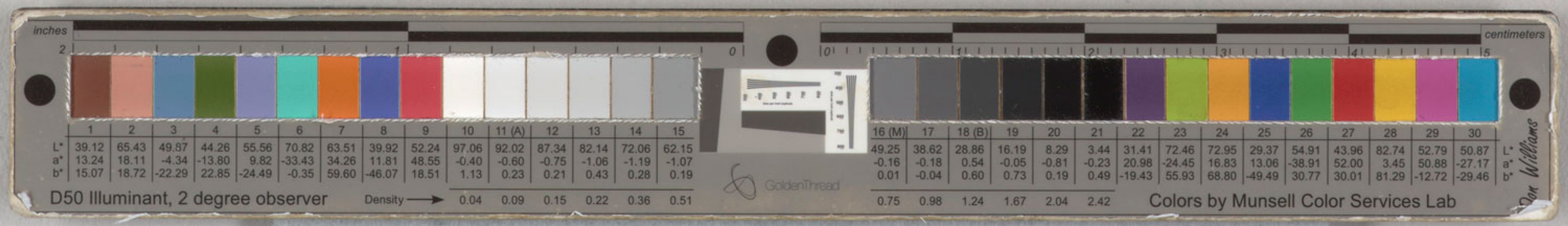
Sir Isaac Newton's
Note Book

The Pierpont Morgan Library

MA 318

See article by
David Eugene Smith
&
L. J. Mora. biography of
Isaac Newton. N.Y.
Scribners, 1934. p. 17



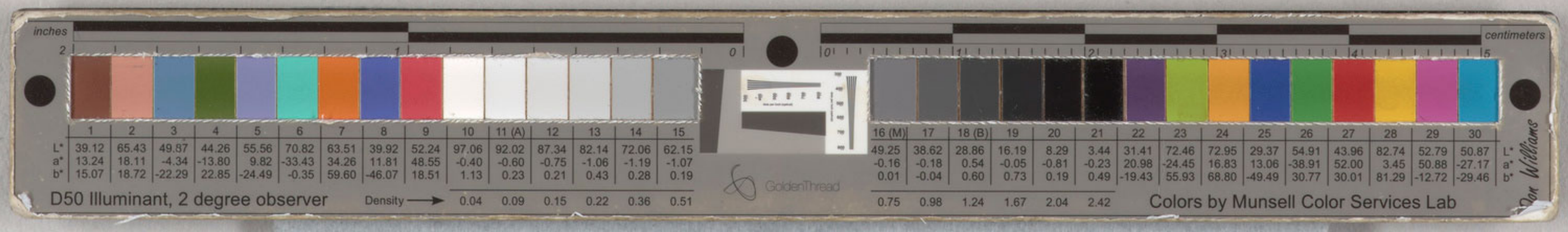
	1	2	3	4	5	6	7	8	9	10	11 (A)	12	13	14	15
L*	39.12	65.43	49.87	44.26	55.56	70.82	63.51	39.92	52.24	97.06	92.02	87.34	82.14	72.06	62.15
a*	13.24	18.11	-4.34	-13.80	9.82	-33.43	34.26	11.81	48.55	-0.40	-0.60	-0.75	-1.06	-1.19	-1.07
b*	15.07	18.72	-22.29	22.85	-24.49	-0.35	59.60	-46.07	18.51	1.13	0.23	0.21	0.43	0.28	0.19

	16 (M)	17	18 (B)	19	20	21	22	23	24	25	26	27	28	29	30	
L*	49.25	38.62	28.86	16.19	8.29	3.44	31.41	72.46	72.95	29.37	54.91	43.96	82.74	52.79	50.87	L*
a*	-0.16	-0.18	0.54	-0.05	-0.81	-0.23	20.98	-24.45	16.83	13.06	-38.91	52.00	3.45	50.88	-27.17	a*
b*	0.01	-0.04	0.60	0.73	0.19	0.49	-19.43	55.93	68.80	-49.49	30.77	30.01	81.29	-12.72	-29.46	b*

Density	0.04	0.09	0.15	0.22	0.36	0.51	0.75	0.98	1.24	1.67	2.04	2.42

Isacus Newton hunc librum
possidet.
teste
Edvardo Secker.
pret: 2d ob.
1659.

MAGIS


inches
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1 2 3 4 5 6 7 8 9 10 11 (A) 12 13 14 15
L* 39.12 65.43 49.57 44.26 55.56 70.82 63.51 39.92 52.24 97.06 92.02 87.34 82.14 72.06 62.15
a* 13.24 18.11 -4.34 -13.80 9.82 -33.43 34.26 11.81 48.55 -0.40 -0.60 -0.75 -1.06 -1.19 -1.07
b* 15.07 18.72 -22.29 22.85 -24.49 -0.35 59.60 -46.07 18.51 1.13 0.23 0.21 0.43 0.28 0.19
16 (M) 17 18 (B) 19 20 21 22 23 24 25 26 27 28 29 30
L* 49.25 38.62 28.86 16.19 8.29 3.44 31.41 72.46 72.95 29.37 54.91 43.96 82.74 52.79 50.87
a* -0.16 -0.18 0.54 -0.05 -0.81 -0.23 20.98 -24.45 16.83 13.06 -38.91 52.00 3.45 50.88 -27.17
b* 0.01 -0.04 0.60 0.73 0.19 0.49 -19.43 55.93 68.80 -49.49 30.77 30.01 81.29 -12.72 -29.46
D50 Illuminant, 2 degree observer
Density
0.04 0.09 0.15 0.22 0.36 0.51
0.75 0.98 1.24 1.67 2.04 2.42
GoldenThread
Colors by Munsell Color Services Lab
Bar Williams

Of Drawing.

Instruments of drawing.

Pens made of Raven quils. ~~thirdly~~ smooth paper. & light coulored blew pap^{r}. fine parchment. a flat thin bras ruler. a paire of compasses. a ring. & sundry plummetts. & pastells to draw with=all.

Of plummets.

Ther are naturall plummetts not made. as blackload. black thalk. thareto slyslit. red stone. white thalke. & there are artificiall plummits. Thus made.

Take a great thalk stone & make furrows in it 2 or 3 inches long & so wide as you may lay a quil in each of them. Then take a proportion of white thalke ground verry fine, temper it wth aile, or wort & a little new milke, & so make pap thereof: then power it into y^{e} furrowes of y^{e} thalke. you may soone tak them out & rold them up, or let y^{m} lie in y^{e} thalk till they be quite dry. & then take them out & straight y^{m} into a lantorne forme.

You may temper Lake wth burnt Alabaster for for a red. as

Alabaster burnt & bice for a blew. & so for others. regarding some colours y^{t} will bind over hard wth must have a little water put on them in their grinding.

Of Drawing wth yo pen

Let yo thing wch you intends to draw stands before you, so yt yo light be not hindred from falling upon it. & wth a pointed pen of charcole draw it rudely & lightly wch when you have don soe if it be well don; if not wipe out wth yo wing & begin againe, & so draw it till it bee well. yn wipe it over gently wth yo wing, so yt you may perceive yo former strokes; yn wth yo blark chalk or pensill draw it perfectly & curiously as you can, & shaddow it as yo light falleth upon it. If you draw on blew paper when you have finished yo drawght wet yo paper in fair water & let it dry of it self. & so yo drawing will hold fast on.

Of Drapery.

Draw yo utmost lines of yo garment & yo greater folds first wch continue throug yo whole garment, yn break yo great folds into lesse, & so shaddow them.

Of Landskip.

If you express yo fume make it wise ing or falling behind some hill, but never express yo moone or starres but upon necessity.

Of Emblem or Empresse work.

In drawing after yo life sit not nearer yn two yards from yo partie, & sit of one height. but if yo party you draw be very tall let him sit above you a little if low or a child let him sit a little below yu If you draw from yo head to yo foot let yo

Of Drawing.

y^e party stand at y^e least six yards frõ you. let y^e party stands for how tan sit so upright as they tan stand.

ffirst, draw y^e streaks for y^e forehead, w^ch must boe done exactly, becauso according to y^t proportion must all y^e rest boe drawn as if y^e fore head boe soe long, y^u must if it be twice so long from y^e forehead to y^e chin. then draw y^e farthest eye making y^e circle of y^e light exactly round & clearing y^e reflection of y^e light w^th eye exactly as a white spott, according to y^e light. 3. draw y^e nose. fourthly y^e nearest eye, leaving y^e just length of an eye betweene it & y^e other. 5. Draw y^e mouth. 6 the chin. 7 finish y^e out line of y^e face. & lastly y^e haire. having finished y^e head draw y^e whole body proportionable thereunto.

Of Shaddowing.

To shaddow smoothly & roundly w^th all is a far greater turning y^u to shaddow hards & darke; for it best to shaddow as if it were not shaddowed.

To take a perfect draught of a pirture.

Take a sheet of Vernis or of y^e finest pa=per you can get, wet it all over w^th cleane sallit oyle, y^u wipe y^e sallett away so y^t y^e paper may be dry throughly. then lay y^e paper on y^e pirture, & you shall see y^e pir=ture through y^e paper & then w^th a pencill draw it over. & y^u w^th a pen. Then take of y^e oyled paper & lay it on a cleane sheet, & w^th a stiff pointed, or a feather of a swallow

wing, draw it over againe; & you shall
have it neatly drawne on ye white paper.

Another way.

Take some Lake & grinde it fine & temp
per it with linseed oyle, & then wth a pen
& this mixture draw out all ye great out
strokes of any picture & also ye muscles.
Wet yr ~~ay of paper with a sponge~~ contrary side of ye picture, & pres
it hard upon ye sheet of clean paper
& it will leave behind it all ye strokes
you drew.

An easy way to lessen or enlarge a picture
Make a square, & then divide it into
divers equall parts with ye compass
ses, & draw crosswart lines wth a ruler
& a pensill, so yt ye picture be divided in
equall squares, & so make squares on
a faire paper as little or big as you
will, but let there be soe many, as
there is in ye picture, then observ
ing ye order of ye squares draw ye
picture over wth a pensill passing
from square to square.

How to make Allum water

Take a quart of water & boyle it in a quarter
of a pound of Allum, sooth it untill it be
molten, & let it stand a day, wth this water
wet over ye pictures yt you intend to colour
for it will keepe ye colours for sinking into
ye paper & make them show fairer, & con-
tinue ye longer wthout fading. You must let
ye paper dry of it selfe before you lay ye co-
lours on it or wet it againe for some paper
needs four or 5 wettings.

Of drawing.

How to make gum water

Take rhoano water & put gum Arabick a little into it, let it stands till y^e gum be disolved, & let it not bee too thick for you cannot work well with it. nor too thin for it will not binde fast enough. with this water temper y^e colours before you lay them on.

To make lime water.

Take unslakt lime & cover it with water, an inch thick let it stand a night & powre of y^e cleare water in y^e morning, & keepe it in a cleane thing for y^e use. with this water you must temper y^e face groome when you would have a cleare colour of it.

To mak water of fyre ashes.

Steepe fyre ashes a night in raine water, in y^e morning powre of y^e clearest. this is to temp^r y^e brasill with.

How to prepare y^e colours

Such colours as have need of grinding you must grinde them with faire water, y^n put them on a smoth chalk stone, & let y^m dry. y^n grinde y^m againe with Gum water & reserve y^m in muscle shells for y^e use.

A sea colour.

Take privet berries when y^e sun entreth into Libra, about y^e 13^th of September, dry y^m in y^e Sunn; then bruise them & steepe y^m in allum water, & straine y^m into an earthen poringer y^t is glazed.

Another.

Take blew Inde & steepe it in water & put to it a little Verditer.

A yellow colours.

Take yellow berrys, & bruise y^m & steepe y^m a quarter of an howre in allum water y^n strain y^m if you will or let y^m stand in liquour.

A Haire colour.

Take umber or Spanish browne grind it & temper it with gum water.

Of Drawing.

A russet colour.

Take y^e^ fattest fut you can get & put it into a pot of clear water so y^t^ it be coverd two or 3 fingers & let it boyle well wth don straine it through a cloth & let it on y^e^ fire againe to thicken (but take heed you let it not^or^ too hot a fire for feare of burning it) & so let it boyle gently till it bee as thick as you would have it.

A colour for faces

Lay on y^e^ thickes little spotts of lake or rose leab y^n^ come all over it with white, & a little lake, shaddow it with Lamblack or umber, & white leab.

Colours for naked pictures

Take white leade & a little Vermilion temper them & lay them on, shaddow it wth colour as mentioned in y^e^ middle & adde a little fut to y^e^ utmost double hatches.

A colour for dead corpes.

Change white leade with y^e^ water of yellow berrys & wash y^e^ picture all over y^n^ thang it wth blew Indico & shaddow it in y^e^ single hatches, & leanest places y^n^ take fut, yellow berrys & white leab & wth y^e^ shadow y^e^ darkest places

A blood red colour.

Cinaper, lake, & vermillion make a good red.

Another.

Take some of y^e^ clearest blood of a sheepe & put it into a badder & wth a needle punct holes in y^e^ bottom of it y^n^

hang it up to dry in ye sunne, & disolve it in allum water according as you have need.

Colours for garmons.

A purple colour.

Take log wood, & sooth it in vinogar & smal boare in an earthen pot & put a little all hum therein till it tast strong.

A red colour

Boyle brasill as you did ye log-wood. But if you would have it a fadd red mingle it with pot ash water, if a light red temper it with white loab.

A Crimson

Cynapor tops: Cynapor-lake: or vermilion.

A groon

Take privet berry water, & thang it w^th yellow berry water, & it giveth a pursit groone for ye ground.

Another groone.

Take spannish groone thane pirit & steep in Rhenish wine, straine it & put unto it a little honey or white sugar candy & it will make a good groone.

A light groone.

Compose Verdigreace, & white loab 2 Verdigreace as much yellow berrys & a little white

Yellow colours

Orpiment & saffron, Mastiot, Gambugium either of those give a good yellow.

Blew.

Verditer, Azure or Bice, blew Inde.

Of Drawing

Colours for building

Lay blark & white loads for y^e^ walls of ye thos, conduits, & greator buildings Bolus for y^e^ pillars & less houses red load for tiles, for y^e^ loads blow & white, for rot. tages Jut alone

Colours for Landskips

Lay verditor, blow, white, & greene, or first goo all over it wth ~~yellow & white wth greene~~ saffron & white y^n^ put a lit- tle Jut to it & goo over it againe. Or first take greene & white load & goo over it shadow it wth a little more greene, y^n^ wth white & last of all wth greene, a little white & yellow bice rygs.

Sky colours

Brasill & white load is y^e^ lightest, y^n^ light purple & white, y^e^ Jndo blow & white, y^e^ darkest is Jndo blow.

Cloud colours

The lightest is white load, & Jndo blow a litle quantaty of each, y^e^ next a deale of Jndo & a little white, y^n^ white wth a little brasill, y^n^ purple & & yellow berrys.

Colours for y^e^ lone beames.

Lay yellow berrys with a little white shadow it wth saffron & red load.

A lyon tawney.

This is made of red load & Mastirot.

A coark colour.

This is of roucu & Vermilion.

Of Drawing.

A bras tolour.

This is made of Mastirot, & umber.

A marble or ash tolour

This is blake & white.

A russit tolour

A little white & a good quantoty of wod.

A browne blew

Take 2 two parts of Inds baudias, & a thirds of Coruse

A Crans tolour.

It is of black lead & ground wth gum water.

To write gold wth yo pon ov & infill.

Take a shell of gold, & put a little gum water into it, & work wth it.

How to write a gold tolour.

Take a new laid egg, make a hold at one end & let out yo substance yt take yo yolk without yo white, & four times soo much quittsilver in quantitie as of yo former grind ym well togither & put ym into yo shell stop yo hold thereof wth chalk & yo white of an egg yn lay it under a hen yt sitt wth 6 more for yo space of 63 weeks, yo break it up & with wth it.

Flesh tolour.

Take white lead grind it wth oyle, lake, & vermilion so you may make it pale or high tolourd at yor pleasure.

A White tolour.

White lead ground wth nut oyle.

Charcole blake & beard blake

Grind charcole very small with water, let it dry yn grind it with oyle. thus make beatole blake.

Of Drawing.

A colour for Silver.

Take charcoale blacke & white leade

A colour for golde.

Take Lake vmber rodd leade & Mastiot.

To lay golde on any thing.

Take rodd leade ground very fine tem=per it wth Linseede oyle, write wth it & lay leafe golde on it, let it dry, & pol=lish it.

To melt mettle quickly yea in a shel

Make a bedd or laying of mettle, & on it make a other bedd wth powder of brim=stone salt peeter & sawdust, & like quantitie of either then put a fire to ye said powder wth a burning charcole & it will bee in a masse. ~~a powder~~

To make a hard glew.

Take of ye powder of tile sheard two pound unslakt lime 4 pound lin=seede oyle a sufficient quantaty to tem per ye whole mixture. & it is very strong.

To make wood or bone red alwayes

Take ye powder of brasill mingle it wth milke roll, but so yt it may bee very red, & let ye wood or bone lie 8 days in it.

A good cement for broken glasses.

Take raw filke & beat it wth glasse & mix ym together wth ye whites of eggs.

A bait to catch fish.

Take Cocculus Indice ℥ ss. honney ~ ss. seeds, & wheaten flower of each a quart of an ounce, hive honey as much as will

~~Of Drawing~~ Extravigants

take them into past. Where you see y^e most
fish past in Bits like barly corns, & they
will swim on y^e top of y^e water, so y^t you
may take them up with yo^r hands or a nett.
If it rane after y^e bate is past into y^e water
or if you put y^m in othe fare water they
will come to themselves.

You may in y^e dead of winter in y^e morn=
ing when y^e sun shines catch fish with
angle bates onely with past made of wheat
flower

To make birds drunk.

Take furk meat as they love as wheat,
barley. &c. steepe it in lees of wine or in y^e
juice of Lemons, & sprinkle it where ~
birds use to haunt. Sodden Garlick sprinkled
amongst corne soone.

To catch crows, or ravens.

Take y^e liver of a beast & cut it into
divers peeces, put some rue Vomita into
each peece. & lay y^m where crows haunt.

To catch crows or pigeons.

Cut white peace & steepe y^m 8 or 9 days in
y^e gall of an ox. & lay y^m where they haunt.

To make pigeons, partriges ducks &
other birds drunk.

Set a Clark wine for y^m to drink where
they come.

Another

Take tormentill, bylo it in good wine put
barley into it. Lay it where y^e birds com.
this should be don in winter when snow is.

Another way to catch birds.

Make past of barley meale onion blade,
& hen-bane seeds, & fat it on severall lit=
tle boards or tiles, or such like for y^e birds

Extravigants.

To make pearles of Chalk

Take some chalke & cut it into y^e^ fine thine lot it lye till it breake, temper it with y^e^ whits of eggs & make divers fassions of pearles both great & smal not y^m^ being dryed & cover y^m^ with leafe gold. & they are done

A Jewel for travellers.

