EXERCISE BOOK.

For Pointed Portraits
Likeness.
outlines of faces

Name _____

Subject _____

School _____

f. 2v

Just perceptible interval may be ~~taken at minute of a degree~~

1′ = 1 inch at 100 yards about, really at 95.5 yards

= 0.1 inch at 30 feet, = 0.1 inch viewed in mirror 15 feet off

= 1/8 at 12.5 yards or 37.5 feet or in mirror 19 feet off

= 1/16th inch ---- 9½ feet off

arc 1′ = $\frac{\pi r}{180 \times 60}$ = $\frac{\pi r}{10800}$ $r = \frac{10800}{\pi} \times$ arc 1′

log 10800 = 4.0332238
log π = log 3.1416 = 0.4971509
log 3437.7 = 3.5362729

rad = 3438 × arc 1′.

1 metre = 39.37 inches.
log 39.37 = 1.5952
log 3.438 = 0.5363
log 135.4 = 2.1315 inches
3.438 metres = 135.4 inches

~~1 millimetre at 34.38 metres~~
~~or 47.19 m in mirror~~

direct vision 1 millimetre at 3 metres + 438 millimetres, say 3½ metres

mirror vision 1.719 metre 1¾ metres

direct vision at 135.4 inches = 11.3 feet = 11 feet 4 inches

1 mm, mirror ~~6.77 feet say 6 ft 9 inch dist of mirror~~
= 5 ft 8 in distance of mirror

Blurring

Supposed distribution on either side of a point

1	2	1
2	4	2
1	2	1

bad & complicated

	½	1	½	
½	2	2	2	½
1	2	4	2	1
½	2	2	2	
	½	1	½	

(reject)

on either side of a line

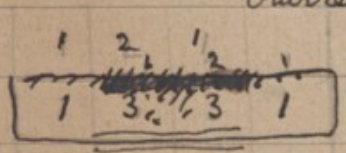
	4	8	4 = 16
Say	1	2	1 = 4

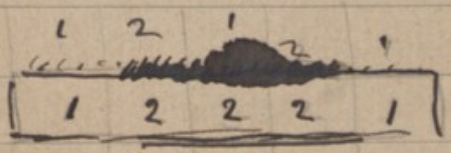
	3	8	10	8	3	= 32
Say	1	2	3	2	1	= 9

on either side of two lines at distances apart of 1 2 3 4 just perceptible intervals

blurred

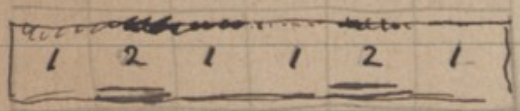
(1)

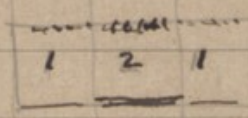


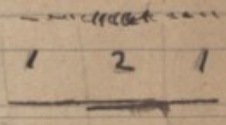


(2)

(3)



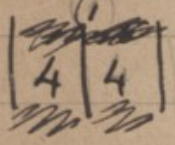




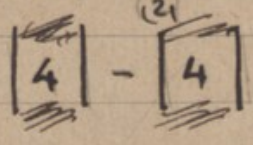
(4)

not blurred

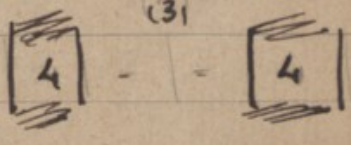
(1)



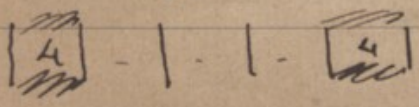
(2)



(3)

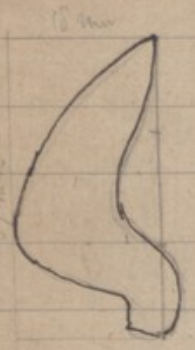


(4)

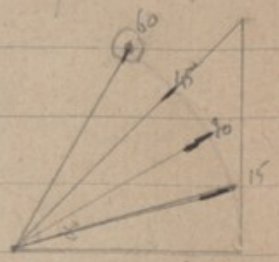


From Letter R. Lect.
May 25 1888

All Lacustrés & many Lacustrés fall within these limits



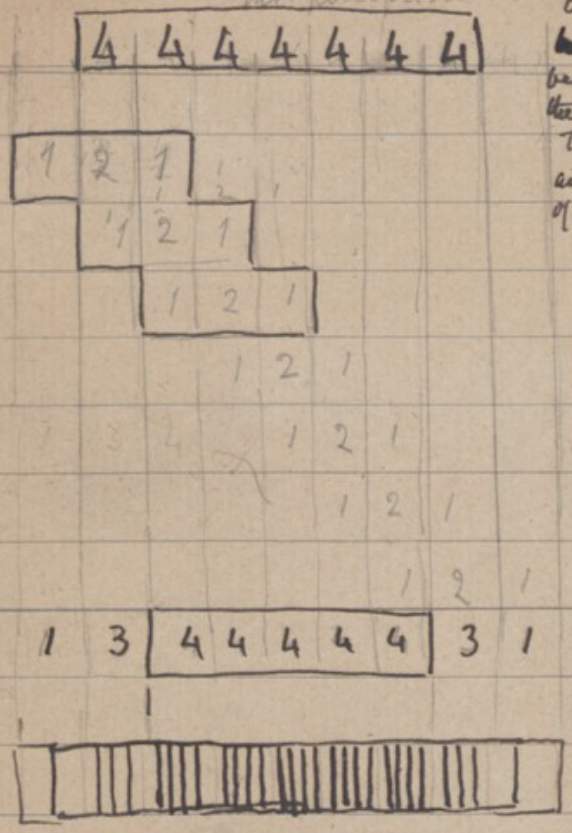
About ⅓ the space is filled. Whole space = 37 × 18 sq mm
say 37 × 10 = 370 sq mm of actual space



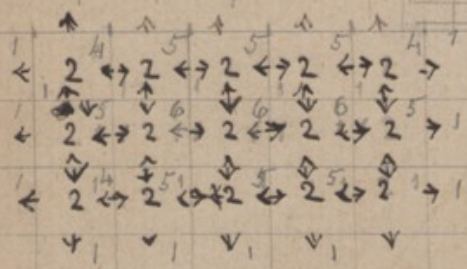
The angle of earhole, subtended by upper rim 'Bord' and twist-lips, lies in the 18 cases of Bertillon's profiles (Plates 35-36) between 30° & 45°, on a range of 15°

	1	1	1	1		
1	24	25	25	24	1	
1	25	26	26	25	1	
1	25	26	26	25	1	
1	24	25	25	24	1	
	1	1	1	1		

The effect of blurring a band of tint No 4 which is divided into just perceptible intervals and then blurred as by wetting. If each small square in vertical column becomes turned into 3 having the tints 1, 2, 1 the mass of the band is unchanged but the column at either side becomes transformed into 2 having the tints 1, 3 and 3, 1 respectively. This gives a penumbral edge to it and a more or less doubtful definition of 2 intervals in width instead of 1.



actual fact



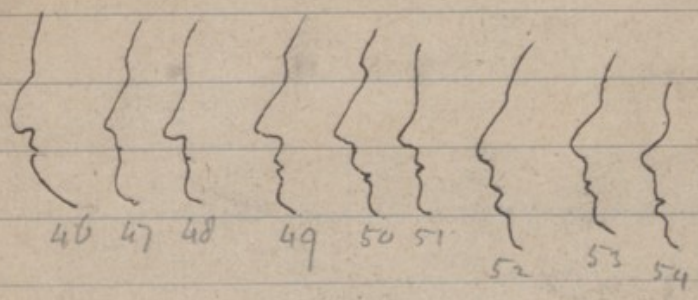
№	1 – 6	page B
	7 – 31	C
	32 – 45	D
	46 – 66	A

This is the beginning of the profile

Plate 33

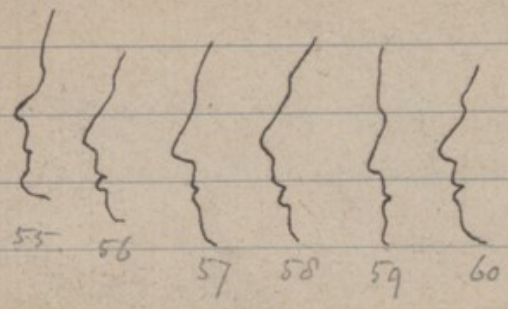
f.6 (A)

Plate 4



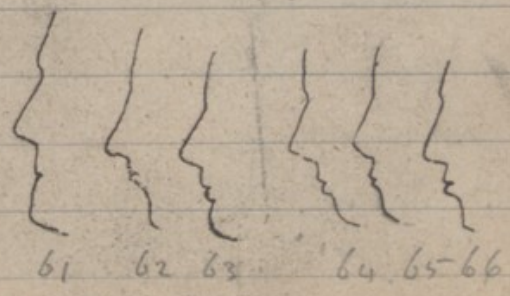
33

32



32

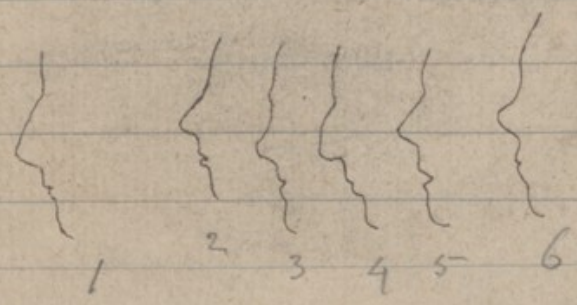
31



31

also see before

plate 34

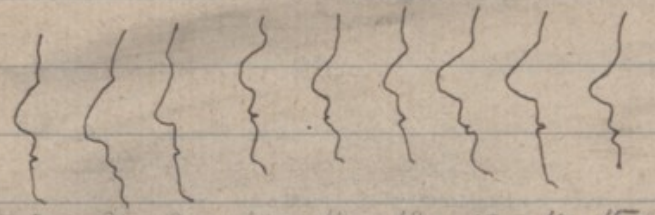


Plate

34

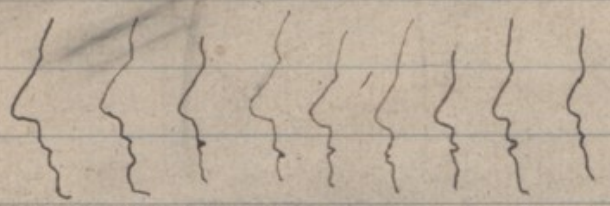
Plate.

35



7 8 9 10 11 12 13 14 15

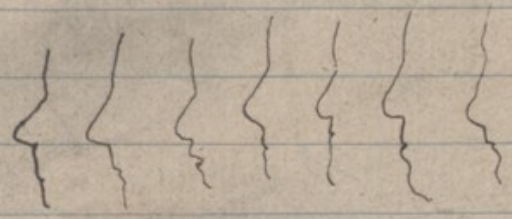
36



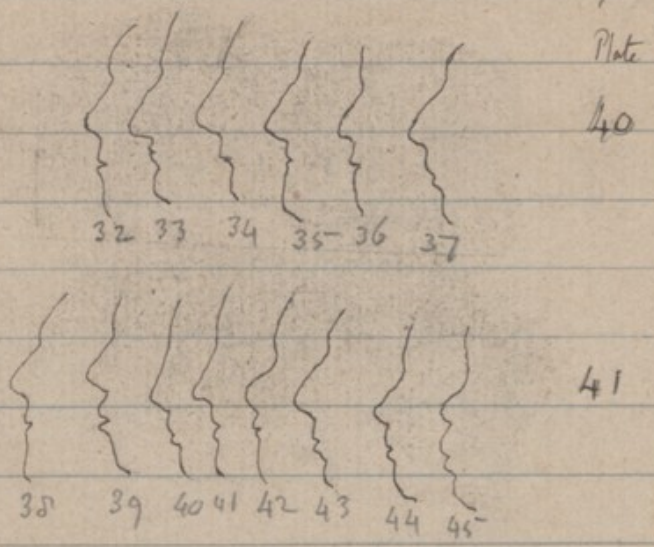
16 17 18 19 20 21 22 23 24

There are no profiles in the intermediate plates

39



25 26 27 28 29 30 31



The foregoing are all the profiles in Bertillon; their numbers are

Plate	Nos
31	6
32	6
33	9
34	~~6~~
35	9
36	9
No profiles between	—
39	7
40	6
41	8
Total	65

There are many possible hindrances to discrimination between objects, such as distance, obscurity, dark, fog, ~~fatigue~~ from the amount of each [illegible] of which, theoretically, at least, ~~may~~ exact measurement and the measurement of his expression, the hand of the hindrance. With the hindrance ~~[illegible]~~ is sufficiently great ~~[illegible]~~ the power of discrimination decreases; distance may render the two persons ~~[illegible]~~ quite indistinguishable, so may obscurity, fog, &c. At intermediate stages ~~the power~~ of ~~discrimination is lessened~~, a stranger ~~may~~ be mistaken for a friend, ~~[illegible]~~ but it will not be wholly abolished. ~~and~~ There will always be some ~~a certain~~ definite amount of hindrance, ~~that will~~ sufficient to prevent and only just to prevent discrimination ~~between~~ two specified and ~~so what resembling~~ objects. If they are greatly alike the hindrance ~~needed~~ will be small, if slightly alike it will be greater; ~~and~~ speaking generally, ~~the~~ a measure of ~~correct~~ of hindrance will be ~~an~~ an important item in the measurement of resemblance. ~~It will be the only item, if the pictures are of the same size when compared.~~ ~~Otherwise~~ Resemblance however takes no count of the size of the objects compared, ~~[illegible]~~ they may be large or small or one may be larger than the other small without affecting ~~resemblance~~ it. The unit of resemblance is therefore a compound one, partly dependent on the size or distance of the objects compared, or more briefly on the angle they respectively subtend and partly on the hindrances interposed before the power of discrimination between them vanishes, and their difference is just-, or only just not discernible.

The conception is unfamiliar and ~~hard~~ most easily will be explained by beginning with the simplest case, say that of two copies on the same scale of a single picture, how can their resemblance be measured. Provide a test card to be laid by the portraits and be viewed at the same time. ~~A set of gradations~~

^b)

A black lead pencil is 1/4 inch diameter

1' = 1 inch in 3448 inches

30' = 1 inch in 114.7 inches

= 1/4 inch in 28.7 inches (say 28 3/4)

That is a pencil subtends 30' at 28.7 (say 29) inches

I have blackened a strip between 2 knots on it, at that distance apart

ARITHMETICAL TABLES.

Numeration Table.

Units 1
Tens 12
Hundreds 123
Thousands.....1,234
Tens of Thousands 12,345
Hundreds of Thousands..123,456
Millions 1,234,567
Tens of Millions 12,345,678
Hundreds of Millions 123,456,788

Sterling Money Table.

4 Farthings ....1 Penny ..d.
12 Pence .....1 Shilling ..s.
2 Shillings .....1 Florin
2 Sh. & Sixpence 1 Half Crown
5 Shillings .....1 Crown ..cr.
10 Shillings .....1 Half Sov.
20 Shillings, 1 Sov. 1 Pound ..£
21 Shillings .....1 Guinea

Arithmetical Signs.

+ Plus; Sign of Addition.
— Minus; Sign of Subtraction
× Sign of Multiplication
÷ Sign of Division
= Sign of Equality
: : : : Sign of Proportion
√ Sign of the Square Root
∛ Sign of the Cube Root
° Degree, ′ Minute, ″ Second
∴ Therefore ∵ Because

Troy Weight.

For Gold, Silver and Jewels.

24 Grains .... 1 Pennywgt. *dwt.*
20 Pennywgts. 1 Ounce .....*oz.*
12 Ounces .... 1 Pound .....*lb.*

Apothecaries' Weight.

For Mixing Medicines.

20 Grains ....1 Scruple ....*scr.*
3 Scruples ..1 Drachm ....*dr.*
8 Drachms ..1 Ounce .....*oz.*
12 Ounces ....1 Pound .....*lb.*

Avoirdupois Weight.

For all Goods except Gold, Silver and Jewels.

16 Drachms 1 Ounce .....*oz.*
16 Ounces 1 Pound .....*lb.*
14 Pounds 1 Stone .....*st.*
28 Pounds 1 Quarter .....*qr.*
4 Quarters 1 Hundredwt...*cwt.*
20 Cwt. ....1 Ton .....*tn.*

Hay and Straw Weight.

36 lb. Straw .....1 Truss.
56 lb. Old Hay .....1 Truss.
60 lb. New Hay .....1 Truss.
36 Trusses .....1 Load.

Long or Lineal Measure.

12 Lines .....1 Inch .....*in.*
12 inches.....1 Foot .....*ft.*
3 Feet .....1 Yard.....*yd.*
2 Yards .....1 Fathom ....*f.*
5½ Yards .....1 Pole or Perch.
40 Poles .....1 Furlong ..*fur.*
8 Furlongs or 1760 Yds..1 Mile

Cloth Measure.

2¼ Inches....1 Nail.
4 Nails ....1 Quarter of a Yard
4 Quarters..1 Yard.

Solid or Cubic Measure.

1728 Cubic Inches 1 Cubic Foot
27 Cubic Feet ..1 Cubic Yard
24¾ Cubic Feet ..1 Solid Perch mason's work
12 Cubic Feet ..1 Solid Perch brickwork

Imperial Heaped Measure.

