contained in the INSIDE or 'drupe' of the Hive. Buffs, browns, greyish-greens, etc..

These are here called **TERNIALS**.

MID-GREY is at the **KERNEL** of the Hive. Down the centre is a spine or **AXIS** joining the two Polar-Primes :- Apex-white and Zero-black.

The Axis has no colourness ; it is achromatic ; lighter greys going up, darker greys going down.

PALE COLOURS fill the **UPPER** pyramid.

DARK COLOURS fill the **LOWER** pyramid.

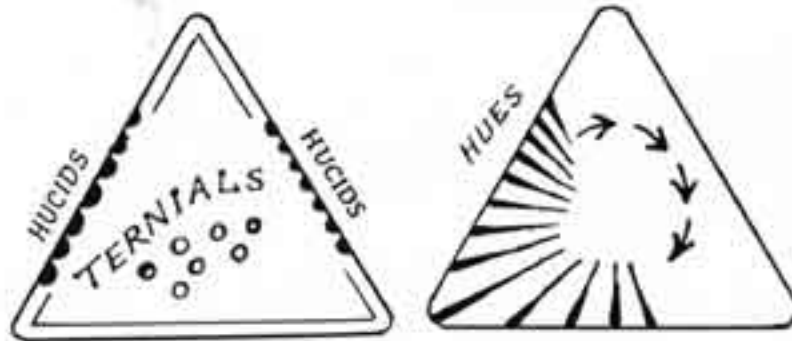
QUILTS. All the quilts, large and small, have hucids along their edges, and ternials spreading towards a grey centre.

COLOURS OF GREATEST MAGNITUDE. The largest quilt is one representing the large middle triangle between the upper and lower pyramids.

Its three corners hold three Colour-Primes, -Blue, Yellow, Red.

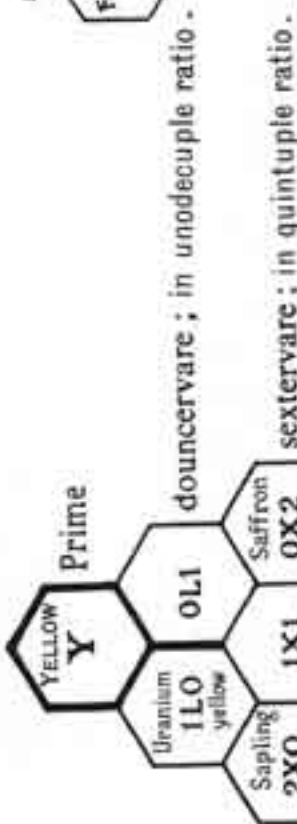
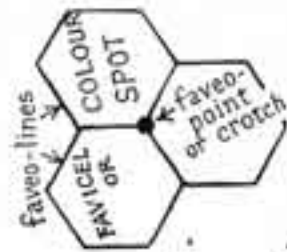
All the colours on this quilt are called 'Magnomial' colours ; they are neither pale nor dark, but colours of greatest magnitude.

The Magnomial Quilt has 91 hexagon-spots.



magno great
nomen name
mia middle

Magnomial Quilt.



Numbers belong to centres of spots.

RATIO-NUMBERING

Every colour-number aggregates to twelve.

7 tinges of blue.

4 tinges of yellow.

1 tinge of red.

makes Colour No. 741.

L is eleven
X is ten

douncervare ; in unodeuple ratio.

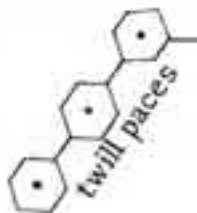
sextervare ; in quintuple ratio.

quartervare ; in triple ratio.

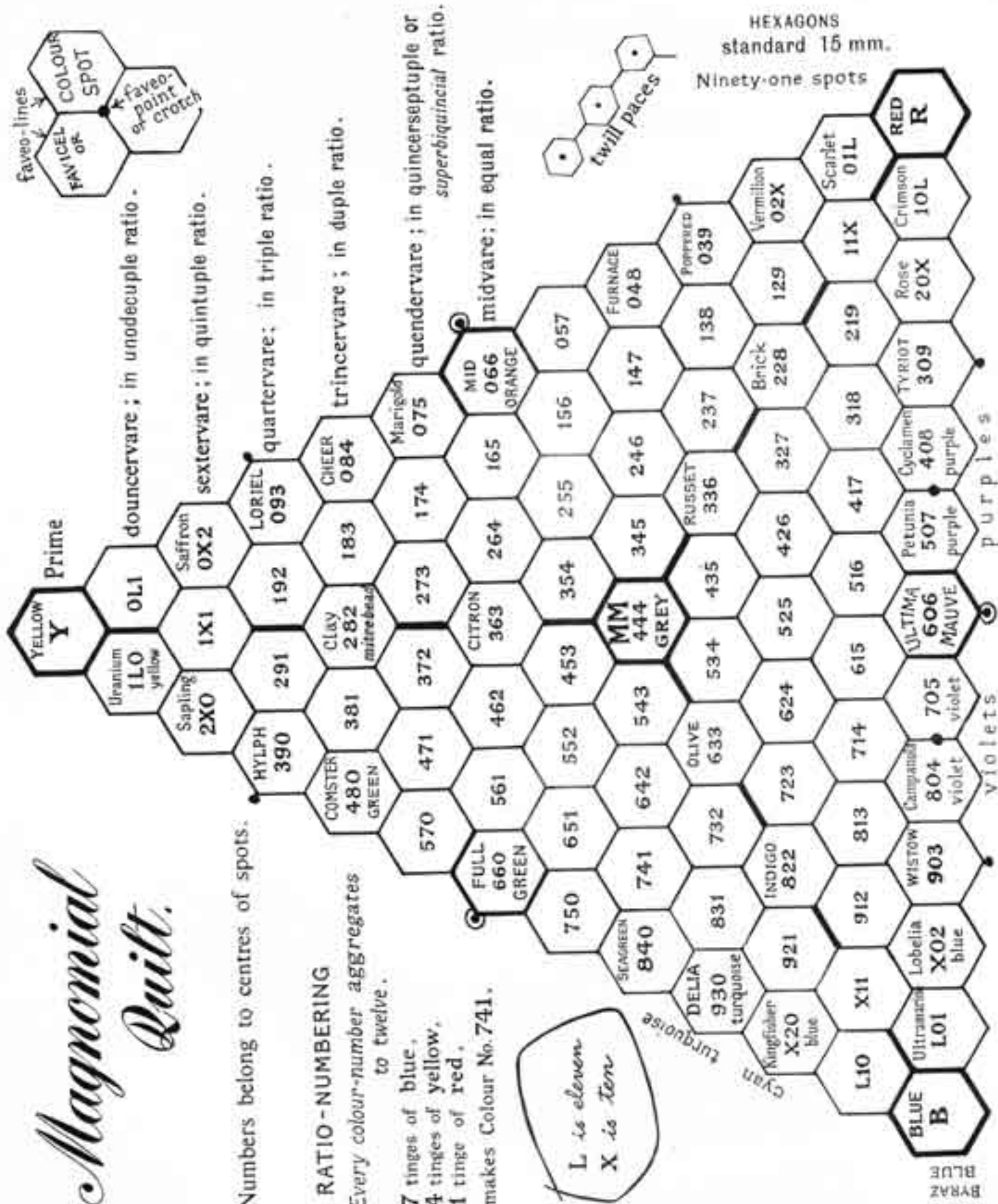
trincervare ; in duple ratio.