Let a travelers take a piece of Rock alum, & hold it now & y^n^ for a small time in their mouths for when they are hot it will coole y^m^ & refresh y^r^ quench their thirst more y^n^ beer will.

There is also a stone (with y^e^ Mounte banks call a Celestiall or miraculus stone & y^e^ Apothecarys lapis prunella) with dos not much differ from this it is only better.

A Salve for all sores.

Take a pound of sheeps tallow a pound of turpentine & a pound of Virgin wax, a pint of sallet oyle, a quarter of a pound of Rosin: take also of Bugle, Smallage, & plantaine halfe y^e^ quantity off y^e^ other or so much as will make a pinte boyle all these together on a soft fire of coles, always stir it till 2 & 3 part be consumed, y^n^ tak it from y^e^ fire & straine it through a new tanvas cloth, into an earthen pot.

To make red printing Ink.

Take a spoonfull of Vermilion to y^e^ quantity of a hazell nut of sloans turpentine w^th^ a

Extravagants.

spoonefull & a half of linsd oyle grind
ym together on a paintors stone.

To make blew printing ink.

Take bice or smalt & grind ym wth oyle
& turpentine as you did yo former

To mak yellow printing ink.

Take rosins Orpiment, & use it as you did yo former.

To make greene printing ink

Take Verdigrease or Spanish greene very
cleane wthout stalks, & grind it as yo former

To make blark printing ink.

Ther is a blark earth wch those yt print
maks use & grind it wth oyle & turpentine
as you did yo former.

How to write on blark paper.

Take yo yolk of a new layd egg & grind
it on a marble wth faire water so as you
may write wth it. yn write what you will
wth it & when it is dry blark all yo pa-
per over with ink & when it is dry, you may
straye all yo letters yt you wrot of wth
a knife.

To ingrave on a flint.

Take a flint & write on it what you
will wth yo tallow of an ox, after=
ward lay yo flint in Vinegar 4 days.

and

To make the Balsom, of Vintent Lavollos, good for all greene wounds, Palsies, Paines proceeding from a cold cause, Gouts, Strains, Bruises, Aches, Sciatica Cramps. &c

Take of Hyssop, Margerom, Tyme, Rosemary, Sage, Baume, Wormwood, Rue, Winter, Savory, Calamint, Southern-wood, St Johns wort, Pony-royall, Nep, Clowns, All-heale, Sanicle, Solfe heale, Groundsell, Mother of time, Adders-tongue, Fennel, of each a good handfull, Let them bee all greene, & cleanse them very well from dirt, & dampe them well in a stone morter, then take a Gallon of the best Sallad Oyle, & cut the herbes soe bruised, & the oyle altogether in an earthen pot; & add thereunto 3 pints of the best Spanish wine, & stir them well together. & so cover the close & then let them stand so in infusion 24 houres; then cut them all into a large brass pan, & over a soft gentle charcole fire boyle them till all the humidity bee evaporated, then press them off very hard into another fit vessell & to take Myrrh 3 ounces, aloes the best & frankincense of each 2 ounces; Cascamahara, & Gum-elemy each

bark one ounce, dissolve the Gumms in
Bark, & straine them through a linnon
cloth. Then take Wax, rosin, Burgun
dy-pitch, & Colophony, of each a pounds.
Turpentine 4 ounces dissolve them
over the fire & mix a little of yo^2
Oyle with them, wherein yo^2 hearbs
were infused; & then by degrees more
& more; & at last all. Then doe soe like
wise to gums. Thirst, put in a spoone=
full of the Oyle, Wax, & Colophony,
mingled together in Gums, & stir
them well together, then more & more
till at last you have incorporated y^m
all together; then take liquid-sto=
rax 4 ounces, Oyle of spike 3 our=
ces, Chimicall Oyle of cloves, Nut
megs, Amber, of each two drams; stir
them well together, but doe take
you^r not in your Chimicall oyles
till yo^2 Balsome doe almost cold

To make his oyntment for all
burning & skalding by fire or Gun=
powder. Likewise it assuageth all manner
of inflammations, or Gallings by riding
or of young Children. &c.

Take henbane, Lambs Lettice,
Mandrake leaves, of each one hand=
full and a halfe, Poplar buds 4 our=
ces, Houseleeke & Pony-wort of
each

one good handfull Colewort leaves
3 good handfull; 7 great old onyons
stamp them all in a morter; &
put them into two quarts of oyle
of violets, & let them infuse 12
howers in warme ashes; then give
them 5 or 6 boyles over the fire,
then put in halfe a pint of wine-
Vindgar, & then byle them again
till all the Vindgar bee consumed;
then straine them hard off, & ad
as much wax to the oyle thus strai
ned off as will give the consistance
of an oyntment; then put it up
when it is cold, & let it bee for
yor use.

A Speciall remedy of his, for
the tooth-ark, wch never failed to
give ease to any hollow tooth, or o-
ther, for a time.

Take Pellitory of Spaine,
long pepper, Ginger, & Cloves, of
each one dram; Ginny-pepper
halfe a dram beate all these into
a very fine powder; then wth
Chimicall oyle of cloves, oyle of
thyme, & spirit of salt of each
a like quantity, make it up into
a paste & out of that paste make lit
tle pellets, or cakes, & dry them
in the sun; & so use them

To make his powder to purge the head.

Take ginger of the best, Orris powder of each halfe a dram; Pellitory of Spaine, & white Hellebore, of each halfe a dram; All these into a fine powder & feavers them well & add to them two drops of ~~Ananifeeds~~ oyle of Annifeeds. And when you will use it take the quantitie of a barly corne & snuff it up into ye nose as it will cause a sneezing, whereby it purgeth the head from all superfluous humo[rs] strengthneth the memory & taketh away the heavie sight & is good for the thickness of hearing taken as aforesaid every other morning

An Excellent Plaister of his own owne.

Take Gum Opoponax, Galbanum, & Gum Elemny, of each one ounce, of Venus Turpentine 4 ounces, oyle of Mastick 2 ounces, wax two ounces: dissolve all these in a brass pan together, & first remember you strain ye gummes, & then, according to art, incorporate, as you were taught in the Composition of ye balsom then dip fine clothes in it, & let them ly till they be cold, then when any rotten troubles you applie a peice. to it

Lookes for yᵉ eye-sight.

Things hurtfull for yᵉ Eyes.

Garlick Onions & Leeks. over much Lettice. Goeing too suddaine after meate Hot wines. Cold ayre. Dunkens. Gluttony. Milke. Cheese. White & rob rouse. Much bloode after Meate. Much blood-letting. Cold warts. dust. Much weeping. & watching.

Things good for yᵉ sight.

Measurable sleepe. rod roses. fennell. Solandine Vervaine roots Pimpernell. Onulus Christi. To wash yᵉ Eyes in faire running water, & yᵉ hands & foot often. To looke on any greene or pleasant colours, or in a faire glasse.

A Water to cleare yᵉ sight

Take greene Walnuts huskes & all as they come from yᵉ trees & a few of yᵉ leaves & distill them: Then drop yᵉ water thereof into yᵉ eyes morning & night for 6 or 7 days together.

Drop 3 or 4 drops of yᵉ water of rotten apples at a time into yᵉ Eyes.

Wash yᵉ eyes with yᵉ water of Daisies, both roots & leaves being cleane washed, then stamped & strained.

The juice of yᵉ leaves Euphrasie, or yᵉ water.

X Another.

ake a new laid Egge, roast it hard & cut
e shell in ye midst & take out ye yolke
clean & put a pcite of Coporas in wher
ye yolke lay, binding ye egg together again
yn set it to ye fire till ye ~~Egge~~ Coporo
was bee dissolved to water. yn take all
ye white out of ye shell cutting it in
small pcits, yn put it into a glas of
faire running water letting it stand
so a little while, yn straine it throug
a fine lining cloth, & keepe it in a glass
close stopped so wash yor eyes every
morning & evning therewith.

Containe Inkes.

To turne waters into
wine
i Into Claret. X

Take as much Corkwood as you
can hold in yor mouth without
distowing tye it up in a cloth, & put
it in ye mouth, then sup up som
water & champe ye Corkwood 3 or 4
4 times & spit it out into a glass
2 for White wine.
Chew ye Ball one or two lightly. & as
you did for claret.

ffor Sack.

Take a drop of Wine or Beare vinegar & put it in y^e^ Glasse shakeing it about y^e^ sides of y^e^ Glasse &c: as you did for Claret.

ffor Sky coloured Blew or Lett Glasse &c: as you did for Claret.

Put a corne of salt in y^e^

ffor possit drinke or curds.

Take one drop of Sallot oyle, &c as you did for Sack. & it will be a possit drinke, y^n^ let it stand a while & it will be curds.

ffor Strong Waters.

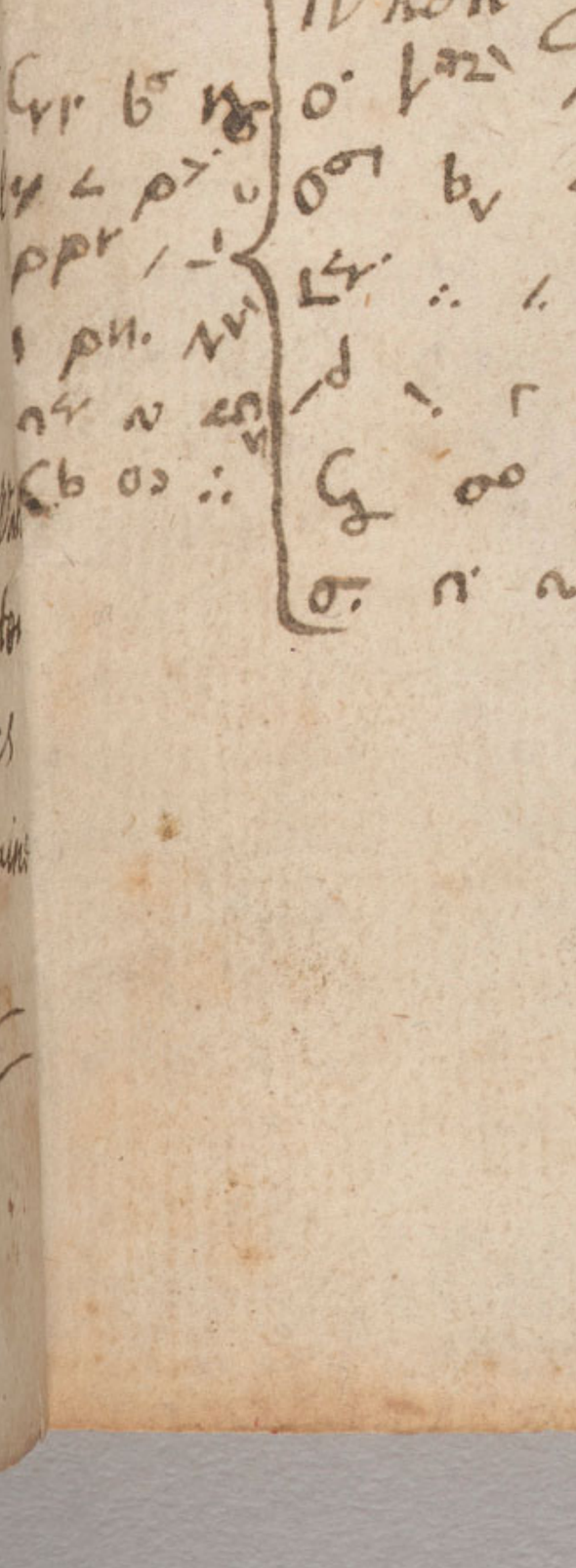
Have a cup of Strong Water by you like y^e^ other of water wch drinke up as if it was y^e^ water & poor it out againe into one of y^e^ Glasses.

To Cut a Glasse.

Take a plaine Glasse, hold it vp side downward over a candle till it be very hott then take a match of wood, & blowing it all y^e while run it ov^r y^e Glasse as you would have it cut.

A Remedy for a Ague.

When Jesus came y^e Crosse



Signs	Degrees	Months	Days	Bredth of y^e day	Sun rising	Length of day	Decl.	Months	Degrees	Signs
				h. m	h. m	h. m				
♈	28	12	10	6 0	8 11	7 37	10	12	28	♎
	9		20	5 58	8 10	7 40	1		19	
	21		1	5 54	8 0	8 0	20		8	
♉	1	1	10	5 44	7 49	8 21	10	11	28	♏
	11		20	5 35	7 34	8 52	1		19	
	23		1	5 15	7 13	9 34	20		7	
♊	2	2	10	5 0	6 56	10 8	10	10	27	♐
	12		20	4 50	6 36	10 47	1		18	
	21		1	4 20	6 19	11 22	20		7	
♋	0	3	10	4 0	6 1	11 58	10	9	27	♑
	10		20	3 40	5 41	12 37	1		18	
	22		1	3 8	5 18	13 23	20		7	
♌	0	4	10	2 40	5 1	13 57	10	8	27	♒
	10		20	2 10	4 43	14 33	1		18	
	21		1	1 30	4 25	15 9	20		7	
♍	29	5	10	0 30	4 12	15 35	10	7	27	♓
	8		20	0 0	4 0	15 59	1		19	
	20		1	Continu	3 51	16 17	20		8	
♎	29	6	10	all day	3 48	16 23	10	6	29	♈

The moone in y^e signe y^t y^e sun is in dooth strangeth, & rises with y^e sunn. three signes before him in y^e same degree is her first quarter. & three rises 6 hours before him. In y^e contrary signe & same degree she is in y^e full & rises 12 ho: before him. three signes after him is her last quarter & she rises 6 ho: after him

To know how signe & degree ad y^e number of y^e signe y^t y^e sun is in. Cast y^e degree to y^e number against how ages tasting away 12 signes. & making 30 degrees 1 signe.

Prime	Circle	Epact	Dom: Letter	Anno Dni
10	19	20	E	1662
11	20	1	D	3
12	21	12	CB	4
13	22	23	A	5
14	23	4	G	6
15	24	15	F	7
16	25	26	ED	8
17	26	7	C	9
18	27	18	B	1670
19	28	29	A	1
20	1	11	G	2
21	2	22	F	3
3	3	3	DC	4
4	4	14	C	5

4. 7.	9. 12.	6. *	3. 11.	8. *	5. *	1. 10.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	*	*	*	*
♌	♍	♎	♏	♐	♑	♒
G	F	E	D	C	B	A

Anno Domini	Dom: Letter	Epact	Circ: Sol:	Prim:
1676	B.	25	5	5
7	C	6	6	6
8	D	17	7	7
9	E	28	8	8
1680	DC	9	9	9
1	B	20	10	10
2	A	1	11	11
3	G	12	12	12
4	FE	23	13	13
5	D	4	14	14
6	C	15	15	15
7	B	26	16	16
8	AG	7	17	17
1682	F	18	18	18

The age of the moone, number of ye Months from March, w^th March, as days of ye Month make ye moones age: 30 being cast away in months of har 31 days & 29 in ye have not, as often as it may. ☽ ad 7 days, 9 hou: ○ ad 14 days, 18 hours Cad 22 days 3 ho to hor change.

The age of the moone being

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

A Table
ffor movable
ffeasts

Septuages-tima.	Feb	
Dom Lett		
Epacts		
	11	g
		a
	19	b
	8	c
		d
		e
		f
		g
		a
		b
		c

Sexage-sima	Jan	
Dom: Lett		
Epacts	4	
		b
	12	c
	1	d
		e
	9	f
		g
	17	a
	6	b
		c
	14	d
	3	e
		f

Sexa-gesima	m	
Dom Lett		
Epacts	16	
	5	d
		e
	13	f
	2	g
	10	a
		b
	18	c
	7	d
		e
	15	f
		g
		a

Esto	18	
mihi	19	
	20	
	21	
	22	
	23	
	24	
	25	
	26	
	27	
	28	
	29	
	30	
	31	
	Feb 1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	

weeks. day

Sexagesima ——— 1 . 6
Quinquages: or Shrovesunday —— 2 . 0
Quadrages: or y^e 1^st Sunday in Lent 3 . 0
ffrom Palmesunday ——— 8 . 0
Sextua Easter day ——— 9 . 0
-gessi- Low Sunday ——— 10 . 0
-ma to Rogation Sunday ——— 14 . 0
Ascention day ——— 14 . 4
Whitsunday ——— 16 . 6
Trinity Sunday ——— 17 . 6
Corpus Christi ——— 17 . 0

Advent Sunday A . B . C . D . E . ff . G .
Dec: 3 . Nov: 27 . 28 . 29 . 30 . Dec: 1 . 2

Easter Terme begins 11^w 3 Easter
ends 15^w 1 day ——— Sextua
The Trinitie, begins 17^w 5 -gessima
Courts. ends 20^w: 8.
Michaelmas begins y^e 23^th or 24^th of
October. ends y^e 28^th or 29^th of Novemb^r
Hillarie y^e 23^th or 24^th of Jan:
ends y^e 12^th or 13^th of ffeb:

The Southing of ye 7 stars.

morning ☉			afternoon	mor: ☉			after:
	22	1	18	April	Jul	17	7
Octob	6	2	2			2	8
	19.	3	17	March.			
Sept	3.	4	1			17	9
	17	5	12	Febr:	Jun	3	10
Aug:	1.	6	26	January		19	11
					May	4	12

Jan

Dec.

Nov.

The Declination Semidiurnall arck & southing of some of ye fixed stars, before or after ye 7 stars.

