Numeralised Profiles for Classification and Recognition

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NATURE

NUMERALISED PROFILES FOR CLASSIFICATION AND RECOGNITION.

WHEN children or savages attempt to draw a human profile, the result is usually a rude figure that lays stress on five cardinal points. These are the notch between the brow and the nose, the tip of the nose, the notch between the nose and the upper lip, the parting of the lips, and the tip of the chin. Supposing these five points, B', N', L', L', and C', to be located with fair precision, as will shortly be shown to be feasible, then Fig. 1 is directly deducible from them, including the vertical and horizontal axes, C'B', and C'X at right angles to C'B'. The position of the five cardinal points varies in different profiles much more than the probable error of measurement. So though Fig. 1 is a mere skeleton, which determines what may be called the set of the features, and corresponds to the primary triangulation of a country, other points are to be derived from it, such as the intersection with the outline by perpendiculars, drawn from the middle or other specified division of the lines, etc. This skeleton also serves as an excellent basis for the classification of profiles and for anthropological statistics.

Peculiarities of profile, as a racial or family characteristic, can be expressed numerically by an extension of this system in a way that promises to be serviceable for eugenic records. It was, in fact, largely with this object in view that I began the inquiry. The replacement in all scientific work by numerical values, in the place of vague adjectives, is a gain of first-class importance. There is no way known to me, other than this, by which likenesses can be "lexiconised," that is, arranged as words in a dictionary. A needed portrait may be thus discovered by a formula, as a spoken word is found in a dictionary, by means of the letters that express its sound. There are many simple purposes of newspaper interest to which this same method might be applied, but with more elaboration.

The practice of cataloguing profiles may perhaps become useful as a secondary means of identification when the number of persons who are catalogued shall have become too large to be readily dealt with by finger-prints alone. It will also be shown that four

FIG. 1 FIG. 2 FIG. 3

telegraphic "words" are sufficient to convey a very fair profile likeness. The cost of sending an extra four words by telegram to any part of the British Isles being only twopence, and of a moderate amount over-sea, the practice of telegraphing profiles, of all kinds, might become common. A refugee criminal could easily be outstripped by his portrait, sufficiently like to him to justify, in connection with corroborative evidence, his being placed for a while under police observation. The measures of profiles must, of course, be reduced to uniformity. Then, by utilising two out of the five cardinal points to give direction and scale, the mean positions of the remaining three points may be determined for any given race or family, together with the frequency of deviations of any given amount from those mean positions, and such other conclusions as can be reached by the modern methods of statistics.

The corrected values are here described by the same letters as the original ones, but without the dashes. The standard scale that is used is such that BC, the corrected value of B'C', shall be always [illegible] units in length. The reduction is, of course, effected by multiplying each measure in the portrait by [illegible] divided by its B'C'. The number [illegible] is preferable to [illegible], which would probably first suggest itself, for a variety of practical reasons, into which I need not enter here. Two figures are assigned to each measure, so the values [illegible] have to be written [illegible]. The measures are rounded to the nearest integer, there being no room for fractions, decimal or other. A millimetre is a convenient unit for purposes of drawing, more so than one-tenth of an inch; therefore, in reproducing the corrected measures, BC becomes [illegible] millimetres, and the other measures are altered in the same proportion.

A thick beard interferes with determining L' and L', but their positions can usually be inferred with a useful degree of precision in moderately bearded faces.

The accuracy with which the five cardinal points can be located differs considerably. The most exact determinations in an unbearded face are those of the points C' and N', and the direction of the line C'B'. L' comes next in order of exactness, then B' and, lastly, L'. The distance between C'N', or either of the diagonals, and a parallel line tangential to L' can be found with precision, but is not used here. C' and N' are each defined by the intersection of two tangents, as shown for N' in Fig. 3.

It is well to examine these conditions more closely, as they bear on the treatment of curvatures generally. A knowledge of them permits of rough and ready drawing, in which the principal matters being attended to, the less essential ones being more or less disregarded. One of the tangents is parallel to C'B', which is treated as vertical; the other is inclined to the vertical at 45°. Consequently, the curve of N' is contained in an obtuse angle of [illegible]. The tip of each prominence and the bottom of each hollow is represented by one or other of the three short circular arcs shown in Fig. 2, which are sufficiently numerous for the purposes to which they are here applied. The centres of all circles that touch both the vertical and the diagonal will necessarily lie in the line that bisects the obtuse angle between them; consequently, VO forms an angle with the vertical that is equal to half [illegible]. The tangent of this angle is [illegible]; therefore the position of the line of centres may be found by laying off a point V in a vertical direction, at [illegible] units of length from O, and by drawing another line from V horizontally to W, at a distance from it equal to [illegible] of the same units as before. Then the line of centres passes through O and W. It is easily shown (Fig. 3) that the points of contact between the circle and the two tangents are exactly [illegible] of arc apart. The length of the chord of that angle is equal to about three-quarters of the radius. The shortness of the chord, when the radius is small, is well seen in Fig. 2, and must be borne in mind; it accounts for the scarcely noticeable differences in the curvatures, and consequently for the fewness of the standard arcs that are necessary. The arc of [illegible] is shown by a heavy line in Fig. 3, where the circle has a radius of [illegible] mm. There is often a colloquial confusion between the obliquity of the planes between which an edge lies and that of the sides of the edge itself. The former may be very acute, and the angle of the edge would be equally acute if the planes were prolonged until they met; but usually they do not meet, the edge itself being more or less rounded. The acutely inclined faces of a knife may have a blunted edge, that fails to cut the skin without much pressure, while a broken piece of glass, the fracture of which is perpendicular to its face, but the edge of which is not blunted, cuts too readily makes a gash.

The arcs of [illegible] in Fig. 2 all refer to the cutting edge, so to speak. The direction of the lines within which the cutting edge is situated is determined by the adjacent cardinal points towards which they point.

Referring back to Fig. 3, [illegible], the radius, [illegible]; therefore the distance between N and the circle is only [illegible], which for a radius [illegible] mm. is about three-quarters of 1 mm. This small value is diminished in proportion for lesser values of r (see Fig. 2), so for practical purposes N (and similarly C) may be considered to lie only just outside the convex circumference of the arc by which they are in each case represented.

The values of r which are used as standards for the lesser curvatures are [illegible] mm., [illegible] mm., and [illegible] mm. The drawings in Fig. 2 are not exactly on this scale, but the differences are unimportant. It is unnecessary to divide these small curves into concave and convex, as their condition in that respect is indicated by the part they play in the profile. Two other curvatures of the larger radii, [illegible] mm. and [illegible] mm., are used to express and to define the concavity or the convexity of the ridge of the nose.

It is well, at the risk of some repetition, to describe in a single paragraph the nomenclature of the five cardinal points in the original portrait. B' is the point in the fronto-nasal notch at what is judged to be its deepest part; N' is the tip of the nose, found in the way already described; L' is the point of contact between the nasolabial notch and a tangent, drawn diagonally to it and parallel to the other diagonal; L' is a point half-way between the furthest positions at which the lips would touch one another if they were lightly closed; C' is found by a similar method to that used for N'.

The portraits are described by numerical formulæ. Each formula consists of four groups of figures, five figures in each group. The shapes of the profile at and immediately adjacent to the cardinal points, and

of the intermediate links, are expressed by single numerals, as set forth in tabular form in Fig. 4. Six are provided in each case. The radius of the standard curve that best fits the brow-nasal notch, b, is expressed by its appropriate numeral, as shown in the first line of Fig. 4; also the inclination of the brow immediately above b, whether it slopes forwards, backwards, or is upright. The ridge of the nose g is counted as either sinuous, concave, or convex, in two or three different degrees, or else as straight. The letter n includes

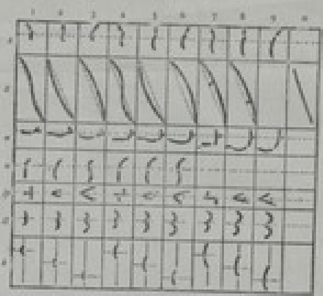

Fig. 4.

both the very tip of the nose and the outline underneath it, which leads towards the naso-labial notch. The lips require two statements, and therefore two separate figures; the former, lp, shows whether the lips are shut, parted in the portrait by 1 or 2 mm., or open by 3 or more, and, again, whether they project evenly, or are overhung or underhung. The latter notation, ll, expresses the sizes of the upper and lower lips respectively, whether they are small, medium, or large. The outline between the lower lip and the chin is always notched, and k describes the size and position of the notch, whether it be small, medium, or large, and whether it be high, medium, or low. The curve of the chin itself at C' is not given.

I have called these profiles "numeralised" to express the fact that they are transformed into numerical formulæ. Twenty figures enter into each formula; they are arranged, as for telegraphy, in the way already described, into four groups of five figures in each group. A "figure," in telegraphic language, includes not only the ten numerals, 0 to 9, but the three symbols in addition, of a stop (.), a hyphen (-), and a short oblique line (/), such as is used in fractions. The arrangement in groups of five, or in "quintets," proved suitable to other similar work on which I was engaged, so it has been adopted throughout. In the four quintets, or, we may say, in the four words that compose a formula, the first three refer respectively to N, L, and L, and in that order. The first two and the last two figures, in each of the first three quintets, give the position of the point in question in X and in Y to the nearest whole millimetre. The middle figure of the quintet is used in connection with Table IV., to describe the peculiarities of the profile at and immediately adjacent to that point. The fourth and last of the quintets is preceded by a dot (.), to show that it belongs to a separate category, namely, to the peculiarities of b, g, ll, and k, as set forth in Table IV., and in that order. When proceeding to draw a figure from a formula, it is advisable for a beginner to use tracing paper. Then, after drawing an arbitrary line in any convenient place, of 50 millimetres in length, to serve for BC and for the vertical axis, and another line CX, at right angles to it at C, for the horizontal axis, to plot the positions of N, L, and L; then, laying the transparent paper upon Fig. 4 to trace, or copy on an enlarged or reduced form, according to the space available, the figures of n, u, and lp, very faintly. Next to do the same to b, g, ll, and k. Afterwards to harmonise the whole tentatively, with faint and brush-like strokes; then with a free and firm hand to draw the outline through them. Tracing paper may otherwise be convenient, because when the original profile looks to the left, by the simple act of turning the traced outline it affords an almost equally close profile, looking to the right.

When transforming the portrait into a formula, the reverse process has to be followed with little alteration. Before finally adopting any formula, the portrait should be reconstructed from it and the formula revised where necessary. It is easy after a little practice to mentally compose a formula so far as the seven small letters are concerned, from a brief inspection, either of the picture or of the living face. Also to reproduce by copying the symbols from Fig. 4 without caring to trace them. In short, the whole operation may be satisfactorily gone through by an intelligent person in a rapid and off-hand way. This might become a popular game for the members of a party to practise this art upon one another, care being taken that the five cardinal points should be truly laid down.

Eight couplets of portraits are given in Fig. 5, both for illustration and for the reader to practise upon. Each couplet contains the original portrait on the left, its formula along the bottom, and the reproduction from the formula (to the standard scale) on the right.

It will be seen from Table V. that four-word portraits are by no means deficient in resemblance to their originals. I think they are considerably more like to them than the sketches, usually printed in the illustrated newspapers, are to the public characters whom they profess to represent. They are, to say the least, of considerable negative value, sufficing to eliminate at the rate of about nineteen out of every twenty individuals as not being the person referred to.

Any form of telegraphy suffices to transmit these four-word profiles. In other respects they are far inferior to those complete pictures now transmitted between certain offices, by means of costly and delicate apparatus, by a method at present undeveloped to its utmost.

It will be observed in the second of the portraits, that of Dr. Bennet Langton, the point L lies to the left of CX, and has therefore a negative value. This is -4, which is expressed here as -04, reckoned to the nearest integer. It is, however, recorded as 96, that is to say, as 100-04, an artifice which practically transfers the horizontal measurement from CX to another

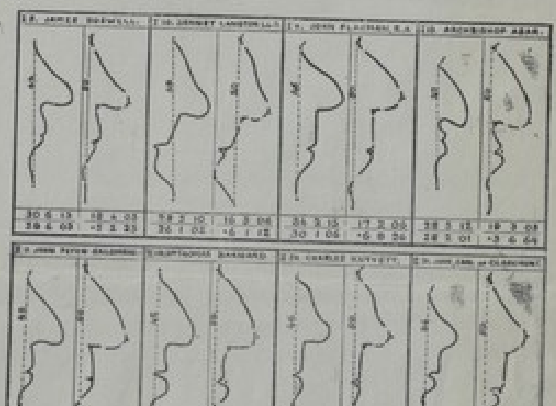

Fig. 5.

line drawn parallel to CX and 100 mm. to its left. No confusion need arise through this transformation, since it leads to very large values lying adjacent to very small ones, and therefore showing that they belong to a different category. The minus values in Y are similarly treated. The process may also be extended beyond the eight squares that surround the primary one.

My experiments have been chiefly made upon the "Collection of Portraits by George Dance, R.A., Sketched from Life and Engraved in Imitation of the Original Drawings" (Longmans and Co., 1809). They were convenient to work with, being all drawn on scales differing little from that of the standard. All the portraits are unbearded and in exact profile, with three or four exceptions. Those that are available are sixty-eight in number. The name of the person to whom each of the eight portraits in Fig. 5 applies is written along its top, and the volume and page of the two folios by Dance, from which the original was traced, are given in the upper left-hand corners. There are several notabilities in his collection besides those in Fig. 5. Among these are Horace Walpole, General Paoli, Haydn, and John Philip Kemble. An exhibition of Dance's pictures was recently held in London. He had a considerable reputation in his time as a portrait painter.

Methods have been used to aid the recollection of dates and other figures. That by Gray, in his "Memoria Technica," was to transform each numeral into either a consonant or into a vowel or diphthong, as might be the most convenient, and thereby to build up words easy to pronounce and to remember. Those who are familiar with such a process might apply it here, and convert the four quintets of numerals into four words, getting over the difficulty of employing the three additional symbols as best they can. If they succeed, the phrase of "four-word profiles" would be literally exact.

I do not find that a general resemblance can be much increased by using one or a *few* more quintets or words. A fifth quintet might perhaps be usefully employed in extending the range of the profile, if it contained one figure to describe the chin and just below it, another to describe the brow, and two figures, 00 to 99, which would suffice to give the general shape of the head.