	Avoird. of Water.	lb.
8 Gallons	1 Bushel	80
3 Bushels	1 Sack	240
12 Sacks	1 Chaldron	2880

Imperial Dry Measure.

	Avoird. of Water.	lb. oz.
2 Glasses	1 Noggin	0 5
2 Noggin	1 Pint	[illegible]
2 Pints	1 Quart	[illegible]
4 Quarts	1 Gallon	[illegible]
2 Gallons	1 Peck	[illegible]
4 Pecks	1 Bushel	[illegible]
8 Bushels	1 Quarter	[illegible]

Square Measure

144 Square Inches 1 Square Foot
9 Square Feet ..1 Square Yard
30¼ Square Yards 1 Square Pole
40 Square Poles..1 Rood
4 Roods .....1 Acre.

Table of Motion.

60 Seconds (″) ....1 Minute
60 Minutes (′) ....1 Degree
30 Degrees (°) ....1 Sign
12 Signs or 360° ....the circle of the earth

Table of Time.

60 Seconds.....1 Minute
60 Minutes .....1 Hour
24 Hours.....1 Day
7 Days .....1 Week
4 Weeks .....1 Month
365 Days .....1 Year
366 Days .....1 Leap Year
52 Weeks .....1 Year
12 Calendar or
13 Lunar Months..1 Year

Days in the Months.

Thirty days hath September,
April, June, and November,
All the rest have 31,
Excepting February alone,
Which has but 28 days clear,
And 29 in each leap year.

MULTIPLICATION TABLE.

Twice	3 times	4 times	5 times	6 times	7 times	8 times	9 times	10 times	11 times	12 times
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7 ,, 14	7 ,, 21	7 ,, 28	7 ,, 35	7 ,, 42	7 ,, 49	7 ,, 56	7 ,, 63	7 ,, 70	7 ,, [illegible]	[illegible]
8 ,, 16	8 ,, 24	8 ,, 32	8 ,, 40	8 ,, 48	8 ,, 56	8 ,, 64	8 ,, 72	8 ,, 80	8 ,, [illegible]	[illegible]
9 ,, 18	9 ,, 27	9 ,, 36	9 ,, 45	9 ,, 54	9 ,, 63	9 ,, 72	9 ,, 81	9 ,, 90	9 ,, [illegible]	[illegible]
10 ,, 20	10 ,, 30	10 ,, 40	10 ,, 50	10 ,, 60	10 ,, 70	10 ,, 80	10 ,, 90	10 ,, 100	10 ,, 110	10 ,, 120
11 ,, 22	11 ,, 33	11 ,, 44	11 ,, 55	11 ,, 66	11 ,, 77	11 ,, 88	11 ,, 99	11 ,, 110	11 ,, 121	11 ,, 132
12 ,, 24	12 ,, 36	12 ,, 48	12 ,, 60	12 ,, 72	12 ,, 84	12 ,, 96	12 ,, 108	12 ,, 120	12 ,, 132	12 ,, 144

f. 1

FOR ONE PERSON ONLY.

Royal Institution,

ALBEMARLE STREET, W.

Admit .....

On Friday Evening, the *190*

The Doors open at Eight o'Clock.

..... M. R. I.

NOT TRA[redacted]BLE, nor ca[redacted]TE be altered, and it cannot be use[redacted]erson under F[redacted]rs of Age.

[redacted]o Member t[redacted] than TWO C[redacted]he same E[redacted]

N.[redacted] by the Boa[redacted]gers—"That th[redacted] the Theatr[redacted] Institution be [redacted]riday Evenin[redacted]HT o'CLOCK."

And—"That Five or more Front Rows of Seats be reserved to MEMBERS AND VIS[redacted]NVITED BY THE BOARD OF MANAGERS, on Friday Evenings, until TEN MINUTES BEFORE N[redacted]E by the Theatre Clock.

THE DISCOURSE BEGINS AT 9 O'CLOCK.

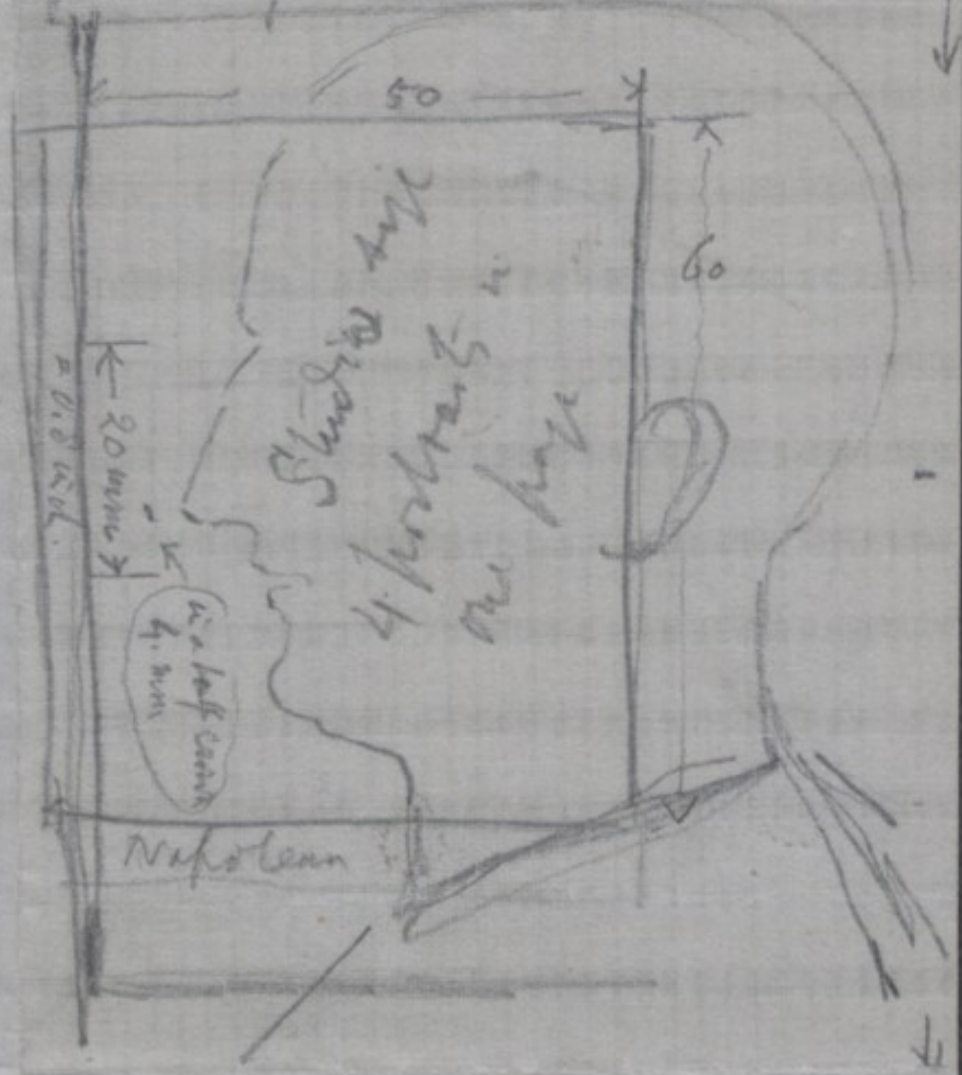
f. 2av

Blurrers

Apparatus
for measure of resemblance

f. 3r

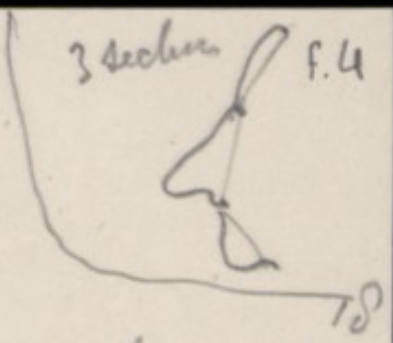
Profiles of Metal Tablets 85 × 105 mm



f. 3v

quality ~~[illegible]~~ angle

Forehead	1–10 Consonants	1–3 Vowels	1– max Contoursals



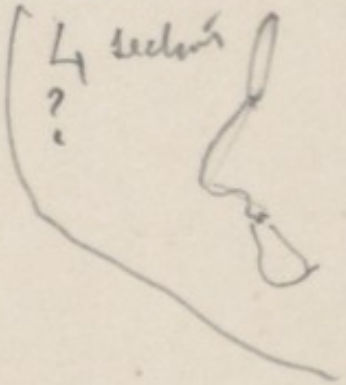
Consonants b ? d f g h k l m n p q r s t v x z

vowels a, e, i, o, u, ai, ou eu

forehead

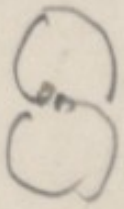
nose

chin

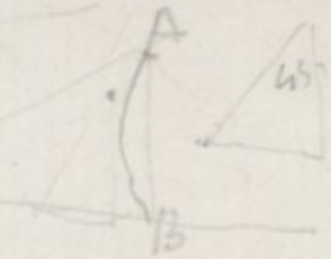


	quality ×	size	=	number Total		bellies
forehead	5	2		10		7 × 3 = 21
nose	5	2		10		21
chin				10		21
						63
				30	separate pieces	

the middle only

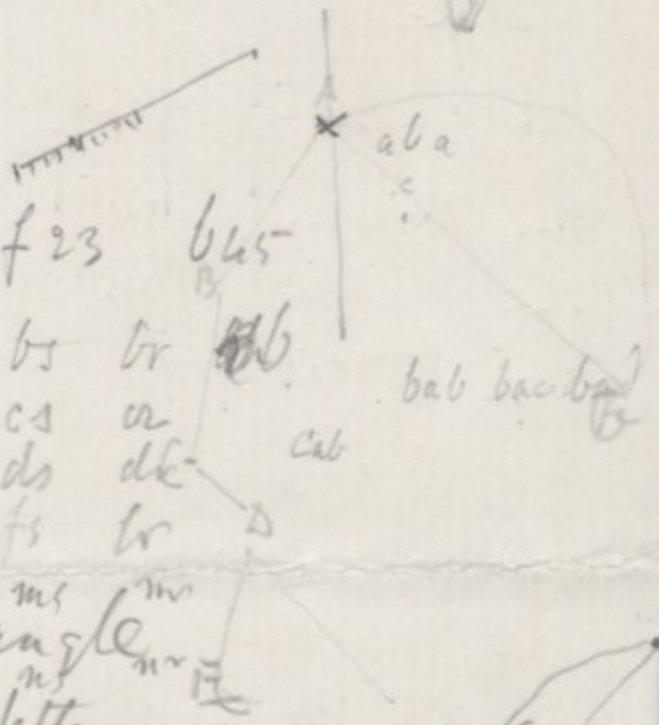


Length A to B
angle to vertical of chord



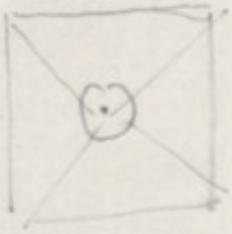
Forehead
Nose
Upper lip
Lower lip & chin

2f 3c 4d 1e

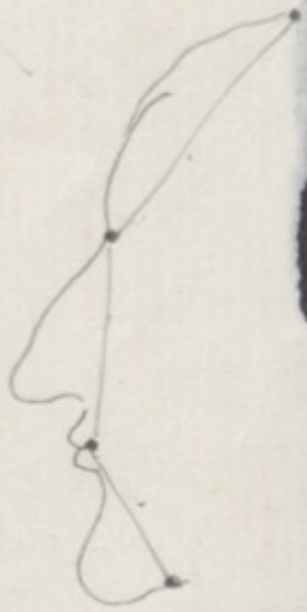


f 23 b 45

bs br bb
cs cr
ds dr
fs fr
ms mr
ns nr
ps pr
qs qr
ts tr
vs vr



type letter	length figure	angle letter



~~ba bai bei bei bob bab~~ 9 ~~10~~ 9

father baby bay bow

ba ~~bee~~ bei bo bu boy beu bowe
bough

~~ca cee ci co cu oi~~

da de di do du

fa fe fi fo fu

ga ge gi go gu

ha he hi ho hu

ka ke ki ko ku

la le li lo lu

ma

pia fr

pa

ra qaki dqqu bola fiku

sa ds dr

ta cs cr

va omit ss rr

14 3×14 42
− 2
40

14 types 126 types

9 lengths 9 lengths of chord

14 angles of chord

Jewish Portraits.
F. Galton
June 1906.

f. 6r

F. Galton Esq,

D. C. L. F. R. S.

42 Rutland Gate

Hyde Park

	1	2	3	4	5	6	7	8	9	0
b	RAD: 2 BACK	RAD: 2 VERT'L	RAD: 2 FOR'DS	RAD: 6 BACK	RAD: 6 VERT'L	RAD: 6 FOR'DS	RAD: 10 BACK	RAD: 10 VERT'L	RAD: 10 FOR'DS	STR'T
g	SLIGHT SIN'S	SLIGHT C.CAVE	SLIGHT C.VEX	MEDIUM SIN'S	MARKED C.CAVE	MARKED C.VEX	UPPR 3rd C.VEX	LOWR 3rd C.VEX		
n	RAD: 2 STR'T	RAD 2 SIN'S	RAD: 2 C.VEX	RAD: 6 STR'T	RAD: 6 SIN'S	RAD: 6 C'VEX	RAD: 10 STR'T	RAD: 10 SIN'S	RAD: 10 C'VEX	
w	ANGLE STR'T	ANGLE C.CAVE	ANGLE C.VEX	RAD: 2 STR'T	RAD: 2 C.CAVE	RAD: 2 C.VEX	RAD: 6 STR'T	RAD: 6 C.CAVE	RAD: 6 C.VEX	
p	EVEN SHUT	EVEN PARTED	EVEN V.OPEN	UPPR PR SHUT	UPPR PR PARTED	UPPR PR V.OPEN	UNDR PR SHUT	UNDR PR PARTED	UNDR PR V.OPEN	
u	SMALL SMALL	SMALL MEDIUM	SMALL LARGE	MEDIUM SMALL	MEDIUM MEDIUM	MEDIUM LARGE	LARGE SMALL	LARGE MEDIUM	LARGE LARGE	
k	RAD: 2 UPPR 3rd	RAD: 2 MIDDLE	RAD: 2 LOWR 3rd	RAD: 6 UPPR 3RD	RAD: 6 MIDDLE	RAD: 6 LOWR 3RD	RAD: 10 UPPR 3RD	RAD: 10 MIDDLE	RAD: 10 LOWR 3RD	

of Galton

1/8 linear

J

K.P.

f. 7v

This Table was made subsequently to that printed in "Nature" article & differs in the following respects.- n 7, 8 & 8 changed from "c.vex-st" to "Simione"
u 1, 2, 3, 4, 5, 6 " to 4, 5, 6, 7, 8, 9 & angle introduced in 1, 2, 3.

The profiles in "Picture Formulas" were amended & drawn by this Table.

	1	2	3	4	5	6	7	8	9	0
b	RAD: 2 BACK	RAD: 2 VERT'L	RAD: 2 FOR'DS	RAD: 6 BACK	RAD: 6 VERT'L	RAD: 6 FOR'DS	RAD: 10 BACK	RAD: 10 VERT'L	RAD: 10 FOR'DS	STR'T
g	SLIGHT SIN'S	SLIGHT C.CAVE	SLIGHT C.VEX	MEDIUM SIN'S	MARKED C.CAVE	MARKED C.VEX	UPPR 3rd C.VEX	LOWR 3rd C.VEX		
n	RAD: 2 STR'T	RAD: 2 SIN'S	RAD: 2 C.VEX	RAD: 6 STR'T	RAD: 6 SIN'S	RAD: 6 C'VEX	RAD: 10 STR'T	RAD: 10 SIN'S	RAD: 10 C'VEX	
u	ANGLE STR'T	ANGLE C.CAVE	ANGLE C.VEX	RAD: 2 STR'T	RAD: 2 C.CAVE	RAD: 2 C.VEX	RAD: 6 STR'T	RAD: 6 C.CAVE	RAD: 6 C.VEX	
lp	EVEN SHUT	EVEN PARTED	EVEN V.OPEN	UPPS PS SHUT	UPPS PS PARTED	UPPS PS V.OPEN	UNDR PS SHUT	UNDR PS PARTED	UNDR PS V.OPEN	
ll	SMALL SMALL	SMALL MEDIUM	SMALL LARGE	MEDIUM SMALL	MEDIUM MEDIUM	MEDIUM LARGE	LARGE SMALL	LARGE MEDIUM	LARGE LARGE	
k	RAD: 2 UPPR 3rd	RAD: 2 MIDDLE	RAD: 2 LOWR 3rd	RAD: 6 UPPR 3RD	RAD: 6 MIDDLE	RAD: 6 LOWR 3RD	RAD: 10 UPPR 3RD	RAD: 10 MIDDLE	RAD: 10 LOWR 3RD	

Shape of Nasion distinct and slope of Frontal

nose from Nasion to Rhinion

rhinion to hyperchelion

upper lip, hyperchelion to ~~lips~~ parting

Nature of lips-parting and synchelion

Size of upper and lower lips

Outline of chin from Border of lower lip to pogonion

Reduce about $\frac{7}{8}$ linear
Diagram 5

omit

F. Galton, enlarged from Photo by E B Nov 18 1907

f. 9

00 / 99	
03 · 50	
20 · 93	
32 · 96	
43 · 57	
52 · 28	
57 · 09	
50 / 62	
11 — 50	
15 · 77	
18 · 90	
21 · 90	
25 — 50	
32 · 66	
36 · 68	
37 · 64	
37 · 56	
39 · 64	
45 · 66	
53 · 82	
56 · 79	
59 · 67	
60 · 50	
61 · 38	
67 · 10	
32 / 00	

a hyphen (—) means +0.5 to the preceding figure.