Name of ye Stars.	Declinat. Deg: min	Semid Arck ho: mi	South. ho: min
The brightest of ye 7 Stars	22 N: 53	8. 16	00 00
Alldebaran. Bulls Eye.	15 n: 41	7 .27	0. 49. a.
Orions bright foote.	8 So 40	5. 14	1. 31. a.
Bright foot of ♎		7. 31	2. 51 a
Syrius. ye greater dog.		4. 30	3. 3 a
Procyon. ye lesser dog		6. 32	3. 54 a
Lyons heart. Calb Elored	13 n: 48	7. 14	6. 23 a
Denab Elored. Lyons taile	16 n: 42	7. 32	8. 4 a
Azimeth, ye Virgins foink	9 So: 8	5. 11	9. 40 a
Arcturus. Alramoth.	21 n: 13	8. 2	10. 33 a
Munim. brigh ✱ of ye river	18 n: 2	8. 56	11. 57 a
Antares. Scorpions heart	25 So: 29	3. 21	11. 5. b.
Bright ✱ of ye Dragons head		not rec	9. 38 b
Bright ✱ of ye Vulture.		6. 43	7. 53 b
Left shoulder of ♒		5. 23	6. 15 b
Breast.		8. 42	4. 40 b
Girdle of Andromeda		10. 38	2. 37 b

The suns Altitude throughout
ye yeare together wth ye Lenghth
of ye shadow of a staffe
Divided into 12 parts

☞ Wh ye 12th pt of ye meridian
altitude is it & it is 11 or 1.
ye 3d pts & it is 10 or 2. 3 quar
ters & it is 9 or 3. 1 pts & a half
& it is 8 or 4. 2 pts & 3/2 & it
is 7 or 5. 5 pts & it is 6. 11 pts
& it is 5. or 7. 3 8. 4 7. 5 6 5. 1

				12	11 1	10 2	9. 3	8. 4	7. 5	6	5. 1
	30	♑	0	61.13	59.58	57.58	44.55	35.55	26.36	17.24	8.41
	20		10	60.50	58.34	57.39	44.37	35.38	26.19	17.7	8.22
	10		20	59.43	57.30	56.41	43.45	34.48	25.29	16.16	7.29
♒	0	♒	0	57.45	55.47	50.8	42.19	33.26	24.9	14.54	6.3
	20		10	55 30	53.28	48.1	40.23	31.35	22.19	13.3	4.8
	10		20	52 34	50.39	45.24	37.49	29.19	20.5	10.47	1 47
♓	0	♓	0	49.13	47.24	42.24	35.11	26.40	17.31	8.12	10.4
	20		10	45.33	43.50	39.4	32.7	23.45	14.40	5.21	11.
	10		20	41.41	40.4	35.31	28.47	20.37	11.38	2.19	5.6
♈	0	♈	0	37.43	36.11	31.50	25.20	17.21	8 29	15.7	
	29		10	33.45	32.17	28.8	21.51	14.4	5.28	18.1	
	10		20	29.53	28.29	24.31	18 27	10.53	2.15	20.6	
♉	0	♉	0	26.13	24.53	21.4	15.12	7.47	24.0		
	20		10	22.53	21.35	17.55	12.14	4 58	28.5		
	10		20	19.56	18.42	15.8	9.36	2.30	33.2		
♊	0	♊	0	17.31	16 19	12 51	7.26	0 28	38.8		
	20		10	15.43	14.1	11 8	5.49	44.1			
	10		20	14.36	13.26	10 5	4.49	47.5			
♋	0		0	14.13	13 4	9 43	4.28	48.6			

The moone will be eclipsed
if her latitude at ye full be under 58 min
40". She is Eclipsed so many digits
as there are 2m: 40" wanting from her
latitude 58m 40" for ye Diameter of ye shadow
of ye Earth being about 1 degree 25m 20"
or 26 min: & ye diameter of ye moone
being 32 min it must needs follow ye
her ~~Limbus~~ centre must approach to ye centre
of ye shaddow within 58 min. 40 or 59 m.
before she can be Eclipsed.

44	6. 7.
26	6. 9.
0	7 2
	7. 7.
	8. 4.
	9. 3.

Systema mundanum secundu
– Copernicum.

Make a circumference for ye Zodiack divide it into 12 signes &c
into 360 degrees. Place ☉ in ye centre. make ye centre of ye
earth almost 4 of ☉s diameters from his
centre towars ye Earth Aphelion i.e. two
degrees 2m 35te towards Cancer's 7th degree. make
its orbe or circumference so wide as yt ye
Suns diameter may be ye 694th pte of it.
i.e. 31 min: Divide it into 365 equal pts
& let each pte stand for ye Earth motion in
one day 1 minute. or thus: Make ye ♁ 4th
centre one degree 1min 6sec from ye Suns. make ye
circumference as before: take a new center
two degrees 2min 13sec from ☉ on ye same side. make
a circumference about it & divide it into 365
pts, drawing lines from each opposite marke
through ye same centre. yn marke ye places on
ye sphære of ♁ wch those lines cut. & you
have ye Earths motion each day, & 1 min:
Make Mercuries centre 4 degr 55 min towards
his Aphelion from ye Sunn, ☉ being in ♒ is
i.e. ♆ being in ♐ 15d. Put ye ♁ in ♈.0.
ye centre of ♅ is in ♐ 25d: 6m; & ye ut=
most pte of his sphære reacheth to ye 7th dg
11th min of ♐ it being 22 degr: 50m distant
from ye his centre. divide it as you did ye
Earths in 88 pts by a circle
who centre is 9 dgr: 10m from ☉ towards
his Aphelion (call this a dividing circle)
each pt ☿ passeth over in 23h. 59m.

Or thus. Make ☉ ye centre of his circumference. make his circumference so large as be re. make him an Epicicle ye diameter being 9 degrees 50m. ☿ moves about his Epicicle ostr 44 days his Epicicle about ☉ in almost 88 days therefore divide all ye circles into 88 pts as you have is motion each 23h 59min. divide his epicicle into 44 pts as you have ye like. But this will not solve ye Phaenomenon unless he be made to stand still in his Epicicle towards his Aphelion. & yn ye swiftnes of his motion in his Perihelion, & slowness Aphelion will not be solved.

Place Venus her centre about 20 or 30 min dist from ye centre of ☉. her diamet is 42deg from her centre. & By a Degre I understand ye 360th pt of ye sphaere or circumference of ye earth.

Place ye moone 2deg 21min in her full & change from ye earth.

Place y^e centre of Mars distant
from ☉ 6^h 46^m towards Virgo 0°. 8'. 2"
Let his circumference be made 98 degrs
distant from his center. Marke a nere
centre 13 degr: 32^m: distant from ☉ towards
his Aphelion in Virgine 0. 8. 2. & let
y^e circumference of it divide y^e space
of ♂ into 687 pts each pte being y^e space
of ♂ his motion in a day

Against y^e Ptha
Plague.

Take Aloes, Hepatick,
myrr cinamon Myrrh of
each 3 dramb. Cloves, Mace Wood of
Aloës or Lignum Aloës, Mastick, Bdla
rmoniack, of each halfe an ounce
Make a fine powder therof, wch take early
in y^e Morning ~~mixt~~ wth white Wine
mixt wth a little Water.

An Excellant water for ~~Ulcers~~
Ulcers.

Take faire water in a vessell never
before used: & power it into quick lime
in another new vessell. Let it stand till
y^e lime sink to y^e bottome & you have
taken all y^e scume from y^e top. & power
y^e cleare water from y^e Lime into a cle
cleare Glasse & stop it well up. Wash
y^e Ulcer wth it: & lay a cloth dipped in
it, on y^e sore. & it cleanses it.

Take soden till it be like a salve helpes
all sores & aches.

Of a Perpetuall Motion
Mix five ounces of ☿ wth so much of
☽ grind y^m together wth ten ounces of
Sublimate dissolve y^m in a ☾ Cellar
upon some Marble for y^e space of 4 days
till they become like oyle & ~~olive~~ distill

this wth fire of chaff
& driving fire & it
will sublime into a dry
substance, & so by re=
peating these dissolvings
& distillings there will be at lenght
produced divers small wch being put
into a glass well lutted & kept
dry will have a perpetuall motion.

Of Drebles Motion

Tho: Lymne sayth it was done by
extracting a fiery Spirit out of ye
Minerall matter joyning ye same wth
his proper aire wch included in ye
Axle tree bring rollon carrieth ye
other wheeles about.

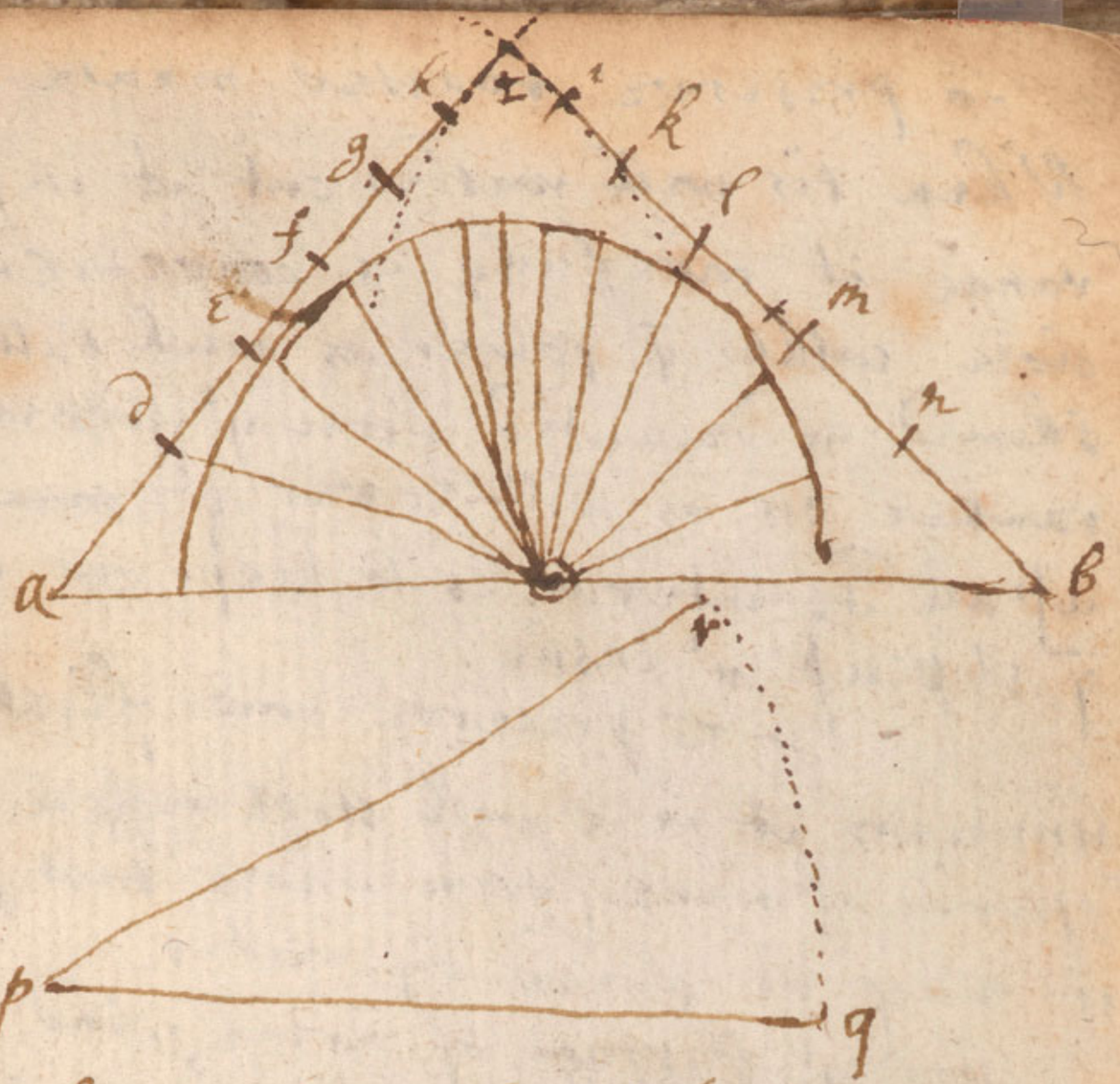
Of a perpetuall Lamp.

The like may be made of Sala
manders wooll, or plumeal=
lum, or linum vivum, otherwise
asbestinum wch is gotten out of ye
stone Amianthus by causing it.
(The stone asbestus being set on fire
will ever burne)
The oyle must be purged from drosse
& be of a tenacious & close substance
so yt it may slowly evaporate yt there
may be time for ye fume to turne to

oyle again y^e lamp bring. & clean
up in a glasse. Or
A oyle extracted out of some Mineralls
as if Gold were dissolved to an Unctuous
humor, or its radicall moyster seperat=
ted from it might burne for many
yeares. Or
If fire could be detained from
flying upward it might be effected.
But neither y^e humour nor y^e flam
must excede y^e strenghth of one
another. & to this purpose it may be
possible to extract an inflamable
oyle, from y^e stone Asbestus, Amia=
antus, or Gold; wch being of y^e same
pure & homogenous nature wth those
bodys shall be so proportioned to y^e heat
of y^e fire y^t being on fire it may
continue for many ages wthout sen=
sible diminution.
If y^e liquor be of a close & glutti=
nous consistency it may burne the
wthout any snuff as in Camphire
& some other Glutinous substances.

The use of y^e table on a Ruler whereby to make a dyall for any latitude.

Make a straight line wch you intend shall stand for 6 a clock at y^e Morning & night let y^e line be as long as from y^e ~~beginning of y^e latitude to y^e~~ cord ~~there are 2 brass nailes to fix y^e foote of y^e compasses uppon~~. beginning of y^e line of latitudes where there is a peice a brass to y^e degree of lattitude for wch y^e Dyal is erected supose y^e 50^th degree & you make y^e line (a b) y^n take y^e length of y^e line of y^e line of cords from y^e beginning to y^e 60^th degree set one foot of y^e compasses on a & make a scrow at it with y^e other foote. & doe y^e like at y^e point at b. y^n draw two straight lines from y^e place where y^e two scrows meet at c to a & b. as (a c, a b) & marke those lines out according to y^e lowerline on y^e ruler. as d e f g h i k l m n. Then take y^e point betwixt a & b & make a circle & draw line from each of y^e former ~~lines~~ marks through y^e circle to y^e center o. & those are y^e lower lines. For y^e gnome make a line as long as a c or b c was & y^t line must be joyned to y^e dial suppose it b p.q. describe a circle as



q.t. Then one point of y^e compasses on y^e line of corbs at y^e begining & let y^e other foot reach to y^e figure wch is y^e same with y^e latitude supose 50. Then set one foote of y^e compasses upon q and ther on y^e circle suppose it reach to r y^n draw a line from r to p. & y^t line is y^e line y^t casts y^e shaddow. &c

To preserve roasted meate.

When tis well roasted cut it in peices & range it carefully & conveniently in a close caske ȳ power as much butter melts skimed & decanted from y^e grosser ℔s & ranker ℔s as will cover y^e meate & fill up all its interwalls to keepe out y^e aire. ȳ stop up y^e caske.

To preserve raw flesh

Immers it in a well stopt vessell under spirrits of wine (from whose tast perhaps it may be freed by water.

for y^e stoppage of urine, wind, stikes & obstructions of y^e splene liver.

Steepe horse dung especially ȳ of stond hors. in aile y^n take it out & strongly expresse y^e juice & drinke it.

For y^e Plague.

Take a good doze of y^e powder of full ripe Jvie-berrys. after ȳ^t y^e afforesd juice of horse dung.

To stanch Blood

Beate 2 Drachmes of Henbane-seede & y^e like weight of white poppie seedes & an ounce of conserve of red roses into a stiff electuarie & take y^e quantity of a nuttmeg or walnutt thereof.

Against spitting & vomitting blood.

Take y^e juice of 12 handfulls of plantaine leaves a convenient quantity of fine Sugar six ounces of fresh cumfrey rootes well beaten together.

How to make excellent good writing

Ink.

A quart of {Claret, or white wine
{or Raine water, or strong beare (wort.

Galls, if $\frac{4}{5}$ ounces, y^n^ Copperice $\frac{4}{3}$ ounces.

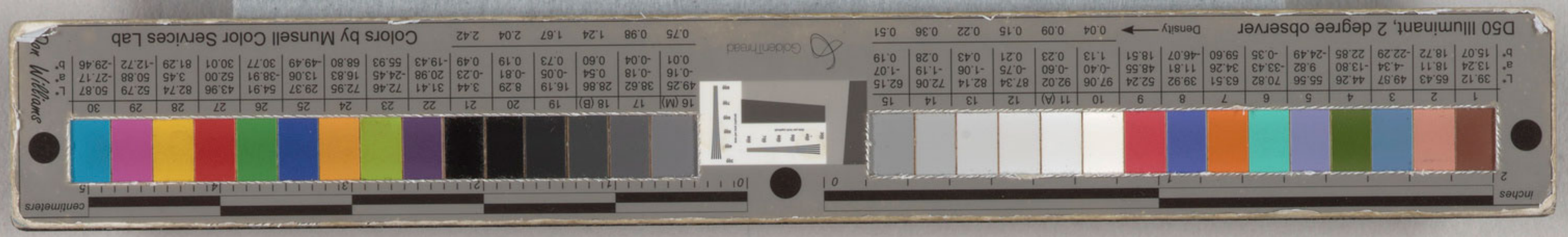
Gum Arabick 3 Ounces

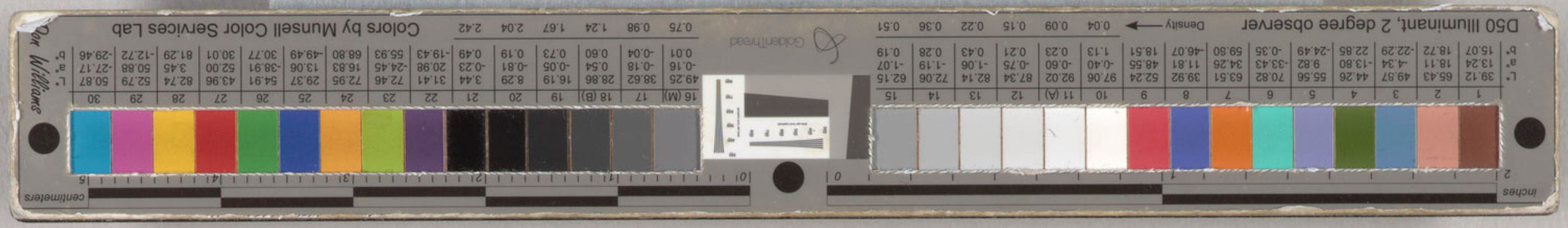
Ysing glasse 2 penny. worth.

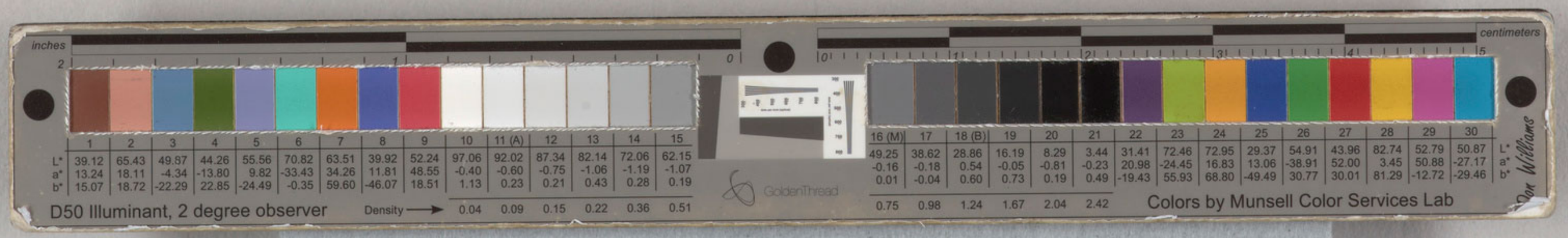
ingle these togither & let it stand nine
days stirring it ones a day. & then
make use of it.

One spoonfull of bay salt will keeps
it from moulding & one glasse of sack
from freezing.

Let noe small dust of Galls or copperice
bee put into y^e^ inke for that doth cloggs
y^e^ penn in writing.