The next distinct stage in order of accuracy is separated by a great distance from the present one. It requires so large a number of dots that straight or slightly curved lines drawn through them will flow smoothly when seen at the ordinary reading distance from the eye. It needs as many as perhaps fifty quintets to describe a profile with exactness and the rest of the head with rough precision, and still more to include the eye and ear. I have made many of these, which, when reduced to the standard scale of BC = 50 mm., are practically identical with the originals, when viewed in a somewhat careless way by a normally sighted person at a distance of 12 inches. A different use is made in this case of the middle figure of the quintet. Thus: the numeral 1 means that a half-unit is to be added to the first two figures; 2, that it is to be added to the last two; and 3, that it is to be added to both of them. This power of doubly minute description is often wasted in the outline that joins and includes the nose-tip and the two lips. Another use for the middle figure of the quintet is to tell that a dotted line should be drawn from the preceding point, to signify doubt of some kind. A hyphen (-) in the middle of the quintet means to begin; an oblique line (/) to end; and a point (.) means an isolated point. But I will not go further into this now; neither will I do more than hint at the way of dealing with portraits that are not in exact profile, by multiplying their horizontal measures into the secant of the angle through which the profiles are turned away from it.

Much more might be added on extensions of this method, especially as regards its facilities and limitations in conveying plans—ceremonial, strategic, and others—for newspaper use. But its general principles have been explained, and as this letter is already too long I will end it abruptly here.

FRANCIS GALTON.

Paper in Nature 1910

Standard units of profile
belong here

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

42 Rutland Gate

S.W.

Mrs. Jones

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Collection of Portraits by George Dance RA. Sketched from the life since 1793 & engraved in imitation of the original drawings Longman & Co 1809

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3 Major James Rennell FRS
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5 James Boswell, biographer of Dr Johnson
6 John Moore. MD. novelist & travels. father of Gen. Sir J Moore
7 Earl of Dartmouth
8 Sir John Anstruther Bart Ch. J. of Supreme Court Bengal
9. Tiberius Cavallo FRS (b Naples) wrote in English on Electricity Magnetism &c
10 Bennet Langton LLD Greek scholar
11 John Flaxman RA
12 Sir Wm Chambers RA Architect
13 Archbishop Agar – Dublin. father of wellborn Ellis Visct Somerset
14 Alan Lord Gardner. Admiral, much service
15 Earl of Lucan created Baron & Earl

16 Sir Wm Scott Kt. (Bro of Herbert Camb)
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8. John Hoole Translator of poets
9. William Hodges RA, went with Capt Cook round the world, Painter
10. Joseph Batty MD
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12. John Rennie FRS Engineer
13. Sir Joseph Banks Pres. R.S.
14. John Wilmot FRS (? what for) Son of Rt Hon Sir Eardley Wilmot Ch. Jus. C.P.
15. William Sharpe. Surgeon
16. Patrick Russell. Physician, plague at Aleppo, Natural History - Indian Serpents
17. Richard Cosway RA painter
18. Jonas Dryander Botanist
19. Dr Thomas Barnard Bishop of Limerick. Friend of the wits of the day
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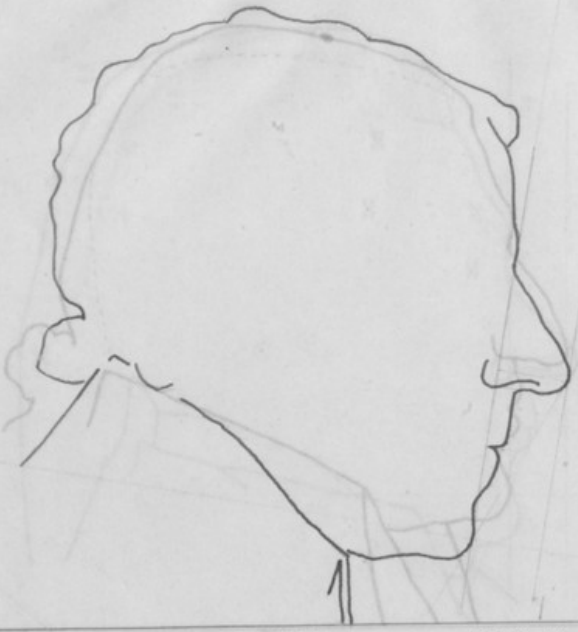

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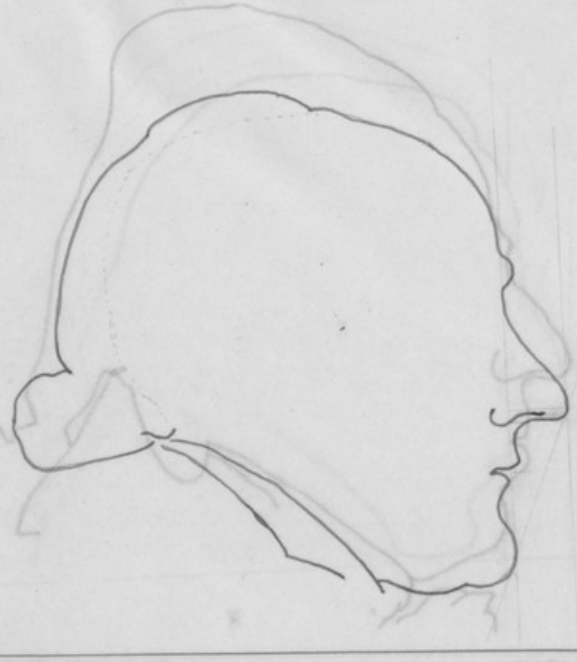

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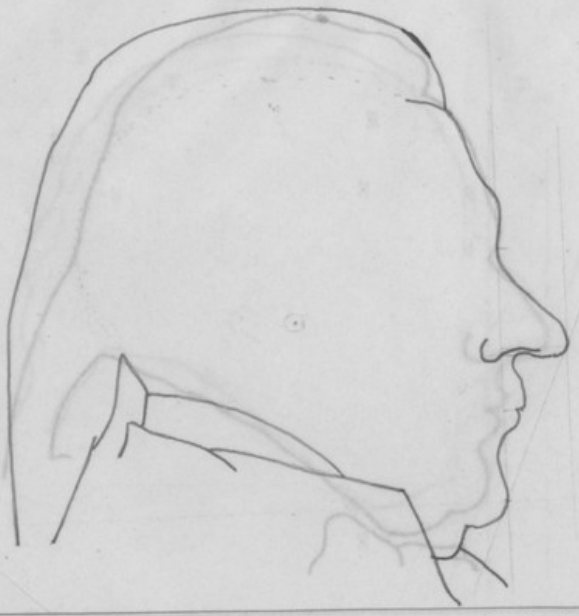

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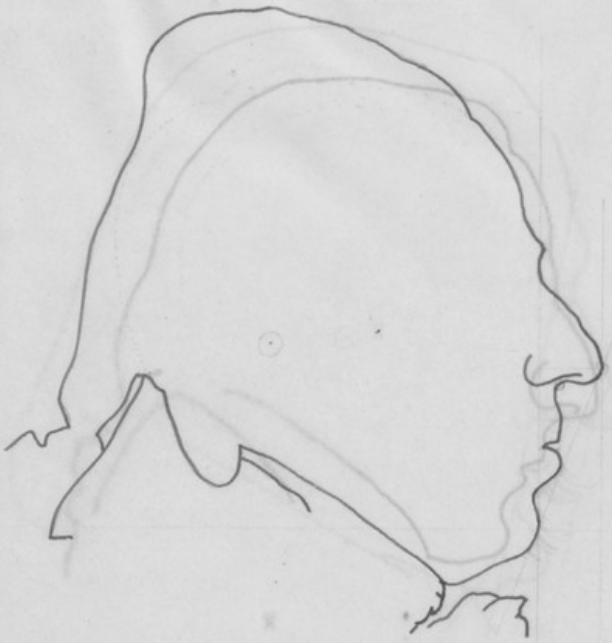

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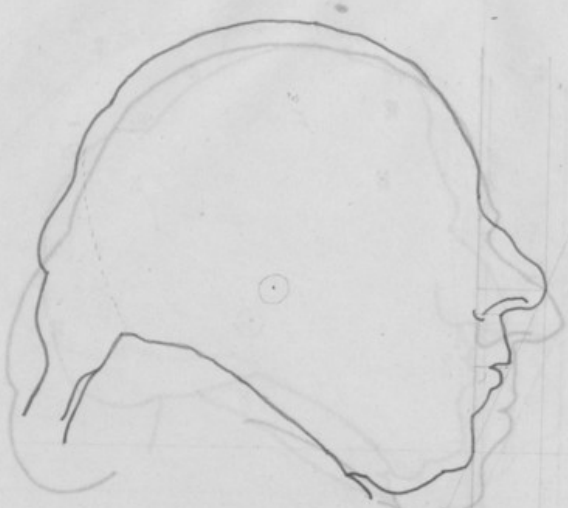

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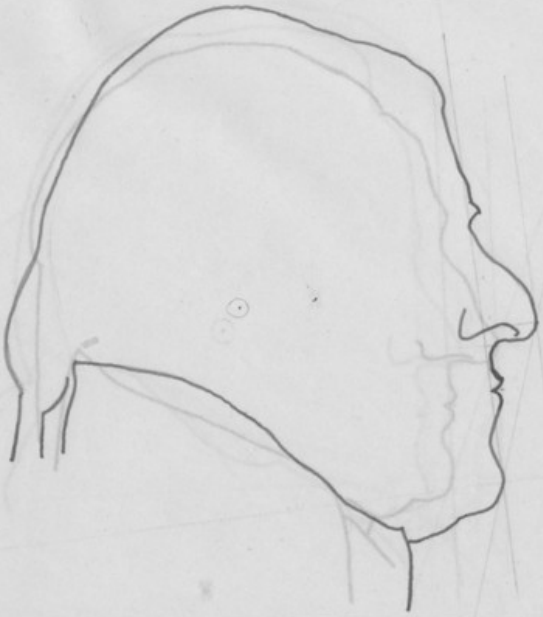

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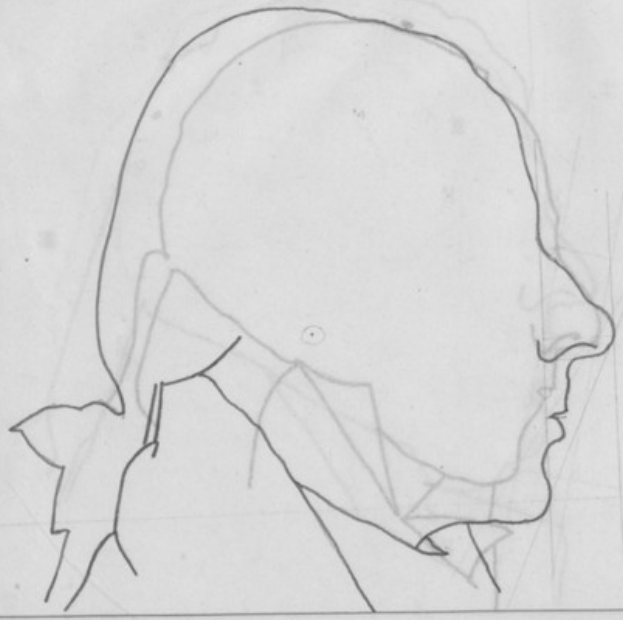

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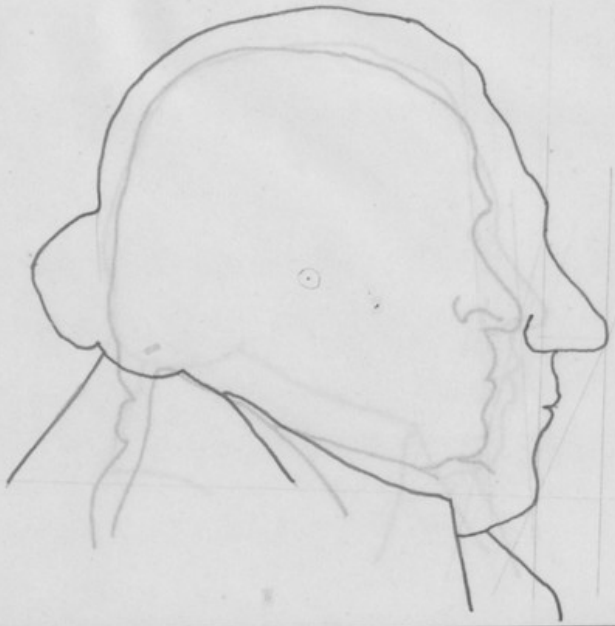

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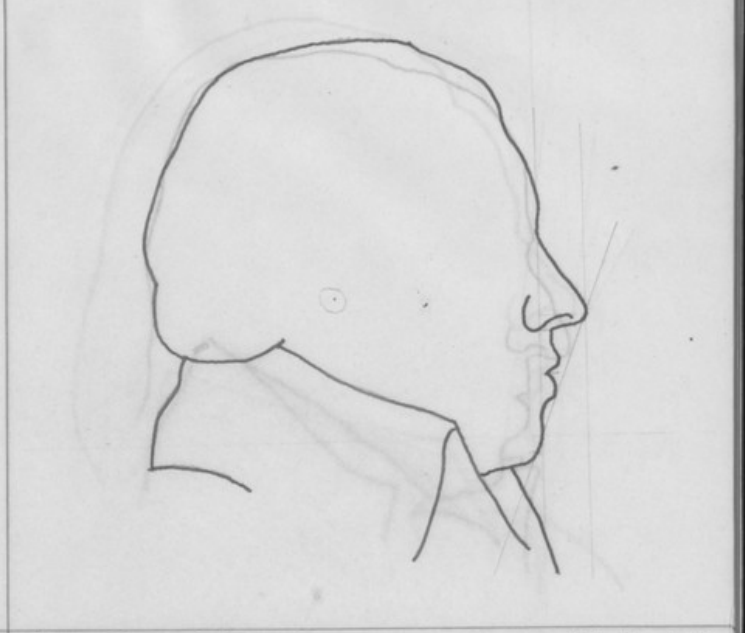

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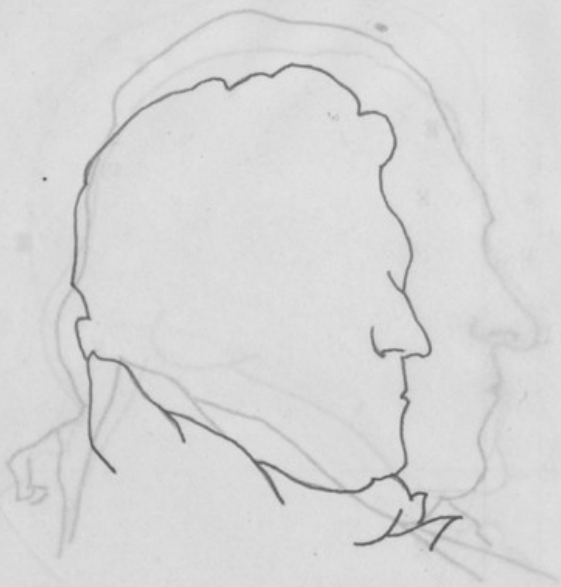