Revised notation

5 means +0.5 to the preceding figure

0 means the point where a line ~~forks~~ bifurcates that ends abruptly & to which subsequent measurements refer

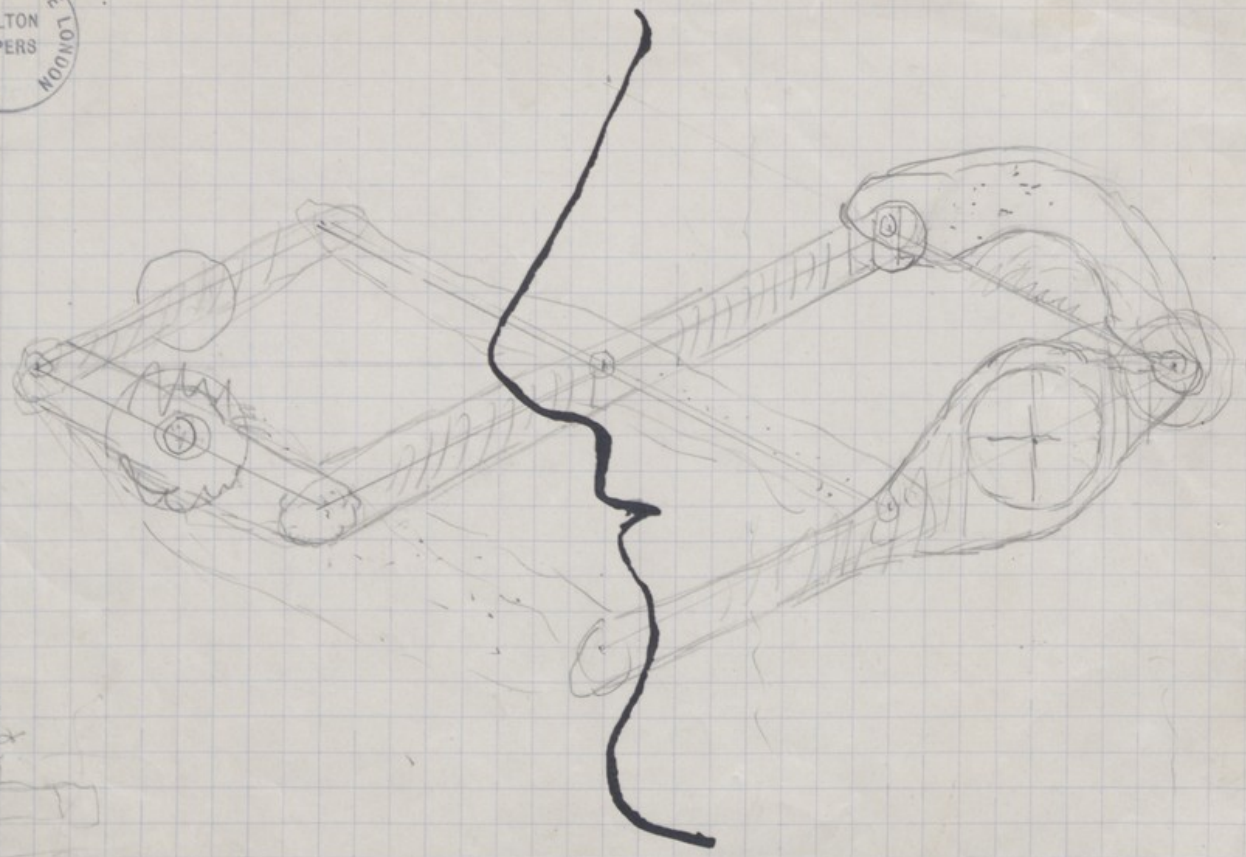
8 is inserted in all measures of that bifurcating line

6 means (n concave to left of line ; q means) concave right of line

11 5 50

Revised with new notation

21 · 90
25 5 50
32 · 66
36 9 68
37 · 56
38 0 50
39 8 42
39 9 64
45 · 66



f. 12 ar

Face outlines

42, RUTLAND GATE, S.W.

a.1

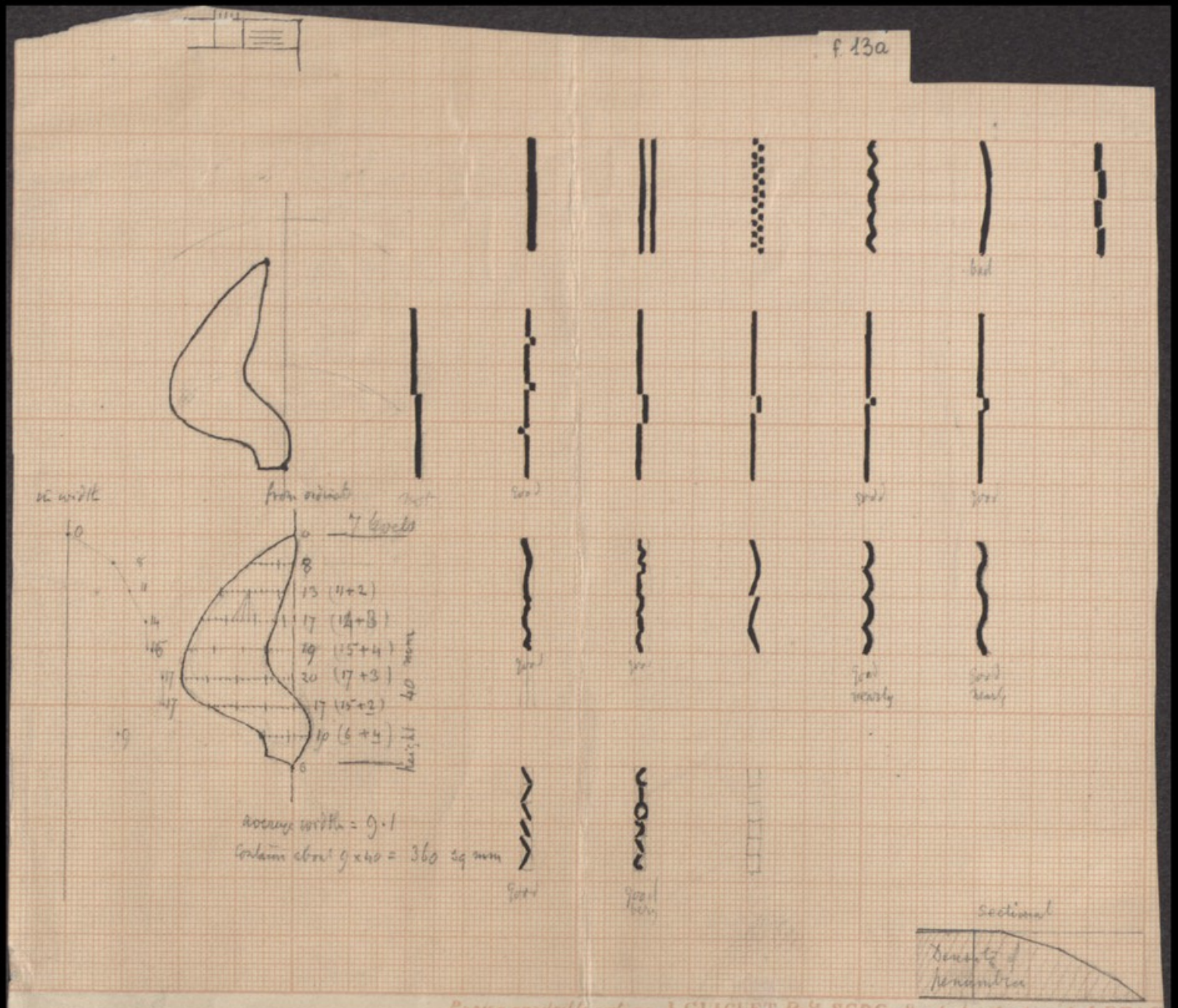
f. 12bv

f. 12cv

f. 12dv

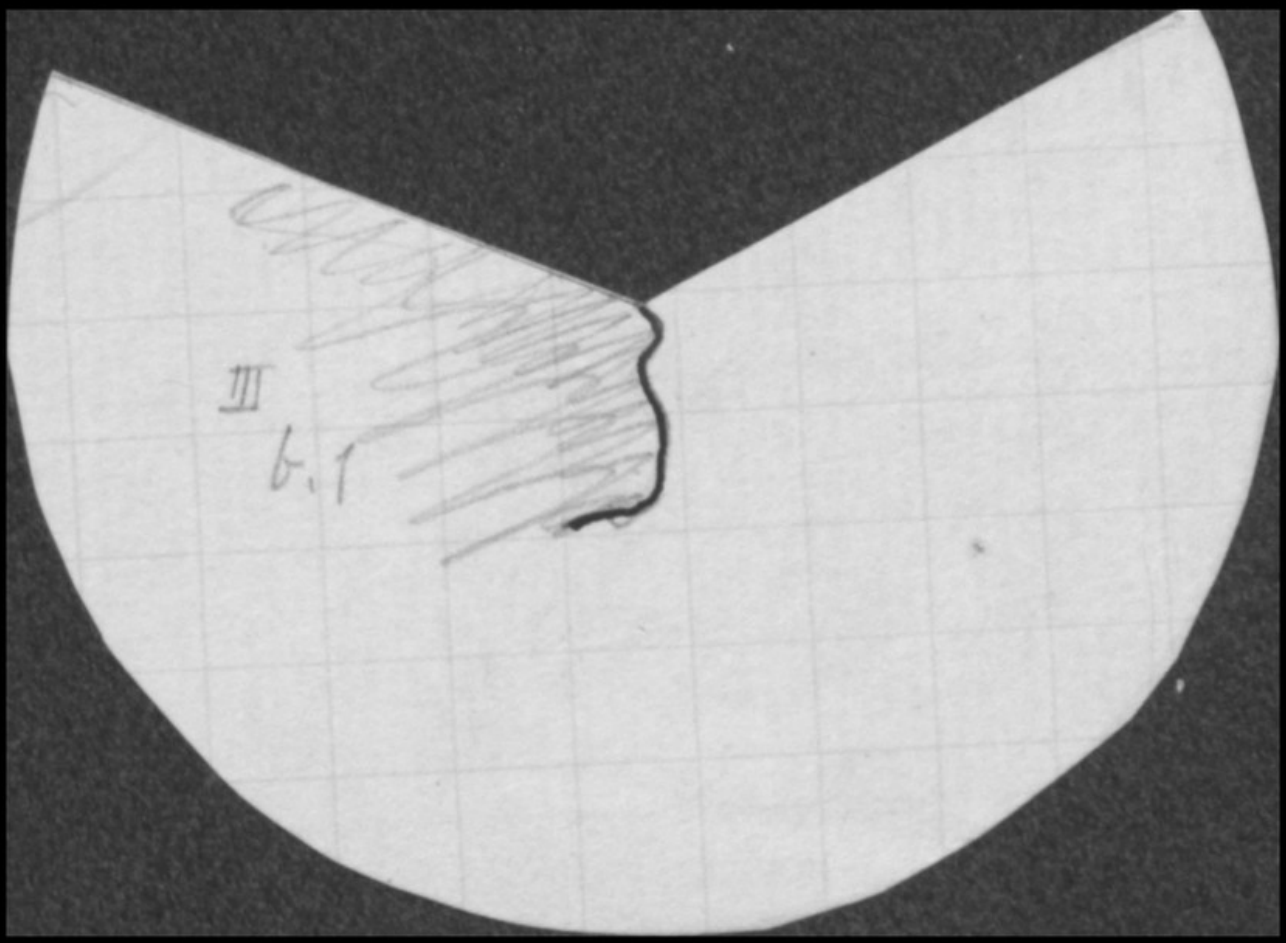
b.2

f. 13a

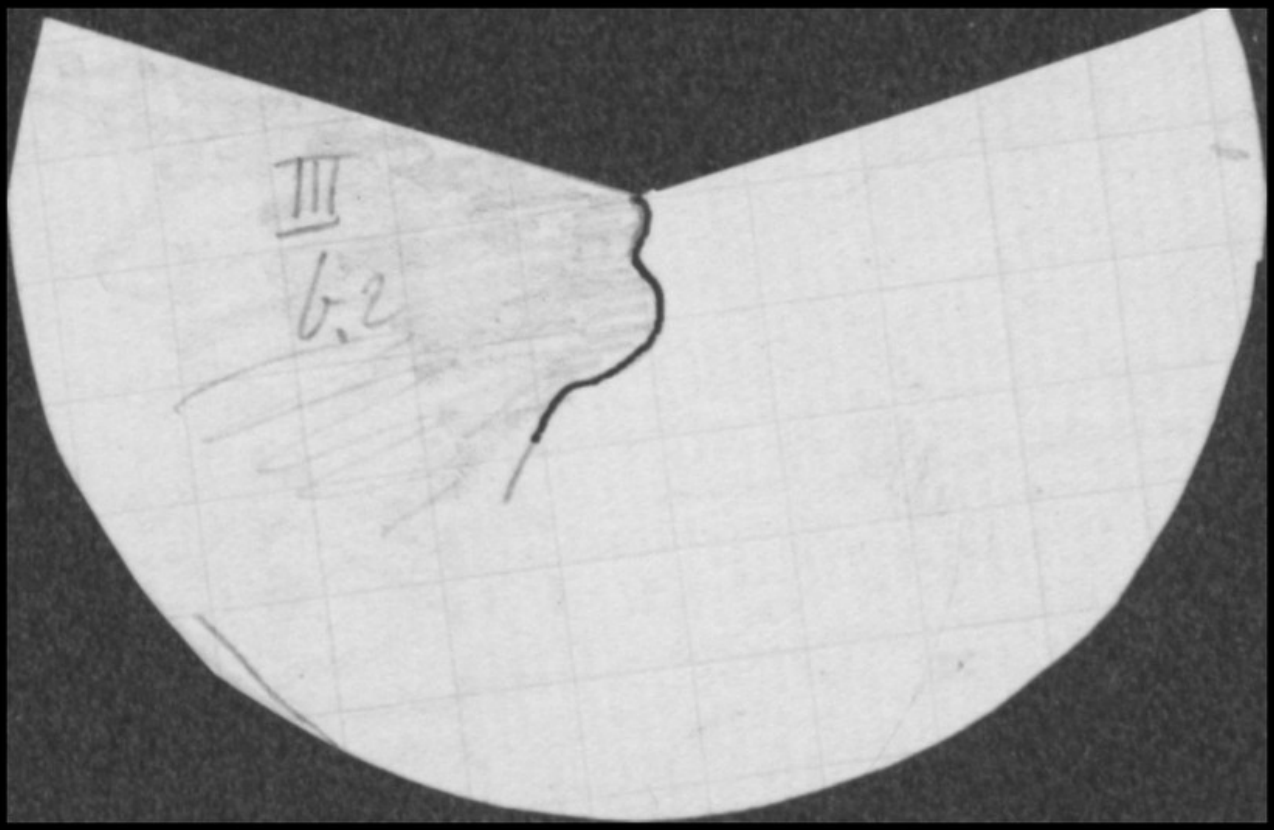


Blocks in each 2x3 rectangle must balance round axis

12 in each 3 mm length of a curve line that length sh. pass through centre of rectangle 2x3