Color Williams
GoldenThread
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab
inches
centimeters


Don Williams
inches
centimeters
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab
GoldenThread


inches
centimeters
1 2 3 4 5 6 7 8 9 10 11 (A) 12 13 14 15
L* 39.12 65.43 49.87 44.26 55.56 70.82 63.51 39.92 52.24 97.06 92.02 87.34 82.14 72.06 62.15
a* 13.24 18.11 -4.34 -13.80 9.82 -33.43 34.26 11.81 48.55 -0.40 -0.60 -0.75 -1.06 -1.19 -1.07
b* 15.07 18.72 -22.29 22.85 -24.49 -0.35 59.60 -46.07 18.51 1.13 0.23 0.21 0.43 0.28 0.19
D50 Illuminant, 2 degree observer
Density
0.04 0.09 0.15 0.22 0.36 0.51
GoldenThread
16 (M) 17 18 (B) 19 20 21 22 23 24 25 26 27 28 29 30
L* 49.25 38.62 28.86 16.19 8.29 3.44 31.41 72.46 72.95 29.37 54.91 43.96 82.74 52.79 50.87
a* -0.16 -0.18 0.54 -0.05 -0.81 -0.23 20.98 -24.45 16.83 13.06 -38.91 52.00 3.45 50.88 -27.17
b* 0.01 -0.04 0.60 0.73 0.19 0.49 -19.43 55.93 68.80 -49.49 30.77 30.01 81.29 -12.72 -29.46
0.75 0.98 1.24 1.67 2.04 2.42
Colors by Munsell Color Services Lab
Dot Williams

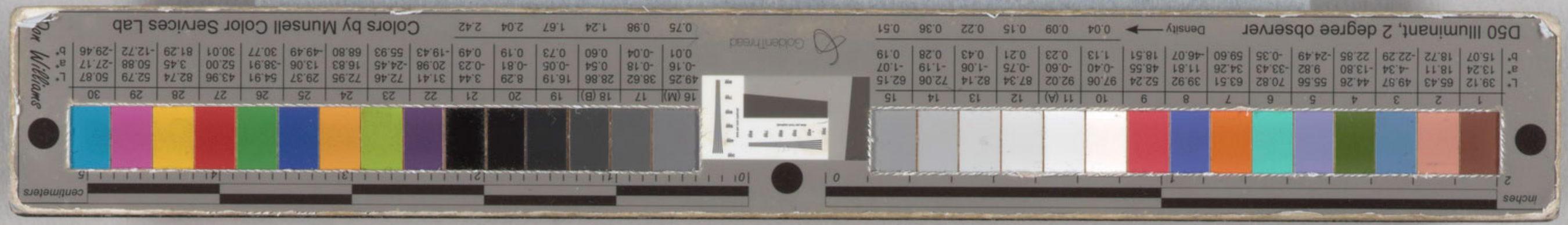
the Dragons head ☊ revolves once in
6798 days; or 18 years 223 days. & through
it moues in 566 days 12 hours. through a
degree in 18 days 21h: 12m:. Every day
moueing 3min 10'' 11''' 1111 11111
degrees. 20'. 32''. If the moone be past her node
ascendant ☊ her latitude is North if past
her ☋ her latitude is south. To know
her latitude by her distance from ☊ ob-
serue this rule.

☽ being distant from ☊			her latitude is.			☽ being distant from ☊	her latitude is		
sign:	Degr:	min	Degr:	'	''	S. ☽. m	☽.	'	''
0	0	10	0	0	55	0 . 3 . 30	0	19	45
0	0	20	0	1	50	0 . 3 . 40	0	20	10
0	0	30	0	2	46	0 . 3 . 50	0	21	5
0	0	40	0	3	41	0 . 4 . 0	0	22	0
0	0	50	0	4	36	0 . 4 . 10	0	23	55
0	1	0	0	5	31	0 . 4 . 20	0	23	50
0	1	10	0	6	26	0 4 30	0	24	45
0	1	20	0	7	21	0 4 40	0	25	40
0	1	30	0	8	16	0 4 50	0	26	35
0	1	40	0	9	10	0 5 0	0	27	29
0	1	50	0	10	5	0 5 10	0	28	24
0	2	0	0	11	0	0 5 20	0	29	28
0	2	10	0	11	56	0 5 30	0	30	13
0	2	20	0	12	51	0 5 40	0	31	18
0	2	30	0	13	46	0 5 50	0	31	12
0	2	40	0	14	41	0 6 0	0	32	57
0	2	50	0	15	36	0 6 10	0	33	52
0	3	0	0	16	31	0 6 20	0	34	47
0	3	10	0	17	26	0 6 30	0	35	43
0	3	20	0	18	20	0 6 40	0	36	37
						0 6 50	0	37	32
						0 7 0	0	38	26
						0 7 10	0	39	21
						0 7 20	0	40	16

D being distant from ☽			her latitude is		
°	′	″	S	D	M
0	7	30	0	41	11
0	7	40	0	42	6
0	7	50	0	43	1
0	8	0	0	43	55
0	8	10	0	44	50
0	8	20	0	45	45
0	8	30	0	46	39
0	8	40	0	47	33
0	8	50	0	48	27
0	9	0	0	49	21
0	9	10	0	50	16
0	9	20	0	51	11
0	9	30	0	52	5
0	9	40	0	53	0
0	9	50	0	53	54
0	10	0	0	54	48
0	10	10	0	55	42
0	10	20	0	56	36
0	10	30	0	57	30
0	10	40	0	58	23
0	10	50	0	59	17
0	11	0	1	0	11
0	11	10	1	1	5
0	11	20	1	1	58
0	11	30	1	2	52
0	11	40	1	3	48
0	11	50	1	4	42
0	12	0	1	5	37
0	13	0	1	10	52
0	14	0	1	16	13
0	15	0	1	21	33
0	16	0	1	26	52
0	17	0	1	32	9
0	18	0	1	37	24
0	19	0	1	42	39
0	20	0	1	47	53
0	21	0	1	53	6
0	22	0	1	58	14

2	3	20
2	8	24
2	13	25
2	18	24
2	23	19
2	28	12
2	33	3
2	37	52
2	42	35
2	47	17
2	51	58
2	56	36
3	1	9
3	5	36
3	10	0
3	14	21
3	18	39
3	22	56
3	27	11
3	31	20
3	35	25
3	39	23
3	43	16
3	47	7
3	50	54
3	54	39
3	58	21
4	2	0
4	5	35
4	9	1
4	12	18
4	15	30
4	18	40
4	21	49
4	24	56
4	27	53
4	30	44
4	33	28
4	36	10
4	38	50
4	41	25
4	43	59

☽ being distant from ☌			her Latitude is		☽ distant from ☌		her Latitude is.	
Signes.	Degr.	D	'	''	Sig:	Degr.	D	'	''
2	5	4	46	16	2	18	5	8	59
2	6	4	48	30	2	19	5	10	5
2	7	4	50	42	2	20	5	11	10
2	8	4	52	50	2	21	5	12	8
2	9	4	54	52	2	22	5	12	56
2	10	4	56	48	2	23	5	13	39
2	11	4	58	40	2	24	5	14	17
2	12	5	0	30	2	25	5	14	49
2	13	5	2	16	2	26	5	15	15
2	14	5	3	58	2	27	5	15	35
2	15	5	5	25	2	28	5	15	49
2	16	5	6	42	2	29	5	15	57
2	17	5	7	52	3	0	5.	16.	0.


Don Williams
inches
centimeters
GretagMacbeth
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab
L* a* b*

Of y^e Resolution of ~~Right line~~ straight lined triangles.



s=sine t=tangent. k=secant. cs=cosine.
ct=cotangent. ck=cosecant. r=radius.
vs=versed sine

1. Of, a, d, ε, g. $s a \times \varepsilon = s d \times g$.

2. Of a, d, ε, f. $rrf = r \times \varepsilon \times cs a + \varepsilon \times sa \times ct d$.
Or, $rf \times t{:}d = r\varepsilon \times s{:}a + \varepsilon \times t{:}d \times cs a$.

3. Of a, ε, f, g. $r\varepsilon\varepsilon + rff = rgg + {}^{2}\varepsilon f \times cs a$.

Of some special resolutions.

If a, ε, & f are given & d sought then
$\frac{\varepsilon - f}{\varepsilon + f} \times ct \frac{1}{2} a = ct. d + \frac{a}{2} = \frac{\varepsilon - f}{\varepsilon + f} \times ct \frac{a}{2}$.

ε, f, g given, & a sought. $\frac{r \times \sqrt{\varepsilon + f + g \times \varepsilon + f - g}}{\sqrt{4 \varepsilon f}} = cs \frac{1}{2} a$.

$\frac{r\sqrt{g + \varepsilon - f \times g + f - \varepsilon}}{\sqrt{4 \varepsilon \times f}} = s{:}\frac{1}{2} a$. $\frac{r\sqrt{\varepsilon + f + g \times \varepsilon + f - g}}{\sqrt{g + \varepsilon - f \times g + f - \varepsilon}} = ct{:}\frac{1}{2} a$.

$\frac{r\sqrt{g + \varepsilon - f \times g + f - \varepsilon}}{\sqrt{\varepsilon + f + g \times \varepsilon + f - g}} = t{:}\frac{1}{2} a$. (Viz: Make $\frac{\varepsilon + f + g}{2} = m$.
$m - \varepsilon = n$. $m - f = p$. $m - g = q$.
then is $\frac{r\sqrt{rnpq}}{\sqrt{mnpq}} = t{:}\frac{1}{2} a$. &c. & $\sqrt{mnpq} = ar\text{æ}$ Δ)



The resolution of Sphæricall triangles

Rectangled, at b

2 Of b, d, ε, f. r x s:ε = s:d x s:f. r x s f = s:ε x ct:d. Or

3 Of a, b, ε, f. r x t:ε = t f x cs:a. r x cs a = t ε x ct:f. Or

4 Of a, b, ε, g. r x t:g = s:ε x t:a. r x s:ε = t:g x ct:a.

1. Of b, ε, f, g. r x cs:f = cs:ε x cs:g. r x ll cs g = csf x k:ε.

5 Of a, b, d, ε. r x cs:d = s:a x cs:ε. r x s:a = cs:d x k ε

6 Of a, b, d, f. r x ct:a = t:d x cs:f. r x cs f = ct:a x ct

Oblique angled triangles.

1 Of b, d, ε, f. s b x s ε = s d x s f.

2 Of a ε, f, g.

3 Of a, b, ε, f

4 Of a, b, d, ε

The 3 last cases are ordinarily resolved by letting fall perpendiculars, viz. an angle & side being given, or by y^e following speciall resolutions.

1 ε, f, g, given; a, sought. $\frac{\sqrt{r \times vs:\frac{\varepsilon+f+g}{2} \times s:\frac{\varepsilon+f-g}{2}}}{\sqrt{ers\ \varepsilon:f}} = cs:\frac{1}{2}a$

Or $r\sqrt{\frac{s:\frac{g+f-\varepsilon}{2} \times s:\frac{g+\varepsilon-f}{2}}{s:\frac{\varepsilon+f+g}{2} \times s:\frac{\varepsilon+f-g}{2}}} = t:\frac{1}{2}a.$ Or $\frac{ck:f \times cs:g + cs:\varepsilon}{s:\varepsilon}$

2 a, d, f given; ε, g sought. $s:\frac{a+d}{2}:t:\frac{1}{2}f :: s:\frac{a-d}{2}:t:\frac{g-\varepsilon}{2}$

$\frac{cs:\frac{1}{2}a - \frac{1}{2}d \times t:\frac{1}{2}f}{cs:\frac{1}{2}a + \frac{1}{2}d} = t:\frac{1}{2}g + \frac{1}{2}\varepsilon.$

3 b, ε, g given; a, d, sought. $\frac{s:\frac{\varepsilon-g}{2} \times ct:\frac{1}{2}b}{s:\frac{\varepsilon+g}{2}} = t:\frac{d-a}{2}.$

$\sqrt{:r \times s:d} = s:e \times ck:f.$

$\sqrt{:v \times t:f} = t:e \times k:a.$

$\sqrt{:v \times t:a} = t:g \times ck:e.$

$\sqrt{:v \times cs:e} = cs:f \times k:g.$

$\sqrt{:v \times$ [illegible] $cs:e} = cs:d \times ck:a.$

$\sqrt{:v \times t:d} = ct:a \times k:f.$

$\frac{\sqrt{:v \times s:e \times s:f}}{\sqrt{s:\frac{e+f+g}{2} \times s:\frac{e+f-g}{2}}} = k:\tfrac{1}{2}a = \frac{\sqrt{:ck:\frac{e+f+g}{2} \times s:e \times s:f}}{\sqrt{s:\frac{e+f-g}{2}}}$ &c

Or $\frac{\sqrt{:ck:f \times s:\frac{e+f+g}{2} \times s:\frac{e+f-g}{2}}}{\sqrt{s:e}} = cs:\tfrac{1}{2}a.$

$\frac{\sqrt{\times \sqrt{s:\frac{g+f-e}{2} \times s:\frac{g+e-f}{2}}}}{\sqrt{s:e \times s:f}} = s:\tfrac{1}{2}a.$ $\frac{\sqrt{\sqrt{s:\frac{e+f+g}{2} \times s:\frac{e+f-g}{2}}}}{\sqrt{s:\frac{g+f-e}{2} \times s:\frac{g+e-f}{2}}} = ct:\tfrac{1}{2}a.$

$\sqrt{s:a}.$ Or, $\frac{\sqrt{\sqrt{\times cs:g} + cs:e-f}}{se \times sf} = vs:a = \frac{\sqrt{\sqrt{\times cs:e-f} \cdot - cs:g}}{se \times sf}.$

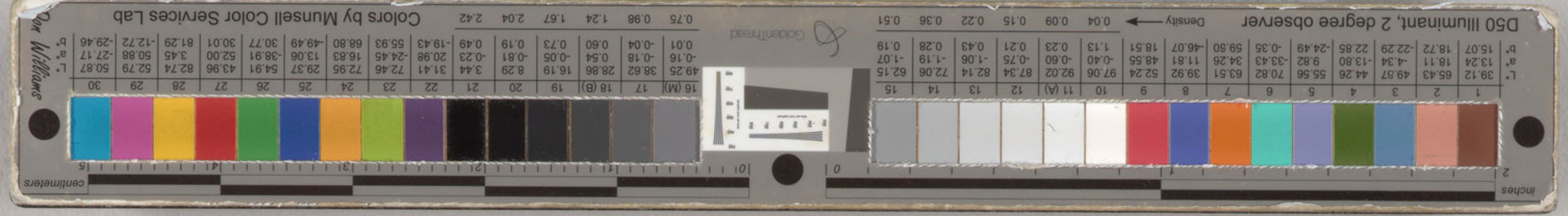
viz $\frac{g+e}{2}$. The $\frac{1}{2}$ sum $+\frac{1}{2}$ difference of g & e is g &c. $\frac{g+e}{2} + \frac{g-e}{2} = g.$ $\frac{g+e}{2} - \frac{g-e}{2} = e.$

$\frac{\frac{e-g}{2} \times ct:\frac{1}{2}\theta}{cs:\frac{e+g}{2}} = t:\frac{d+a}{2}.$ $\frac{d+a}{2} + \frac{d-a}{2} = d.$ &c. In like 4^{e} prec^{d}

a, b, d given; f sought. $\frac{r\sqrt{\text{Vs}:\frac{a+b+d}{2}\times\text{Vs}:\frac{a+d-b}{2}}}{\sqrt{\text{S}:a\times\text{S}:b}}=\text{S}:\frac{1}{2}f$

tis like 4$^{\text{e}}$ 1$^{\text{st}}$ speciall resolution.

a, b, g, ε, given; f$_1^{a\text{ or }b}$ sought. ~~And~~ The 4$^{\text{e}}$ converse



cK $\frac{\sin\alpha - \sin\theta}{\sin\alpha} = \frac{\sin\alpha - \sin\beta}{\sin\alpha} = \frac{\sin\alpha - \sin\theta}{\sin\alpha}$ = vs: compl of ff. &c

s.a. sa XSB

of 4.ª 20 & 3.ª Resolutions.

Of Questions in navigation.

Suppose a = One latitude, b = another latitude, c = their dif
l = difference of longitude, d = distance, R = Rumb
r = Radius. s = sine &c: Ma, Mb = meridionals, M
dian line answering to y^r latitudes a & b.

1 Of a, b, d, R. r × a-b (= r × c) = d × c s R. c × s ec R = d

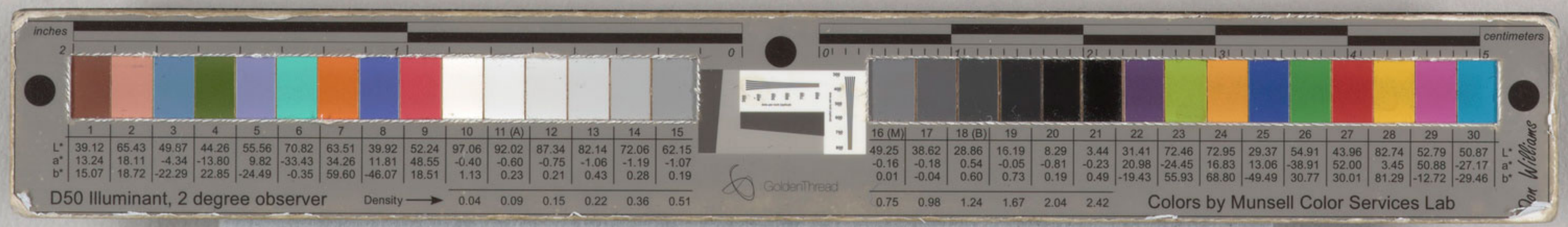
2 Of a, b, l, R. r × l = t R × Ma - Mb. r × Ma - Mb = l ×

3 Of a, b, l, d. ll × a-b × a-b = Ma - Mb × Ma - Mb × dd.
(viz ll × a-b × a-b = Ma - Mb × Ma - Mb × dd + Ma - Mb × M
or pl. $l = \frac{Ma - Mb \times \sqrt{dd + a-b \times d + b-a}}{a-b}$.
2^d, $d = \frac{a-b \sqrt{ll + Ma - Mb \times Ma - Mb}}{Ma - Mb}$. But
b, l, d: or, l, b, R: or a, d, l
or b, R
be positively found. The two first-
are sufficient for resolving all other nautica
problems, viz: y^r 3^d, & 4^th following)

4 Of a, l, d, R. $rl + tR \times Mb = tR \times M: \frac{br + dx cs R}{r}$. Or
$lx ctR + rx Mb = r x M: \frac{bxr + dx cs R}{r}$. 5^t of b, l, R.