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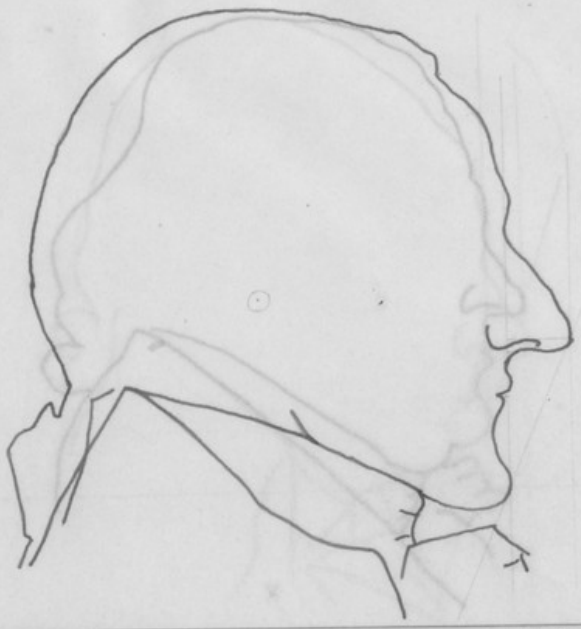

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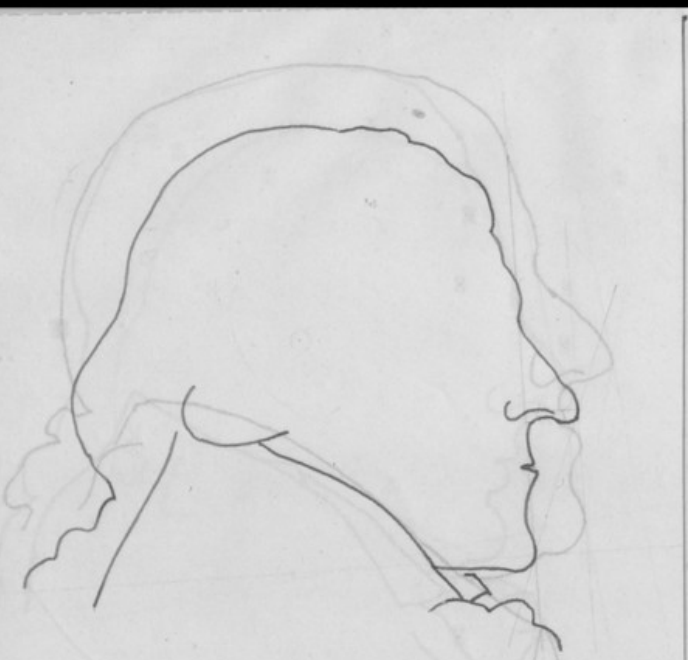

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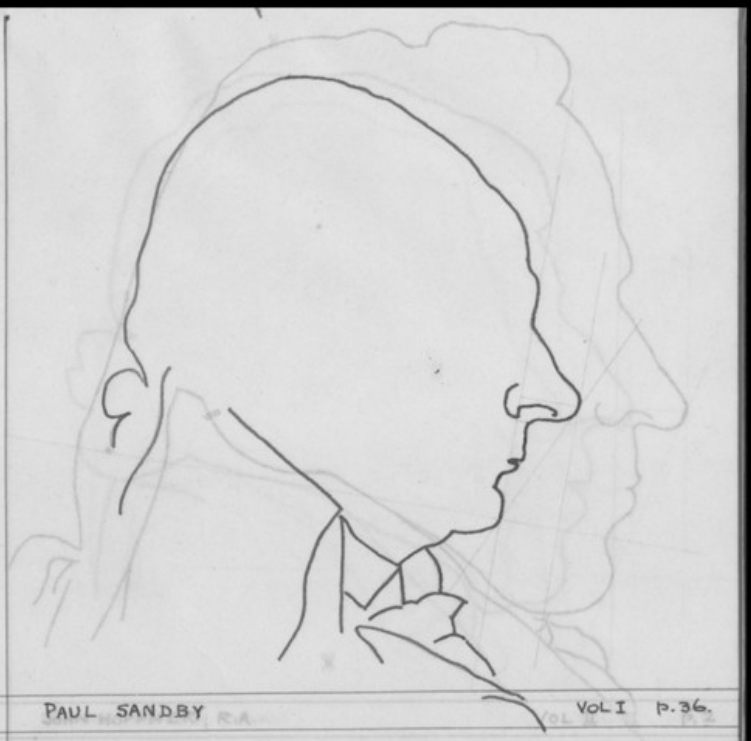

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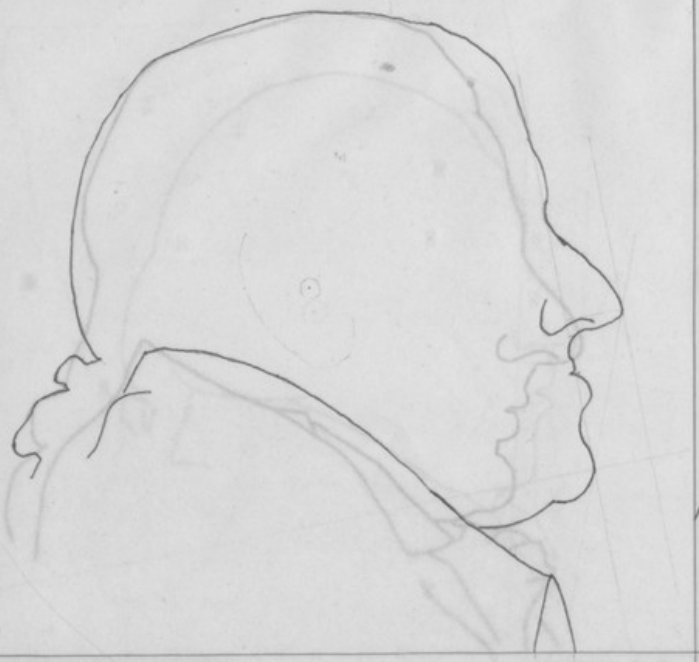
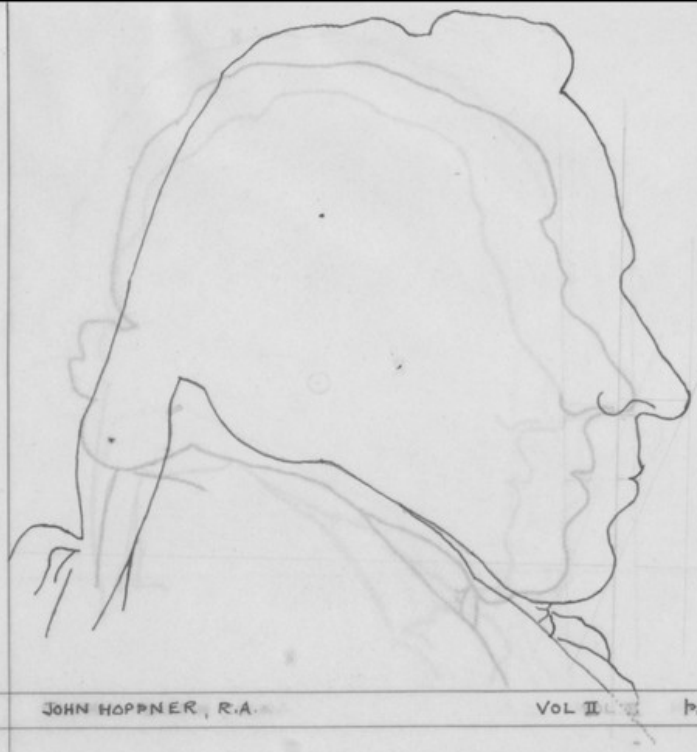