quendervare ; in quincersuple or superbiquinial ratio.

midvare ; in equal ratio.



HEXAGONS standard 15 mm.
Ninety-one spots



RANGING

RANGES AND PACES. Each edge of any quilt is called a 'bivariant range' because its hucids, lying between two corner-hucids, are each composed of varying proportions of two Colour-Primes, —
blue and yellow, or yellow and red, or red and blue.

The midway colour on each range is called a midvare; green, orange and mauve are midvares.

On the Magnomial Quilt, where the corner-hucids are the three Primes, each bivariant range is twelve paces long.

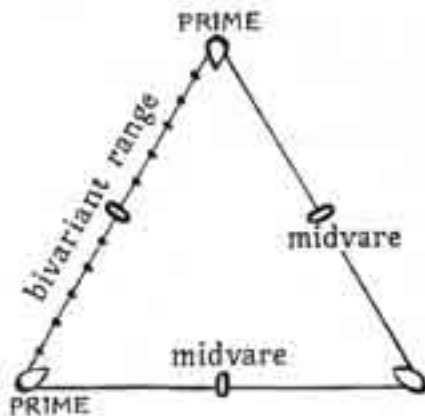
Blue passes to Yellow in twelve paces, and Yellow passes in twelve paces through Orange to Red.

Thus there are 36 magnomial hucids; three of them are Colour-Primes and three are midvares.

MID-GREY. The centre-spot on the Magnomial Quilt is Mid-Grey. This is composed of EQUAL proportions of the three Colour-Primes, and is also midway between the two Polar-Primes (white and black).

TERNIALS are the subdued or quiet colours; the further inwards they lie on the quilt, the greyer they are in aspect. They are called 'ternials' because they are composed of varying proportions of the three Colour-Primes; (*terne*, French for dull. *Terni*, Latin, three-each).

SIX FACETS or sloping quilts ('kirtles'). The outside planes of the pyramids are the same size (91 spots) as the Magnomial Quilt. They hold all the brightest colours; pale and dark hucids, here called 'hucidets'

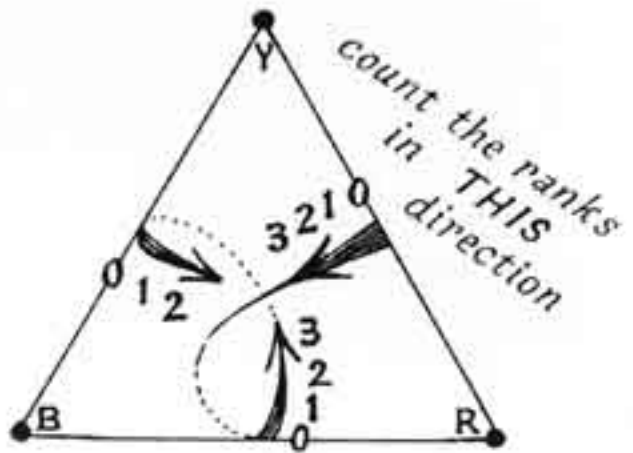
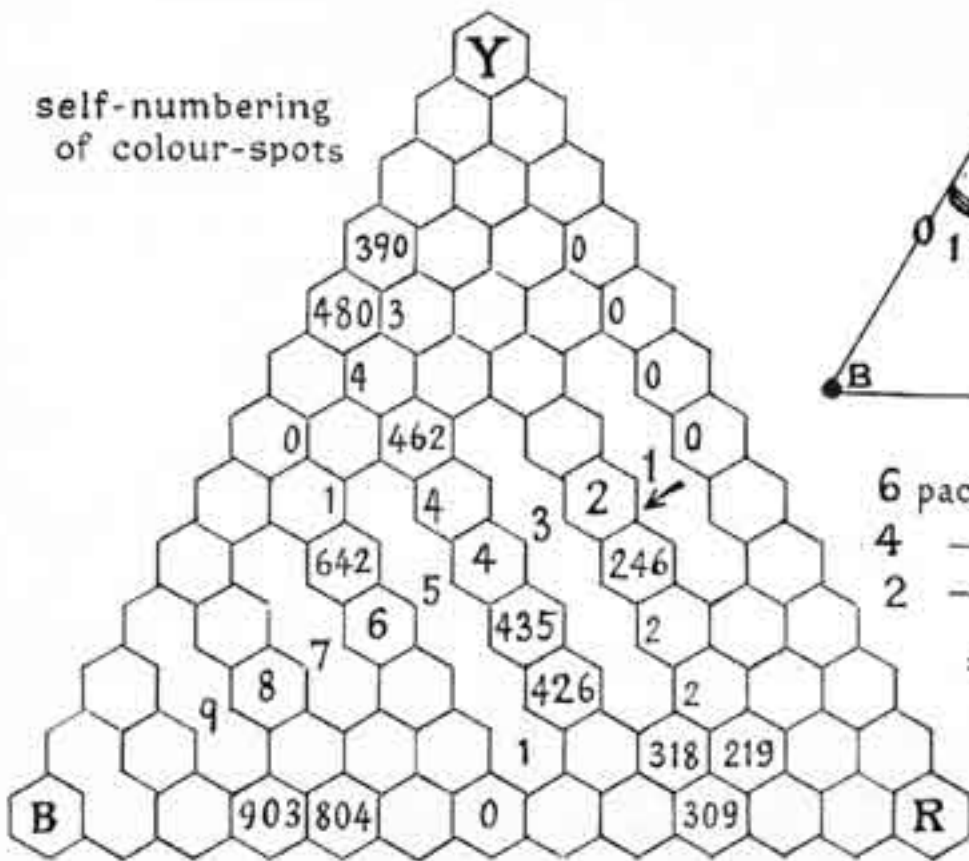