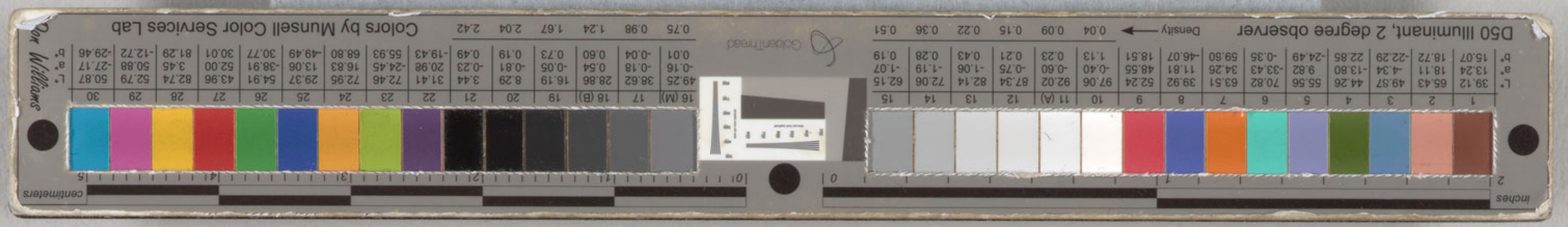
Note, y^t these nautical problems may be
resolved in Numbers if instead of Mx - Mb
we write $\frac{lt\ 45 + \frac{1}{2}a - lt\ 45 + \frac{1}{2}b}{30 \times lt\ 45:1. - V}$ (= $\frac{lt\ 45 + \frac{1}{2}a - lt\ 45 + \frac{1}{2}b}{lt\ 45\ 30' :- V}$
Or $\frac{lt\ 45 + \frac{1}{2}a - lt \frac{7°802}{45 + \frac{1}{2}b}}{30 \times lt\ 45:1. - V}$) supposing lt to si
nifie y^r logarithm of y^r tangent.
2^dly y^t by y^r help of these or such like
equations [viz: $rr = t \times ct = cs \times R = s \times ck$.
$r \times cs = s \times ct$, $r \times s = cs \times t$. $r \times t = s \times R$, $r \times ct = cs \times ck$.
$r \times R = t \times ck$, $r \times ck = ct \times R$. $r = vs \times cs$. $R \times vs = r \times R$
$2rr \times vv = ss + sv \times sv$. $rr = ss + cc$. $rr + tt = zz$. $rr \times t = zrr \times t$
$+ t \times t \frac{1}{2} \times t \frac{1}{2}$, Or $rr \times t2 = 2rr \times t + t2 \times tt$. $r3 + rtt = rr \times$
$- tt \times R2$. &c] we may get new theorems for


inches
centimeters
D50 Illuminant, 2 degree observer
Density
GoldenThread
Colors by Munsell Color Services Lab
Don Williams

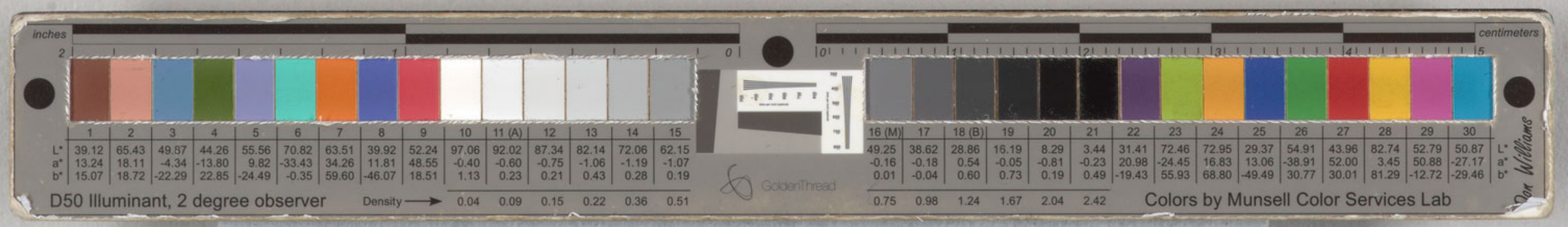


	1	2	3	4	5	6	7	8	9	10	11 (A)	12	13	14	15
L*	39.12	65.43	49.87	44.26	55.56	70.82	63.51	39.92	52.24	97.06	92.02	87.34	82.14	72.06	62.15
a*	13.24	18.11	-4.34	-13.80	9.82	-33.43	34.26	11.81	48.55	-0.40	-0.60	-0.75	-1.06	-1.19	-1.07
b*	15.07	18.72	-22.29	22.85	-24.49	-0.35	59.60	-46.07	18.51	1.13	0.23	0.21	0.43	0.28	0.19

	16 (M)	17	18 (B)	19	20	21	22	23	24	25	26	27	28	29	30
L*	49.25	38.62	28.86	16.19	8.29	3.44	31.41	72.46	72.95	29.37	54.91	43.96	82.74	52.79	50.87
a*	-0.16	-0.18	0.54	-0.05	-0.81	-0.23	20.98	-24.45	16.83	13.06	-38.91	52.00	3.45	50.88	-27.17
b*	0.01	-0.04	0.60	0.73	0.19	0.49	-19.43	55.93	68.80	-49.49	30.77	30.01	81.29	-12.72	-29.46

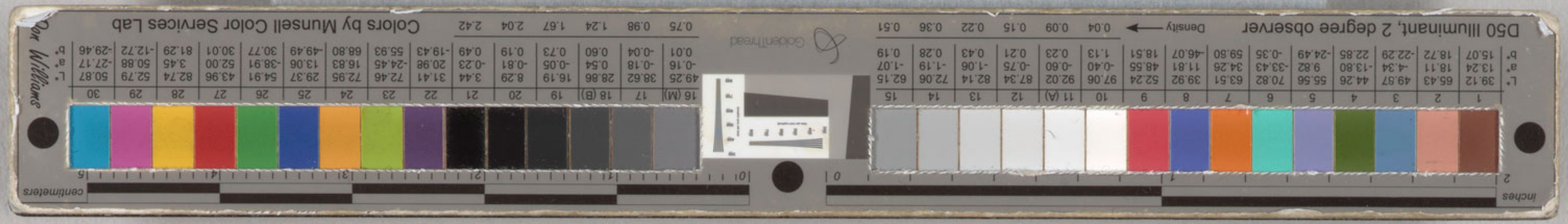

Don Williams
inches
centimeters
GretagMacbeth
D50 Illuminant, 2 degree observer
Density
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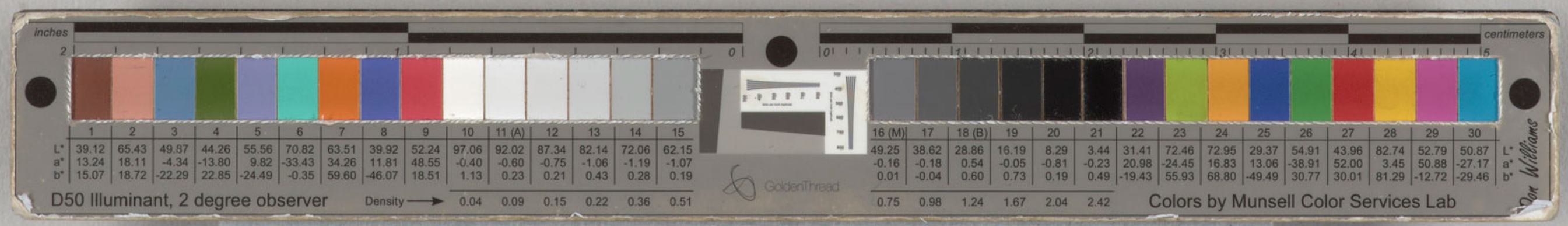




	1	2	3	4	5	6	7	8	9	10	11 (A)	12	13	14	15
L*	39.12	65.43	49.87	44.26	55.56	70.82	63.51	39.92	52.24	97.06	92.02	87.34	82.14	72.06	62.15
a*	13.24	18.11	-4.34	-13.80	9.82	-33.43	34.26	11.81	48.55	-0.40	-0.60	-0.75	-1.06	-1.19	-1.07
b*	15.07	18.72	-22.29	22.85	-24.49	-0.35	59.60	-46.07	18.51	1.13	0.23	0.21	0.43	0.28	0.19
										0.04	0.09	0.15	0.22	0.36	0.51

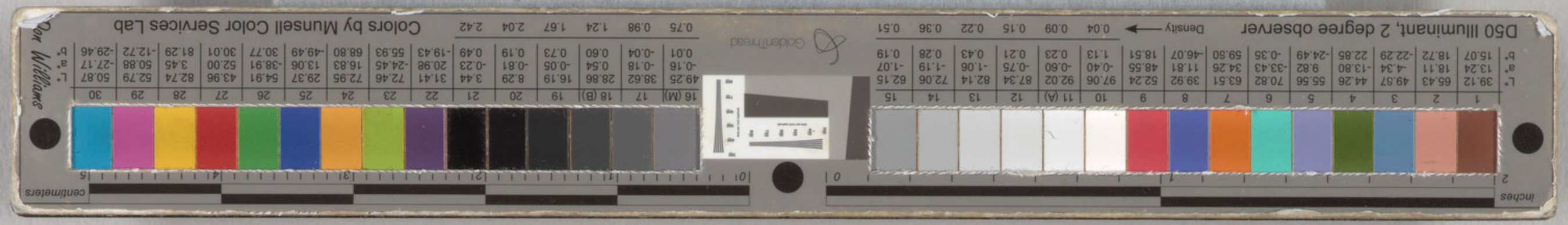
	16 (M)	17	18 (B)	19	20	21	22	23	24	25	26	27	28	29	30
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a*	-0.16	-0.18	0.54	-0.05	-0.81	-0.23	20.98	-24.45	16.83	13.06	-38.91	52.00	3.45	50.88	-27.17
b*	0.01	-0.04	0.60	0.73	0.19	0.49	-19.43	55.93	68.80	-49.49	30.77	30.01	81.29	-12.72	-29.46
	0.75	0.98	1.24	1.67	2.04	2.42									

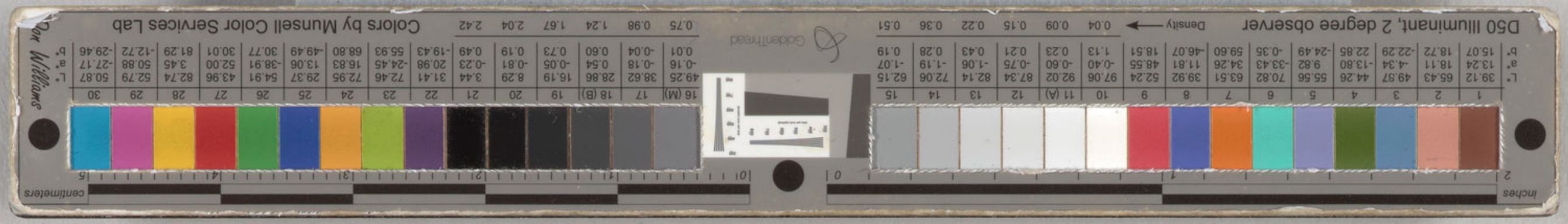

Box Williams
inches
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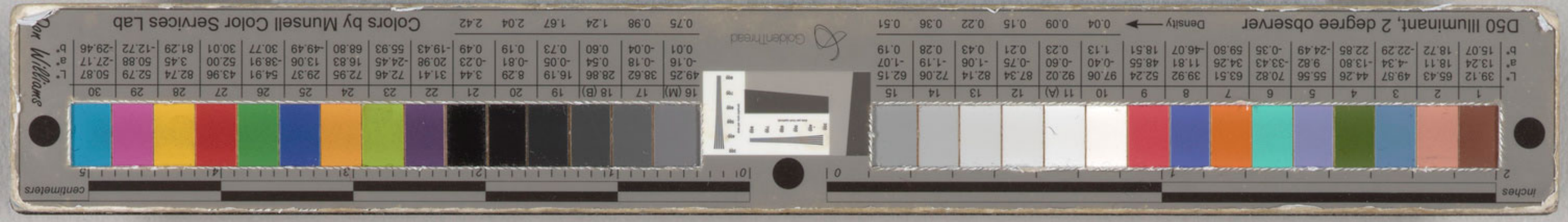


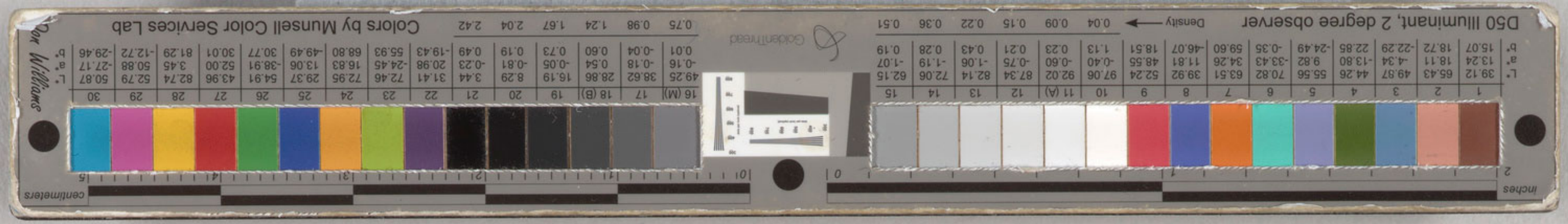
	1	2	3	4	5	6	7	8	9	10	11 (A)	12	13	14	15
L*	39.12	65.43	49.87	44.26	55.56	70.82	63.51	39.92	52.24	97.06	92.02	87.34	82.14	72.06	62.15
a*	13.24	18.11	-4.34	-13.80	9.82	-33.43	34.26	11.81	48.55	-0.40	-0.60	-0.75	-1.06	-1.19	-1.07
b*	15.07	18.72	-22.29	22.85	-24.49	-0.35	59.60	-46.07	18.51	1.13	0.23	0.21	0.43	0.28	0.19
										0.04	0.09	0.15	0.22	0.36	0.51

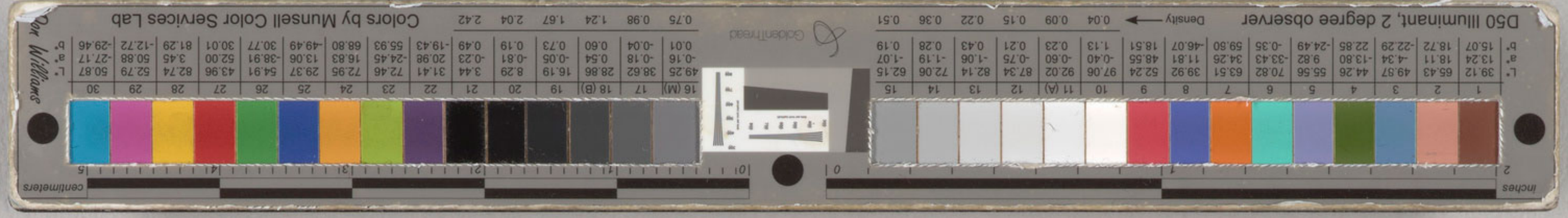
	16 (M)	17	18 (B)	19	20	21	22	23	24	25	26	27	28	29	30	
L*	49.25	38.62	28.86	16.19	8.29	3.44	31.41	72.46	72.95	29.37	54.91	43.96	82.74	52.79	50.87	L*
a*	-0.16	-0.18	0.54	-0.05	-0.81	-0.23	20.98	-24.45	16.83	13.06	-38.91	52.00	3.45	50.88	-27.17	a*
b*	0.01	-0.04	0.60	0.73	0.19	0.49	-19.43	55.93	68.80	-49.49	30.77	30.01	81.29	-12.72	-29.46	b*
	0.75	0.98	1.24	1.67	2.04	2.42										

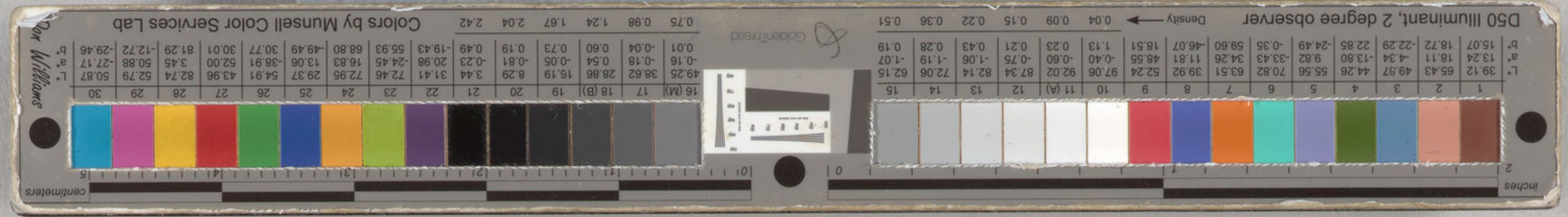

Color Williams
inches
centimeters
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab
GoldenThread

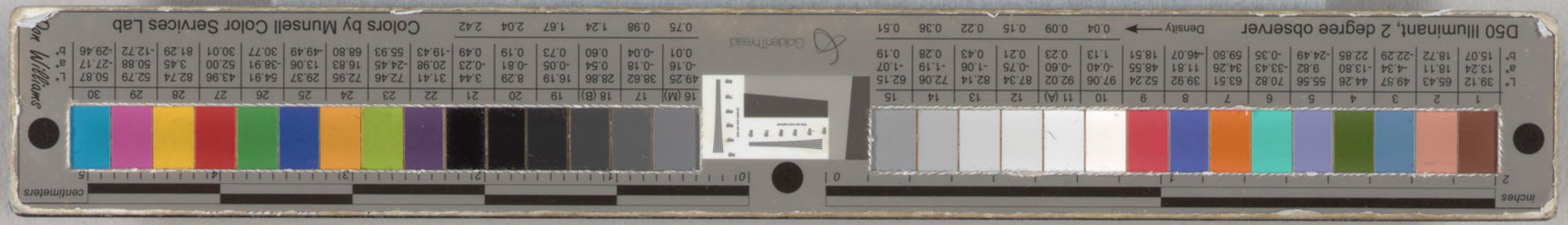

inches
centimeters
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab
Don Williams
GretagMacbeth

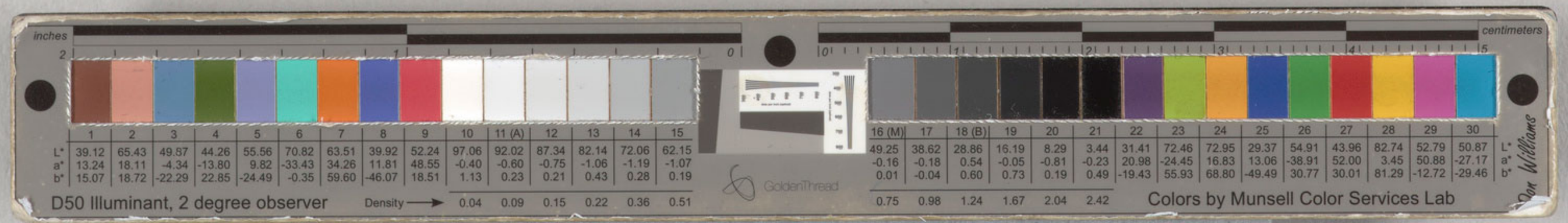

Gretag Macbeth
Color Rendition Chart
Dot Materials
Ink Materials
Dot Gain
Color Gamut
Color Gamut
Dot Gain
Ink Materials
Dot Materials
Gretag Macbeth
Dot Williams
inches
centimeters
D50 Illuminant, 2 degree observer
Density
L* a* b*
Colors by Munsell Color Services Lab
L* a* b*