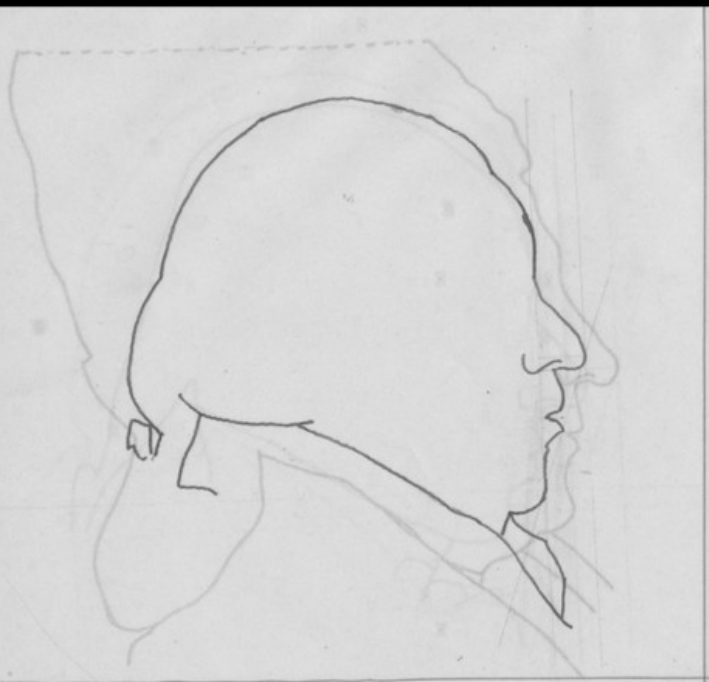
ROBERT MYLNE, F.R.S. VOL II P. 1



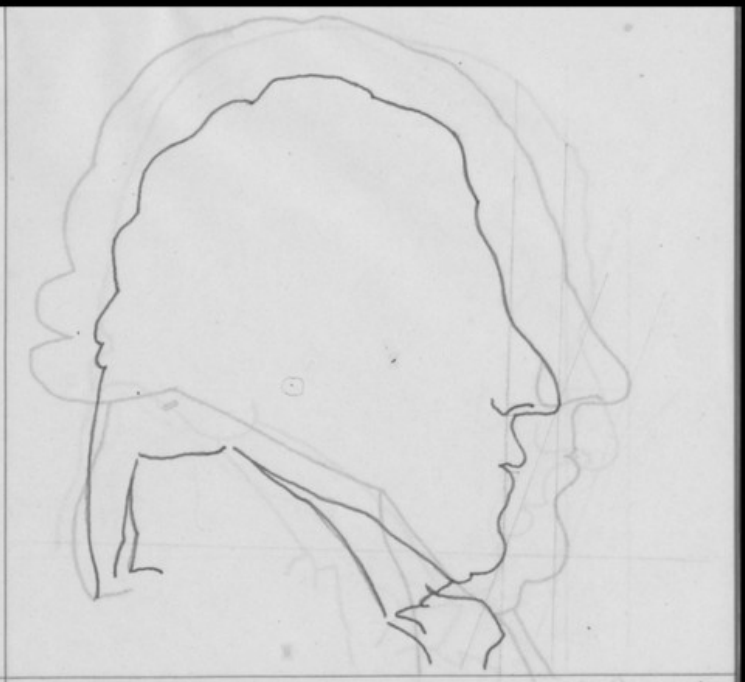
JOHN HOPPNER, R.A. VOL II P. 2

JOHN PHILIP KEMBLE VOL II p. 3

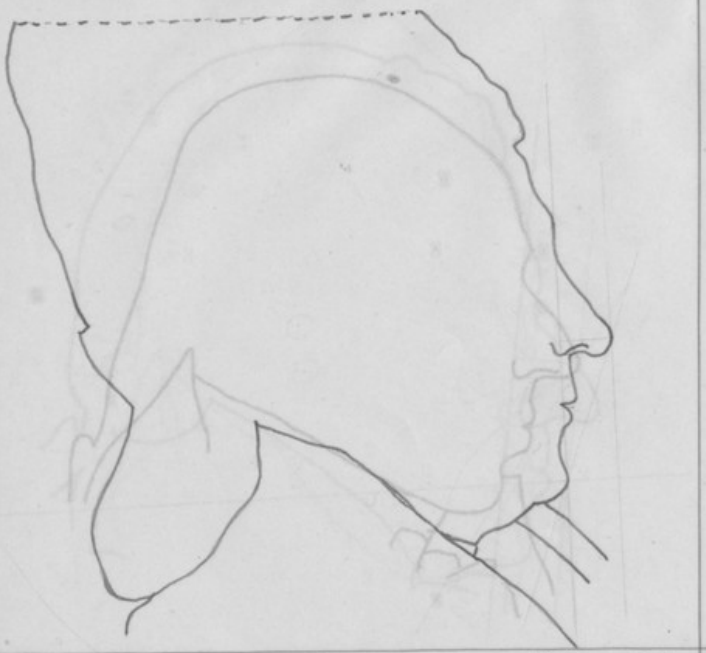
SAWRY GILPIN, R.A. VOL II p 4



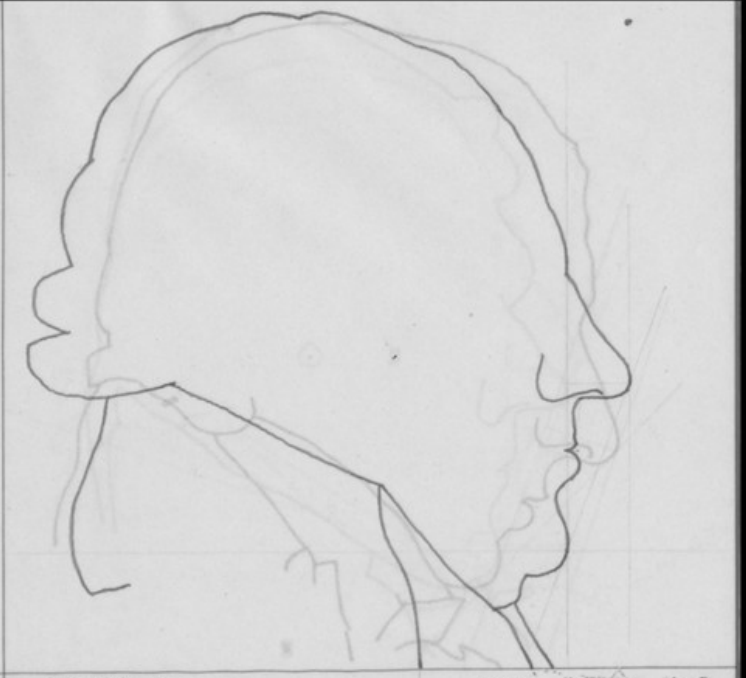
JOSEPH WILTON, R.A. VOL II P. 5



WILLIAM THOMAS LEWIS VOL II P. 6



CHEVALIER d'EON (AS A WOMAN) VOL II P. 7



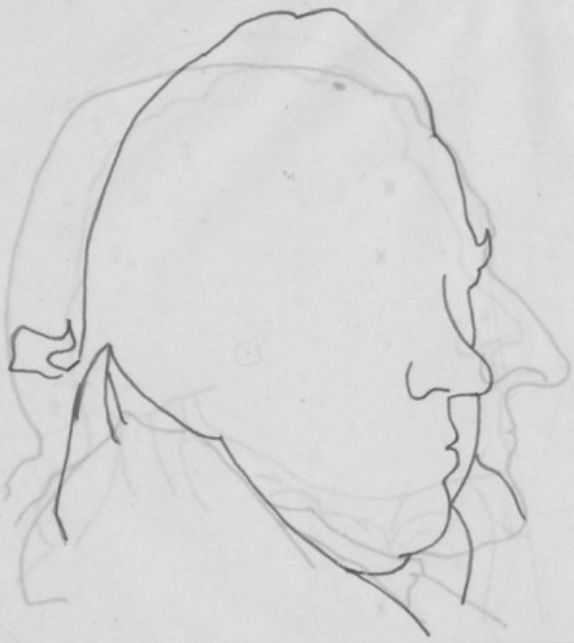
JOHN HOOLE VOL II P. 8

WILLIAM HODGES R.A. VOL II p. 9

ROBERT BATTY, M.D. VOL II p. 10

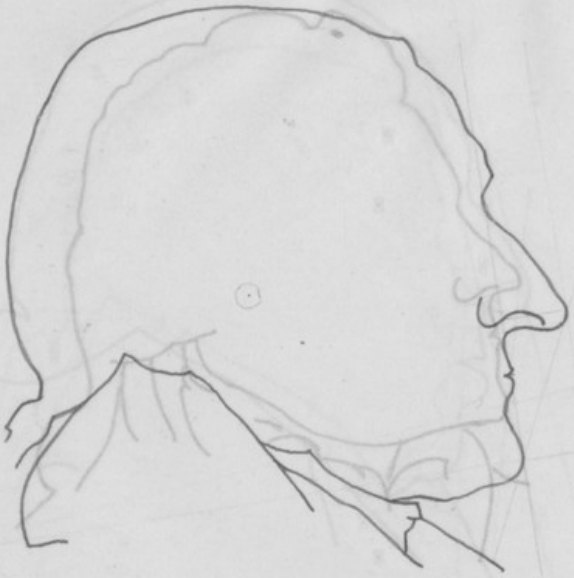
JOHN PETER SALOMON VOL. II P-11

JOHN RENNIE, F.R.S. VOL. II P.12

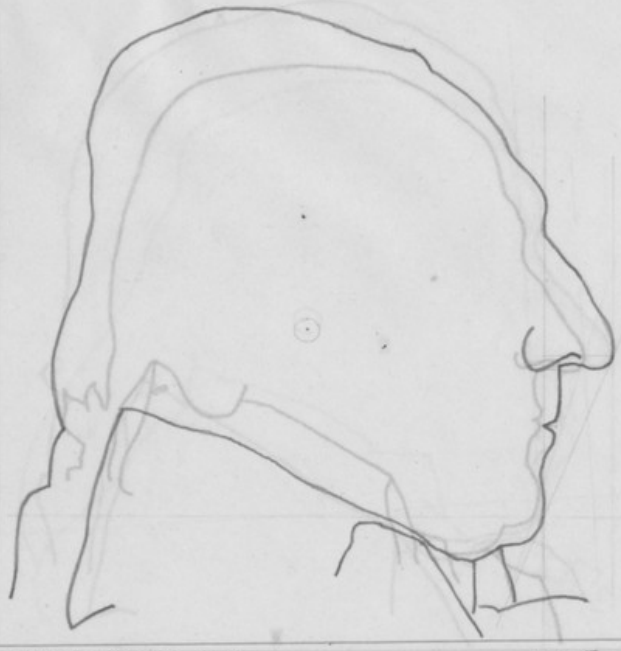


SIR JOSEPH BANKS, BART. VOL III P. 13

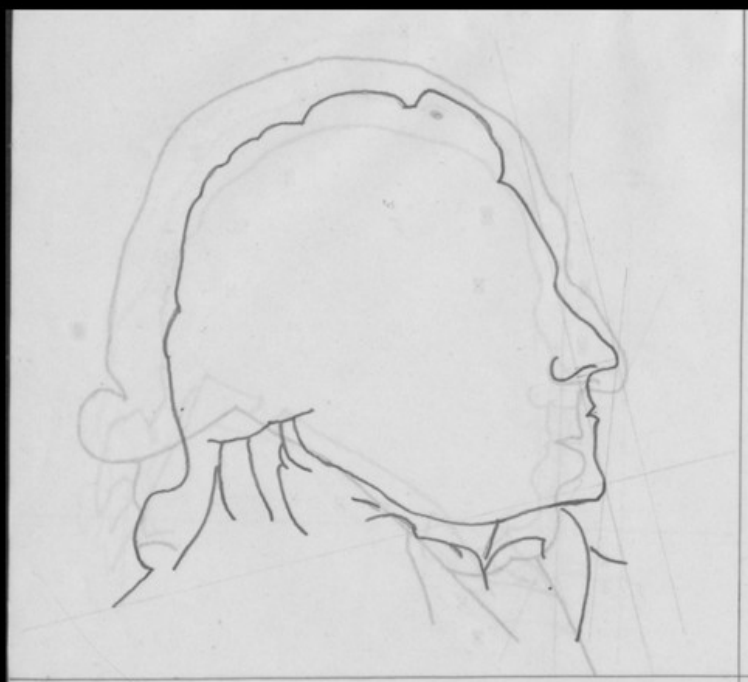
JOHN WILMOT, F.R.S. VOL II P. 14



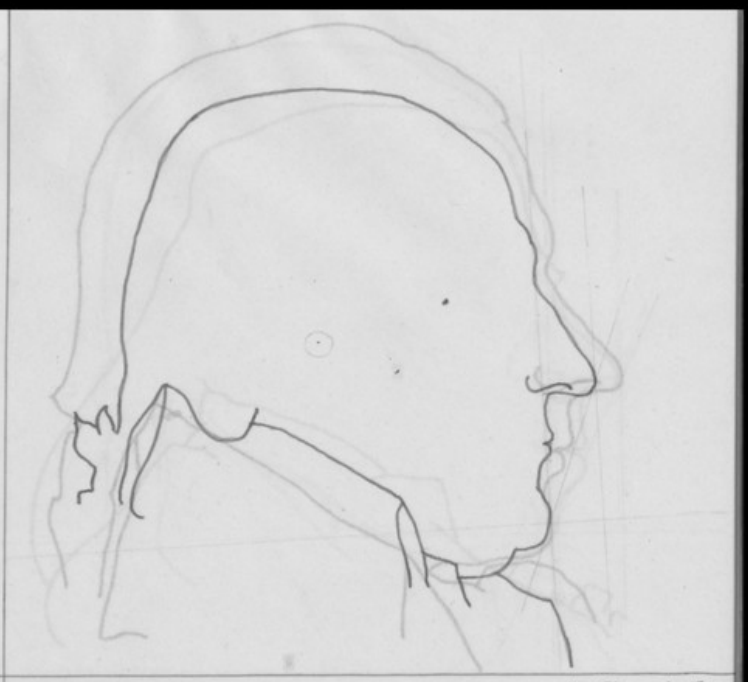
WILLIAM SHARP VOL. II p. 15



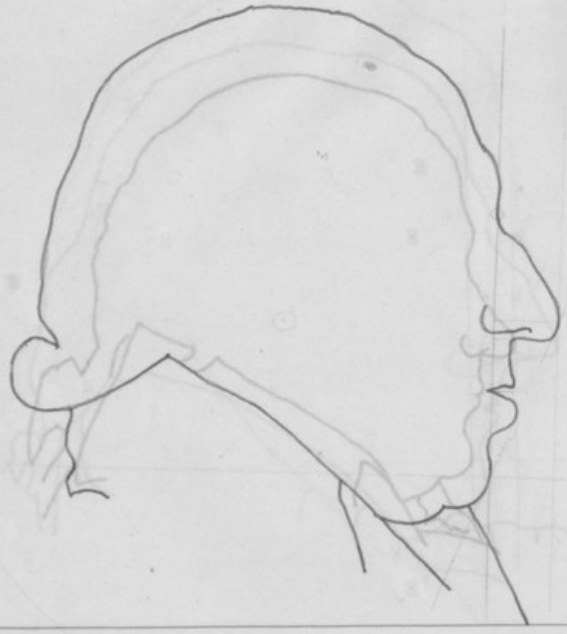
PATRICK RUSSELL, M.D. VOL. II p. 16



RICHARD COSWAY, R.A. VOL II P. 17



JONAS DRYANDER VOL II P. 18

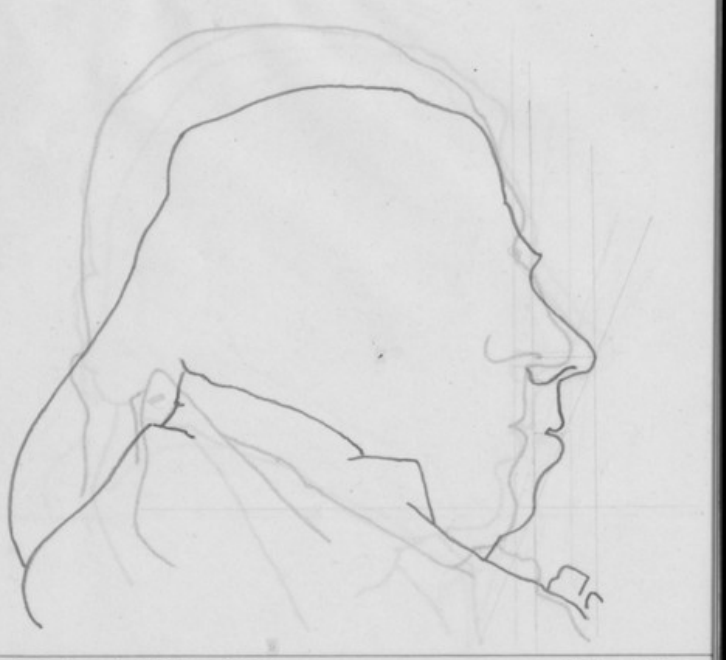


Dr T. BARNARD, BISHOP OF LIMERICK. VOL II p. 19

JOHN LATHAM, M.D. VOL II p. 20

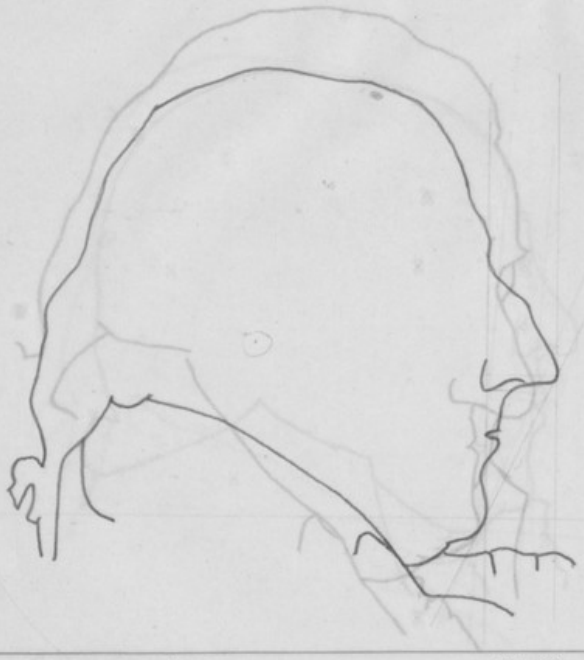
f. 33

JOHN FRANCIS RIGAUD, R.A. VOL II p. 21



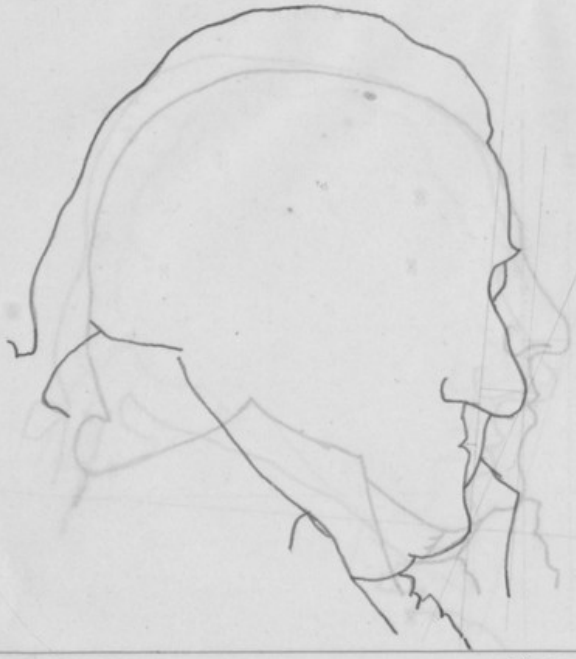