*See also terne in
Oxford English Dictionary*



COUNTERPACE NUMBERING

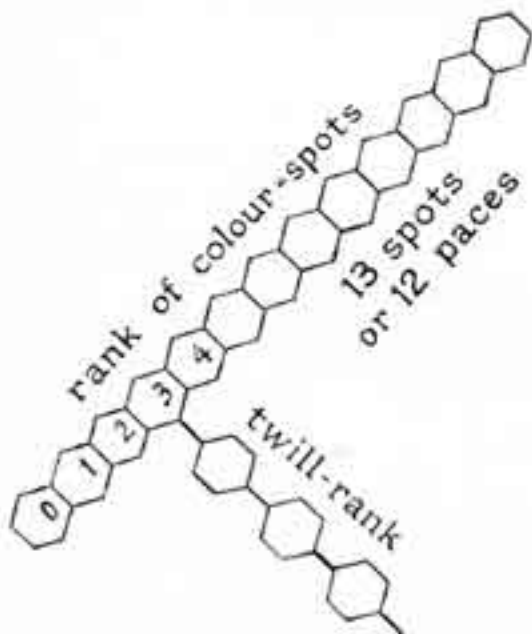
self-numbering
of colour-spots



6 paces towards Blue = 6
4 — — Yellow = 4
2 — — Red = 2
= colour-spot N° 642.

twelve 'tinges' make
one 'aspect' or
one spot-mixture.

count the ranks from side towards corner; side-rank counts as 0; three counts give three digits for any colour-spot; the three digits total twelve and spell the colour-mixture and the position in the hive.



blue	yellow	red	white	black
B	Y	R	A	Z

0	0	6	6	.
---	---	---	---	---

plainly this is a
Pink.

6 0 0 6
light blue.

6 0 0 0 6
dark blue.

3 3 0 0 6
dark green.

6	6	0			
5	5	0	0	2	
5	6	0	1		
4	4	0	4		
6	4	1	0	1	

Greens

BYRAZ NUMBERING BY RATIO

COLOUR LANGUAGE. One of the difficulties in producing coloured materials to MATCH perfectly is the fact that it is almost impossible, without a Number System, to explain or describe, in writing or by telephone or telegram, the differences that occur.

Hitherto the subject has been so little understood that a Colour Language has had no chance to develop. Compare with the richness of Music terminology and notation, which people go to great lengths to master. The Byraz System needs no such painstaking efforts, only momentary reflection, once the elements are grasped.

KEY. The name BYRAZ is the key to the numbering of colours.

B is Blue, **Y** is Yellow, **R** is Red. **A** is white, **Z** is black.

NUMBERS SHOW RATIO. In the Byraz System, the number of any colour shows its composition, its make-up, its ASPECT. Every number shows how many portions of blue, or of yellow, or of red, or white, make up the ASPECT of its colour. Every colour has an aspect value of twelve portions ('tinges') of primes, mixed into a unit or 'Aspect' . Numbers are analytical and digitally quantitative.

NUMBERS SHOW POSITION. In the Hive, every colour-spot differs evenly from its neighbour-spots by an equal exchange of one tinge of prime ; one of blue for one of yellow, one of yellow for one of red.

The number of any colour shows its POSITION in the Hive. It shows how many paces any spot lies from any corner. Count the ranks, edge-ranks counting as nought. Each spot-number has three (or four) figures and these always add sideways to TWELVE. 534=twelve.

No two spots in the entire Hive bear the same number.

SELF-NUMBERING. Consider a pure PINK or whitish-red. It contains no blue ; write down '0' . No yellow ; another '0' . Six parts red, six of white ; two 'sixes' follow, and we have the number 0066. The number spells the make-up of the colour. A dark-brown might have 1 of blue, 3 of yellow, 4 of red, no white and 4 of black. Its number then is 13404. Full-green is an equal mixture of Blue and Yellow, 6 of each ; number 660. A pale-green would be 3306 because it contains 6 of white.

For ten, write X ; for eleven, write L. For twelve-tinges, write the capital letter of the Prime-colour ; as B or Y or R or A (white), MM (mid-grey), and Z (black).

Right-hand noughts for no-white, no-black, are omitted ; as 912, not 9120 nor 91200 ; but write 750, 390, 480 for greens ; no number has less than three digits.