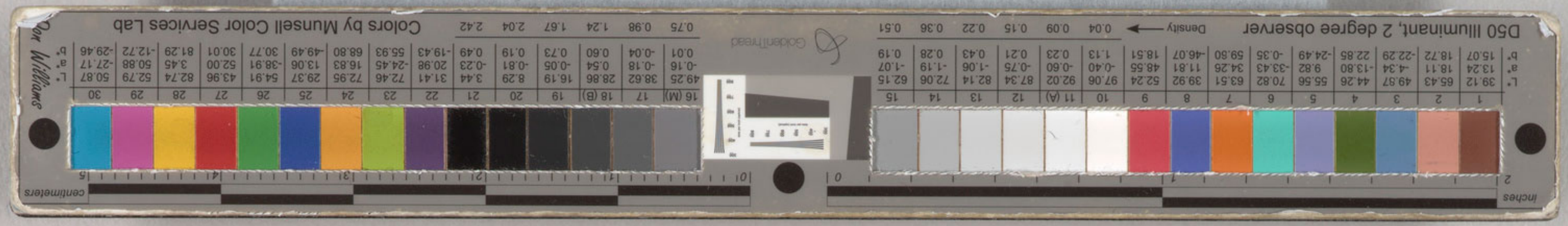

Don Williams
centimeters
inches
GoldenThread
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab


Gretag Macbeth
Color Checker
inches
centimeters
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab


Don Williams
inches
centimeters
GretagMacbeth
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab


inches
centimeters
Don Williams
GoldenThread
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab
L* a* b*


inches
centimeters
1 2 3 4 5 6 7 8 9 10 11 (A) 12 13 14 15
L* 39.12 65.43 49.87 44.26 55.56 70.82 63.51 39.92 52.24 97.06 92.02 87.34 82.14 72.06 62.15
a* 13.24 18.11 -4.34 -13.80 9.82 -33.43 34.26 11.81 48.55 -0.40 -0.60 -0.75 -1.06 -1.19 -1.07
b* 15.07 18.72 -22.29 22.85 -24.49 -0.35 59.60 -46.07 18.51 1.13 0.23 0.21 0.43 0.28 0.19
D50 Illuminant, 2 degree observer
Density
0.04 0.09 0.15 0.22 0.36 0.51
GoldenThread
16 (M) 17 18 (B) 19 20 21 22 23 24 25 26 27 28 29 30
L* 49.25 38.62 28.86 16.19 8.29 3.44 31.41 72.46 72.95 29.37 54.91 43.96 82.74 52.79 50.87
a* -0.16 -0.18 0.54 -0.05 -0.81 -0.23 20.98 -24.45 16.83 13.06 -38.91 52.00 3.45 50.88 -27.17
b* 0.01 -0.04 0.60 0.73 0.19 0.49 -19.43 55.93 68.80 -49.49 30.77 30.01 81.29 -12.72 -29.46
0.75 0.98 1.24 1.67 2.04 2.42
Colors by Munsell Color Services Lab
Bar Williams


inches
centimeters
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab
GoldenThread
Dot Williams

Loving ffriend

It is commonly reported ye you are sick. truly I am sorry for ye. But I am much more sorry ye you got yo^r sickness (for ye they say too) by Drinking too much. I ernestly desire you first to repent of yo^r having been drunk & ye to seeke to recover yo^r health. And if it please God ye you ever bee well againe ye have a care to live healthfully & soberly for time to come. This will bee very well pleasing to all yo^r friends & especially to

Yo^r very loving freind
T. N.

Luvino ffrend

It iz Romonloy ripworted Reat yw ar sik. Triuli Oy am sori for Dat. But Oy am mutW mawr sori Dat yw got yu siknes (for ye DEE SEE tu) boy Driyking tuu mutW. Oy ernestloy dilzoir yw furst two ripent of yur heviy bign driyk and Den tu syke tu rikover yur Relθ. And if it plijz God ye yw iver by wel egeen Den heer ee Raare tu liv Relθfuli & swaberli for toim to kum. Dis wil by veri wel pliizziy tu ooll yur frendz & ispeWali tu

Yo^r veri lawiy frend
T. N.

A vowell is turned to ʋ when yᵉ breath passeth difficultly through yᵉ lipps. v turnes to b by shutting yᵉ lipps & b to m by open=ing the nose.

A vowell is turned to ɣ when yᵉ breath is straitned twixt yᵉ toungs end & teeth. ɣ turnes to ð if yᵉ toung & teeth close & ð to n by opening yᵉ nose.

A vowell is turned to ɷ when yᵉ breath is straitned twixt yᵉ middle of yᵉ tounge & rough of yᵉ mouth (so yᵗ it vibrats 'gainst yᵉ teeth) ɷ turnes to g by closing yᵉ middle of yᵉ tongue & palate. & g to ȝ by opening yᵉ nose.

The quavering or jarring of toungs end against yᵉ fore parte of palate changeth a vowell into r, that quavering chaseing r turns to ʒ (yᵗ breath vibrating against yᵉ teeth wch passeth by yᵉ toungs end), ʒ is turned to l if yᵉ tongues end & palate close yᵉ breath so passe by yᵉ tounge sides as to vibrate against yᵉ cheekes.

ʋ, b, ɣ, ð, ɷ, g, ʒ, are changed into

f, p, θ, t, ψ, k, s, by stopping yᵉ sound of yᵉ Larinx.

R signifies breathing
ה signifies yᵉ breath straitned in yᵉ throte.

The forr pte of yᵉ mouth straitned by (drawing in yᵉ lips &) contracting yᵉ middle pte of yᵉ toangue to yᵉ rough of yᵉ mouth, but yᵉ hinder parte at the throate being widned makath yᵉ pro= nuntiation of ɥ, being more dilated at yᵉ rough it maketh i, more still at yᵉ throat rough but straitned at yᵉ throate makes ɛ still more straitned at yᵉ throat dilated at yᵉ rough & yᵉ lipps & chaps a little opened makes a, more still yᵉ lipps & chaps being wide open make o, more still yᵉ lipps a little thru out & contracted makes ω, more still makes u, yᵉ throate & lipps most straitn & lipps thrust out most makes w.

Soe yᵉ greatest cavity in yᵉ mouth bin first made in yᵉ throate & thence by dɛ= grees moved towards yᵉ lips further from yᵉ larin (like yᵉ stoppings yᵉ holes of a pipe to sound yᵉ notes in order from ɥ sol re ut, to ɥam w causes yᵉ pronunciation of yᵉ vowells in this order ɥ i ɛ a o ω u w

The filling of a very deepe flaggon wth a constant streame of beere or water sounds yᵉ vowells in this order w,u,ω,o, a,ɛ,i,ɥ.

yi yea yes yet
ye yate yelke
ya yarde
yo Yorke yonder yawne
yw yow yoake
yw you youth
iy skaild selt
ie frare weam

iu few slew Engh
ey weight hei.
ei aide

au how out doubt
oy thy, I, pride bite

wy boy woy

wu Rold fould
ww should could

uy, wy, wee
ui will weigh quill sm gchismo
ue wet way quell tn eatn
ua was quarrell bl abl
uo worne what or hwat. kn waken
uw woe word
wu woolfe woolt.

yiy yeild
yaw yowle, you or yaw.
yow yow

uie weare
uei weight.
uau would
wew whewle whew
uoy quite why=hwoy.

Ykt=Yt. hang't winkt
Ys. things
Yg. anguish
Yk. think

dv. George
age=adve
judg=dvudv

rdv. urge George
ndv change hinge
ldv Belgia

tw child which switch

ks ax tricks workes

Nt naught thaught

sm gchismo
tn eatn
bl abl
kn waken

long a

: y : thee feede feild these wee see freak
: ii : the weigh sea seiz heak meere easy
.· ee.· they way say hake end health faint hair faile
.· aa.· and mave care
·.oo·. saw falk morne hawke fault naught
·.ww·. so move foale to note before most though
·.uu·. foole too looke foder (cold) comes (moderne) wood (oake) (Rost) (oake) some
: w : should = showld. would, woolk. wood love

vocales

.· i : is this hit mist fill
.· e : felt men fed
.· a.· as man that mast, fallow.
.· o.· for not lost folly God
.· w·. furre frogg dogg turne ~~Rough~~ furrow
.· u·. luck full But lust must thus good summe.

consonants

labiales

·m.
·b.
·p.
·v=bh. voyce have
·f=ph. ~~Pharo~~ of for

dentale

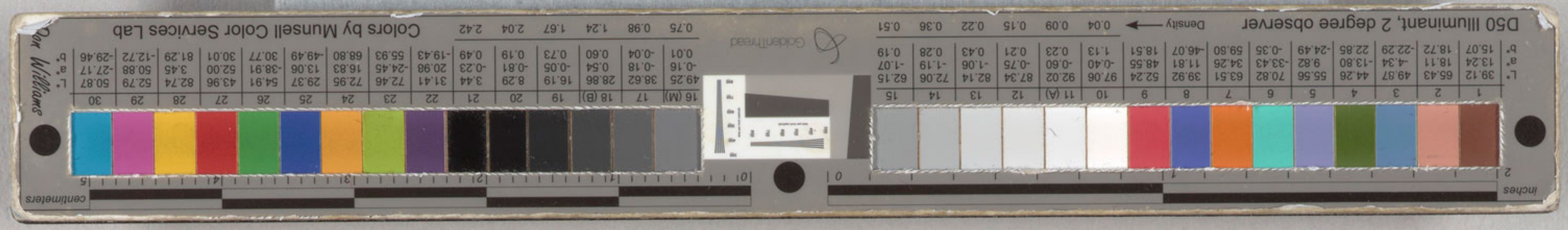
·n.
·d.
·t.
·ths=dh. the tilk x
·θ=th. Kath think

To ye labialls may bee adds ye jarring of ye lips caused by shutting ye lips of ye mouth forcing ye breath through ye mouth. To gutturally add ye (welsh) jarring of ye throte as ~~which was~~ cover up both and correspond to ~~their~~ ye phlegme. & 11 ye breathing through ye throte straitned wth & wthout a voyce. as gh in though=thoun naught rough

gutturalls palati

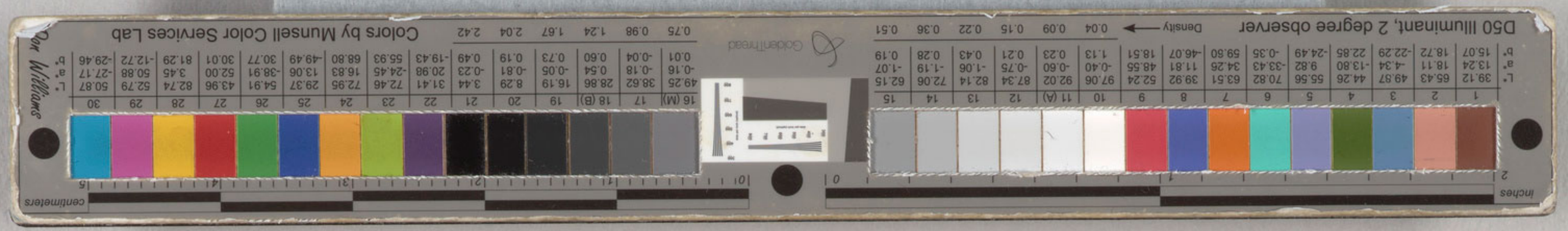
·z. zeale is
·s. cell sell ice us
·sh.
·ch.
·y. thing=thiy strong
·g.
·k. can. Kill. quiet or Kuiet. luck
·zh=zh, or gh. grazier=gravier
·sh=sh, or kh. shew ash nation=naVon.
·h.

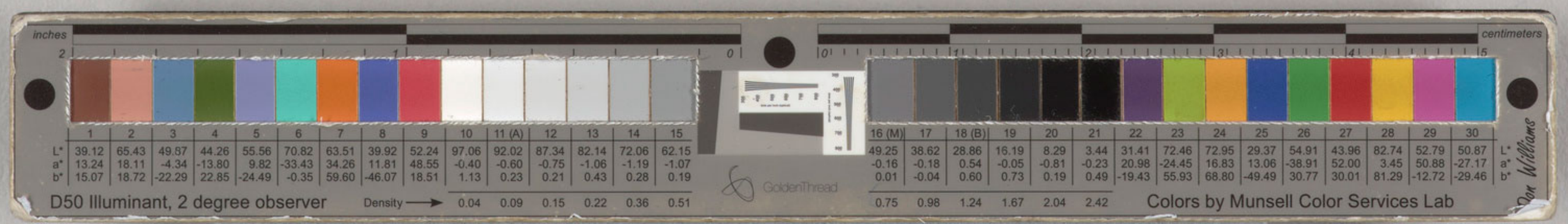
Colors by Munsell Color Services Lab
D50 Illuminant, 2 degree observer


Don Williams
inches
centimeters
GoldenThread
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab

The abc may bee distinguished into
single & combined letters. & y^e single
into vowells & semivowells.

3 : | a: and, that, rare.
2 :. | θ. m^e, maine, hath, lament, faint, may.
1 :: | i. is, ease, this, these, the. heate, hit.
4 :. | o. folly, fall, for, fault, morne, hawke
5 :: | u. to both mourne turne scourge furrow.
6 :.: | w. luck looke good but lust should
v.
l. able or abl.
n. written or writtn.
m. happens or happn. scisme.
ng=y, or kung, or kuy. thiy.
s,
z.
t,
d.
p,
b.
k,
g.
f,=ph,
v.
θ, θεὸς, think
th. the, that.
sh, shall. or Wal
*. joy or d*oy. grasier, or gra*er.
j=dsh; or j=d* valker
ch=tsh. child or tshild
y=i young or iou
q=k
x=ks
c=k, or s.
w=u or 3.
h
~~ch=tsh~~


Ron Williams
inches
centimeters
ColorantHead
D50 Illuminant, 2 degree observer
Density
Colors by Munsell Color Services Lab



	1	2	3	4	5	6	7	8	9	10	11 (A)	12	13	14	15
L*	39.12	65.43	49.87	44.26	55.56	70.82	63.51	39.92	52.24	97.06	92.02	87.34	82.14	72.06	62.15
a*	13.24	18.11	-4.34	-13.80	9.82	-33.43	34.26	11.81	48.55	-0.40	-0.60	-0.75	-1.06	-1.19	-1.07
b*	15.07	18.72	-22.29	22.85	-24.49	-0.35	59.60	-46.07	18.51	1.13	0.23	0.21	0.43	0.28	0.19

	16 (M)	17	18 (B)	19	20	21	22	23	24	25	26	27	28	29	30	
L*	49.25	38.62	28.86	16.19	8.29	3.44	31.41	72.46	72.95	29.37	54.91	43.96	82.74	52.79	50.87	L*
a*	-0.16	-0.18	0.54	-0.05	-0.81	-0.23	20.98	-24.45	16.83	13.06	-38.91	52.00	3.45	50.88	-27.17	a*
b*	0.01	-0.04	0.60	0.73	0.19	0.49	-19.43	55.93	68.80	-49.49	30.77	30.01	81.29	-12.72	-29.46	b*

Density	0.04	0.09	0.15	0.22	0.36	0.51	0.75	0.98	1.24	1.67	2.04	2.42

L.
Leado.
Loadestone.
Ligure.

M
Metall.
Minos.
Marble.
Milstone.
Money.
Marks.

N
Noble.

O.
Oare.
Onix.

P.
Pearle.
Penny.
Pound.
Peise.

Q.
Quicksilver.

R.
Rod loade.
Rubie.

S.
Silver.
Stoole.
Sowder.
Stone.
Stonepit.
Sardius.
Sapphire.
Skate.
Skilling.

T.
Tin
Touchstone.
Topaz.
Toastor.

V.
Whitoloade.
Whetstone.

P.
Pebble.

inches
D50 Illuminant, 2 degree observer
Density
centimeters
GoldenThread
Colors by Munsell Color Services Lab
Don Williams

Wind.
Wormwood-
Calo.

Y.
Yolko of an Eg

Of
Minerallis.

Chap: 16.

A
Amethist.
Agate.
Adamant.
Angell.

B.
Brass.
Bezaarstone.
Borill.

C
Copper.
Corrall.
Cornerstone.
Carbuncle
Crystall.
Cornelline.
Cornip.
Coales.
Cogles.
Coyns.
Crowns.

D.
Diggor.
Diamond.
Doller.

E
Emrald.

F.
Flintstone
Flint.
Flab.
Flaw.
Flarthing.

G
Gold.
Grindlestone
Groate.

H.
Halfpenny.
Halfcrowns.

I.
Iron.
Iowell.
Iasper.
Iacinth.

P.

Pottingers.
Pottage.
Pouke.
Pudding.
Pancake.
Pie.
Pastie.
Pig.
Patkrag.
Pottitoe.
Pluck.
Plate.
Posset
Pickle.
Pot.
Porrie.

Q.

R.

Roast meat.
Rand.
Rack
Rib.

S.

Sallott.
Saltsellar.
Salt
Spoone.
Syllibub.
Studmeate.
Sawsage.
Sowell.
Sauce.
Sweetmeats.
Supper.
Sowse.
Skin.
Seame.
Sqr.
Stirrup.
Supersedeas.

T.

Table.
Tablecloth.
Towell.
Trencher.
Tart.
Towell
Tothpick.
Tallow.
Cost.

V.

Veal.
Vinegar.
Vdder.
Victualls.

W.

Watergruell.
Wafer.
White of an
Egg

Florentine
Flat.
Flooto.
Floole.
Flagon.

G.
Gammon.
Guost.
Glass.
Gristle.
Gruel.
Groats.

H.
Heart.
Hastletts
Honey.
Hoofs.

J.
Joint.
Jugg.
Joule.

K
Knife.

L.
Loafe.
Lamb.
Land.
Leaven.
Leatheretaves.
Loins.
Leg.
Liver.
Lights.
Ladle

M.
Morsel.
Moss.
Moats.
Milks
Mutton.
Mince meats.
Manshet.
Meals.
Mouspoise.
Manna.
Marrowbones.
Marrow.
Mustard.
Motheglin.

N
Napkin.

O.
Oils.
Olive.

Buttor.
Boofe.
Baton.
Boild } meate
Bakt }
Broild
Bagpudding.
Blackpudding.

C.

Biskett.
Bunn.
Beefs.
Braune.
Breakefast.
Beaver.
Broaft.
Briskot
Buttock.
Briskotdraught.
Buttock-rand.
Brewer.
Boer.
Boaker.
Bowle.
Bottle.
Bason.
Buttersupp.
Buttered ails
Bottled beere.
Banquett

Catower.
Cloth.
Crust.
Crumb.
Carver.
Creame.
Chese.
Carbonadoed
Cake. (meat.
Custarde.
Choostake.
Chitterling.
Capon
Chine.
Chooke.
Choslip.
Caudle.
Chalice.
Cup.
China ailes.