III
b.1

f. 13bv


III
6.2

f. 13cv

f. 139v

f. 13ev

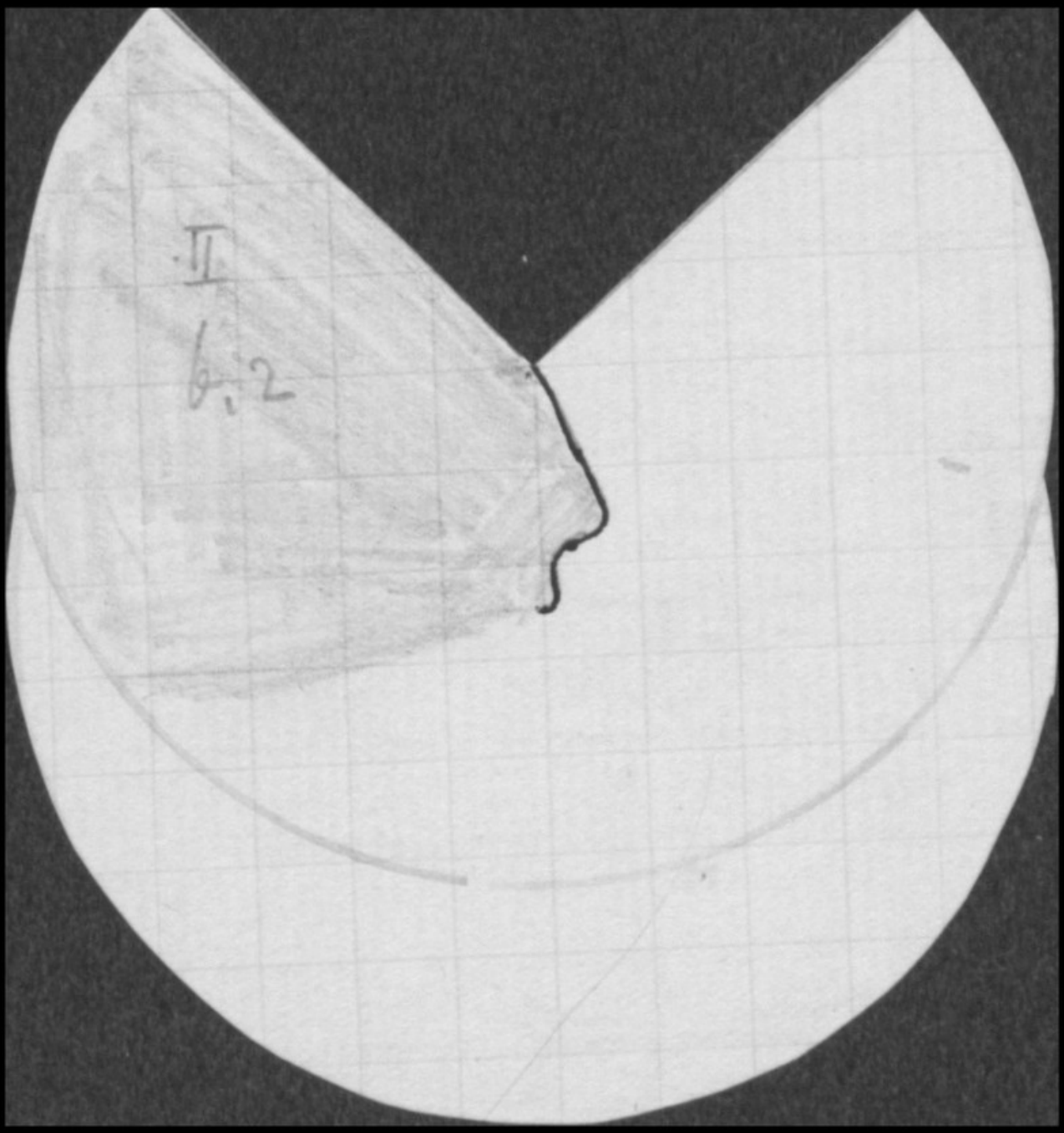
II

a. 2

III

a, 2

f. 13fv

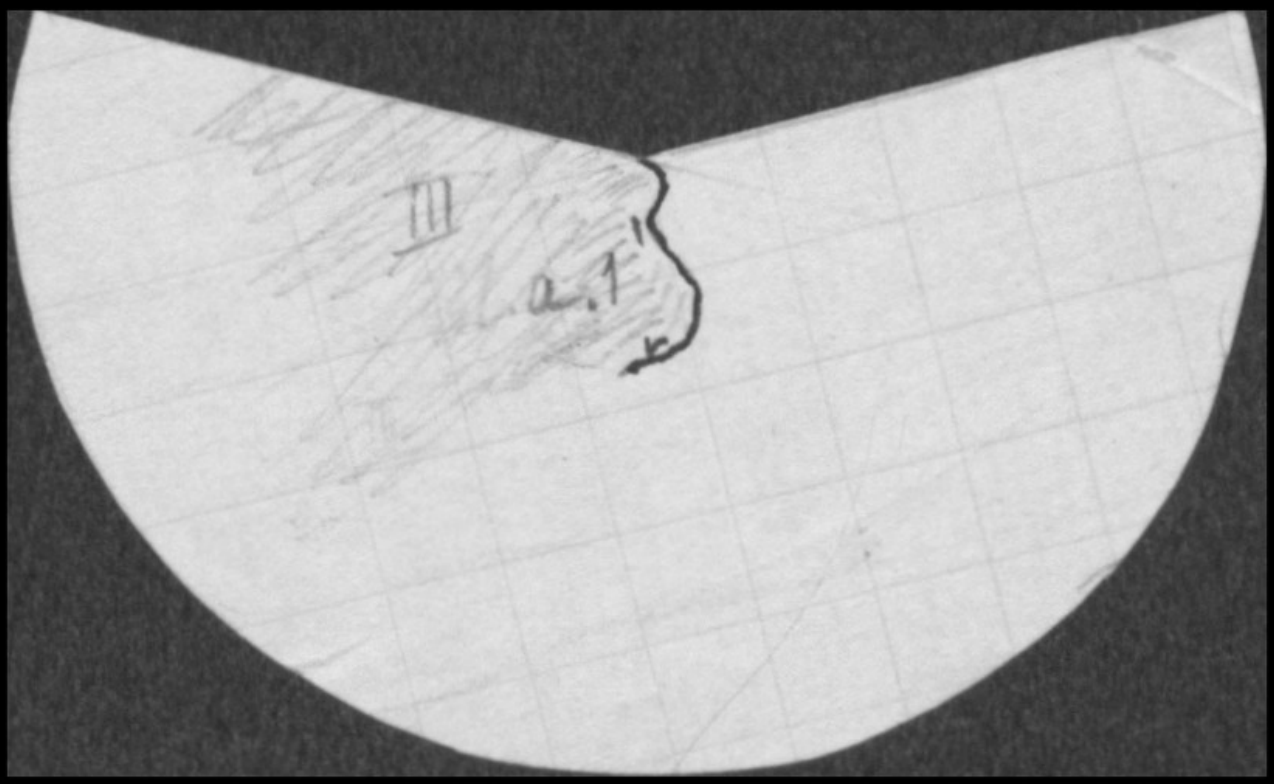

II
6,2

f. 13gv

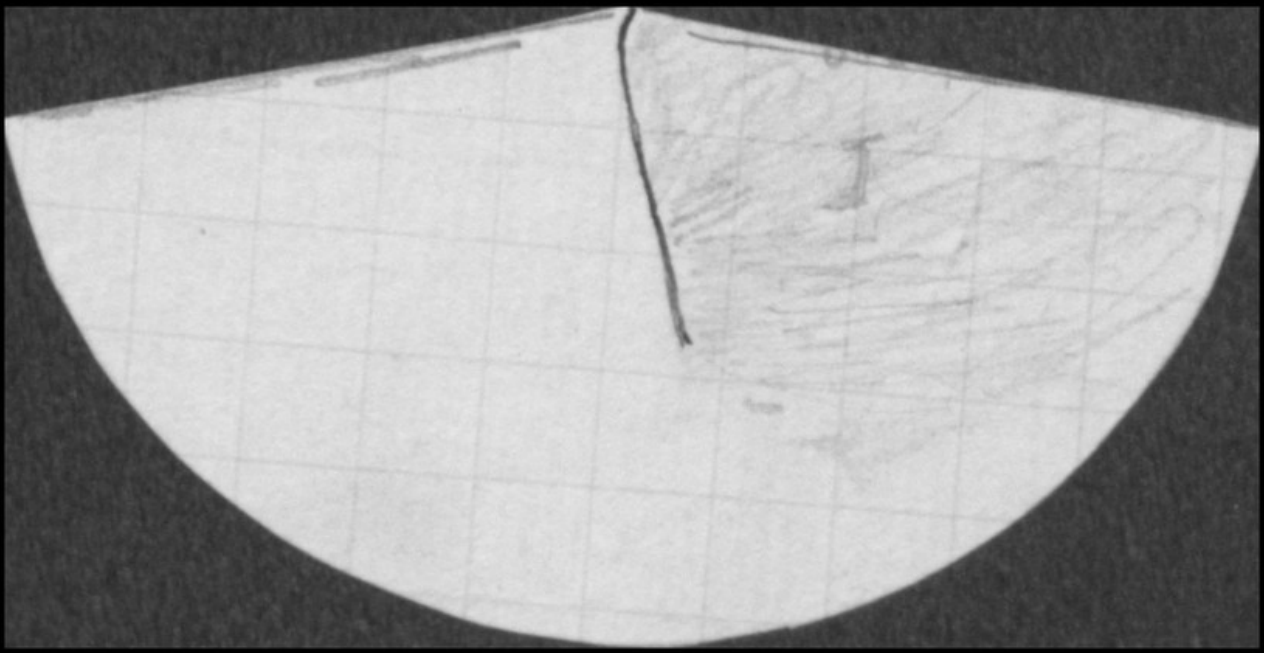
I

b.2

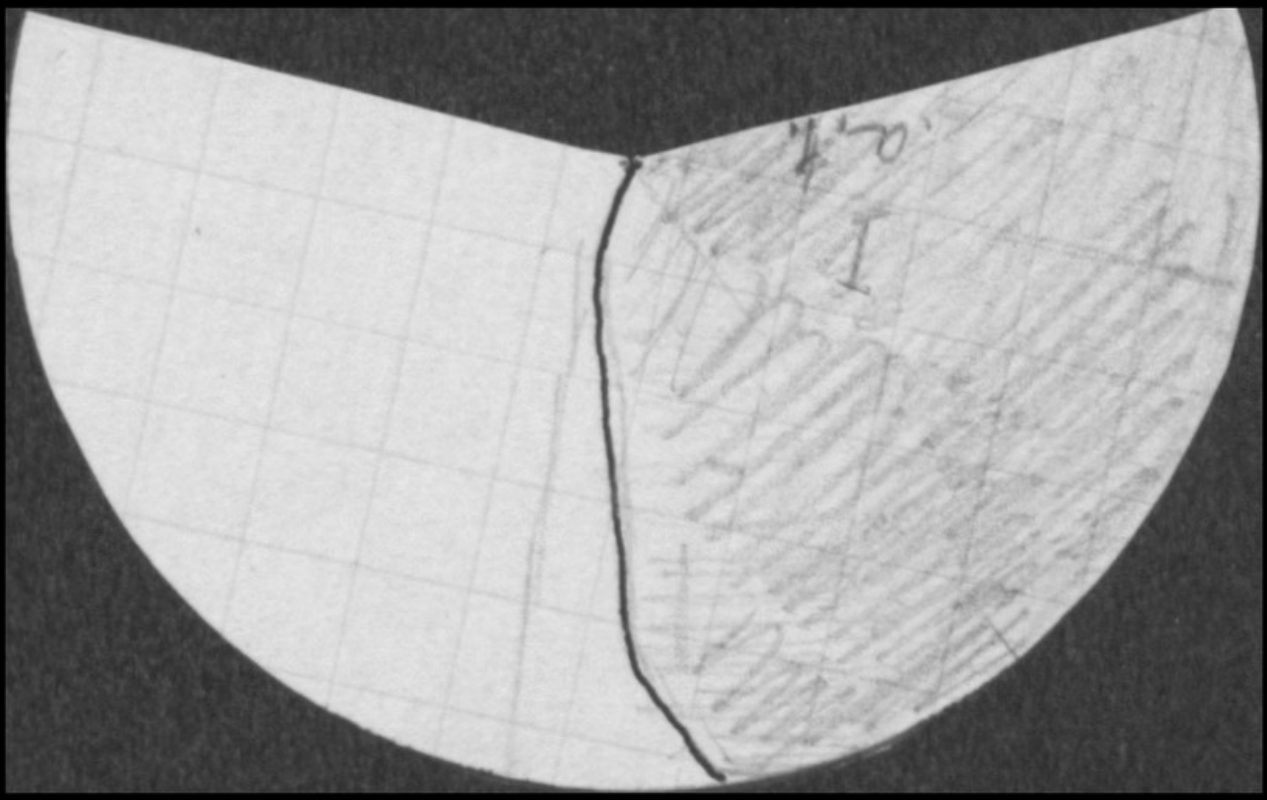
f. 13hv


III
a.F'

f. 13iv



f. 13jv


45°
I

F. 13 Rv

II

a. 1.

f. 13 ℓ v

II

b. 1

f. 13mv

Pointed Portraits

No 2 1903

4 8 4
16
1 2 1
1 2 4 2 1

3 8 10 8 3
22

3 8 10 8 3
3 8 10 8 3
3 9 18 18 9 3

3 8 10 8 3
3 8 10 8 3
3 8 13 16 13 8 3

3 8 10 8 3
3 8 10 8 3
3 8 10 11 11 10 8 3

16	0	16
16	0	16
16	-	16
16	-	16
16	-	16

1 2 1
2 4 2
1 2 1
2 4 2
1 2 1
2 4 2
1 2 1
2 4 2
1 2 1

1 2 1
2 4 2
1 2 1
2 4 2
1 2 1
2 4 2
1 2 1
4 2

1 2 1
2 1 4 2 2 1
1 2 2 4 1 2
1 2 1
4 2

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4 8 4 8 4
4 8 4 8 4
4 8 4 8 4
4 8 4 8 4

4 8 8 8 4

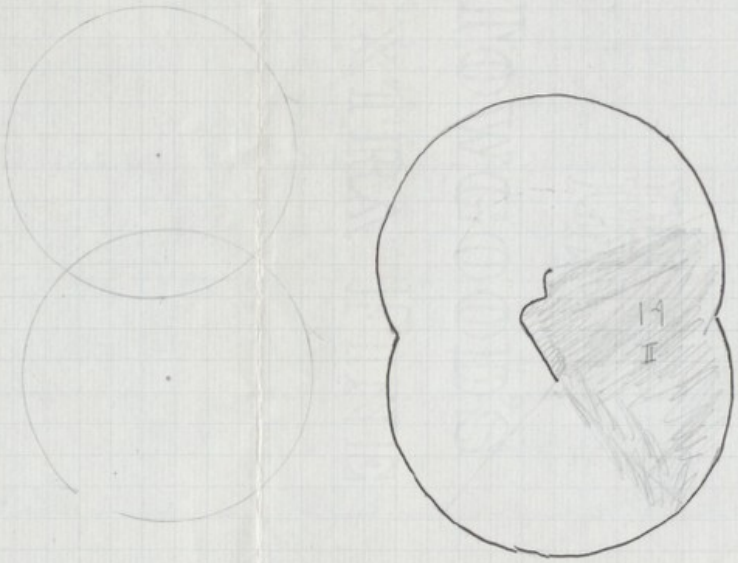
4 8 4 4 8 4
4 8 4 4 8 4

1 2 1

1 3 1

3 8 10 8 3
3 8 10 8 3
3 8 10 8 6 8 10 8 3

3 8 10 8 3 3 8 10 8 3
3 8 10 8 3 - 3 8 10 8 3



ROYAL GEOGRAPHICAL SOCIETY.

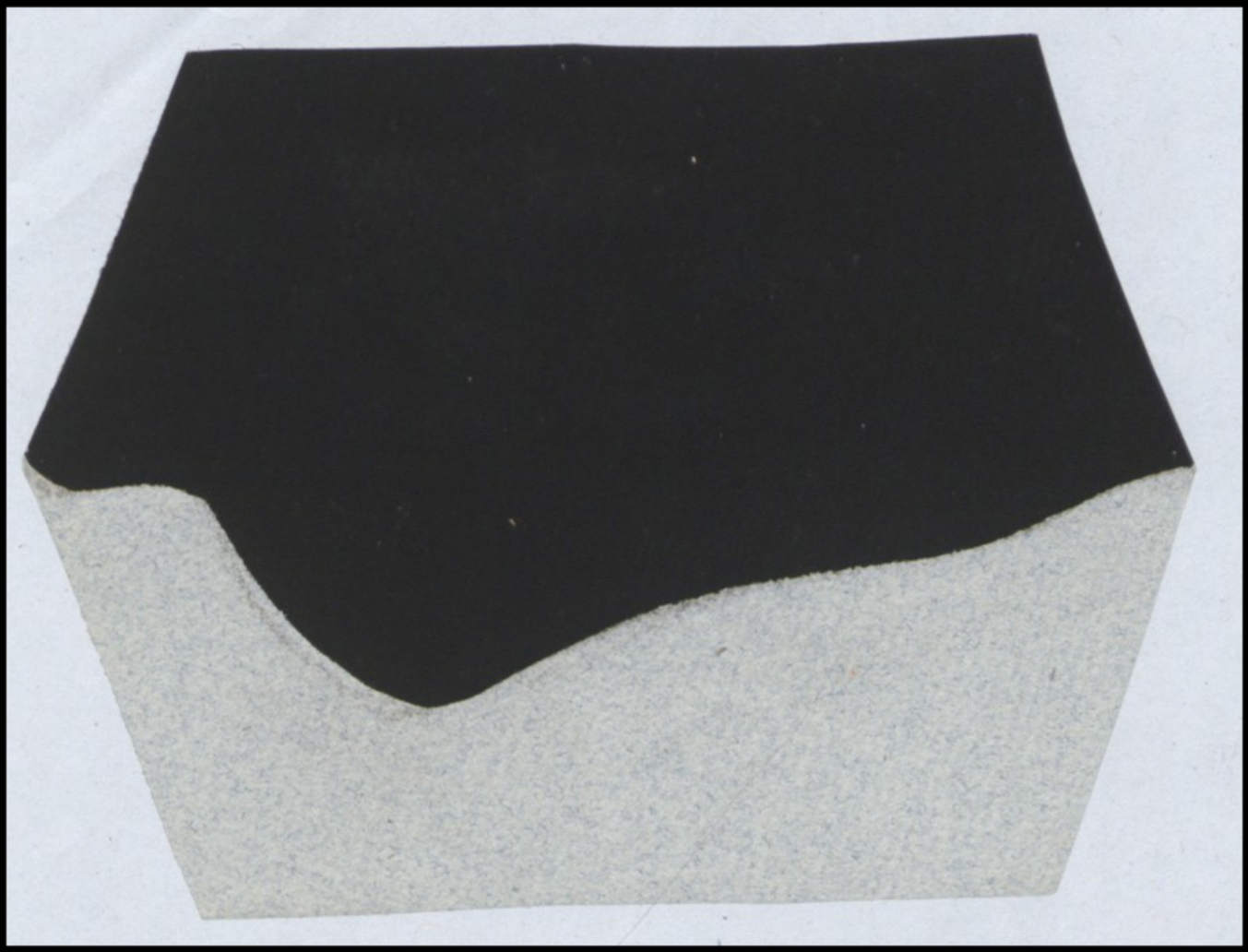
Francis Galton, Esq., D.C.L., F.R.S.,

42 Rutland Gate, S.W.

Intimation of a Change of Address
must reach the Office of the R.G.S. not later than the 15th of the month.