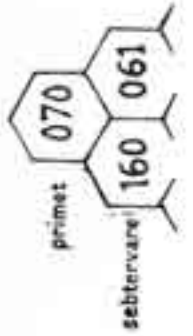
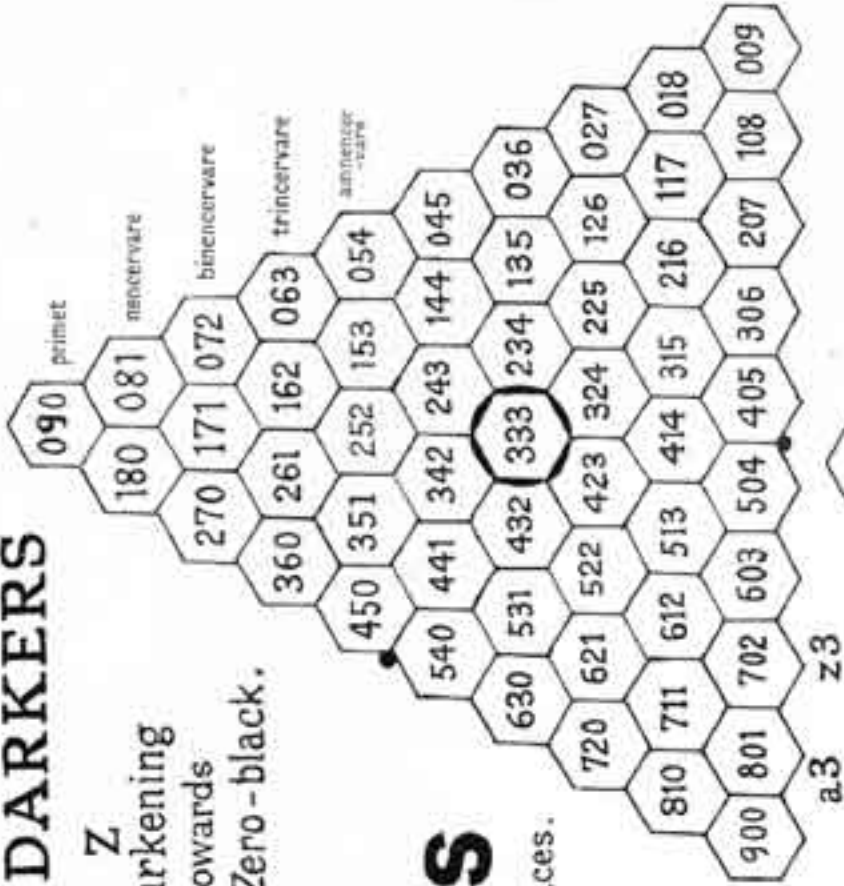
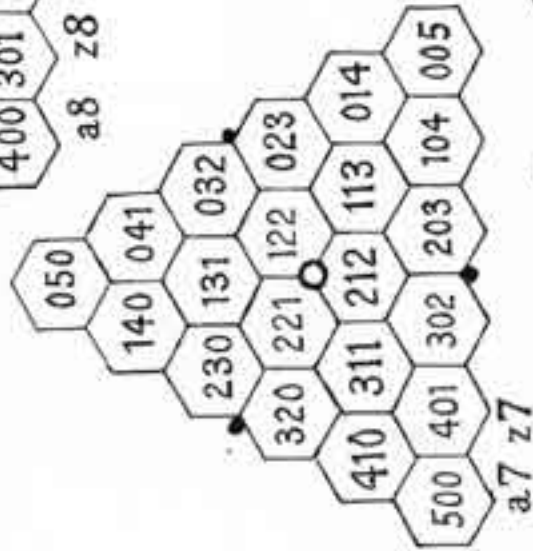
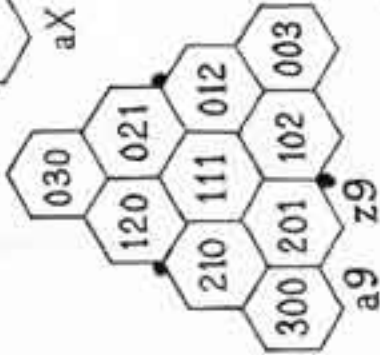
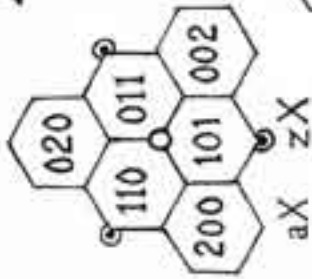
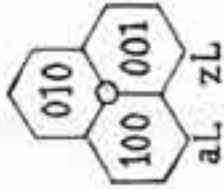
ALEVATES & DARKERS

a
alevating
towards
Apex-white.

Z
darkening
towards
Zero-black.

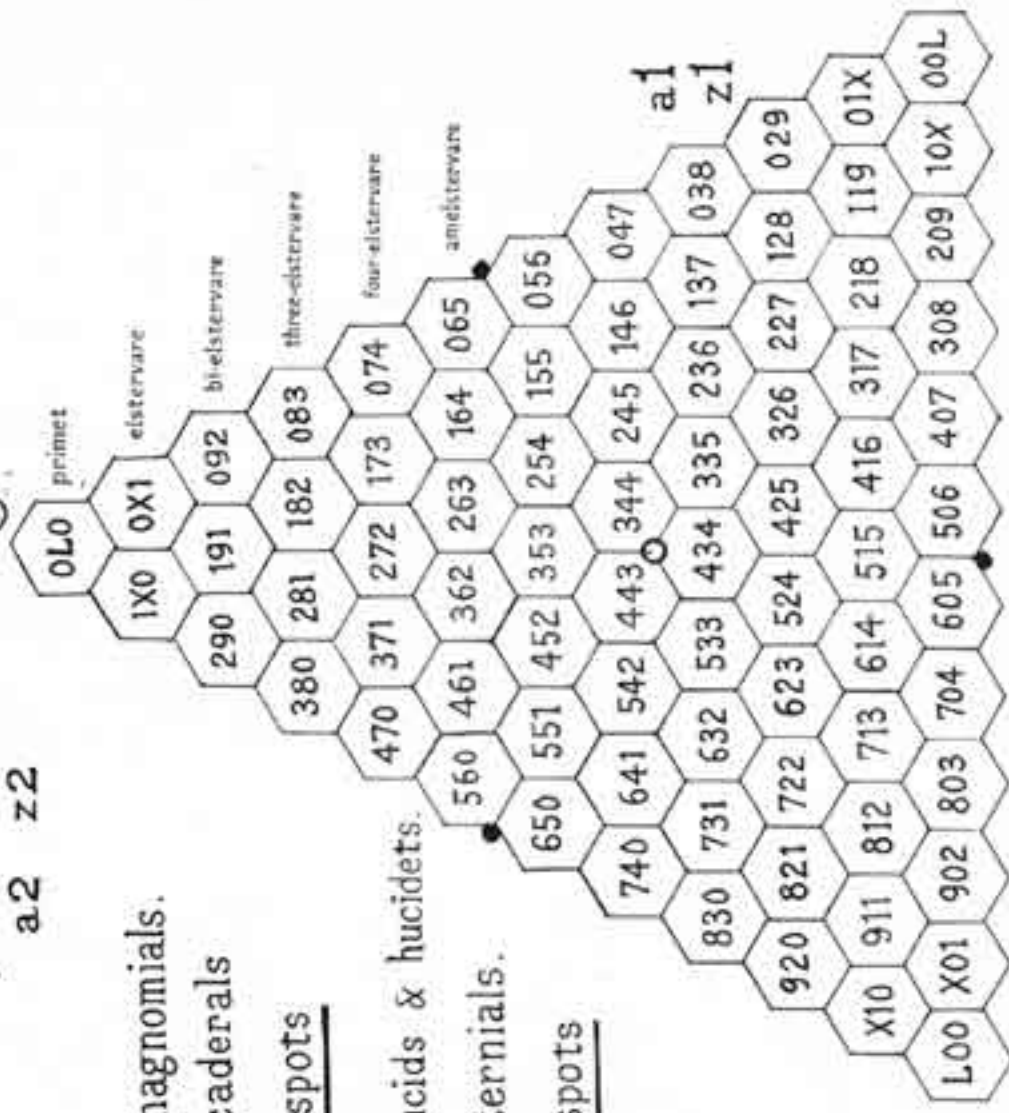
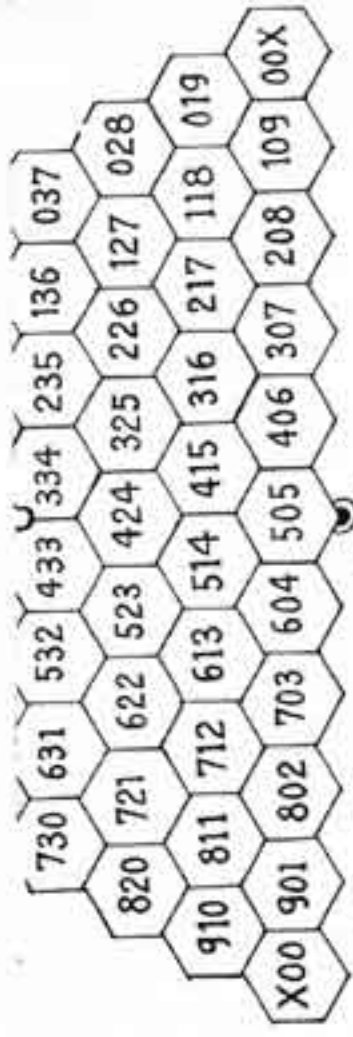
QUILTS