D.

Dish.
Dinner.
Draught.
Drinke.
Droggs.
Distdrink.

E.

Eneer.
Egg.

ff.

ffood.
ffleesh.
ffried meate.
ffritter.
ffleith.
ffeast.

Span.
Side.
Skin
Stomach.
Soldoms.
Sight.
Smell.
Spoole.
Stinke.
Sower.
Shame.
Sorrow.
Subtilness.
Slumber
Sobing.
Speaking.
Sole of ye foot
Sweet.
Sharpe.
Sleepe.
Snouting.
Suspition.
Sadness.
Shame.
Sorrow.
Subtilness.
Slumber
Sobing.
Speaking.
Sole of ye foot
Sweet.
Sharpe.
Sleepe.
Snouting.

T.

Temples.
Tooth.
Tongue.
Throate.
Thumb.
Thigh.
Toe.
Taste.
Touch.
Trust.
Talking.

V.

Voyce
Vaine.
Vrin.
Visage.
Vse.

W.

White of ye Eye.
Wrist.
Wrike.
Wisdome.
Will
Will.
Wrinkle.

Wondering.
Wan.
Wraath.
Wife
Walking.

Y.

Yellow.

Of
Meate & Drinke.

Chap: 15

A

Apoplexie.
Aldeberry
Ale.

B.

Broad.

Jolonous.
Imagination
~~Doctor.~~
~~Devils.~~
~~Schools.~~

K

Knuckls.
Knee.
Kidnies.
Knowledge.

L

Leanness.
Lip.
Loins.
Leg.
Lungs.
Liver.
Laughter.
Love.
Loathing.
Lork of haire.

M.

Member.
Marrow.

Muscle.
Mouth.
Memory.
Mind.
Mistaking.
Misery.
Malice.
Modesty.
Manners.
Midriff.
Meditation
Mirth.
Mourning.

N.

Nose.
Nostrills.
Nork.
Nails
Navell.
Nipple.

O

Opinion.

P.

Pores.
Pax.
Pransis
Pailness.
Prudence.
Pleasure.

Puddings.
Pitty.
Passion.
Presumption
Physiognomy
~~Parents.~~

R.

Rib.
Rod.
Russet.
Rollish.
Reason.
Remembran to
Rejoysing.

S.

Soule
Skin.
Sinew
Snot
Spittle.
Shoulder.
Shoulderblade.

Distrust.
Desire.
Dread.
Displeasure.
Distortion.
Distraught.
Discourse.

E.

Eare.
Eye brow.
Eye Lid.
Elbow.
Envie.
Error.
Enmity.
Entrails.

ff.

Flesh.
Flat.
Forehead.
Face.
Fist.
Finger.
Flegm.
Forgetfulness.

Faith.
Feare.
Fidelity
Foolishness.
Favour.
Friendship.
Fashion!

G.

Gummes.
Gullett.
Gall.
Gray
Groans.
Gristle.
Guts.
Grief.
Gladness.
Gangrene.

H.

Head.
Haire.
Hand.

Knuckle-bone.
Lippe.
Loam.
Loole.
Heart.
Hearing
Hatred.
Hope.
Heaviness.
Humanity.
Hate
Hired

J.

Jaw.
Joint.
Ignorance.
Judgment.
Joy.
Jollaity.
Ire.
Impudence.
Imprudence.
Irrationallity
Infidellity.

Woor.
Widow
Widower.
Whoore.
Wolshman.
Witch.
Wisdman.
Wizard.
Wrotch.

Armohole.
Ankle.
Art.
Admiration.
Anger.
Amity
Affection.
As

Y.

Yoman.

Of
Man, his
Affections,
& Senses.

Chap 14.

A.

Arteries
Apple of ye Eye.
Arms.

B.

Body.
Bone.
Beard.
Breath.
Breast.
Bosome
Back.
Backbone.
Belly.
Buttock.
Brains.
Blood
Bowells
Bladder.
Blark.
Browne.
Blow.
Boldness.
Bashfullness.
Behaviour.
Bitterness.
Blushing.

Brow
Beautie

C.

Growth.
Corner of ye Eye
Cheeke.
Countenance.
Chapp.
Chin
Calfe of ye Leg.
Collor.
Caull.
Color.
Confidence.
Compassion
Courtesie.
Civility.
Certainty.
Collerbone.
Carriage.
Cogitation
Consideratio
Complexion

D.

Dreams.
Doubting.
Disposing

R.

Rogue.
Robber.
Ranter.
Rowller.
Rascald.
Roman.
Roundhead.
Rotter.

S.

Son
Sister.
Subject.
Sluggard.
Swearer.
Sabbath breaker
Slave.
Sinner.
Seducer.
Stroller.
Stot.
Swisser.
Spaniard.
Sarazen.
Sapon.
Scythian.
Skulkite.

Saddurie.
Sophister.
Sizer.
Sibollar.
Speaker.
Sessor.
Statesman.
Seducer.
Senator.
~~Swoothsaer~~
~~Skoriff~~
Schismatick.
Stoick.
~~Sextick~~.
Sodomite.

T.

Twins.
Thief.
Turke.
Tartarian.
Trojan.
Tutor.
Tasker
Traytor.

V.

Virgin.
Vestle.
Vitount.
Villaine.
Venetian.
Vitroy.
Umbra.
Vintner.

W.

Wife.
Wedlock.

M.

Marriage.
Mother.
Marquess.
Manslayer.
Madman.
Me.
Midianite.
Moabite.
Muscovite.
Me of arts.
Moderator.
Maior.
Major.
Minister.
Malefactor.
Martyr.
Musketeer.
Murderer.
Magistrate
Mossalian.
Monk.
Manichæan

O.

Orphan.
Offender.
Overseer.
Originalist.

P.

Portion.
Postcritic.
Prince.
Protestor.
Peasant.
Pirate.
Pagan.
Polonian.
Parasite.
Pitt.
Persian
Pope.
Papist.
Papist.
Protestant.
Pharisie.
Philistine.
Puritan.
Presbyter.
Probum.
Pupill.

Pensioner.
Prævaricator.
Proctor.
Parents.
Post-Mr.
Pikeman
Prisoner.
Patriarch.
Pelagian.
Pristillianist.

Q.

Quaker.
Quarroller
Quarter-Mr

N.

Nephew.
Nunn.
Negro.
Novatian.

H.

Husband.
Hair.
Heathen.
Hebrew.
Hibito.
Hittito.
Hungarian.
Hunn.
Hermit.
Hypocrite.
Hollander
Herauld.
Horatyk.

I.

Joynt-heire
Inheritance.
Jade.
Idolator.
Infidell.
Jew.
Iswalild
Irishman
Italian.
Jebusite.
Independent

Justice.
Judge
Foolish.

K

Kindred.
King
Knight Bannaret.
Knight.
Knave.

L.

Lyar.
Layterer.
Lumbard.
Lovito.
Lorturer.
Lieutenant.

f.
g.
father
and mother
great-grand father
great-grand moth.
Generation.
Genealogie.
Gentleman.
Gentile.
German.
Grecian.
Gibbonite
Gallilean.
Generall.
Zealer.
Gipsie.
Gargasite

B

Batholous.
Broome.
Bird { man
maid
chamber.
Brother.
Bastard.
Barron.
Blaxheimer.
Bicorlor.
Babler.
Babylonian
Bishop.
Brittaind.
Bedlam.
Beggar.
Bonomest.
Benjamito.

C.

Consanguinity
Child.
Cousin.
Countryman.
Comonwealth's-
Creator (man
Cutpurse.
Cuckold.

Caldean.
Carnolite
Cardinall
Christian
Clarke.
Cavilloor.
Conduct.
Chantolour.
Constable.
Churchwarde.
Collonell.
Captaine.
Corporall.
Curate.
Canaanite.
Calvinist.
Colestianan.

D.

Daughter.
Duke.
Drunkard.
Doctor.
Dane.
Deacon.
Deamond.
Dr

Divine.
Dark-man.
Donatist.

E.

Espousalls.
Earle.
Esquire.
English-man
Egyptian.
Essean.
Epistorall man
Ensigne.
Emperour.
Epitome.

ff.

ffather.
ffornicator.
fflattorer.
ffrenchman.
ffloretine
ffriar
ffollow.
ffollowtomon.

Stinrup.
Stone.
Swith.
Sword.
Subtraction
Sycamore.

Of Kindreds & titles.

Chap. 13.

V.

Viol.
Virginalls.

W.

Waggon.
Wall.
Wedge.
Wee.
Weight.
Wheelbarrow
Whetstone.
Whip.
Whistle.
Wimble.
Wheele.

T.

-athstone.
-enour.
-imble
-isle.
-reed.
-ool
-ragedy.
-apr.
-eeble.
-rench.
-rumpett
-une.
-urningframe

Y.

Yard.

A.

Ancestors.
Adulterer.
Arabian.
Adamite
Ammonite
Ammonite
Armenian
Assyrian.
Arian.
Antichrist.
Anabaptist
Apostle.
Alderman.
Admirall.
Asiane
Affrican.
American.
Aunt.
Affinity.
Aerian.
Atheist.
Accurate.
Aunt

O.

Oare.
Ordinance.
Organs.
Oven.
Ounce.
Oyle.

P.

Paine.
Paper.
Parchment.
Pattoone
Pork.
Poire.
Pox
Penknife.
Pensill.
Pinkar.
Pike.
Pile.
Pint
Pistoll.
Plaine.
Plaister.
Play.
Plummett.
Point.
Pottle
Poulder

Poulder.
Powle.
Preserve.
Prick.
Prore.
Pike.

Q.

Quarroll.
Quart.
Quarter
Quill.

R.

Rark.
Raile.
Razor.
Raxion.
Riddle.
Rork.
Rod.
Roe.
Rule.

S.

Sackbutt.
Saddle.
Sails.
Saw.
Scales.
Stone.
Screw.
Seame.
Shaume.
Shoares.
Shittle.
Shoafe.
Shute.
Ship.
Snare.
Song
Solder.
Spattula.
Spirit.
Spring.
Square.
Stall.
Staune
Still.
Stick.
Stox
Stilly.
Strike.

Glasso.
Gouge.
Glasing-
(knife.
Grist.
Grindle-
(stone
Gun.

H.

Hammer.
Halter.
Harpe.
Harpsitalls.
Hatches.
Hatchett.
Harrow.
Headpiece.
Hedge.
Hem.
Hide.
Headstall.
Hooks.
Hoops.
Handle.

E.

Inck.
Ingill
Ingraver.
Instrument.
Inke.
Iuice.

K.

Knife.

L.

Lance
League
Lease.
Letter.
Line
Loome.
Lute.
Loape

M.

Mallet.
Manger.
Manche.
Mante.
Mast.
Mattock.
Maukin.
Measure.
Mile.
Mill.
Millstone.
Mould.
Multiplicaton
Musick.
Musket.

N.

Naile
Needle.
Neese.
Net.
Note.
Number.
Numeration.

centimeters
GretagMacbeth
Colors by Munsell Color Services Lab
D50 Illuminant, 2 degree observer
inches

Bason.
Bandiloors.
Bootle.
Bellows.
Ball.
Barr.
Barrow.
Beams.
Bolt.
Bill
Boate.
Bolt.
Bow.
Bop.
Blade.
Broadsword.
Brush.
Bullet.
Bushell.

C.

Cambrell.
Cannon.
Carbine.
Charger.
Chains.

Chaudor.
Chocker.
Chissell.
Cipher.
Cittorne.
Club.
Collar
Colours.
Conserve.
Counter.
Cornett.
Coate.
Crosbow.
Colter.
Cymball.
Cliff
Cable
Cloover.
Comedy.

D.

Dork.
Division.
Dramme.
Droggs.
Drill.
Druggs.
Donatist.

E.

Edge
Elk.
Elson.

F.

Fauchion.
Feather.
Fidle.
Fidlestick.
Figure.
File.
Foote
Framesaw.
Furlong.
Furnace.
Fatt.

G.

Galland.
Gam-ut.
Garth.
Gigginson.
Gill
Gimblet.

Stouko.
Sowou.
Soodo.
Sheafo.
Shork.
Stubblo.
Spoks.
Straw.
Shalo.
Sholbaud

T.

Taros.
Twoshow.
Turfo.
Tenant.
Tilago.
Tatton.
Tame.
Tray.
Thong.
Trough.

Vt V.

Vsthor.

W.

Waino.
Wheelo.
Windowcloth.
Whip { lash. Stork. rough.
Wheato.
Widrow.
Wong.

Y.

Yardo.
Yato
Yoako.

Instruments & things belonging to Artes.

Chap: 12.

A.

Art.
Alk.
Addition.
Author.
Anglewood.
Anvill.
Arrows.
Arrow.
Report.
&c

B.

Bark.
Barkpoire.
Bag
Bagpipe
Base

K.

Kilno.

L.

Lintell.
Land.
Living.
Lathe.
Loape.

M.

Mowdw.
Maunder.
Mark.
Moald
Mault
Maultfouse.
Moulter.
Mutkhill.
Mustorke.
Manger.
Meadow.

N.

Noope.

O.

Oates.

P.

Poase.
Pulse.
Pease.
Plow { beame / share / handle / iron. / man. / staff }
Pasture.
Pailes.
Pin
Pirkforke.
Prop.
Phillor.

Q

Quarnes.

R.

Rake.
Roll.
Rent.
Riddle.
Ryes.
Rails.
Rath.
Rise
Rie.
Ridge.
Reapes.
Reapinghook

S.

Sand.
Sive.
Shakforke.
Shovell.
Swinetoat
Stable.
Stoopfat
Stark.
Stall.
Stake.
Swinglestwe
Sack.
Staddle.
Swath.
Sith.
Sickle
Sheade.

aunbrisman.
oulter.
aster.
art.
ob.
rib.

D.

arnoll.
ung.
ike.
unghill.

E.

ard.
ow-bourd.

H.

Han.
Hail.
Harrow.
Heild.

Harrow.
Hallow.
Furlong.
Hurdle.
Hedger.
Homo.
Hoeshold.

G.

Gebir
Gate.
Grass.
Groundsword.
Grownd.
Goade.
Granarie.
Graine.

J.

Inclosure.

L.

Husbandman.
Hay.
Harvest.
Hayloft
Harrow.
Huske.
Heath.
Hovell.
Hedge.
Hairclath.
Headstall.
Husbandry.
Hurdle.
Hatchet
Hopper.
Horsecollar.

Colors by Munsell Color Services Lab
D50 Illuminant, 2 degree observer

Costingiron.
Crasan.
Chatth.
Cunrot.
Cont.
Crunks.

Waptayes.
Wheelo.-band
Watertable.
Wattle.

Blads.
Boards of oa
(oaks.
Barns.
Barnofloors.
Boams.
Boy.
Bullockhous
Bolt.
Boolls.
Bands.

Off
Husbandry

Chap II.

V.
Victualling-house.
Vtensills.
Vassall.

A
Arable-land.
Apple-tree.
Arms.

C.
Clord.
Commons.
Cottage.
Cork.
Cowhouse.
Costcrane.
Clay.
Cradle.
Come.
Corkle.
Crowndoles.
Chaff.-house.
Chafoing-vate.

W.
Walk.
Wicket.
Window.
Warehouse.
Workhouse.
Washing-tub.
Wyck.

B
Beans
Broadcorns
Barly
Barly.

R.

Rubbish.
Rida
Roofs.
Rafters.
Rundlett.
Rack.
Rug.
Rotk.
Roole.
Rorrons.
Ridgtree.

S.

Stone.
Slate.
Stairs.
Studdy.
Scaffold.
Spittle.
Sooling
Stools.
Soale.
Spiggot.
Spoke.
Spit

Spark.
Skillet.
Strainer.
Sponge.
Sheete.
Snuff.
Snuffers.
Spindle
Skreen.
Sportatles.
Swillingtub.
Skelfe.
Skep.
Streame.
Stoole.
Standkill.
Spoole.
Sissors.
Sawdall.
Smothingiron
Spoone.
Snork.
Shutt.
Sturd.
Storehouse.
Story.
Sinke.
Saucer.

Chaffdish.
Cowar.
Tile.
Tawerne.
Cable. - rope
Trunke.
Tub.
Cap.
Clothingiron.
Trivett.
Tinderbox.
Tinder.
Taxestry.
Tarth.
Thimble.
Troy.
Till.
Turning wheel
Trencher. - rack.

ColorChecker by Munsell Color Services Lab
Colors by Munsell Color Services Lab
D50 Illuminant, 2 degree observer
GoldenThread

Kittkin.
Kettle.
Knoadingtrough.
Kimnell.
Kitt.

L.
Latch.
Lock.
Lintoll.
Lattice.
Latk.
Lardon.
Library.
Lumber.
Lid
Ladle.
Lamp.
Laythorne.
Looking-glass.
Like

M.
Mortar.
Match.
Matt.
Mashfatt.

N.
Nails.
Noodle. — Eg.
Napkin.

O.
Oven. — stone

P.
Pallard.
Pork.
Ponthouse.
Post.
Prop.
Pillar.
Pavement.
Parlour.
Press.
Pannier.
Pipe.
Pigeon.

Pott.
Pann.
Pestell.
Pipkin.
Pillow.
Pallett.
Pivis.
Pin.
Pails
Pantheon.
Pothooks.
Pillowbeer.
Plate.
Pottinger.
Plaister.
Petition.
Pavillion.
Pothis
Platter.

Q.
Quarrell.

D

Door.
Dining-roome.
Desk.
Dripping.
Dripping-pan
Dresser.
Dish.
Dishclout
Distaffe.
Drawer.
Dunne.
Doxie.

E.

Eaves.
Eptinguisher

Ff.

Foundation.
Fore-doore.
Folding-doores.
Furniture.
Frame.
Flasket.
Foot-stoole.

Fforme.
Fireirons.
Flesh hooke.
Fireshovell.
Fforme.
Fosset.
Flint.
Feather bed.
Faines
Floore.

G.

Gate.
Glasse.
Gallowy.
Garnett.
Guttertile
Grate.
Grater.
Gridiron.
Glasrags.
Gallontree.

H.

Howse.
Harbour.
Hinge.
Hall.
Hingle.
Hand-basket.
Hampier.
Hogshead.
Hangings.
Hearth.
Hooke.

I.

Inn.
Iacke.
Iaume.
Joystree.

K

Knocker.
Key.

Colors by Munsell Color Services Lab
Gretag Macbeth
Color Checker
Don Williams
centimeters
inches
Density
D50 Illuminant, 2 degree observer

Bark-doors.
Bolt.
Beams.
Boards.
Bake-house.
Bowk.
Box.
Barkett.
Butt.
Barrell.
Bunghole.
Bodyons.
Bellowes.
Bed.
Blankett.
Bolster.
Bedsticks.
Bodkin.
Boghouse.
Bellmony.
Bread
Buttery.
Boule.
Buttonmoppes.
Bottle
Bagg.
Brush.