SAMUEL ARNOLD, MUS.D VOL II p. 22

f. 34b



RICHARD BUDD, M.D. VOL II p. 23

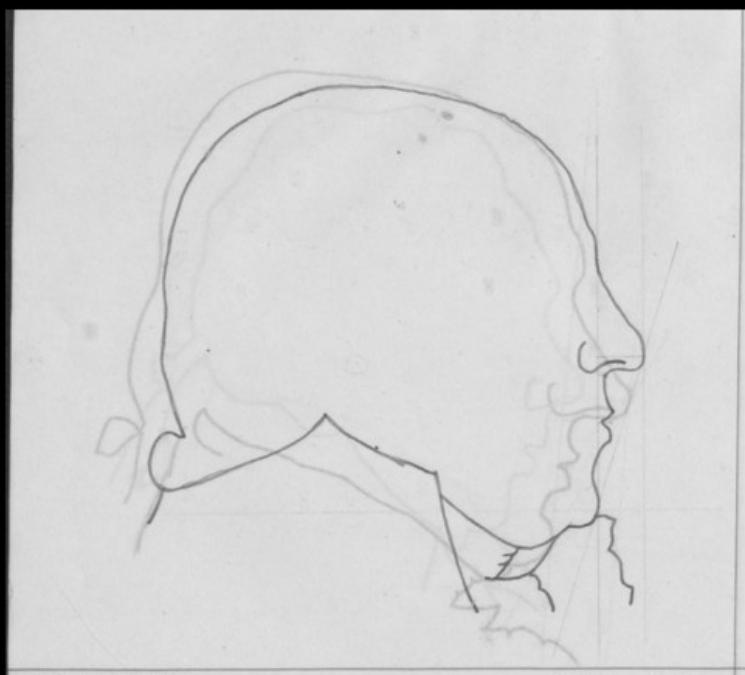
CHARLES KNYVETT VOL II p. 24



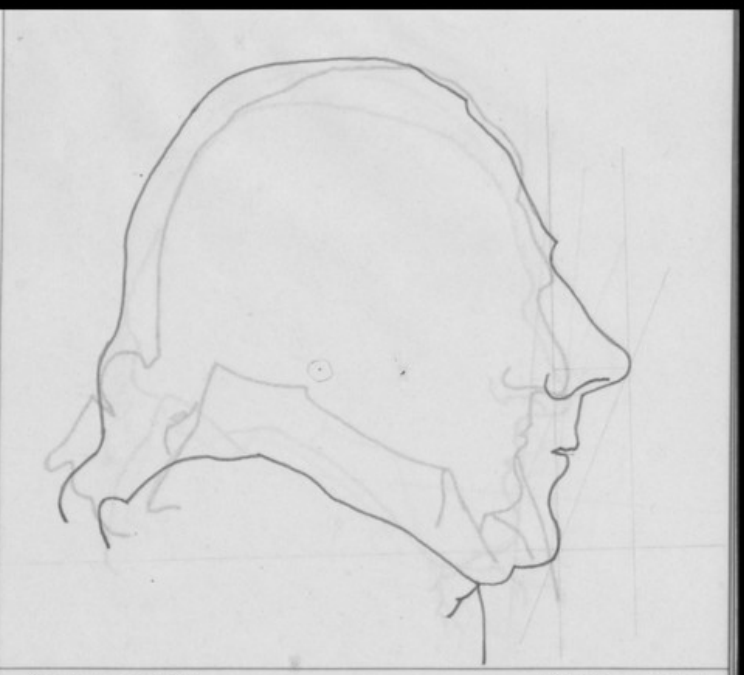
NICHOLAS REVETT VOL II p. 25

PRINCE HOARE VOL II p. 26

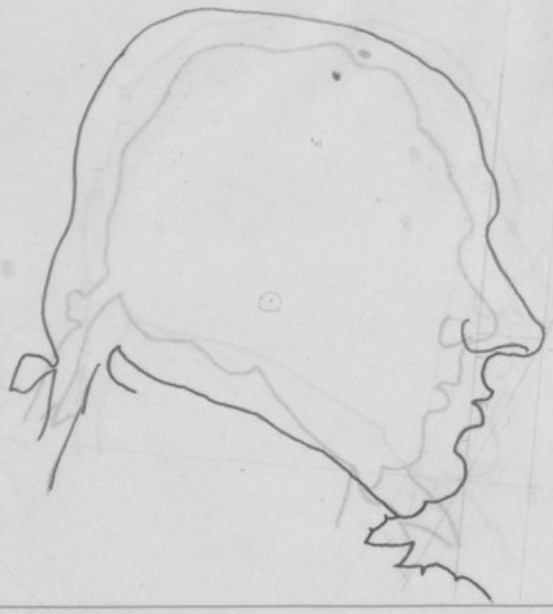
f. 36



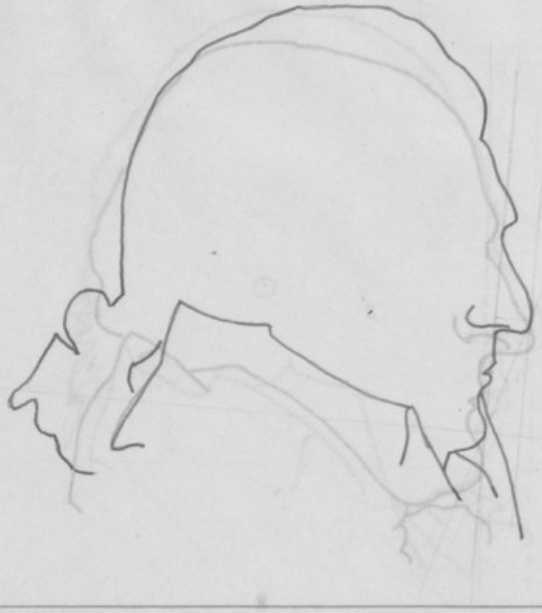
JOHN ZOFFANY, R.A. VOL II P. 27



JOSEPH MUNDEN VOL II P. 28



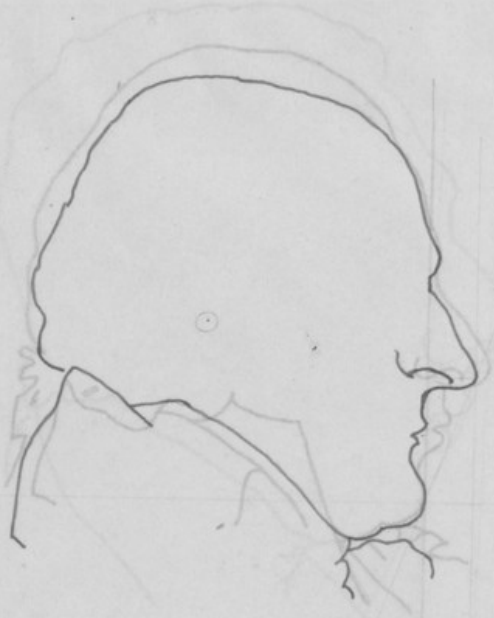
CHARLES ARMSTRONG VOL II P. 29



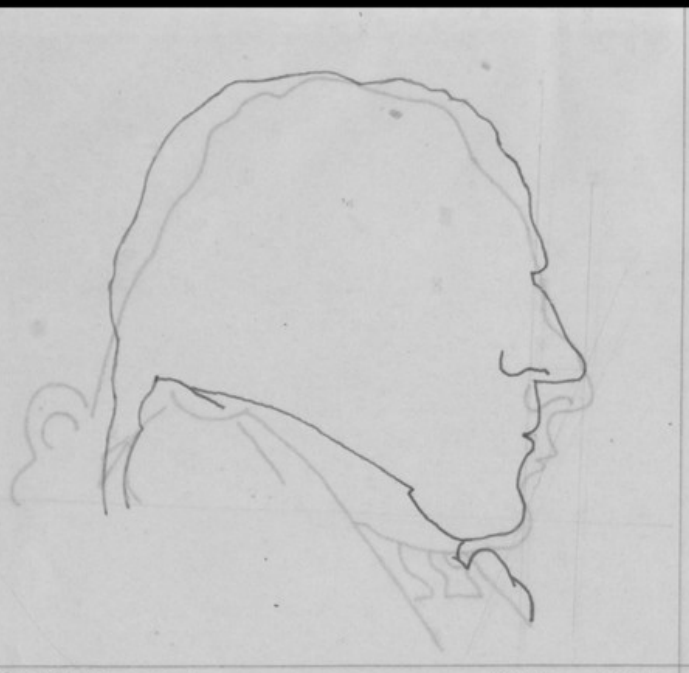
JOHN CARR VOL II P. 30

38

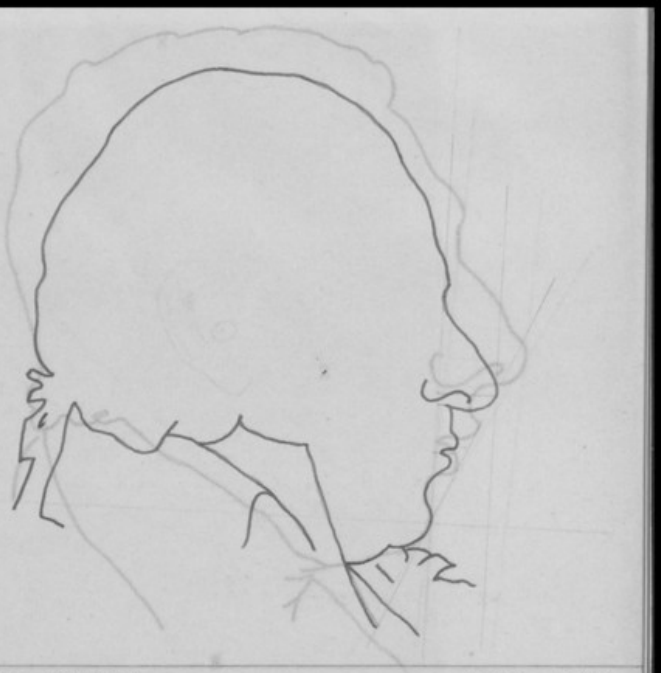
JOHN, EARL OF CHARLEMONT VOL II p. 31



MILES PARTINGTON VOL II p. 32



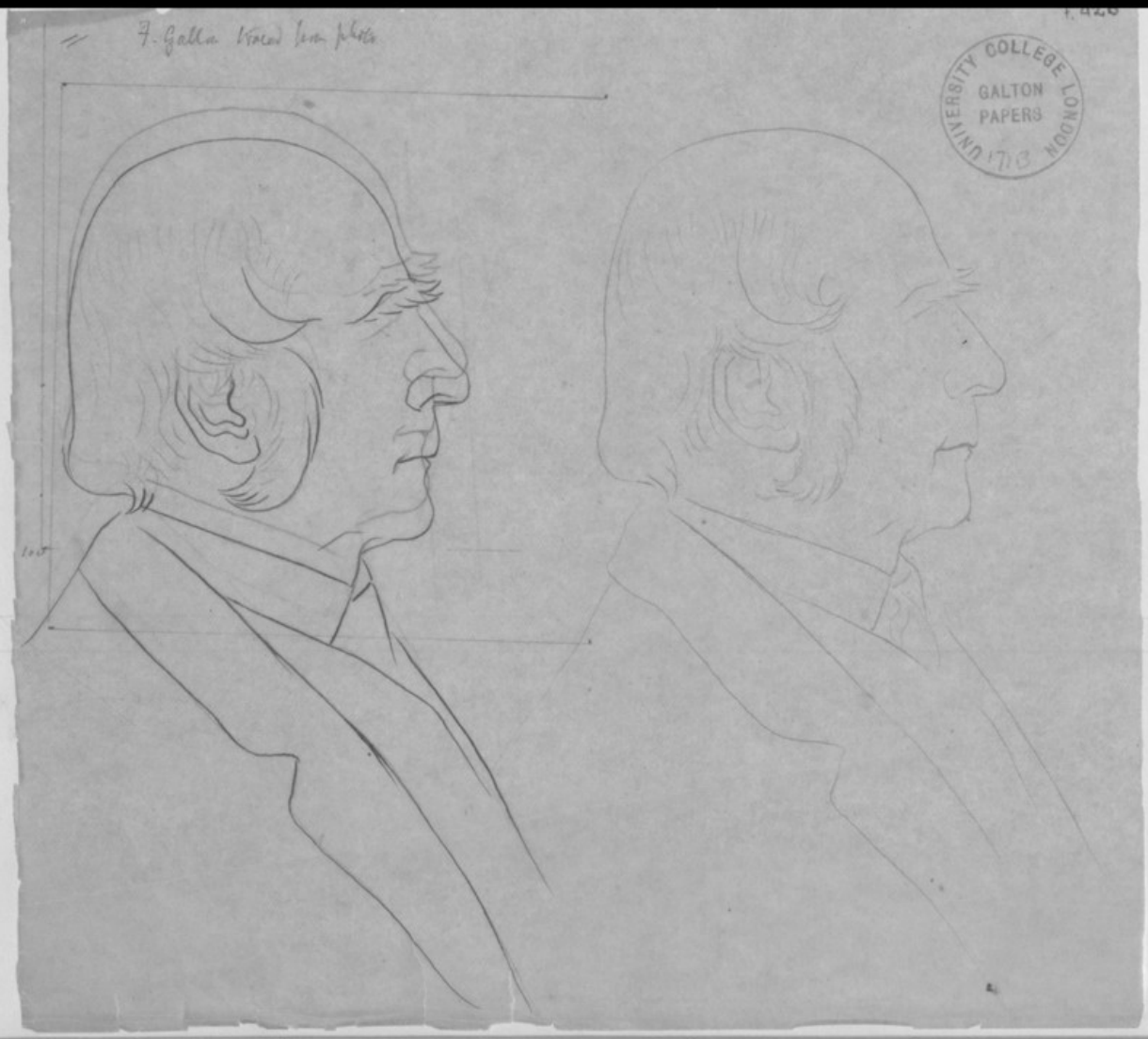
SAMUEL HARRISON VOL II p. 33

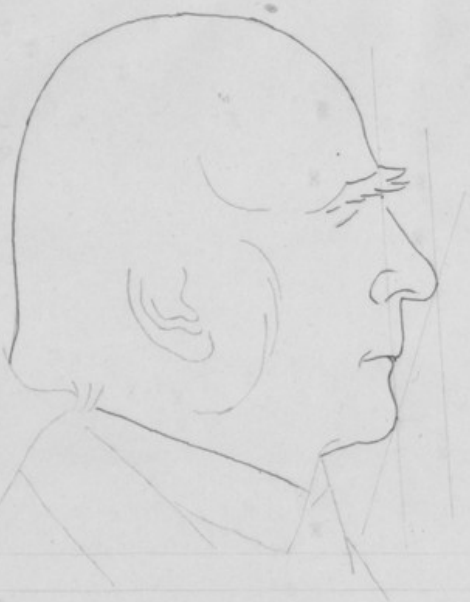


ROBERT BENSLEY. VOL II p. 34

THOMAS KARDWICK VOL II P. 35

THOMAS GIRTIN VOL II P. 36


F. Galton Traced from photo
UNIVERSITY COLLEGE LONDON
GALTON
PAPERS
178
f.42
f.43



f. 43

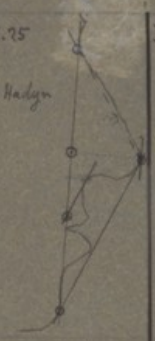
F. 1

Dance Vol I

I

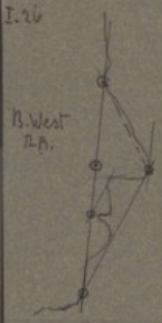
I.25

J. Hadyn



I.26

B. West R.A.



I.27

R. Smirke jun.r R.A

I.28

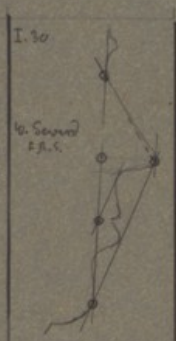
J. Bacon R.A

I.29

T. Banks R.A.

I.30

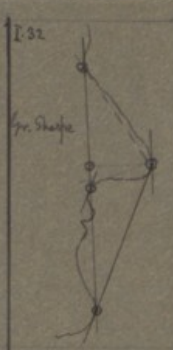
W. Seward F.R.S.