or level-matlaces.



FALLOW or TRISTO.
a6 z6

L is eleven.
X is ten.



91 magnomials.

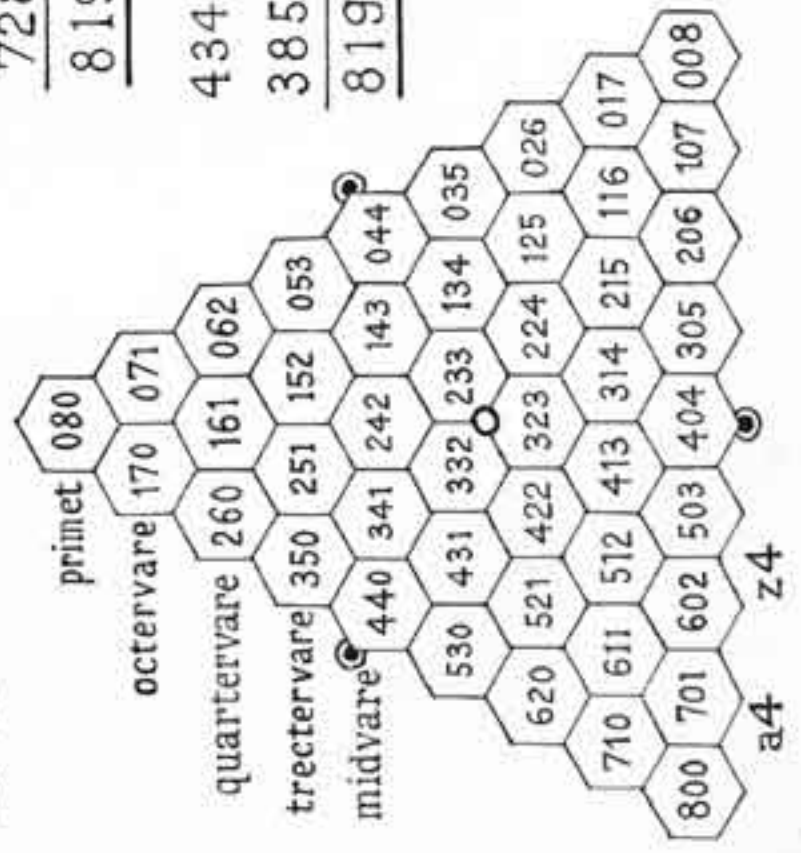
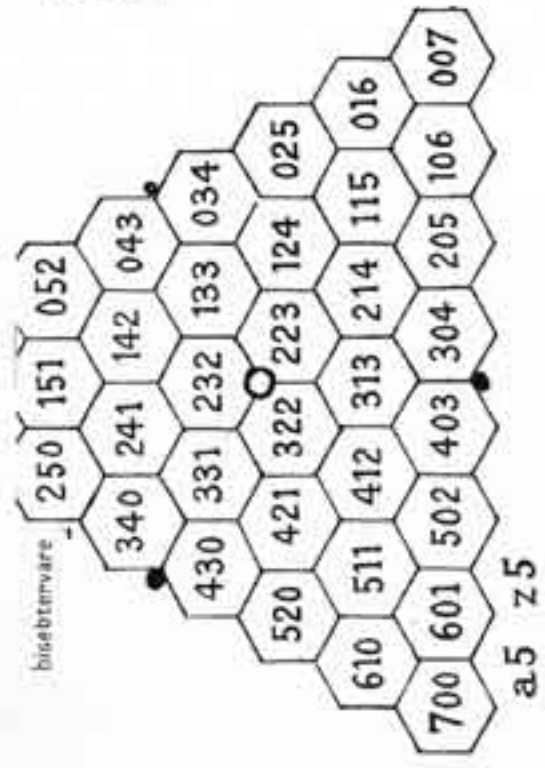
728 caderals

819 spots

434 hucids & hucidets.

385 ternials.

819 spots



Fractionals

Blueward semipacials.

Half-tinge numbers.

These colour-names (excepting in CAPITALS) follow WILSON'S Colour Dictionary, containing exact examples; old-established names in Botany and Chemistry. Paint-label names are here rejected.

BYRAZ colour-names are in CAPITALS.

▲ indicates prism colours.

COOLBLUE, PORCELAIN blue
CYAN.