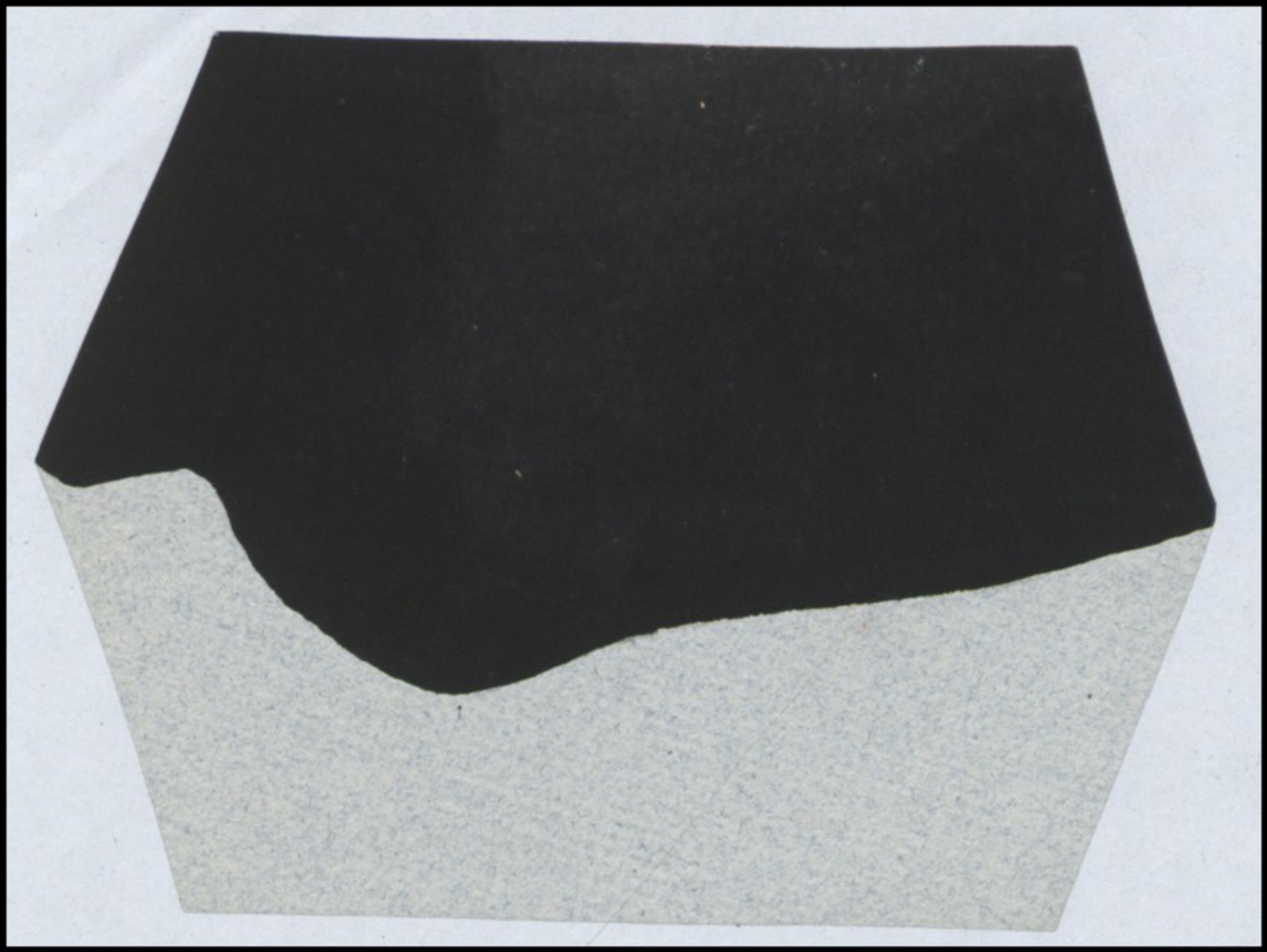
Jointed Portraits
F. Galton

Jointed Portraits



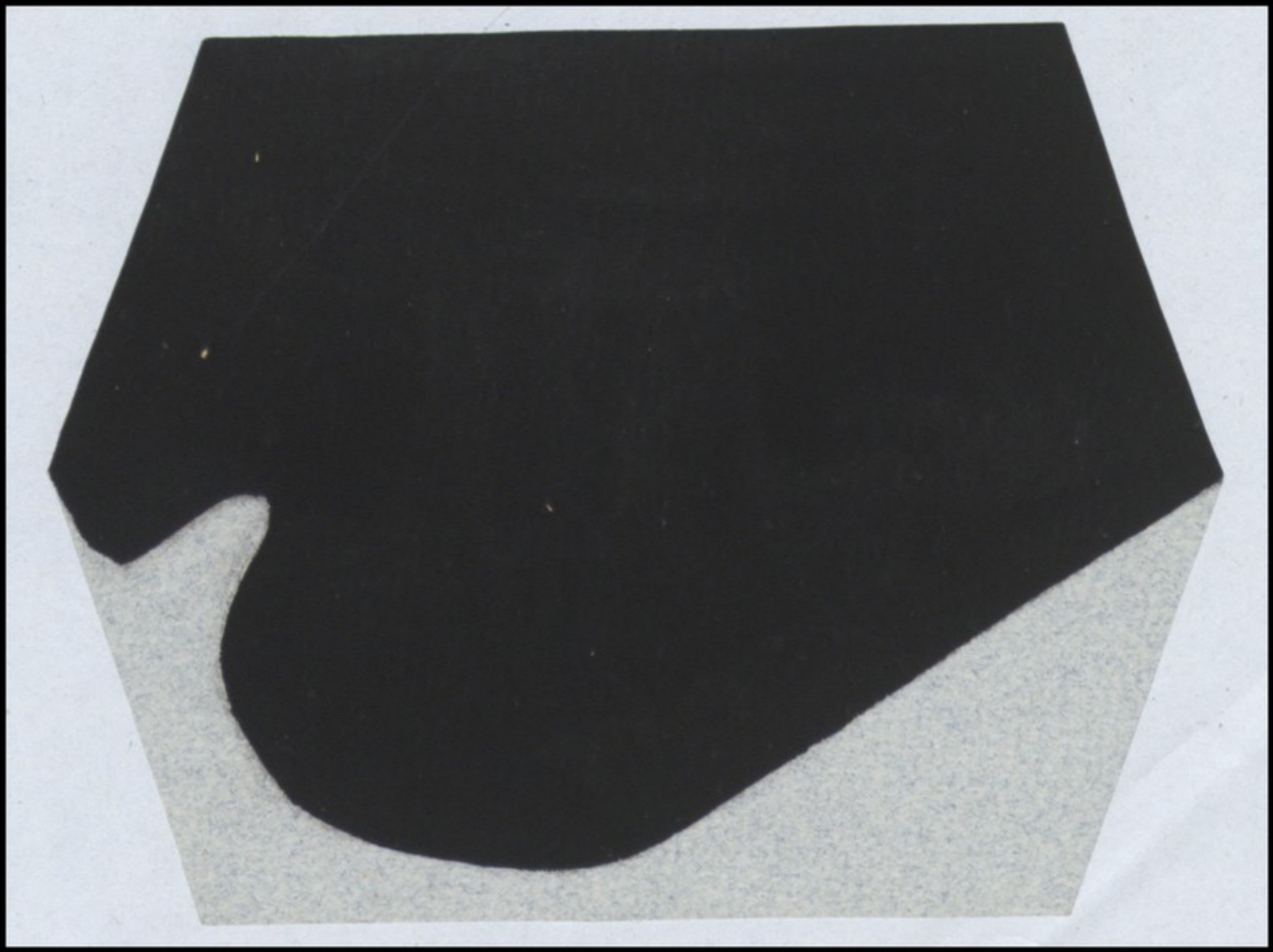
f. 15v

16



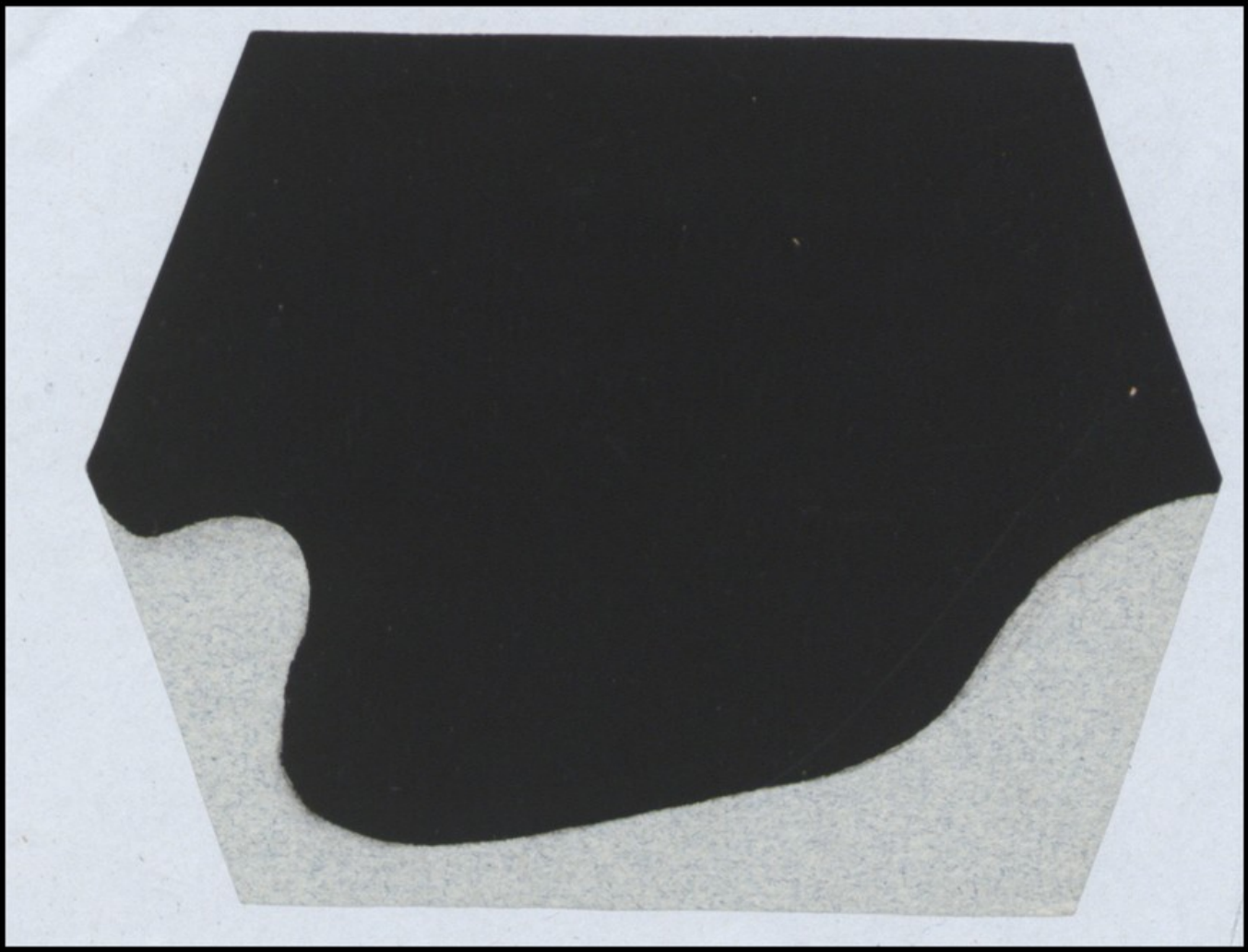
f. 16v

7



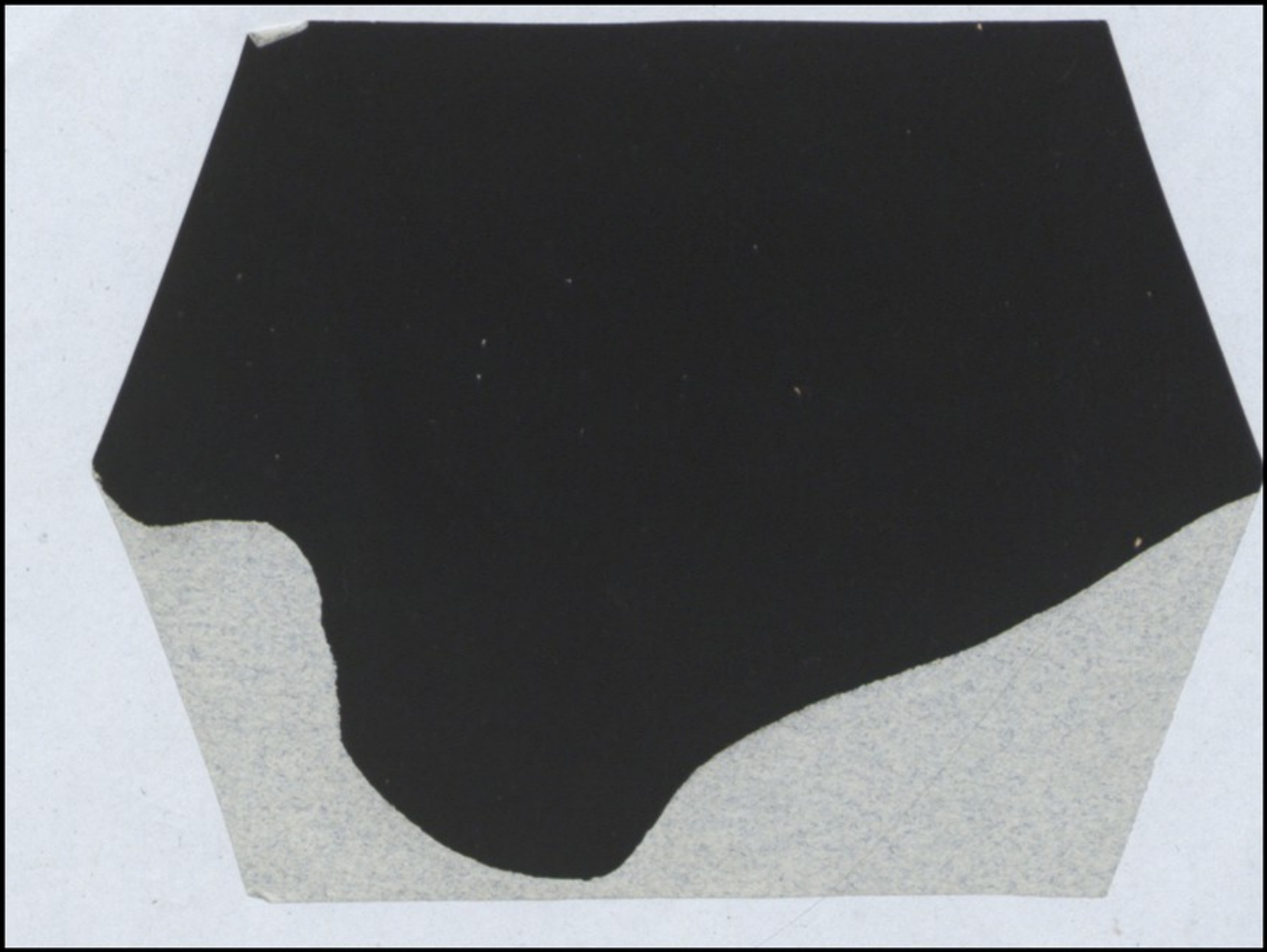
f. 18v

5



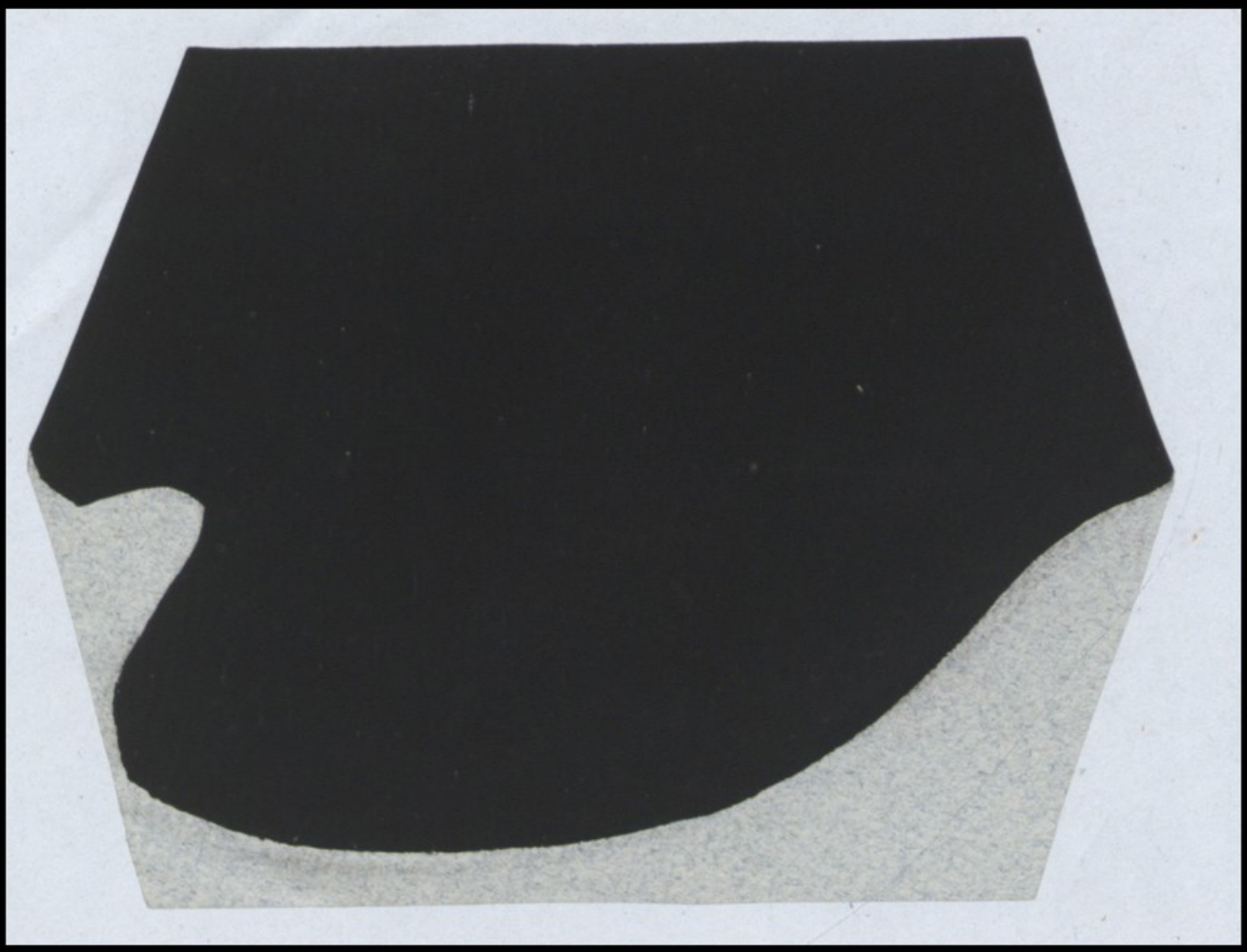