I.31

I.32

Jer. Sharpe

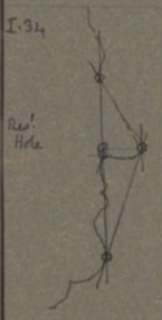


I.33

T. Heaine

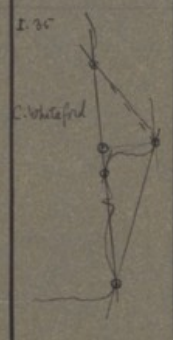
I.34

Rev.d Hole



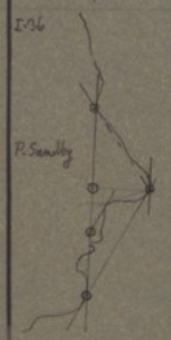
I.35

C. Whitefoord



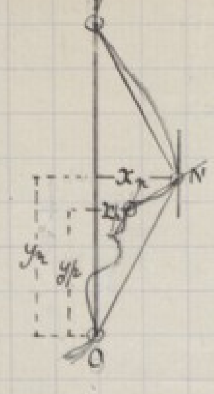
I.36

P. Sandby

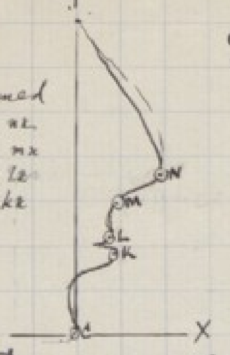


(Dance Vol I)

Data of Formulas in Cents?
(Nose & nose to lip only)



renamed
ny nx
my mx
ly lx
ky kx



Dance Vol I

	1 Hor.	Walpole	2 J.	Stevens	3 J.	Rennell	4 Ralf	Dickson	5 James	Boswell	6 J.	Moore	7 Lord	[illegible]
YO	46.5	100	51.0	100	44.0	100	43.5	100	42.5	100	43.7	100	40.0	100
y_n	30.0	64	31.2	61	24.5	56	26.0	60	26.7	60	26.7	60	25.7	64
y_p	25.7	55	27.2	53	24.0	55	23.0	53	25.0	59	24.2	55	21.7	54
x_n	12.0	26	14.5	28	10.2	23	10.5	24	11.5	27	11.5	26	10.2	25
x_p	3.5	8	4.2	8	1.5	3	2.0	5	2.2	5	3.0	7	2.0	5
	8 Sir J.	Anstruther	9 Thomas	[illegible]	10 B.	Langton	11 J.	Flaxman	12 Sir W.	Chambers	13 Archb.	Agar	14 Lord	Gardner
YO	44.5	100	42.5	100	48.0	100	44.0	100	42.2	100	37.0	100	44.7	100
y_n	26.7	60	28.5	67	27.0	56	29.7	67	24.0	57	20.5	55	26.7	59
y_p	23.7	53	24.2	57	25.0	52	26.0	59	21.0	50	20.0	54	23.7	53
x_n	11.5	26	12.2	29	11.0	23	13.5	31	10.5	25	9.5	26	9.5	21
x_p	4.5	10	4.5	11	1.7	4	5.0	10	2.2	5	1.5	4	1.2	3
	15 Lord	Lucan	16 Sir Wm	Scott	17 Sir G.	Rooke	18 Gen.	Paoli	19 Josh	Bates	20 Alex.	Dalrymple	21 J.	Northcote
YO	39.7	100	40.5	100	43.5	100	39.0	100	44.0	100	44.5	100	40.0	100
y_n	23.5	59	22.0	54	27.0	62	23.7	60	27.2	62	26.5	60	24.5	61
y_p	22.5	57	20.7	51	23.5	54	22.7	57	23.5	53	24.2	54	21.5	54
x_n	8.7	22	9.0	22	12.0	28	8.0	20	12.5	29	11.5	26	10.5	26
x_p	0.0	0	1.2	3	4.2	10	0.0	0	5.0	11	2.7	6	4.2	10
	22 T.	King	23 W.	Shield	24 J.	Barry	*25 J.	Haydn	26 B.	West	27 R.	Smirke	28 J.	Bacon
YO	34.5	100	38.5	100	34.5	100	47.0	100	38.2	100	32.0	100	39.0	100
y_n	21.5	62	25.0	65	22.0	64	28.7	59	23.2	61	20.5	64	24.0	61
y_p	20.0	58	22.5	58	19.0	55	24.0	51	21.0	55	18.0	57	22.0	56
x_n	7.0	20	9.0	23	8.5	25	13.0	28	9.5	25	7.2	23	9.0	23
x_p	1.0	3	2.0	5	2.5	7	3.0	6	3.0	8	0.7	2	3.0	8
	29 T.	Banks	30 W.	Seward	*32 Gr.	Sharpe	33 T.	Hearne	34 Rev.	Hole	35 C.	Whitford	36 P.	Sandby
YO	39.5	100	41.0	100	43.5	100	37.5	100	32.2	100	39.5	100	34.0	100
y_n	25.2	64	26.5	65	26.0	60	22.5	60	19.7	61	24.7	62	19.7	58
y_p	23.0	58	23.7	58	23.2	53	21.5	57	18.2	56	23.0	58	17.0	50
x_n	9.5	24	9.7	24	11.0	25	9.7	26	7.0	22	9.0	23	10.0	29
x_p	2.7	7	3.5	9	0.5	1	1.7	5	0.0	0	1.5	4	2.7	8

* 31 omitted as unsuitable.

f. 4 (3)

Dance Vol I

(Data & Formulae for lips only)
in Cents

	I.1 Horace Walpole		I.2 J. Stevens		I.3 J. Rennell		I.4 Bish. Dickson		I.5 James Boswell		I.6 J. Moore		I.7 Lord Dartmouth	
	46.5	100	51.0	100	44.0	100	43.5	100	42.5	100	43.7	100	40.0	100
ly	16.5	35	17.5	34	19.0	43	17.0	39	16.0	38	14.7	34	16.0	40
ky	14.5	31	13.0	25	12.5	28	13.5	31	13.5	32	9.5	22	11.0	28
lx	3.0	6	4.7	9	2.2	5	1.5	3	4.0	9	4.0	9	3.0	8
kx	2.0	4	2.2	4	1.2	3	−0.5	−2	2.5	6	4.5	10	2.0	5

	I.8 Sir J. Anstruther		I.9 Tiberio Cavallo		I.10 R. Langton		I.11 J. Flaxman		I.12 Sir W. Chambers		I.13 Arch. Agar		I.14 Lord Gardner	
	44.5	100	42.5	100	48.0	100	44.0	100	42.2	100	37.0	100	44.7	100
ly	16.0	36	15.5	37	16.0	33	16.0	36	15.0	31	15.0	41	17.5	39
ky	11.0	25	12.0	28	14.0	29	11.5	26	12.0	29	10.5	28	15.2	34
lx	3.7	8	6.5	16	−2.0	−4	6.0	14	2.5	6	2.5	7	2.0	4
kx	1.2	3	5.0	12	−5.0	−10	5.0	11	1.0	2	3.2	9	1.0	2

	I.15 Ld Lucan		I.16 Sir W. Scott		I.17 Sir Giles Rooke		I.18 Gen. Paoli		I.20 Alex. Dalrymple		I.21 J. Northcote		I.22 T. King	
	39.7	100	40.5	100	43.5	100	39.0	100	44.5	100	40.0	100	34.5	100
ly	15.0	38	14.5	36	16.0	37	16.0	41	16.0	36	14.7	37	12.0	35
ky	11.0	28	10.5	26	13.5	31	13.0	33	12.5	28	12.5	31	9.5	27
lx	0.0	0.0	1.2	3	5.0	12	0.5	1	3.0	7	4.2	10	1.5	4
kx	0.0	0.0	0.5	1	2.0	5	0.0	0	2.0	4	2.7	6	1.5	4

	I.23 W. Shield		I.24 J. Barry		I.25 J. Haydn		I.26 B. West		I.27 R. Smirke		I.28 J. Bacon		I.29 T. Banks RA	
	38.5	100	34.5	100	47.0	100	38.2	100	32.0	100	39.0	100	39.5	100
ly	16.0	42	13.2	38	16.0	34	14.5	38	13.0	40	15.5	40	15.0	38
ky	12.5	32	8.5	25	11.5	25	10.5	28	11.0	34	13.5	35	12.5	32
lx	2.5	7	3.0	9	4.0	9	3.5	9	1.5	5	3.5	9	4.0	10
kx	1.5	4	2.5	7	5.0	11	3.7	10	1.5	5	2.2	6	3.2	8

	I.30 W. Seward		(I.31)		I.32 Gr. Sharpe		I.33 T. Hearne		I.34 Revd. Hill		I.35 C. Whitford		I.36 P. Sandby	
	41.0	100			43.5	100	37.5	100	32.2	100	39.5	100	34.0	100
ly	16.0	39	unsuitable, not a profile.		17.5	40	14.5	38	13.0	40	15.5	39	10.0	29
ky	11.5	28			14.0	32	12.0	32	9.7	30	14.0	35	8.5	25
lx	4.0	10			0.5	1	3.0	8	0.2	1	1.0	3	2.0	6
kx	4.0	10			−1.0	−2	2.0	5	0.5	2	1.0	3	0.7	2

omitted in its right place above →

	I.19 Joah Bates	
	44.0	100
ly	15.5	35
ky	11.0	25
lx	4.0	9
kx	2.7	6

2 : 32.2 = x : 100   327/2000·6 1932

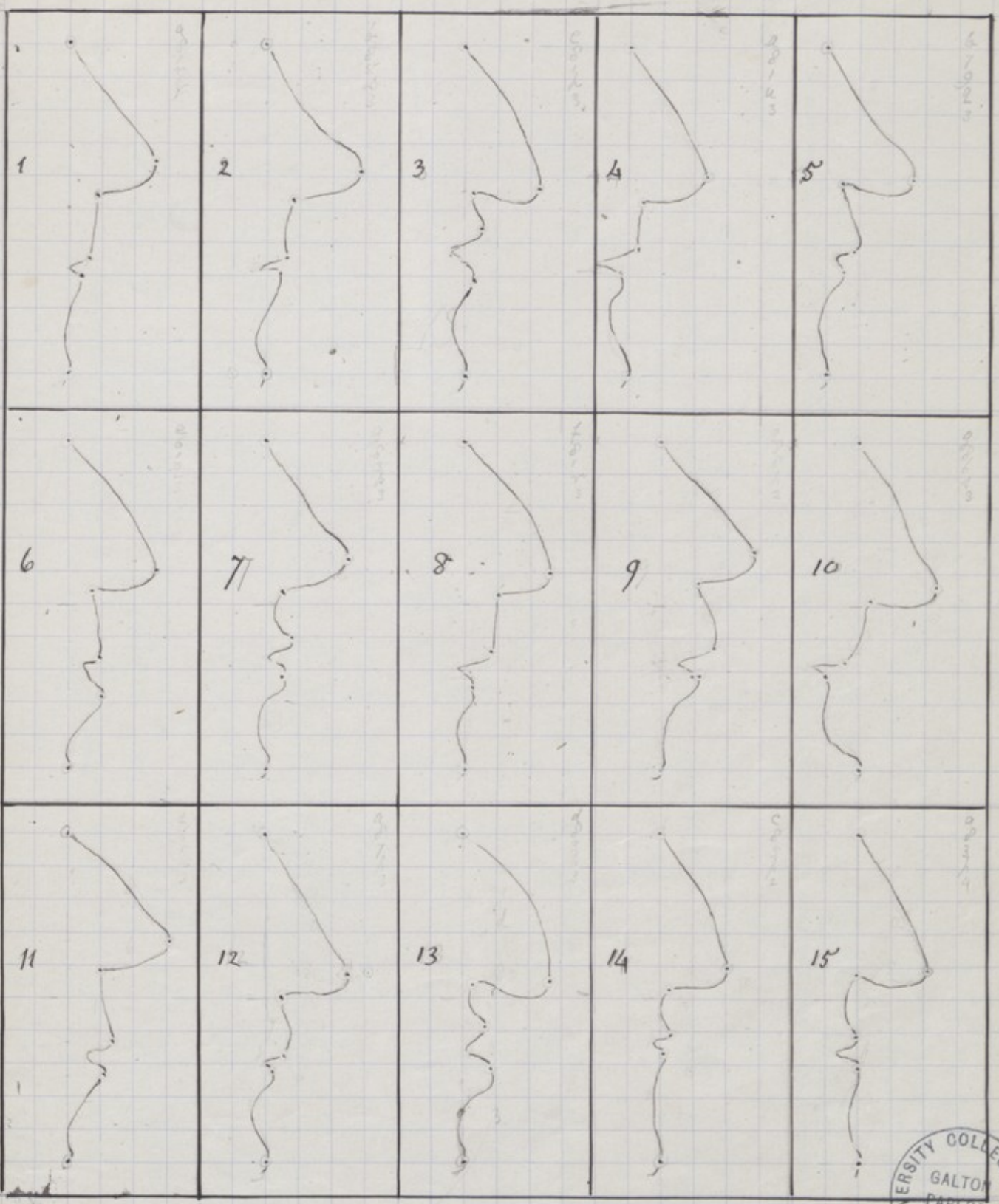
Dance Vol I Formulas in cents

f. 5 (4)

page	Name	n		m		l		k						
		y	x	y	x	y	x	y	x					
1		64	26	55	8	35	6	31	4	a	8	1	p	2
2		61	28	53	8	34	9	25	4	b	8	2	r	5
3		56	23	55	3	43	5	28	3	e	8	9	p	4
4		60	24	53	5	39	3	31	−2	c	7	1	p	4
5		60	27	59	5	39	9	32	6	b	8	9	q	4
6		60	26	55	7	34	9	22	10	f	7	6	q	5
7		64	25	54	5	40	8	28	5	g	7	3	p	4
8		60	26	53	10	36	8	25	3	f	8	1	p	3
9		67	29	57	11	37	16	28	12	c	7	6	p	3
10		56	23	52	4	33	−4	29	−10	g	7	6	q	3
11		67	31	59	10	36	14	26	11	g	6	1	p	5
12		57	25	50	5	31	6	29	2	a	7	9	p	3
13		55	26	54	4	41	7	28	9	e	8	9	t	4
14		59	21	53	3	39	4	34	2	e	8	3	p	2
15		59	22	57	0	38	0	28	0	c	7	3	s	4
16		54	22	51	3	36	3	26	1	h	8	3	p	3
17		62	28	54	10	37	12	31	5	c	7	3	u	3
18		60	20	57	0	41	1	33	0	c	6	9	p	2
19		62	29	53	11	35	9	25	6	g	8	1	t	2
20		60	26	54	6	36	7	28	4	b	6	6	q	2
21		61	26	54	10	37	10	31	6	c	1	1	r	2
22		62	20	58	3	35	4	27	4	g	8	7	p	2
23		65	23	58	5	42	7	32	4	b	1	5	p	4
24		64	25	55	7	38	9	25	7	a	8	3	s	4
25		59	28	51	6	34	9	25	11	c	7	3	t	3
26		61	25	55	8	38	9	28	10	g	8	6	t	4
27		64	23	57	2	40	5	34	5	g	1	4	p	5
28		61	23	56	8	40	9	35	6	b	8	1	t	2
29		64	24	58	7	38	10	32	8	a	7	1	t	3
30		65	24	58	9	39	10	28	10	a	6	1	t	3
32 *		60	25	53	1	40	1	32	−2	c	8	4	q	2
33		60	26	57	5	38	8	32	5	a	8	1	p	5
34		61	22	56	0	40	1	30	2	b	8	4	p	3
35		62	23	58	4	39	3	35	3	a	8	4	p	2
36		58	29	50	8	29	6	25	2	g	8	1	p	4