ORIENTAL blue
BYRAZ BLUE Spectrum blue

Cobalt blue

ULTRA-MARINE blue

Gentian blue

Lobelia blue

Hyacinth blue

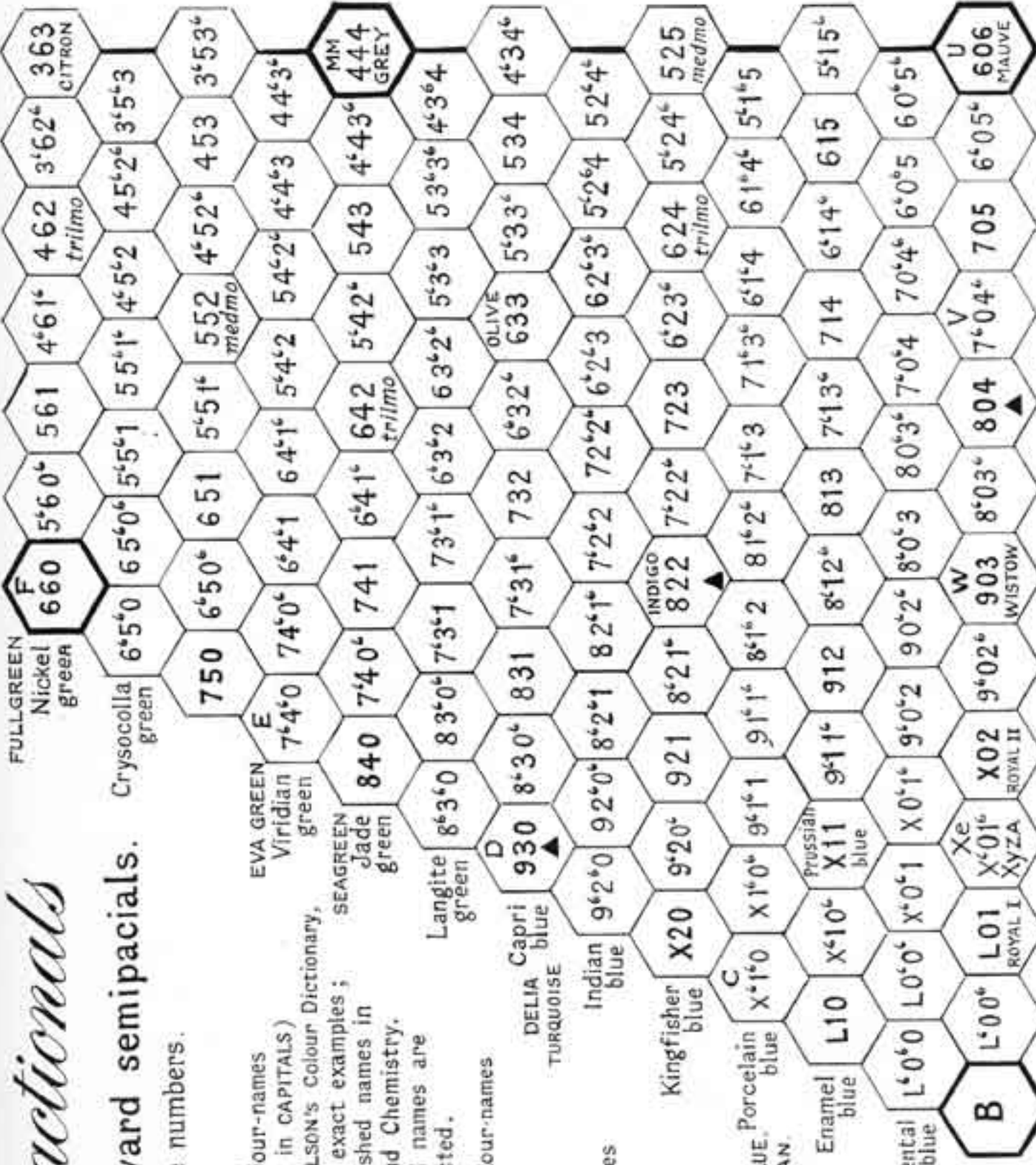
Methyl violet

Aster violet

Campanula violet

Amethyst violet

Bishops mauve



NUMBERING TERMS

ROUGH NUMBERING. The Byraz number of any colour can be assessed approximately by eye-judgment. The faculty for this is easily acquired by practice, and once acquired is of great use in any Studio. Conversely, a given number (by telephone or telegram) can readily suggest the required colour. One has only to remember the Byraz sequence. Write down the number given, and above it write the name BYRAZ. A rough guess-number should be written with a 'c' for 'circa', 'roughly', 'about'; for 'very roughly' write 'cc'.

c8031
cc723
v462

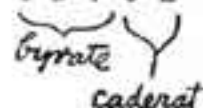
To indicate especial exactness, add 'v'.

SEPARATE TINGINGS. When writing separately '3 tinges of blue' write it 'b3'; 5 of white as a5; 6 of black is z6.

QUILT NUMBERING. Quilts are numbered a1, a2, a3, a4, a5, and so on; and z1, z2, z3, down to Z. Every colour on the a1 quilt contains one tinge of white; on the a2 quilt two tinges of white. The more white, the smaller the quilt and the fewer its colour-spots. The a6 quilt is called the Fallow quilt; the z6 quilt is the Tristo quilt.

BYRAZ
336 . .
417 . .
5016 .
42303
13008
0381 .
03702

DIGIT-NAMES. The first three digits in a Byraz-number (3234) are called 'the byrate'; the fourth or the last digit is called 'the caderat' (or tone-number, or the quilt-number). The lowest (above 0) of the byrate digits is called 'the terniat'; the highest is 'the nodiat'. Numbers of four or five digits are 'quadral' or 'caderal'.



AGGREGATING. The process of adding-together sideways the quantities told by the digits of a number ($6411 = 6+4+1+1 =$ twelve) is here called 'aggregating' them; the resulting sum-total is the 'aggregate'. A constant standard aggregate is called the 'tally'; the Byraz tally is twelve.

Assigning numerals to a colour-aspect is 'digitating'; as when dark-indigo is given the number 41106. Finding numbers for spots on a quilt is 'counterpacing'.

QUANTIFYING. In the Byraz system, every colour-aspect has twelve tinges; otherwise if more or less than twelve, they are 'abtinges'. Aspects must be considered as totality-units of constant equal value; so if an aspect has more than twelve abtinges, then these abtinges are each of lesser magnitude than are tinges; just as a pound can be split into 16 ounces or into 19 lesser-portions.

NON-TWELVERS. In hasty numbering, it is generally safe to write numbers that might aggregate to more or to less than twelve; but all such numbers should have a *j* added. This *j* indicates non-twelvering. To convert non-twelvers into twelvers, multiply by twelve and divide by the unwanted aggregate. Fractions will occur; if convenient, a non-twelve number can remain unconverted.