f. 19v

7



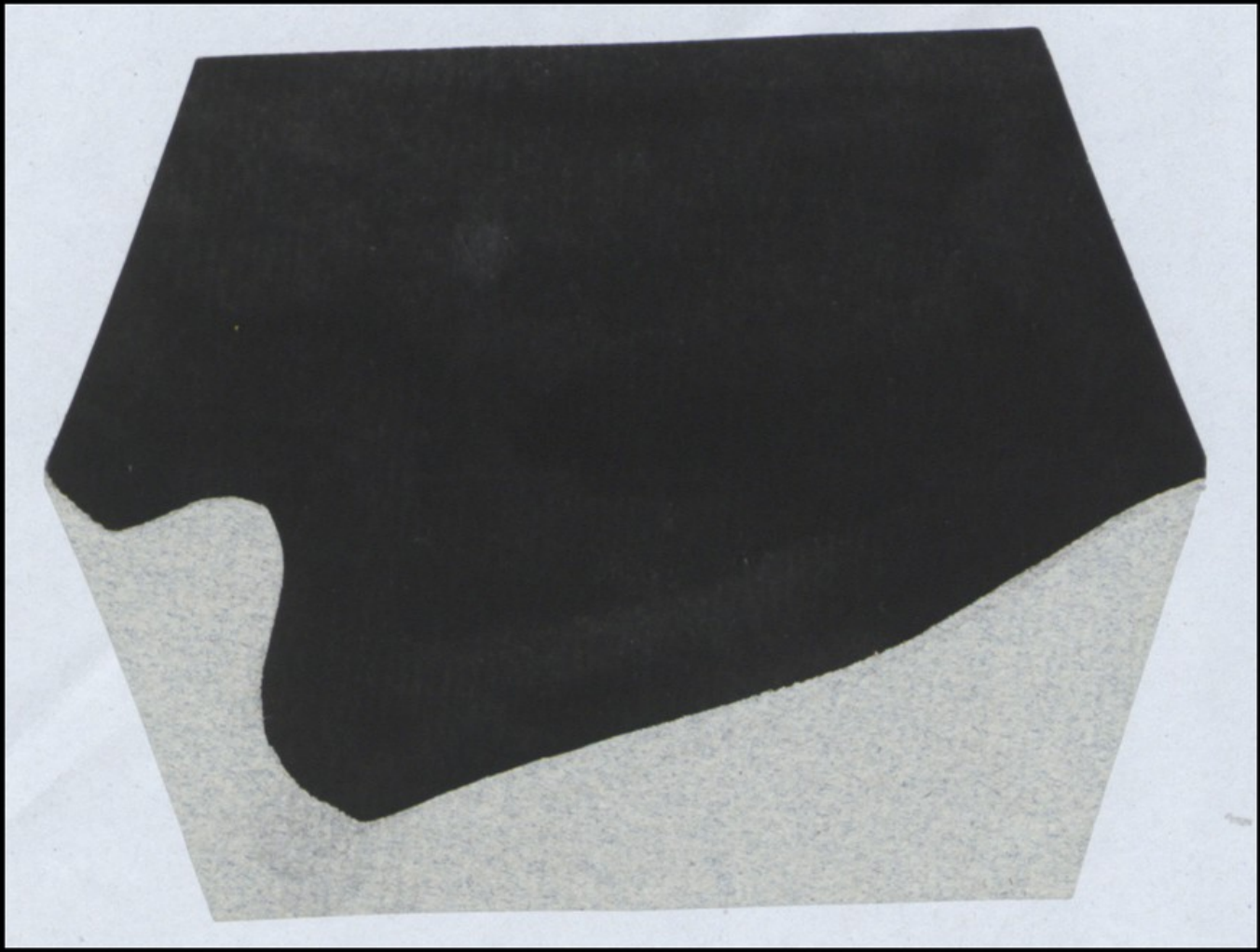
f 20v

13



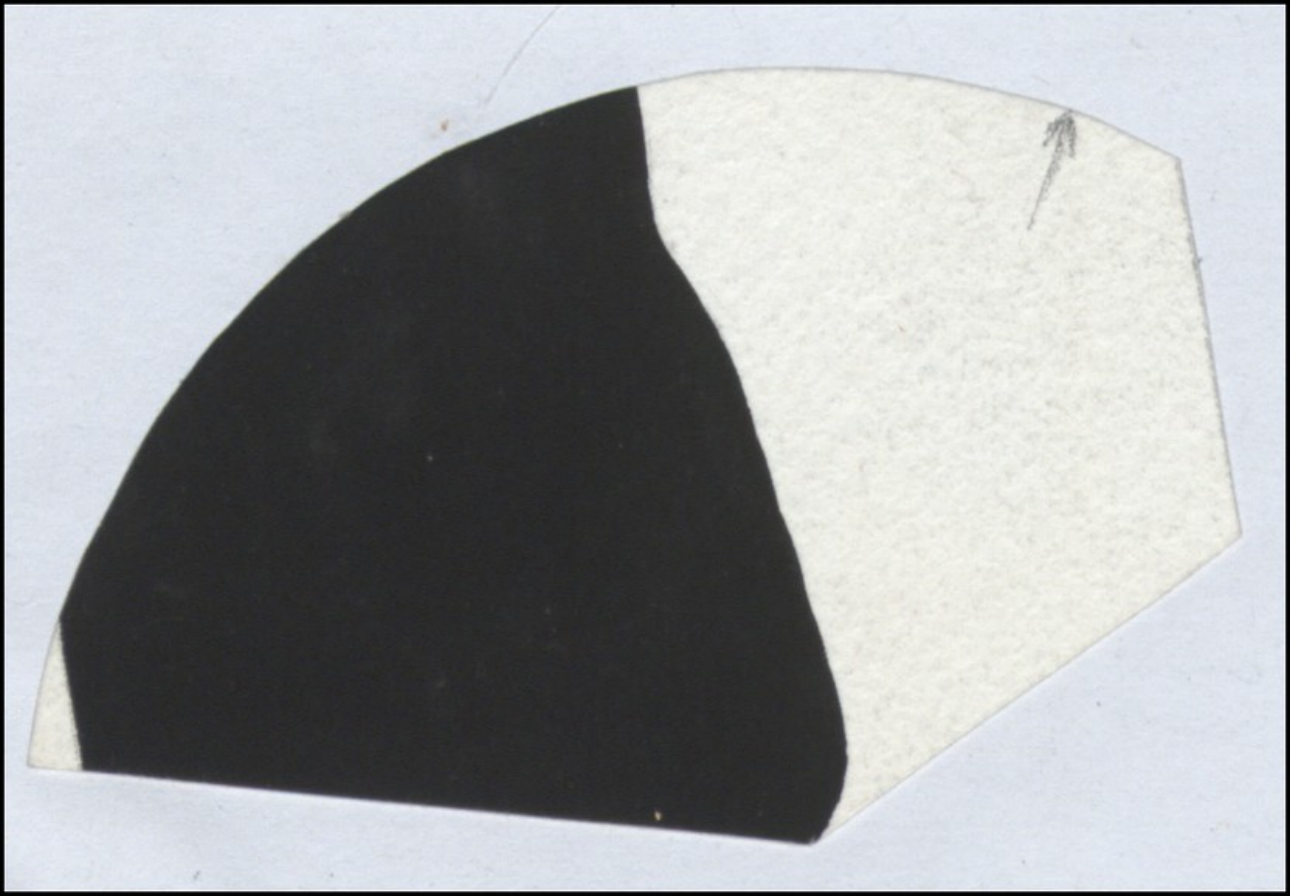
f. 21v

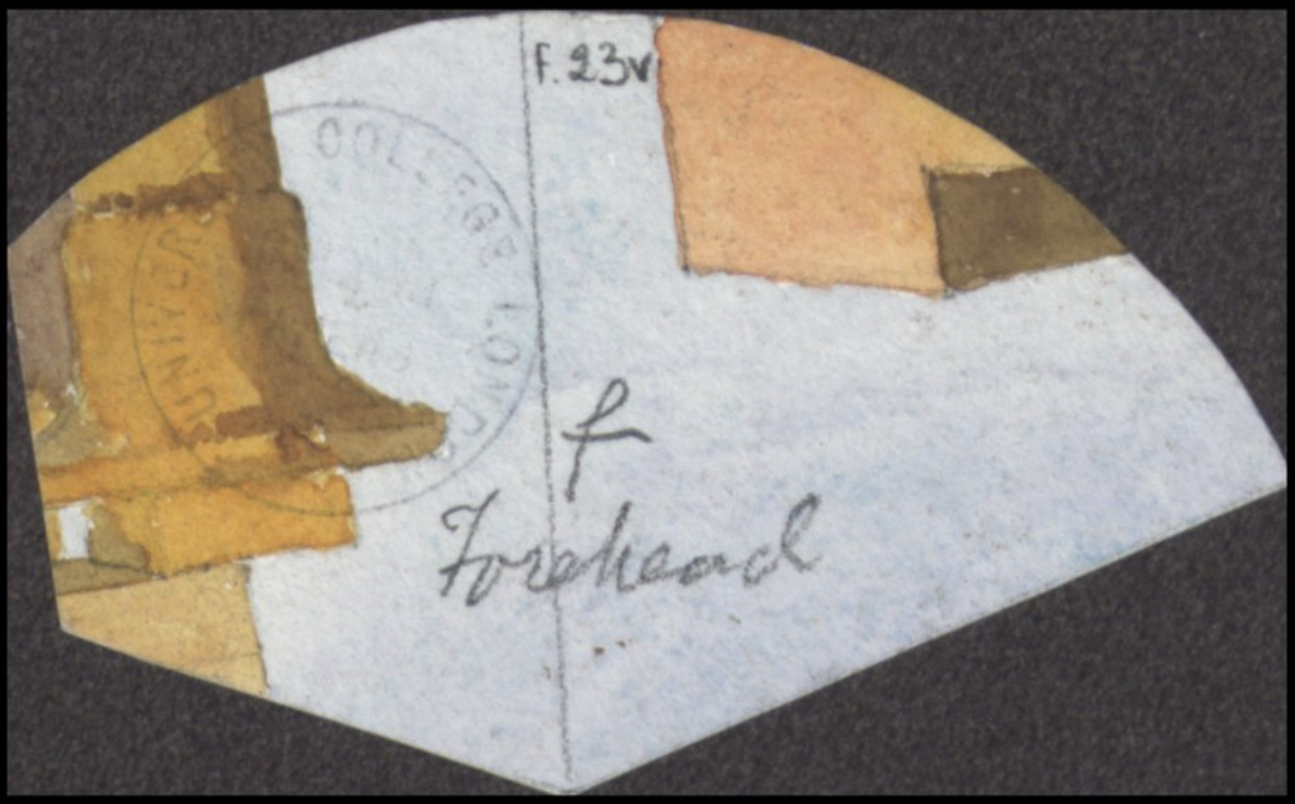
2

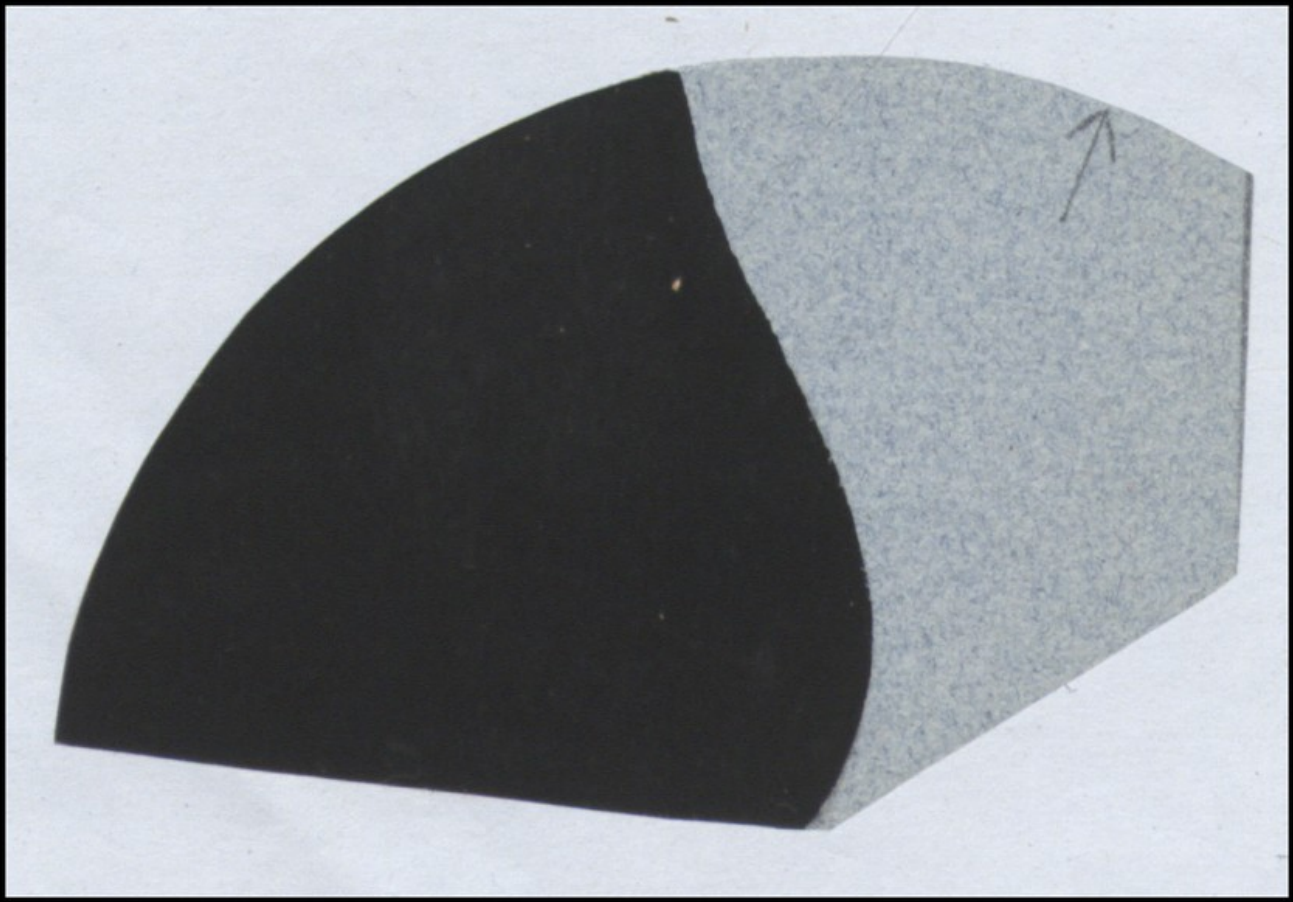


f. 22v

1



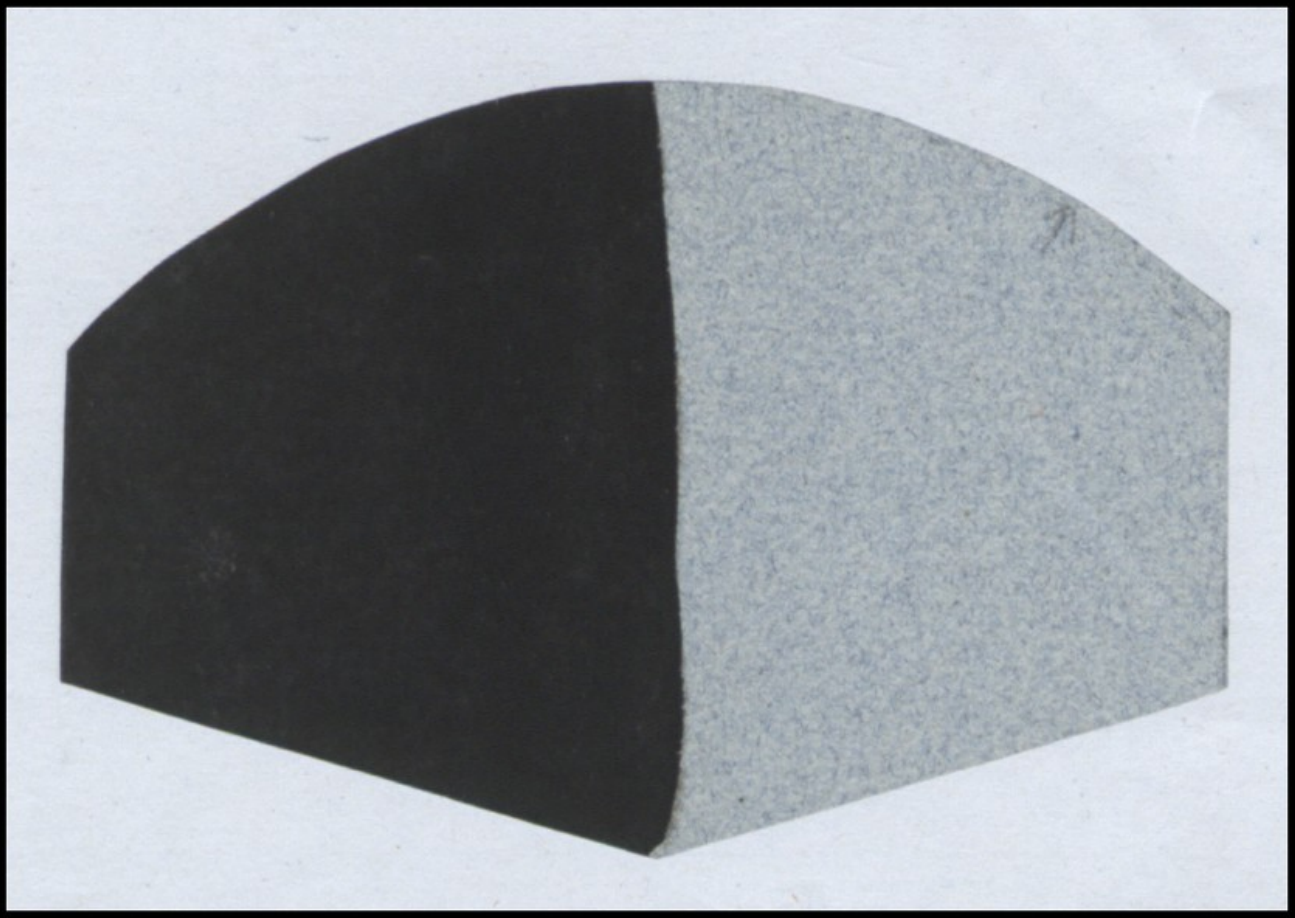