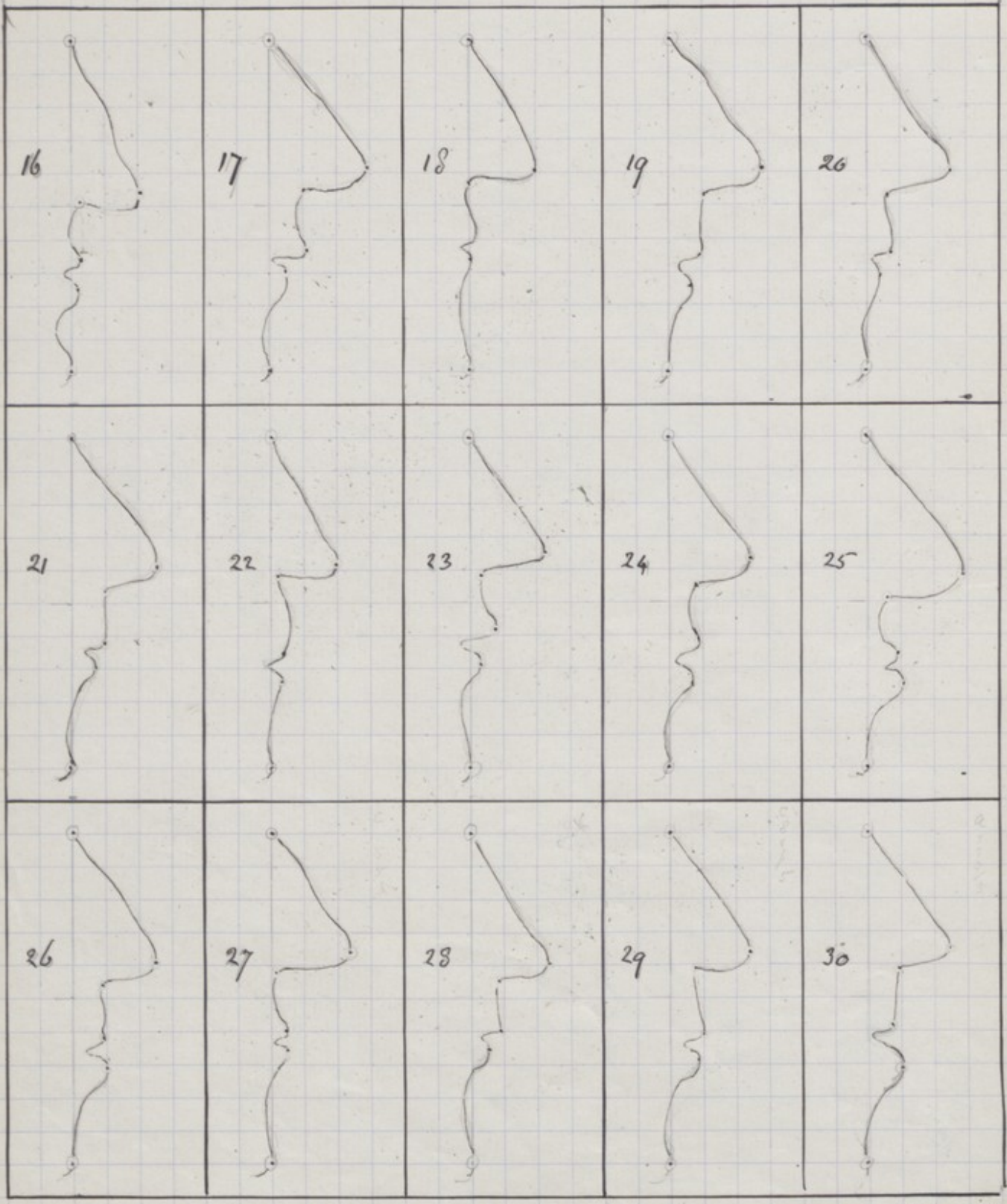
f.6 (5)

Dance Vol I (1415) drawn from the formulae



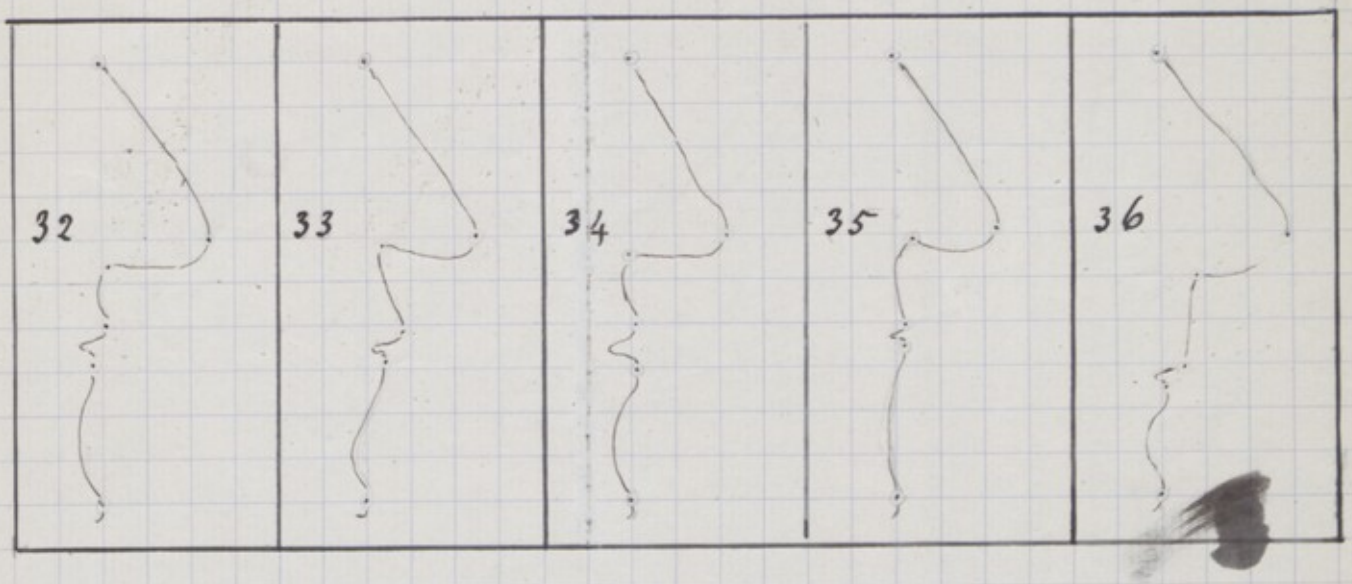
(6)

Dance Vol I (16 & 30, drawn from the formulas



31 is unsuitable (not a portrait)
& omitted

Dance Vol I (32 to 36, drawn from the formulas



f. 9

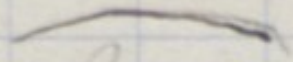
~~between~~

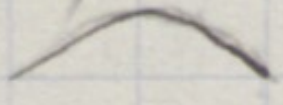
inwards ←

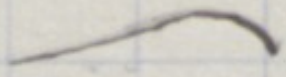
outwards →

base of rose

1 

2 

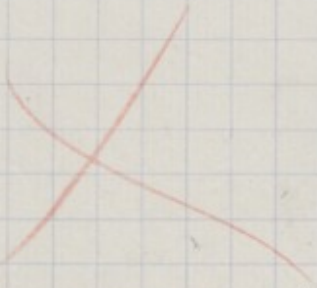
3 

4 

5 

Danse

Vol 1

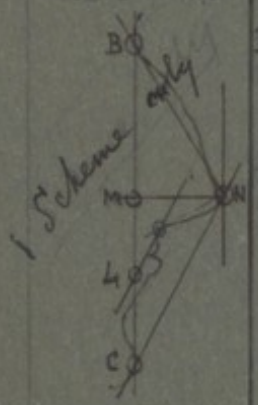


F.1

Dance Vol II

II

II. 1



II. 2

II. 3

II. 4

II. 5

II. 6

II. 7

II. 8

II. 9

II. 10

11

14

15

II. 16

II. 17

II. 18

II. 19

20

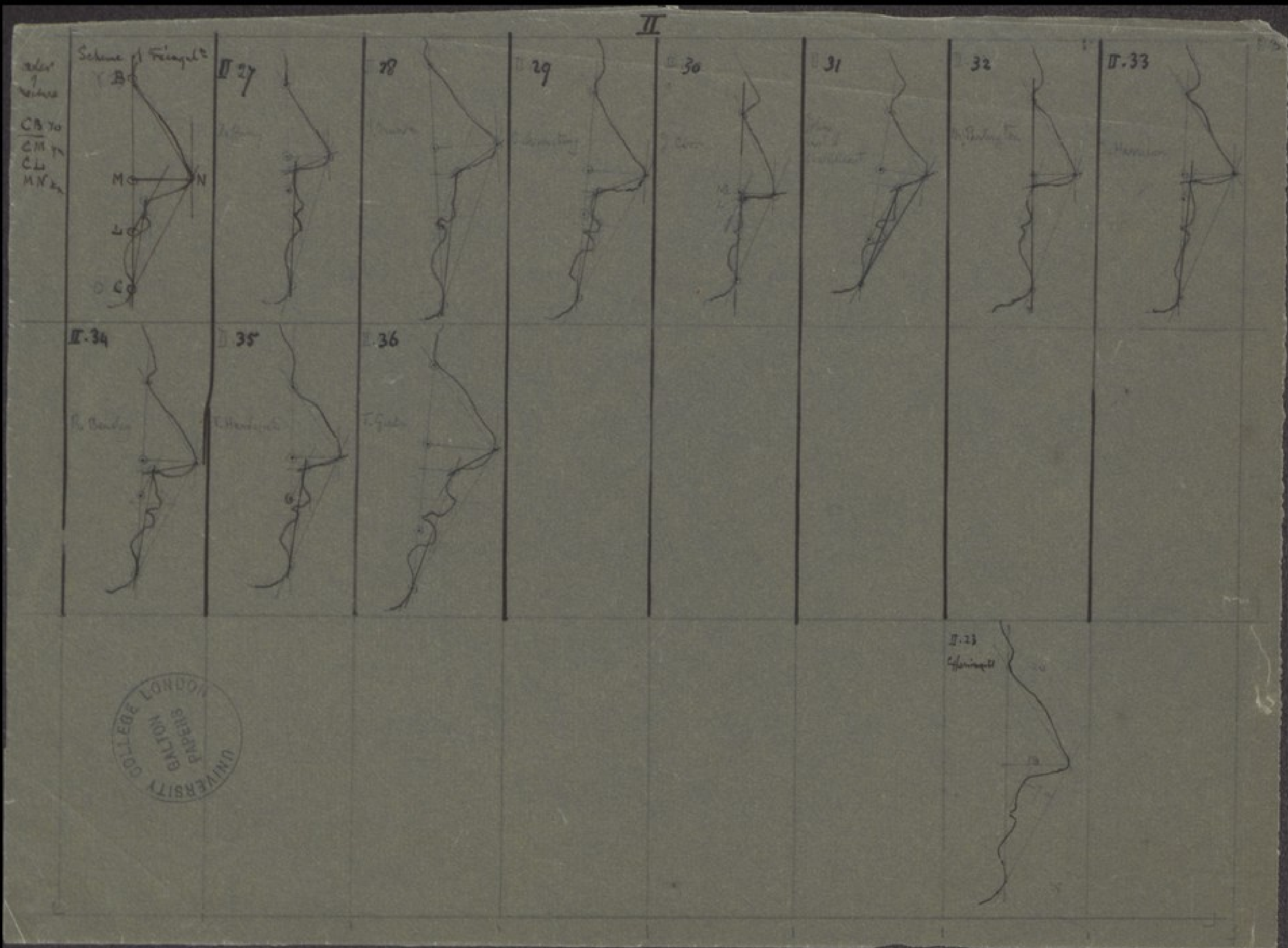
21

22

23

II. 24

II. 26



Dance Vol II.

	1	Mylne	2	Hoppner	3 J.	Kemble	4	Gilpin	5 J.	Wilton	6	Lewis	7	Chev. d'Eon
YO	44.0	100	47.5	100	41.0	100	45.5	100	35.5	100	43.0	100	39.2	100
yn	25.7	59	28.0	59	24.0	59	27.2	60	21.5	60	26.0	60	28.5	61
yp	22.0	50	26.0	55	21.0	51	24.5	54	20.0	56	23.2	54	22.0	56
xn	10.0	23	12.0	25	10.0	24	12.0	27	8.0	28	9.7	23	9.0	23
xp	0.0	0	3.0	6	2.5	6	4.7	10	2.0	6	1.5	3	2.0	5
	8 J.	Hoole	9 W.	Hodges	10 R.	Batty	11	Salmon	✕ 14 J.	Wilmot	15	Sharp	16	Russell
YO	48.5	100	37.0	100	45.0	100	39.7	100	45.2	100	45.0	100	48.0	100
yn	28.0	58	22.7	61	27.0	60	23.5	60	24.2	53	24.5	54	28.2	59
yp	26.0	54	20.0	54	22.5	50	21.5	54	23.0	51	22.7	50	25.2	53
xn	10.5	22	11.0	30	12.5	28	12.0	30	12.0	27	11.5	25	12.0	25
xp	1.5	3	4.0	11	3.5	8	2.0	5	1.0	2	1.0	2	2.5	5
	17	Conway	18	Bryander	19 Bishop	Barnard	20	Latham	21	Rigaud	22	Arnold	23	Bull
YO	34.0	100	42.0	100	46.2	100	46.0	100	32.0	100	38.7	100	43.5	100
yn	20.5	60	24.5	58	27.0	58	27.5	60	19.2	60	25.5	66	22.7	52
yp	17.7	52	22.5	54	24.0	52	24.0	52	18.7	58	21.7	56	20.5	47
xn	8.0	23	9.5	23	12.0	26	13.0	28	8.0	25	11.0	28	12.5	29
xp	1.5	4	1.0	2	3.0	6	4.0	9	1.0	3	4.5	12	4.0	9
	24	Knivett	✕ 26	Prince Hoare	27	Zoffany	28	Munden	29	Armstrong	30	Carr	31	Viscount Charlemont
YO	44.0	100	42.0	100	40.5	100	49.0	100	42.0	100	33.5	100	35.5	100
yn	27.0	61	25.5	61	26.0	64	31.7	65	26.0	62	18.0	54	23.7	66
yp	25.2	57	22.2	53	23.0	57	26.5	54	21.7	52	17.0	52	20.5	58
xn	10.0	23	12.7	30	8.5	21	12.5	25	11.5	27	7.0	21	9.0	25
xp	2.0	5	4.5	11	1.5	4	4.5	9	2.0	5	1.0	3	4.5	13
	32	Partington	33	Harrison	34	Bensley	35	Hardwick	36	Gartin				
YO	38.5	100	41.5	100	39.2	100	36.5	100	45.7	100				
yn	23.5	61	25.0	60	23.5	60	22.0	60	29.5	64				
yp	22.0	57	23.5	57	21.0	53	20.0	55	24.5	54				
xn	8.5	22	10.0	24	11.0	28	10.0	27	14.0	31				
xp	0.0	0	1.0	2	2.0	5	2.7	7	6.0	13				

✕ 3 are unsuitable & omitted, viz: 12, 13, 25

Total 33

Dance Vol. II.