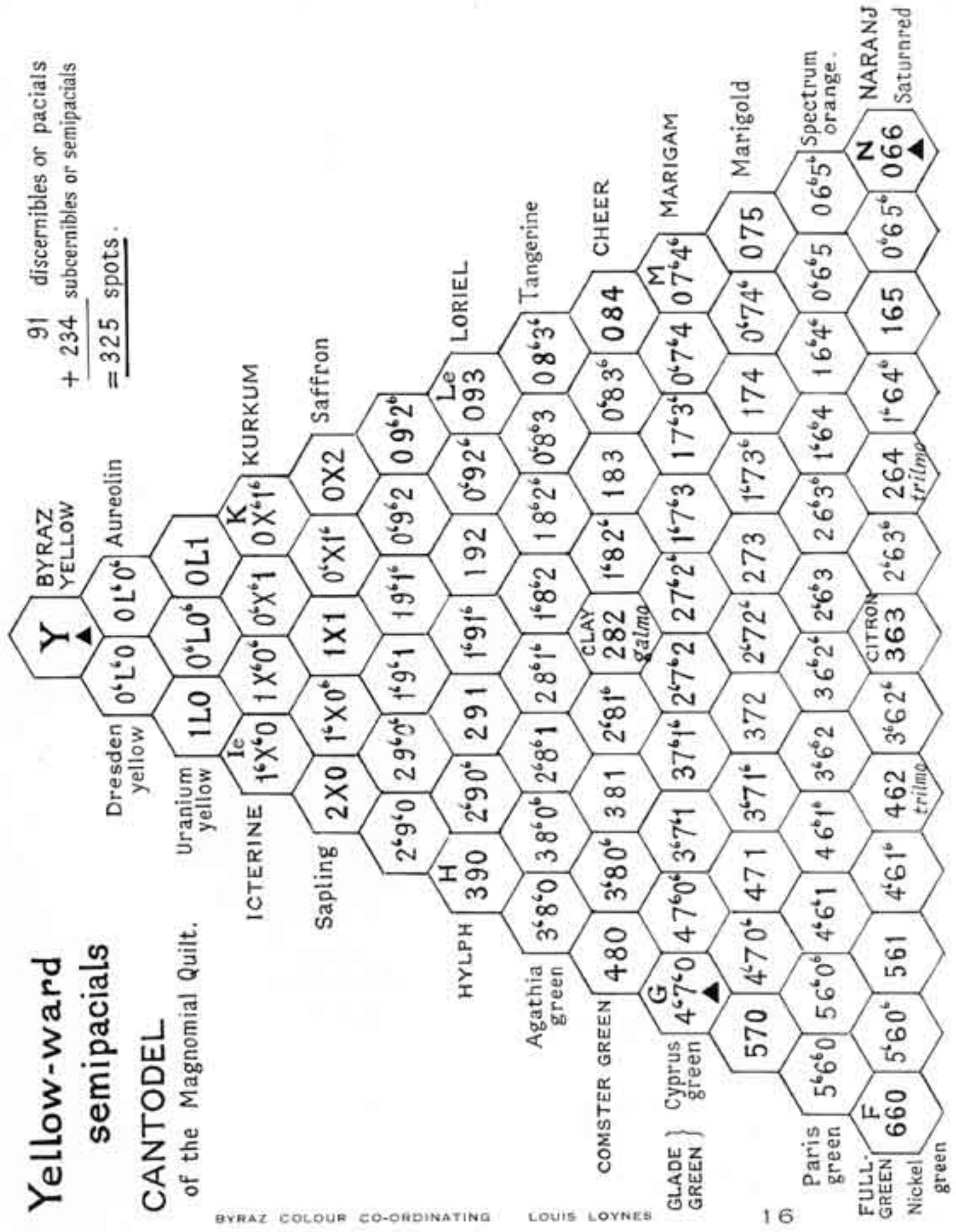
aggregating
twelvers, $\hat{=}$
 $42303 = 12$.
non-twelvers,
 $5382j = 18$,
 $10402j = 7$.