F. 23v
COLLEGE OF LONDON
UNIVERS
f
Forehead



f. 24v

d

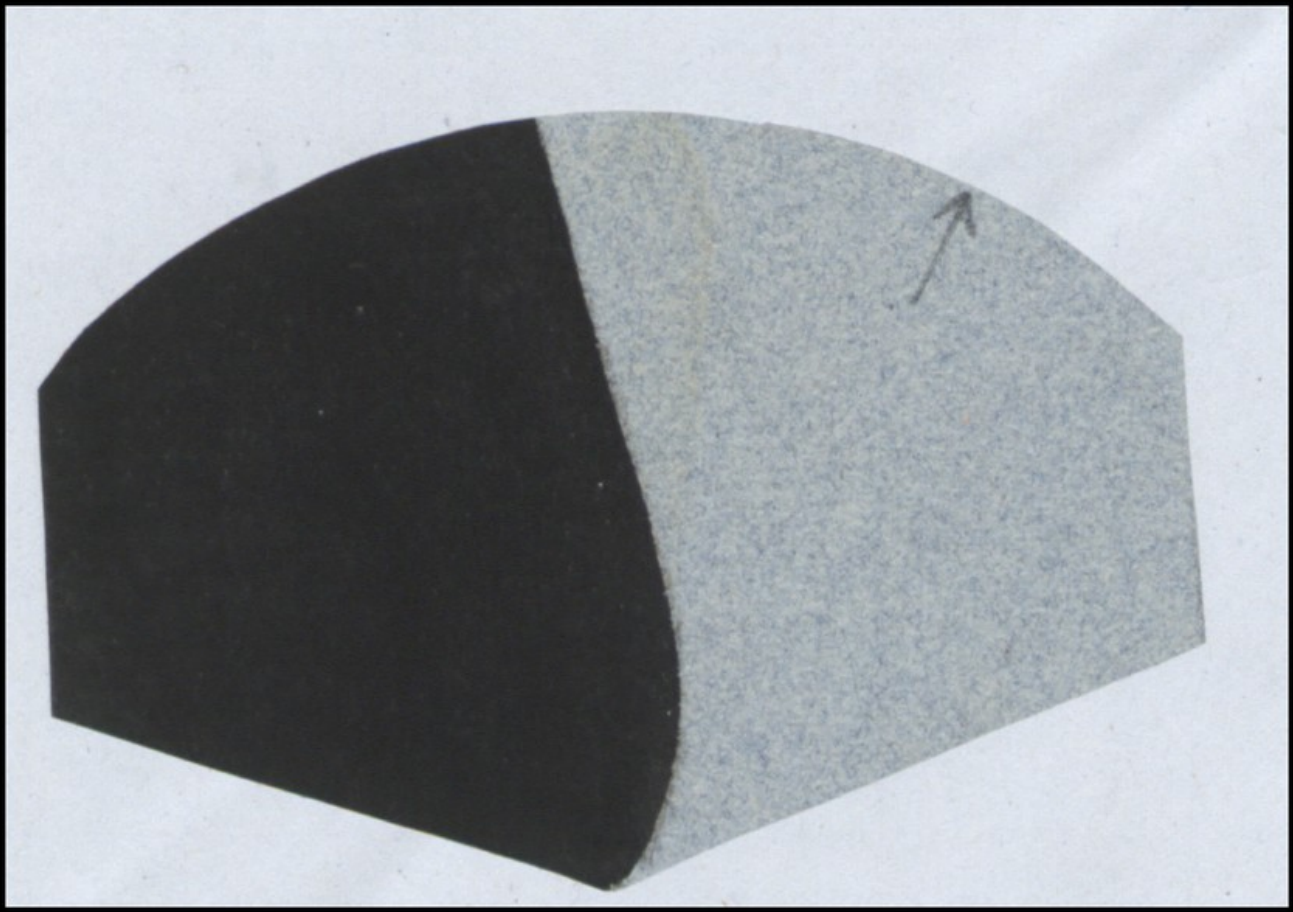
Forehead



f. 25v

6

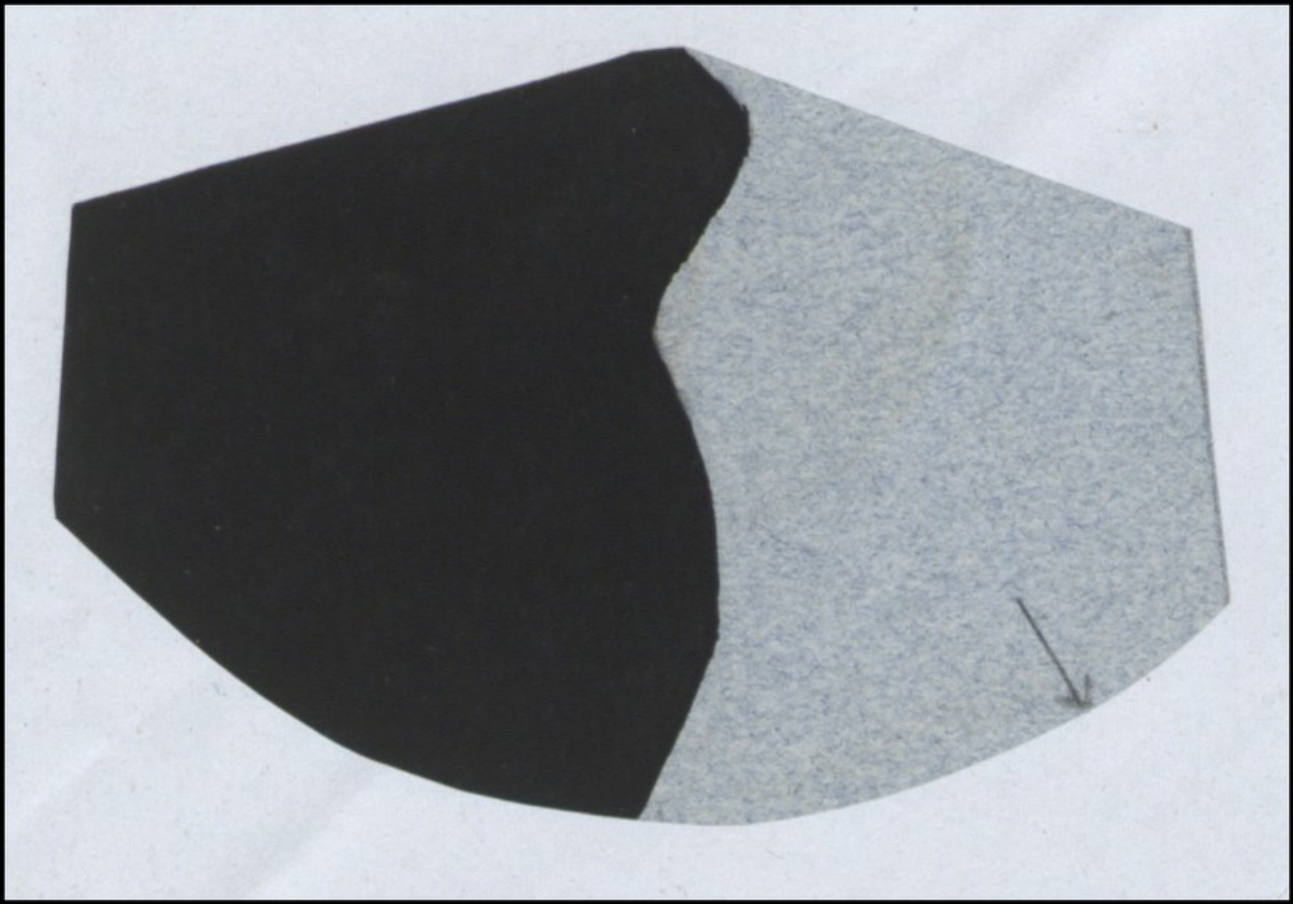
Forehead



f. 26v

C

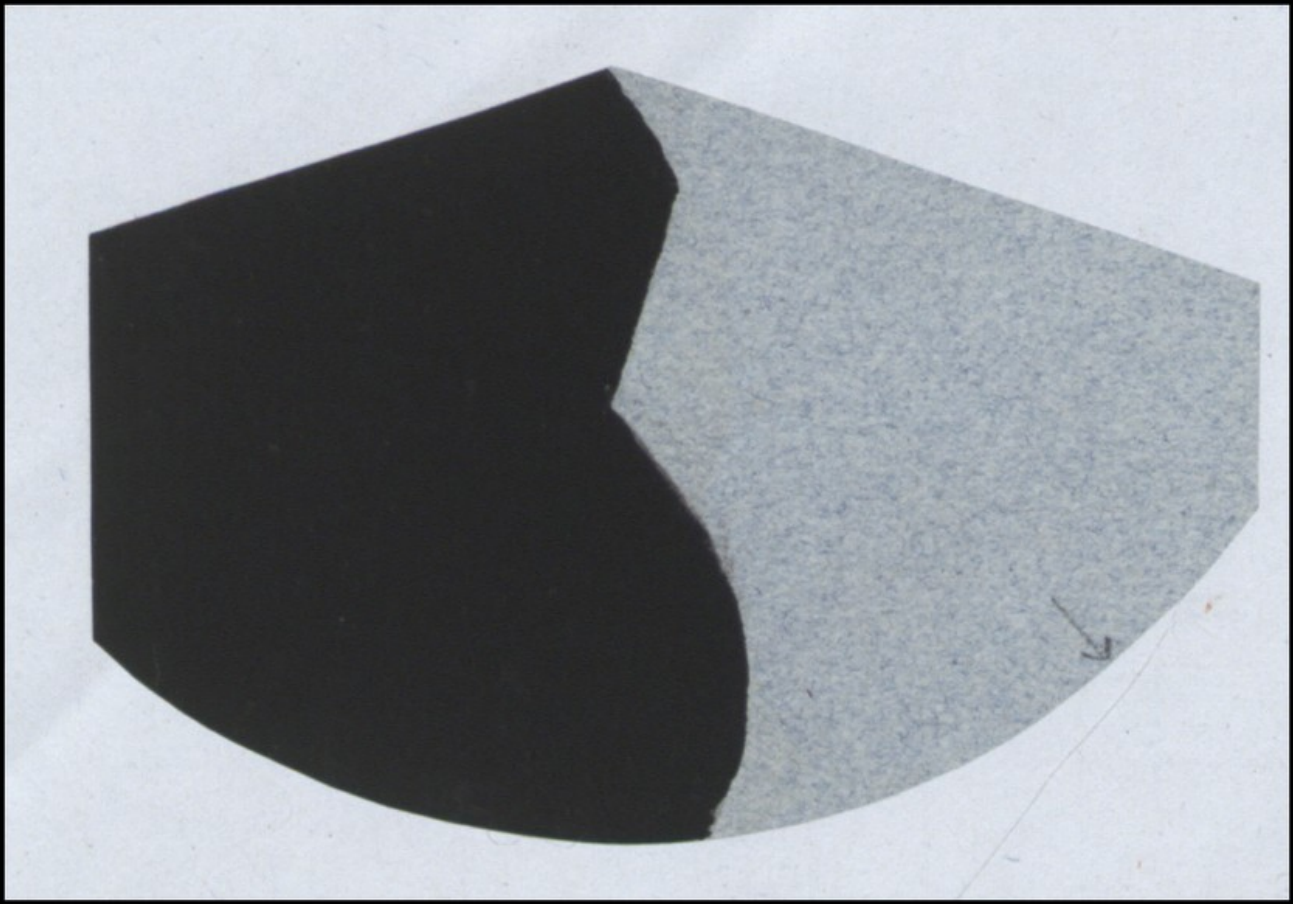
Forehead



f. 27v

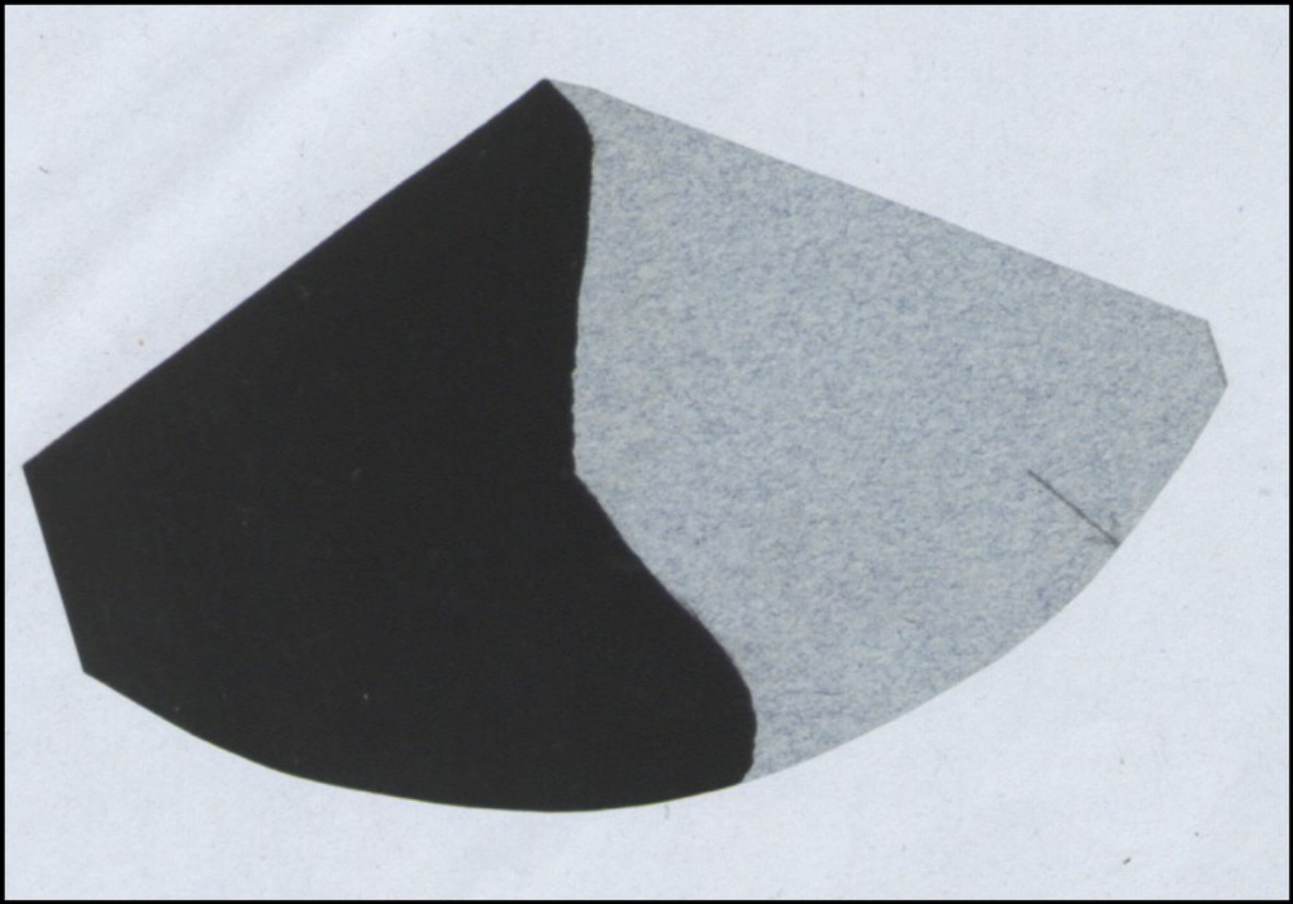