C

Cottage.
Chalke.
Corner.
Chinke.
Casement.
Collar.
Chamber.
Closet.
Chaires.
Cushion.
Carpet.
Cupboard.
Cloth.
Chest.
Coffer.
Cabbinett.
Case.
Corke.
Chimney.
Cauldron.
Chafing-dish.
Colander.
Cradle.
Cannopie.

Coverlet.
Curtains.
Chamber-pot
Close-stoole
Candle-stick
Candle.
Comb.
Curling-iron
Cuttkett.
Cobiron. pr.
Curtaine-ring
Castle.
Corkscroft.
Churne.
Charger
Corkinkhole

R.
Radish.
Rosbourys.
Roote.
Rose.
Rosemarie.
Ruborbe.
Rue.

S.
Sage.
Sabory
Sedge.
Sallott.
Sive.
Seedes
Saffron
Sorrell.
Sponage.
Spinage
Spurres.
Smallage.
Sheepheards-
Sours.
Stalke.
Strawberry.
Sparagoose.

T.
Tansie
Thyme
Tulipe
Turnipe.
Time
Thistle.
Treefold.
Toppes.

V.
Vendigreas.
Violett.

W.
Watercresses.
Wormwood.
Woodsorrell.
Woodbind.

Woode.

Y.
Yarrow.
Yellowbourys

Of a House
& Housald-
stuffe.

Chap: 10.

A.
Arth.
Andiron.
Applerakambe.

B
Building.
Barr
Brick.

G.

Garlick.
Gilliflower.
Gillivor.
Groonosauo.
Grass.

H.

Hoanbo.
Hoanbagrass.
Homlock.
Hompo.
Honbanima
Honbaino.
Houglooko.
Hyssop.

I.

Fuiso

K

Kork.

L.

Lavendor.
Loaves.
Looko.
Lillio.
Londonpride.
Lettice.

M.

Majoram.
Mallows.
Madnip.
Marrigold.
Maulds.
Mortuary.
Mollon.
Mint.
Moly
Monkhood.
Mugwort
Mustard.
Muttontomb.
Mushrooms
Moss.

N.

Nottlo.

O.

Onion.

P.

Parsly.
Parsnip.
Pianuckle.
Pinks.
Pinkinoy.
Periwinkle.
Pilling.
Pith.
Poppio.
Primerose
Pumpion.

Q

Of Sloanbs & Woodos. & Flonoars.

Chap: 9.

A.

Artichoks.
Annios.
Angellico.

B.

Beanefoots.
Broome.
Bugloss.
Burriago.
Bottons.
Borrys.
Burdock.
Buttonbosh.
Bush.

C.

Carrot.
Cabbidge.
Colewoarts.
Colloflonors.
Cucumbor.
Curran.
Camomoile.
Coltsfoot.
Couslops.
Cumation.
Chickingwo
Crotus.
Crowflowors.
Cottle.
Crownoodles.
Cullobins.
Chesnutt.
Collandor.

D.

Dill.
Drunkenjohn.
Daisio.
Dock.
Darnell.
Dogberrios.
Downe.
Dandwoode.
Dragontwoo.

E.

Emmanis.

ff.

ffennell.
ffoxe.
ffinkell.
fflowor.
fflowerdeluce.

W.

Waurmte.

Wooh.

Water.

Wase.

Whirlepoole.

Wost.

Westwind.

Wind.

Weather.

Whirlewind.

Way.

Wolk.

Wolldrag.

Wetting.

Z.

Zodiark.

Zone.

Of ffishes.

Chap: 8.

vide Nomen-
-clatorem.

pag 43

quibus addant

O.

Ocean.
Opposition.
Orcades

Pan.
Pallas
Pond. Plutus.
Poole. Polyhymnia.
Path. Pixe.
Pudgell.
Pump.
Plannet.
Pole.
Pistes.
Proteus.
Plaine.
Pollux.
Palaemon
Priapus
Pluto
Proserpina.

Q.

Quarter.
Quartile.
Quintile.
Quintum.

R.

Rain.
Rainbow.
River.
Rivulett.
Rain.

Rock
Rattle.
Rundlet.

S.

Sand.
Seawood.
Sea.
Starling.
Sedge.
Skie.
Shoke
Sighes.
Sunn.
shallow.
Smoake.
Soote.
Soake.
South.
Southwind.
Storms.
Snow.
Showre
Shining.
Solsticium.
Spring.
Stars.
Storpio.
Sagittarius.
Saturne
Sol.

Seasonstairs
Septentrionals
Syrius
Sroat.
Septile.
Semisextile
Swiming
Silvanus.
Silenus
Quadrate.

T

Tempest.
Thunder.
Thunderbolt.
Tooth.
Turfe.
Taurus.
Tridotile.
Twins.
Thetis.
Tithonus.
Thalia.
Terpsithore.

V

Valley.
Venus.
Virgo.
Virgins-spike
Vulcan
Vesta.
Urania.

E.

Embers.
Eclipse.
East.
East wind.
Earth.
Earthquake.
Euphrosyne
Erato.
Euterpe.

F.

Fire.
Flame.
Flash.
Firebrand.
Fountains.
Frost.
Fowell.
Furnace.
Field.
Flowers.
Ford.
Fen.
Flood.
Firmament
Faunus

G.

Gravell.
God
Goddess.
Grove.

H.

Hemisphere
Heaven.
House.
Earth.
Heat
Heath.
Horizon.
Hail.
Hill.
Hamadryades
Hebe.

I.

Ice
Iris
Inclosure.
Jupiter.
Juno.

K

L

Light.
Lightning.
Lake.
Lamp.

Land
Lains
Leo.
Libra
Luna.
Lucifer.
Heart.
Lions Tail.
Lurina.

M

Marsh.
Mist
Moon.
Moors.
Mountains.
Marl.
Moistness.
Mortar.
Mars.
Mercury.
Minerva.
Muses.
Melpomene

N.

North.
Northwind.
Neptune
Naiades.
Nemesis.

D50 Illuminant, 2 degree observer
Colors by Munsell Color Services Lab
GretagMacbeth
Don Williams
inches
centimeters
Density

Chap. 7.

V.

Venome.
Vomit.
Vntome.

W.

Want.
Won.
Whitlaw
Windy.
Wolfe.
Wood-evill.
Wormes.
Wound.

Ye:

Yellowes

Bellona.

C.

Cloud.
Coale.
Constellation
Clay
Chalke.
Cliffe.
Courtrut.
Candle.
Cazons.
Channell.
Cork.
Conduit.
Comet.
Cantor.
Caxiriorno.
Conjunction.
Castor.
Cupid.
Cares
Callioxo.
Clio.

D.

Dearth.
Drox.
Dekugo.
Darkness.
Dow.
Damm.
Drowning.
Dögstar.
Diana.

Clou: Astraea
Allum.
Askos.
Aequinoctiall Cline
Aries.
Aquarius.
Aldebran.
Antares.
Aeolus.
Apollo.
Aesculapius.
Aurora.
Aglaia.

B.

Brightness.
Brand.
Burning
Baio
Banke.
Bridge.
Brooke.
Bath.
Burket.
Bulwarke.
Boare.star
Bulls eye.
Biquintile.
Barkus.

Phisick.
Phisitian.
Plaister.
Plowrisie.
Plague.
Pimples.
Poxous
Poysoning
Postilente
Prick.
Purge.
Purblinde.
Phlebotomie
Purples.
Push.

Q.

Quinsie.

R.

Relaps.
Rheums
Ringworms

Rottonness
Rate.
Runing of ye reines.
Running.

S.

Salve
Sadness.
Saddleback
Stab.
Starve.
Stalk.
Stalkhead.
Swoathing.
Struse.
Struvie.
Shingles.
Sigh.
Sinnowsyn
Straitt Lung
Skin.
Sobbs.
Sorrow.
Sickness.
Sciatita.
Soke.
Snoozing.
Splaifooted.
Squadzifloma
Squinzie

Squinteyed
Small pox.
Sploons.
Sting.
Straine.
Stunted.
Sturdie.
Stitch
Stroke.
Stammering
Surfoit
Swinepox
Swolning.
Soaring
Starknes.

T

Taisevil.
Tetterwoorm
Tissick
Tooth-ach
Toothless
Typpany

G.

Gangot.
Galdness.
Gobbertooth.
Gorbellied.
Gore-blood.
Gout
Gangreene.
Greatnessed.
Greife.
Grones.
Ground-Ague
Gunshott.

H.

Hard skin.
Headache.
Helwering.
Hirkells.
Hives.

I.

Jaundice.
Impostume.
Joinath.
Joulthead
Itching.

K.

Kernell.
Kingspell.

L.

Lamness.
Leprosie.
Lethargie
Lask
Letting blood
Lifting
Loosenesse.
Lunatick.

M.

Madness.
Mangie
Maimed.
Matter.
Meagrim.
~~Measles~~
Mezels.
Melancholly.
Mother.
Mumion

N.

~~Nails~~
Nolimetangere
Numness.

O

Ondeyed.
Onion.

P.

Pains
Palsness.
Palsie.
Poxtle.

Battlohand.
Bilo.
Bilo.
Blaundors.
Bloamish.
Blooding.
Bloaroyock.
Blind.
Blistor.
Bloodyflup.
Bloodyfalling.
Bloodshot.
Blubberlipd
Blow.
Brokenhead.
Bruiso.
Burno.
Burstonnoss.

C.

Chafo
Catarro

Chinough.
Chirurgion.
Chollor.
Cankor.
Clistor.
Coaro
Colo
Colkirk.
Consumpton
Convulsion.
Corruption
Costivenos
Cough.
Crano.
Crookednos.
Crufht.
Crumpfooted.
Cut.

D

Dead flesh.
Deafo.
Death.
Disease.
Dizzinos.

Dotoago.
Drowsio
Dumb
Drowsinos.

E.

ff.

Fainting.
Fallingsickness
Farcio.
ffeaver.
ffistularo.
ffit.
ffleagm.
ffoolishnos.
fforetho.
ffrenzipsy
ffromito.

O

Organ.
Officers.

P.

Passover
Pew
Pillar
Pinacle.
Petition
Praier.
Preacher.
Priest.
Prophett.
Prophesie.
Psalms.
Psaltery.
Pulpit.

Q.

Quorister.
Quire.

R.

Reader.

S.

Sacrament.
Sacrifice.
Sanctuary
Schoolhouse.
Screene.
Scripture.
Scripture.
Seate.
Sermon.
Singing.
Singingman.
Song.
Sprinkling.
Stairs.
Statue.
Steeple.

T.

Table.
Temple.
Testament
Time.
Thanksgiving

V.

Verse
Vestrie
Viall.

W.

Water
Washing
Weathercock.
Wine.
Witnesse.

Of Diseases.

Chap. 6.

A.

Ach.
Accident.
Affliction.
Agues.
Amazednesse
Anguaile
Anguish.
Apoplexie.
Apothecaries

B.

Balt.
Balme.
Balsome.
Bodie.
Bolting.

Of a Church.

Chap 5

A.

Alley.
Alter.
Antiom.
Almes.
Apostoll.

B.

Baptisme.
Bell. stru
Bells { steambow. trams. roxs. rtkoob.
Benediction.
Bible.
Bier.
Bishop
Breach.

C.

Chantor.
Chappell.
Chantroll.
Chastor.
Chimes.

Church { warden yard
Church { south

Circumcision
Coffin
Communion
Congregation
Confession
Clerk.
Consecration.
Crotchett.
Cure.
Ceremony.

D.

Deacon.
Deputation.
Desk.
Doors.

E.

Elders.
Epitaph.
Evangelist.
Eucharist.

F.

ffunerall.
ffrankincense
ffont.

G.

God { ffather mother.
Gospell.
Grave
Gravestone.

H.

Hallow.
Hearse.
Hymn.

I.

Images.
Imposition
Intercession

L.

Leades.
Library.
Liturgie.
Lute.

M.

Monument.
Magick.

Handes.
Hatt.
Hatband.
Hempes.
Holland.
Hood.
Ham.

G.

Garlott.
Garsio.

K.

Korthoiso.
Koorok.
Knoostrings.

L.

Lato
Lawno.
Linsings
Linning.
Latchett.

M.

Maffo.
Muffler.

N

Norfloth.
Norkjomell.

P.

Parkcloth.
Pettiroate.
Pomwigg
Pillionfloth.
Pinnes
Pinn.
Porkett.
Point.
Purpolo.
Phillot

R.

Raile.
Ridoingcloths
Riblings.

S.

Sackcloth.
Scarfe.
Scarlott.
Sailorcloth.
Stockcloth.
Sattaine.
Skirt
Shoo
Shoestring.
Silke.
Skirt
Sleeve
Slipper.
Smock.

Spangle.
Spunk.
Sorkes.
Solo.
Stomacher.
Stockins.
Stuff
Sarcenet.
Stripe.
Scarfe
Scarlet
Scarge.

T

Tiffany
Tagg.

V

Velvet

W.

Wastcoate.
Wastband.
Whisko.
Windowcloth.
Woollen.
Woolt.

Y.

Yarne.

Boasts.
Chax: 3:
vide Nomen
thetuam
pag: 39.

Cloathes.
Chax: 4.
N.
Noxamwell.
Nyron

B.
Band
~~Bandgrard~~
Bibb.
Bondgrard.
Boots.
Bxarolet
Bulkin.
Button
Brooches.
Broadcloth.

C.
Callico.
Carr.
Chirurgo
Cassock.
Cambrick.
Chains.
Cloake.
Cloth.
Coats.
Coife
Cotton.
Collar.
Crosscloth

Clogs.
Cuffs.

D.
Diapers.
Doublett.
Drawers.
Dressing

E.
Ears-ring

ff.
ffustian.
ffan.
fore-broadcloth
forecloth.

G.
Garment.
Girdles.
Gloves
Gowns.
Gauntr.
Gallons.

H.
Hairolace.
Handkerchiefs
Hairecloth.
Hangingsleeves

R.

Reaper.
Riber.
Roper.
Ringer.

S.

Scavenger.
Schoolmaster.
Scrivener.
Seaman.
Sexton.
Sergeant.
Setterwingman.
Servant.
Secretario.
Shoeshoard.
Shoemaker.
Sievemaker.
Slater.
Smith
Sophister.
Souldier.
Sower.
Stagerplayer.
Swineherd.

T.

Taylor.
Thresher.

Tinker.
Tradesman.
Turner.
Tragedian

V.

Vsurer.

W.

Waterman.
Weaver.
Wheelwright.

Y.

Yeoman.

Birdes.

Chap: 2.

vide Nomenclaturam, pag: 37.

E

Engineer.

F.

Falconer.
Farrier.
Feathermaker
Fenton.
Fiddler.
Fisher.
Fowler.

G.

Gardiner.
Golder.
Glasier.
Goatherd.
Goaler.
Goldsmith.
Grazier.
Grocer.
Grosier.
Glover.

H.

Hoardsman
Historian.
Holster.
Horseriders.
Hunter.
Huntsman
Husbandman
Hostis

J.

Jaylor.
Jewellor.
Inkeeper
Joyner.
Ironmonger
Ironmaker

K.

Knitter

L

Labourer.
Lawyer.
Limner.
Logician.

M.

Mariner.
Mason.
Mathematician
Maulster.
Merchant.
Mercer
Midwife.
Milner.

N.

Negromancer.
Notchboard.

O

Ostler.
Organist.

P.

Painter.
Paramator.
Poder.
Perfumer
Philosopher.
Physitian.
Pilott.
Piper.
Plowman.
Potter.
Proather.
Printer.
Pumpwright.

R.

Rudiator.

D50 Illuminant, 2 degree observer
Colors by Munsell Color Services Lab
Don Williams
GoldenThread

Ro: Soveral things ton-
tained under thos
veneral heads.

Artes, Trades,
& Sciences.

Chap 1.

A

Apothecary.
Chirurgion.
Architect.
Author.
Arithmetitian.
Artificer.
Armourer.
Astrologer.
Astronomer.

B.

Baker.
Bailif.
Barber.
Beggar.
Bellfounder.
Boatman.
Bookbinder.
Bowyer.
Brasier.
Brewster.
Brickmaker.
Broker.
Butcher
Butler
Bolmaker.
Bonesetter.

C

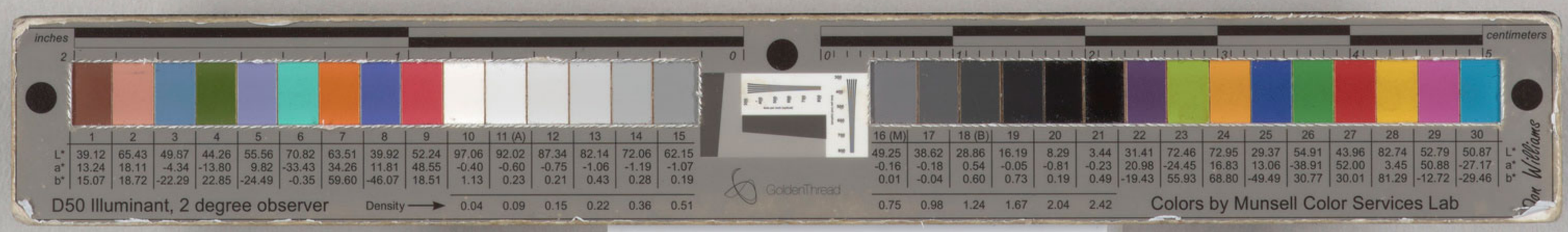
Carpenter.
Carrier.
Chandler.
Chirurgion.
Coalman.
Cobler.
Comedian.
Cook.
Cooper.
Cryer.
Clarke.
Cuboarder.
Currier.
Clothier.
Confectioner.

D.

Diar.
Diving.
Doctor.
Draper.
Druggster.

No. III.





	1	2	3	4	5	6	7	8	9	10	11 (A)	12	13	14	15
L*	39.12	65.43	49.87	44.26	55.56	70.82	63.51	39.92	52.24	97.06	92.02	87.34	82.14	72.06	62.15
a*	13.24	18.11	-4.34	-13.80	9.82	-33.43	34.26	11.81	48.55	-0.40	-0.60	-0.75	-1.06	-1.19	-1.07
b*	15.07	18.72	-22.29	22.85	-24.49	-0.35	59.60	-46.07	18.51	1.13	0.23	0.21	0.43	0.28	0.19
Density										0.04	0.09	0.15	0.22	0.36	0.51

	16 (M)	17	18 (B)	19	20	21	22	23	24	25	26	27	28	29	30
L*	49.25	38.62	28.86	16.19	8.29	3.44	31.41	72.46	72.95	29.37	54.91	43.96	82.74	52.79	50.87
a*	-0.16	-0.18	0.54	-0.05	-0.81	-0.23	20.98	-24.45	16.83	13.06	-38.91	52.00	3.45	50.88	-27.17
b*	0.01	-0.04	0.60	0.73	0.19	0.49	-19.43	55.93	68.80	-49.49	30.77	30.01	81.29	-12.72	-29.46
Density	0.75	0.98	1.24	1.67	2.04	2.42									