Yellow-ward semipacials

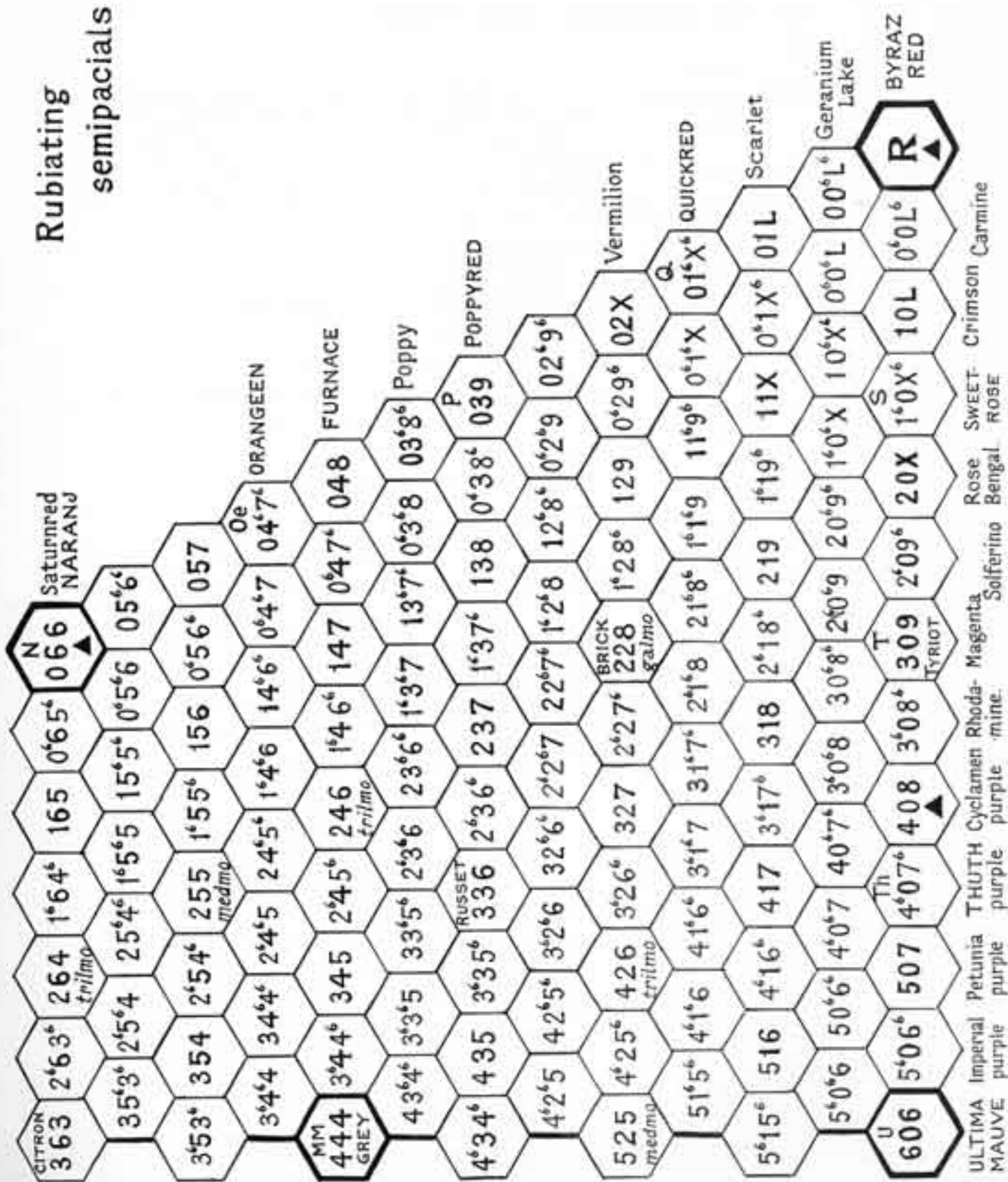
CANTODEL

of the Magnomial Quilt.

91 discernibles or pacials
+ 234 subdiscernibles or semipacials
= 325 spots.



Rubiating semipacials



CO-ORDINATE FRACTIONS

Anglicized nouns & verbs	Latin
$\frac{5}{6}$	<i>dexta</i>
$\frac{3}{4}$ trepter	<i>dodrans</i>
$\frac{2}{3}$ bencer	<i>bes, bessis, bi-triens</i>
$\frac{1}{2}$ half	<i>demi-----, semis</i>
$\frac{1}{3}$ trincer	<i>triens, trienti-----</i>
$\frac{1}{4}$ quarter	<i>quarta</i>
$\frac{1}{5}$ quincer	<i>quinqüens</i>
$\frac{1}{6}$ sexter	<i>sexta</i>
$\frac{1}{7}$ sebter	<i>septa</i>
$\frac{1}{8}$ octer	<i>octa</i>
$\frac{1}{9}$ nencer	<i>noviens, novienti-----</i>
$\frac{1}{10}$ decimal, deci—	<i>decima, decuma</i>
$\frac{1}{11}$ elster	<i>unodecima</i>
$\frac{1}{12}$ douncer	<i>uncia, duodecima, dodeki</i>
$\frac{1}{16}$ quaver	<i>sedecima</i>
$\frac{1}{24}$ vouncer	<i>viduodecima</i>
$\frac{1}{36}$	<i>sestotrigesima</i>
$\frac{1}{64}$	
$\frac{1}{72}$	
$\frac{1}{100}$ centi ^(mal) to centimate	<i>centesima</i>
$\frac{1}{144}$ groster	

In Co-ordinating systems, the terms 'third, fourth, fifth,' for fractionals are quite impractical. They confuse with ordinals, 3rd-one, 4th-one, 5th-one. The paper and print industries use Italian ordinals for fractions; *tertio, quarto, quinto, octavo*; this is impossible in other spheres.

The method in Chemistry of naming fractionals by mutual ratios, in Latin, is impractical in Co-ordinating; 4:5 *subsesquiquartal*; $\frac{3}{8}$ *sesquiquartile*: 3:2 *sesquialteral*.

The term duodecimal is cumbersome and unsuitable, though used by the Duodecimal Society of America. It means two-ten-ing and does not suggest twelve-ing.

Douzième, French, one-twelfth-part.

Sebter; not septer; (sceptre, septic poison, septa partitions in Biology, Sept! ninth month.)

In Pure Geometry; to halve is to bisect; bisector (but avoid confusion with double-sector); trisector, quadrisector (similarly).

In Heraldry (shields and flags); to halve or to part is to dimidiate; to tierce $\frac{1}{3}$, a tierce $\frac{1}{3}$, tierced.

In early English $\frac{1}{3}$ was a thirdel or a thriding.

In Latin, ordinals end with —i, fractionals end with —a; in Greek, ordinals end with —α, fractionals end with —ι.

In the Sciences, fractionals and ordinals are added to words rather inconsistently. It would be wise to keep quadri— for fours, and quarta— for quarters; but we have quadrupeds four-footed, a quartet of four people; also quadrant for $\frac{1}{4}$ -circle and quadrangle for four-sided space. Similarly a centipede is a 100-footed creature; centimetre $\frac{1}{100}$ -metre.

In the Metric System, fractions are Latin and multiples are Greek; centimetre, hectometre, decimetre, dekametre.

FRACTIONALS

FRACTIONALS. Half-tinge numbers appear in refined analysing in laboratory colour-work. Fractions are written simply ;

$5\frac{1}{2} 10\frac{1}{2} 5$ or $5^6 10^6 5$ or $5 \cdot 10 \cdot 5$ for $b5\frac{1}{2} y1 r0\frac{1}{2} a5$.

Fractional colour-spots are too near in aspect to be distinguishable, except when set in the catalogue by experts. There are over five-thousand 'semi-pacials' or half-tingers. In general use, they can be ignored for whole-tinge numbers or 'discernibles'.

SEMIPACIAL TONES :- $a1\frac{1}{2}$, $a2\frac{1}{2}$, $a3\frac{1}{2}$, $a4\frac{1}{2}$, $z0\frac{1}{2}$ and so on.

A LANGUAGE FOR FRACTIONS

Besides the fractioning of tinges, fractions of ranks and quilts often have to be considered and described.

TECHNICAL FRACTIONS. ORDINAL numbers are :- first, second, third, fourth, fifth, sixth and so on.

FRACTIONAL numbers (used here) are :- whole ; half or semi- ; then trincer, quarter, quincer, sexter, sefter, octer, etc ; not the unpractical style :- one-third-part of, a-one-sixth of a, etc.

Not 'a one-third-part of a pound', but 'a trincer pound'.

Co-ordinate fractional-names follow closely to Latin, after the formation of the words 'quarter, quartering, quarterly, quartermile'. This enables fraction-names to play into the language without consideration of whether derivations are Latin, Greek, Saxon or Arabic. The names prefix to nouns of all kinds, omitting the words 'of a'. Quarterway, trincerpace, quincerly, trincerwise, quincerfield, sexterrank, octerlay, quartermixture.

The Latin names used in Chemistry are rejected here ; unclear as to ordinals, numerators and denominators.

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