18

Chun

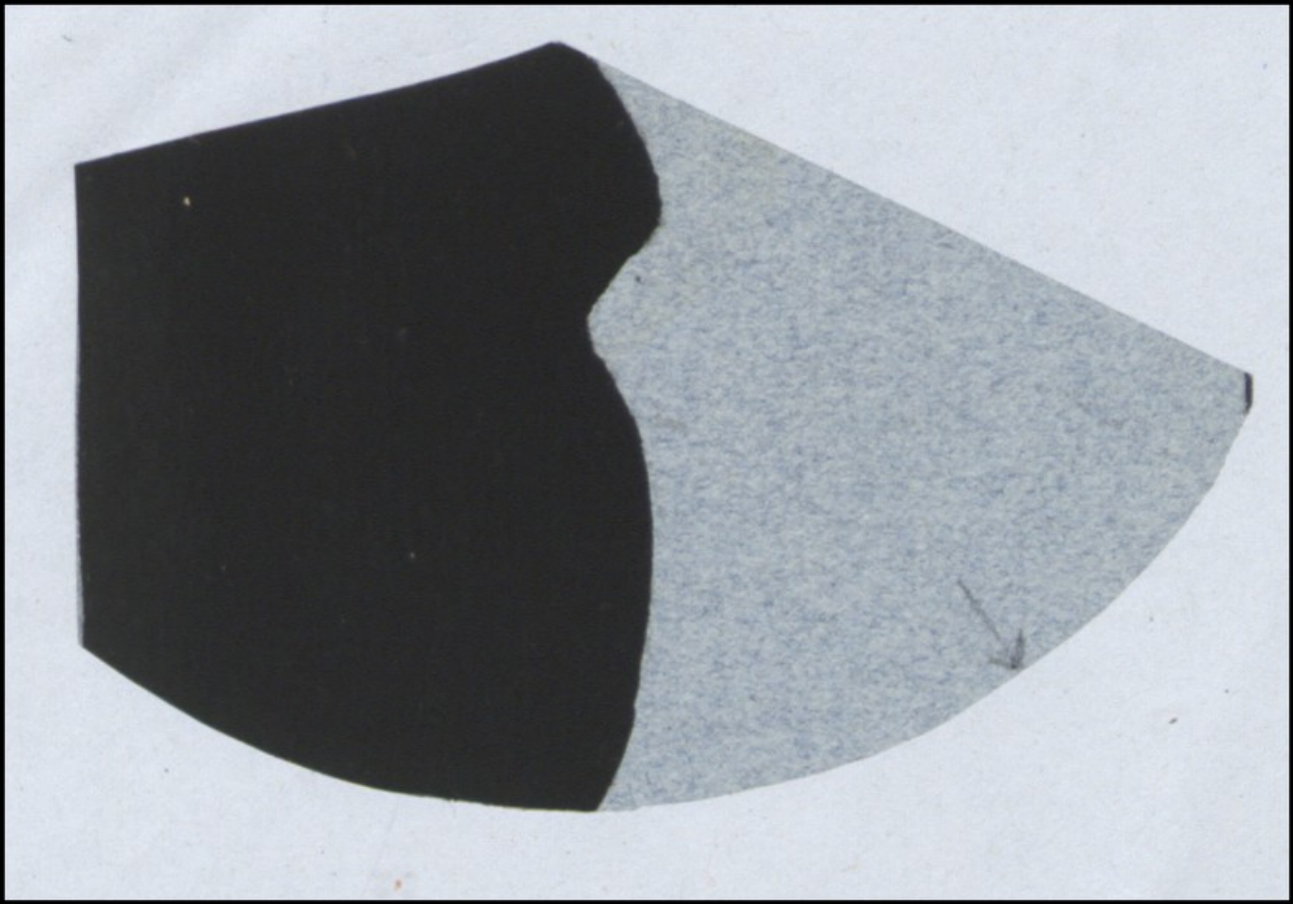


f. 28v

Chin



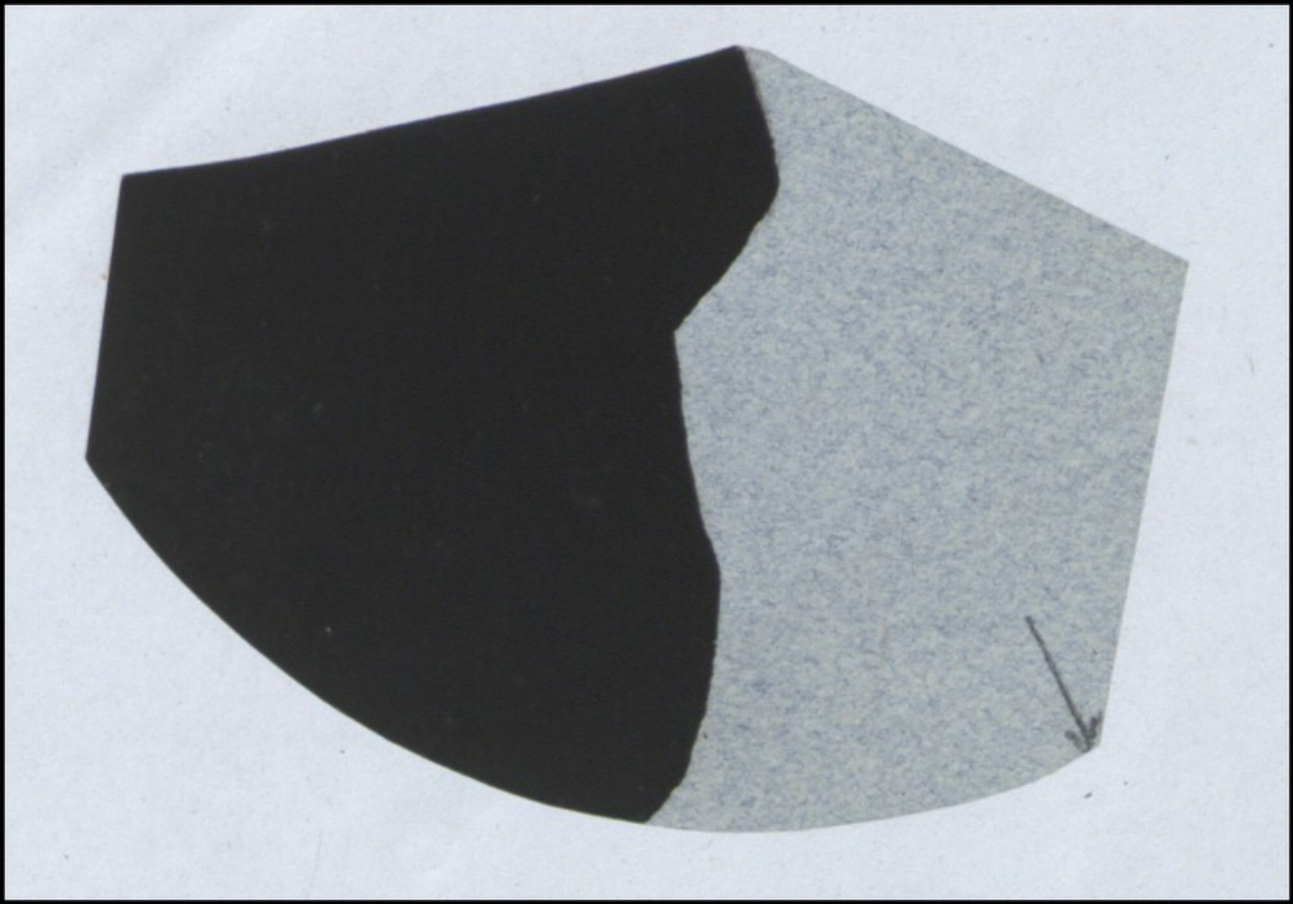
f. 29v



f. 30v

5

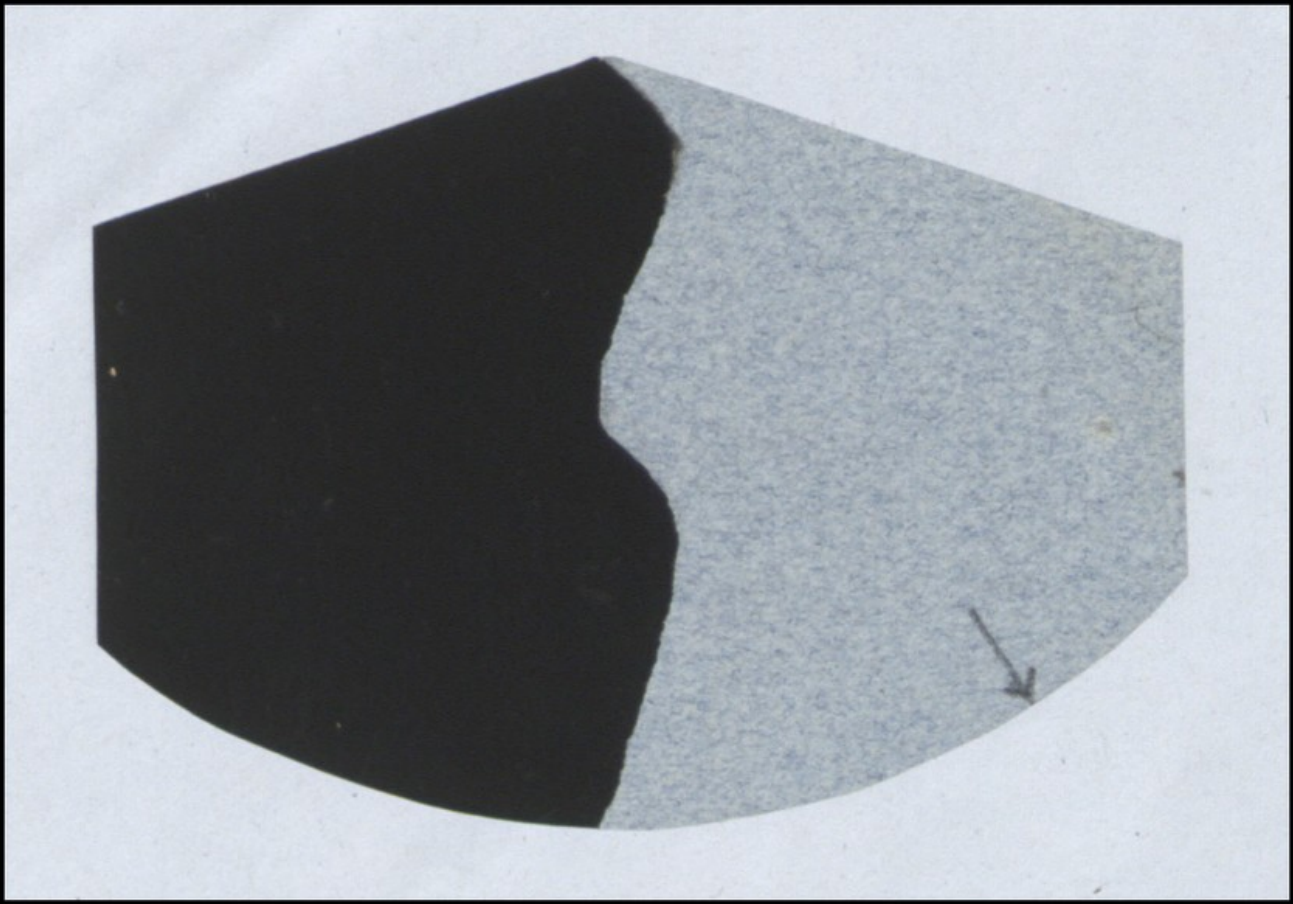
Chart



f. 31v

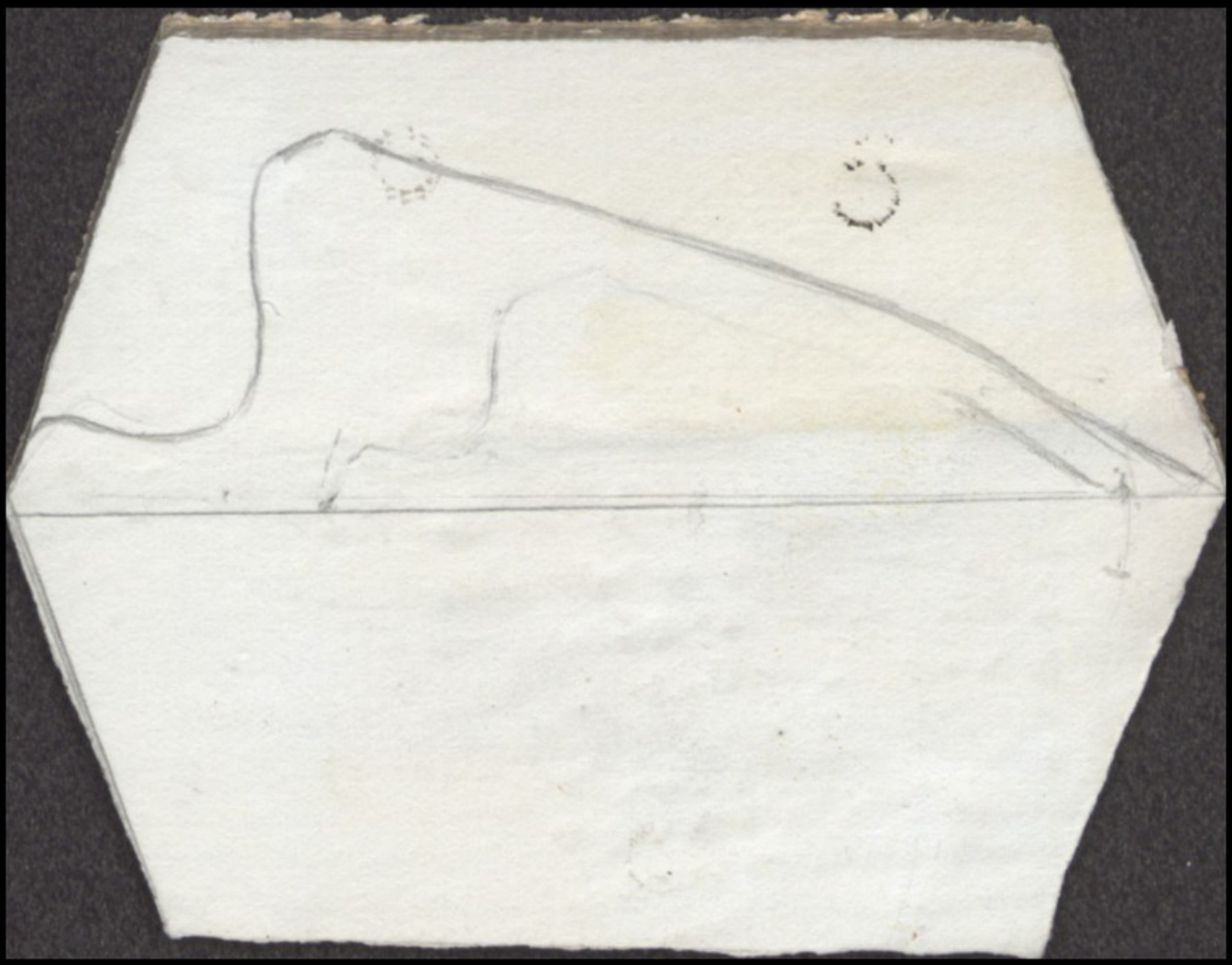
t

Chin



f. 32v

Clair



f. 33v