		1. myline		2. Hopper		3 Wm P. Hamble		4 S. Gilpin RA		5 Jos: Wilton RA		6 W.T. Lewis		7 Chevalier d'Eon	
		44.0	100	47.5	100	41.0	100	45.5		35.5	100	43.0	100	39.2	100
Upper Life	y	17.5	40	16.5	35	15.0	37	16.0	35	12.2	34	15.5	36	14.5	37
Lower	y	14.5	33	12.5	26	10.0	24	11.0	24	8.5	24	11.5	27	11.5	29
	x	0.5	1	4.5	9	2.0	5	5.0	11	3.2	9	3.0	7	2.0	5
	x	1.7	4	4.0	8	0.0	0	3.5	8	2.5	7	1.0	2	1.0	3

		8 John H. Hoole		9 W. Hodges RA		10 R. Batty MB		11 J.P. Salomon		14 J. Wilmot		15 Wm Sharp		16 Pat. Russell MD	
		48.5	100	37.0	100	45.0	100	39.7	100	45.2	100	45.0	100	48.0	100
Upper Life	y	18.2	38	13.0	35	15.5	35	14.5	37	16.5	36	16.5	34	15.5	32
Lower Life	y	14.5	30	9.2	24	10.7	24	11.0	28	13.5	30	13.0	29	13.5	28
	x	1.0	2	4.0	12	3.7	8	2.5	6	0.7	2	0.5	1	1.0	2
	x	2.0	4	4.2	11	2.5	6	3.0	8	0.5	1	0.0	0	1.5	3

		17 R. Conway		18 J. Bryander		19 Barnard (Birth)		20 J. Latham MD		21 J.F. Rigaud RA		22 S. Arnold, Mus.D.		23 R. Budd MD	
		34.0	100	42.0	100	46.2	100	46.0	100	32.0	100	38.7	100	43.5	100
		12.5	37	15.0	36	16.2	35	15.5	34	11.2	35	13.7	35	14.0	32
		10.5	31	13.0	31	12.0	26	12.5	27	9.5	30	10.0	26	12.5	29
		1.0	3	1.0	2	3.7	8	4.0	9	1.5	5	5.2	13	2.0	5
		1.5	4	1.0	2	4.0	9	2.7	6	1.2	4	5.5	14	2.2	5

		24 C. Kaisatt		26 Prince House		27 Zoffany		28 J. Maunden		29 C. Armstrong		30 J. Carr		31 John Ld Clarendon	
		44.0	100	42.0	100	40.5	100	49.0	100	42.0	100	33.5	100	35.5	100
		16.0	36	14.7	35	16.0	40	17.5	36	15.0	36	10.5	31	14.0	39
		13.5	31	10.0	24	11.0	27	14.5	30	10.5	25	8.0	24	10.0	28
		1.0	2	4.0	10	3.0	7	3.5	7	3.5	8	0.7	2	4.5	13
		2.0	5	2.7	6	2.2	5	1.5	3	2.7	6	0.5	1	3.5	10

		32 M. Partington		33 S. Harrison		34 R. Beasley		35 T. Hardwick		36 T. Girtin					
		38.5	100	41.5	100	39.2	100	36.5	100	45.7	100				
		15.0	39	16.0	39	14.5	37	13.5	37	18.5	41				
		11.5	30	12.0	29	10.0	26	10.5	29	9.5	21				
		0.0	0	2.0	5	4.0	10	4.0	11	7.0	15				
		-1.7	— 4	1.2	3	3.0	8	1.5	5	3.5	8				

Measurements of Dance[illegible] profiles VI & II, (continued.)

first attempt used to check the final one

	II. 27 Zoffany		II 28 Munden		II. 29. Armstrong		II. 30 Carr		II. 31. John Earl of Charlemont	
CB	40.5	100	49.0	100	42.0	100	33.5	100	36.0	100
CM	26.0	62	32.0	65	26.0	62	18.0	54	24.0	67
CL	19.0	47	16.0	33	17.0	41	16.5	49	9.5	26
MN	8.5	21	13.0	27	12.0	29	7.0	21	9.0	25
ML	7.0		16.0		9.0		1.0		14.5	

	II. 32 Burlington		II. 33 Harrison		II 34 Bensley		II. 35 Hardwick		II. 36 Garden	
CB	38.5	100	41.5	100	39.5	100	36.5	100	46.0	100
CM	23.5	63	25.5	61	23.0	58	22.0	63	29.5	64
CL	21.5	57	20.0	48	16.0	41	13.5	35	12.0	26
MN	8.5	23	10.0	24	11.0	28	10.0	27	14.0	31
ML	2.0		5.0		7.5		8.5		18.0	

These are entered with Correlation table.

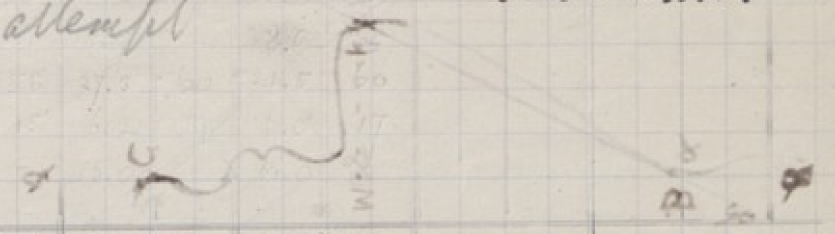
Distribution of CL & MN in the [illegible] of Dance [illegible]

CL \ MN	19–20	24–25	29–30	34–35
24–30	–	3	1	
34–35	2	4	?	
39–40	–	2	–	
44–45	2	4	1	
49–50	7	3	–	
54–55	1	–	–	
59–60	1	–	–	

Measurements of Dance's profiles Vol II ; 33 cases taken
3 unsuitable
36 total in book.

(see other side of this)

1st attempt



C	II.1 Mylne		II.2 Hoffner		II.3 J. Kemble		II.4 Gilpin		II.5 J. Wilton	
CB	44.0	100	47.5	100	41.0	100	45.3	100	35.5	100
CM	25.7	59	27.7	58	24.0	58	27.3	60	21.5	60
CL	22.0	50	19.0	40	15.5	27.5	15.0	33	14.0	40
MN	10.5	24	12.4	26	10.6	26	10.7	24	8.0	22
ML	4.0		9.0		8.5		12.0		7.3	

	II.6 Lewis		II.7 Chev. d'Eon		II.8 J. Hoole		II.9 W. Hodges		II.10 R. Batty	
CB	43.0	100	39.5	100	48.5	100	37.0	100	45.2	100
CM	26.0	60	26.7	60	28.0	58	22.5	61	27.2	60
CL	14.0	33	19.5	49	22.0	45	12.0	32	15.1	33
MN	10.0	23	9.0	23	10.5	23	11.0	30	12.5	28
ML	6.5		6.5		6.0		10.5		12.0	

	II.11 Salomon		II.14 J. Wilbert		II.15 Skerf		II.16. Russell		II.17 Conway	
CB	39.5	100	45.0	100	45.0	100	48.0	100	33.5	100
CM	23.2	60	24.0	53	24.5	54	28.0	58	20.0	60
CL	16.5	43	21.5	48	20.5	45	19.5	40	13.5	40
MN	12.0	31	11.5	26	11.5	25	12.0	25	8.0	24
ML	7.0		3.0		3.0		8.5		7.5	

	II.18 Bryander		II.19 Bp. Barnard		II.20 Latham		II.21 Rigaud		II.22 Arnold	
CB	42.0	100	46.0	100	46.0	100	32.2	100	39.5	100
CM	24.5	58	27.0	59	27.5	60	18.5	57	26.5	67
CL	20.0	47	17.5	38	15.5	34	15.5	48	11.0	28
MN	9.5	23	11.5	25	13.0	28	8.0	25	11.5	29
ML	5.0		9.5		12.0		3.0		15.5	

	II.23 Budd		II.24 Knivett		II.26 Prince Hoare	
CB	43.5	100	44.5	100	42.0	100
CM	22.5	53	27.0	61	25.5	60
CL	13.3	31	20.5	46	13.0	31
MN	12.5	29	10.0	22	12.5	30
ML	9.5		6.5		13.0	

CL/CB	MN/CB	CM/CB
29		
30	20	
1 ..	1	
2 1	21.	
3 III	3 III	53 II
4 .	4 II.	54 I
5	5	55
6	6 I.	56
7 I	7	57 I
8 .	8 I.	58 IIII
9	9 ..	59 II
40 II..	30 I.	60 IIII III
1	1 .	61 II
2	2	2
3 .	3	3
4	4	4
5 I.	5	5
6 .	6	6
7 .	7	7 I
8 ..	8	
9 I	9	
50 I	40	

These are plotted in the correlation table

	[illegible]	[illegible]		
0			20	00
1	58	56	1	03 ½
2	58	56	2	03
3	40	44	3	02 ½
4	47	47	4	46
5	51	50	5	44
6	51	52	6	45
7	59	59	7	47
8	00	0	8	55
9	02	01	9	00
10		01	30	00 ½
1		06	1	05
2		00	2	06
3		55	3	07
4		48	4	07
5		57 ½	5	07
6		02	6	05
7		52 ½	7	05
8		57 ½	8	03
9		06	9	02

Data for Classifying profiles

Use is made of four curves in the profile, to each of which tangents can be drawn

α is the depression between the brows & the nose

β is the outline of the nose tip

γ is that of the front of the chin

δ is that which separates the upper lip from the septum that divides the nostrils

S_0S_1 is a tangent to α & γ; it determines the standard direction.

p_0p_1 is a tangent to β, parallel to A_0A_1; it determines the extreme projection of the nose

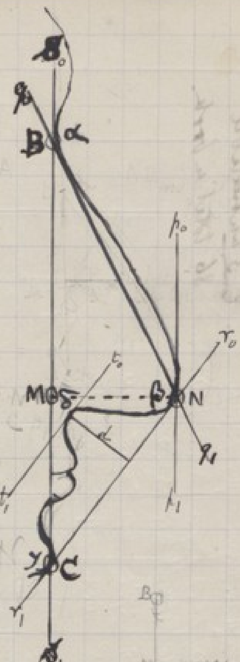
r_0r_1 is a tangent to β and to γ; its intersection with S_0S_1 determines the point C, that with p_0p_1 determines N

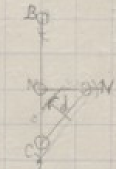
q_0q_1 is a tangent to α passing through N; it determines B

t_0t_1 is a tangent to δ parallel to r_0r_1; d is the distance between t_0t_1 & r_0r_1

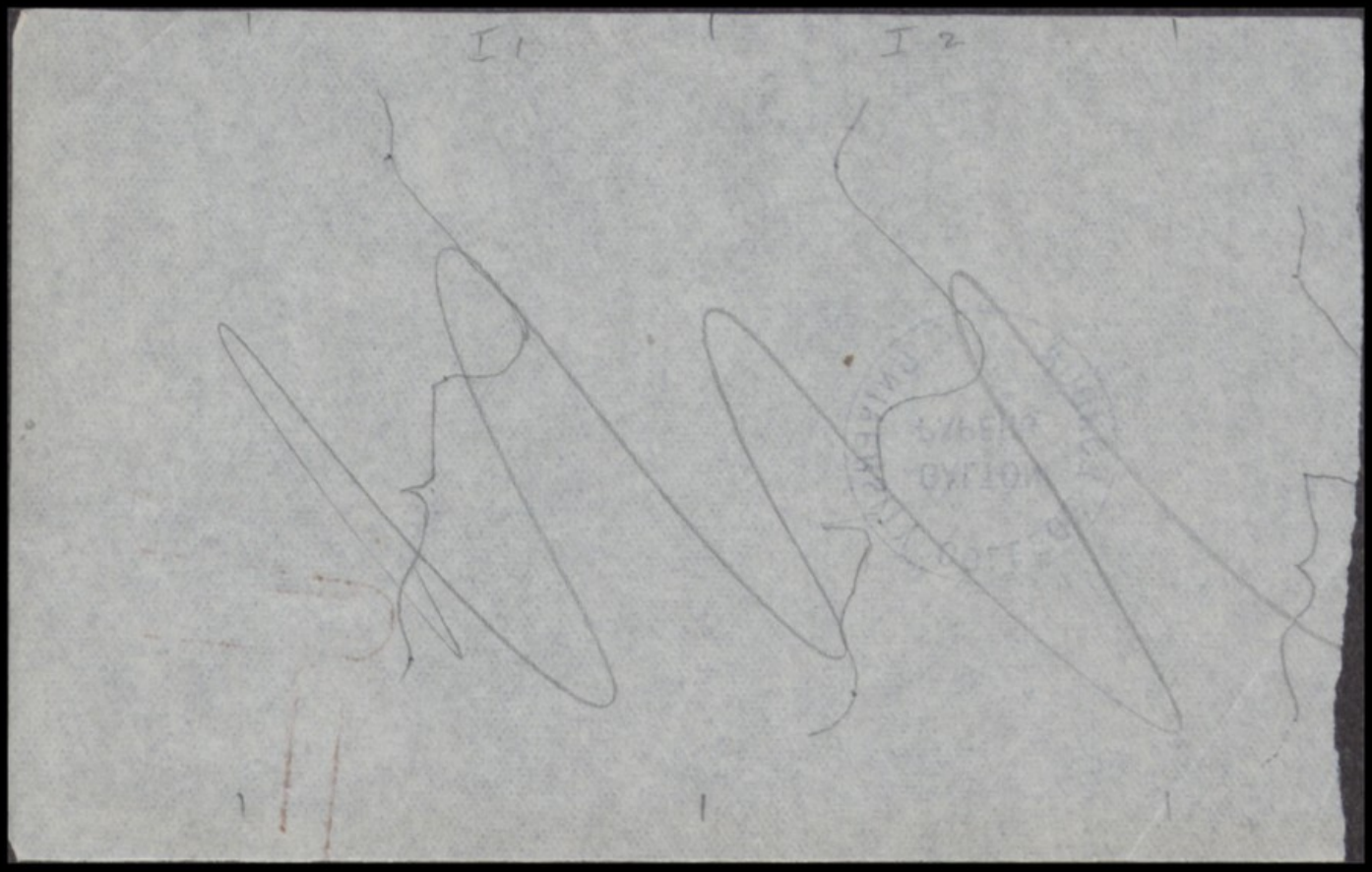
NM is a perpendicular falling from N on to S_0S_1

The figures for classification are 100 multiples of NM/BC, MC/BC and d/BC each multiplied by 100





Dance Vol II


I1
I2

Dance

In case of Non-delivery
to be returned to
The National Physical Laboratory.
Richmond, Surrey, England.

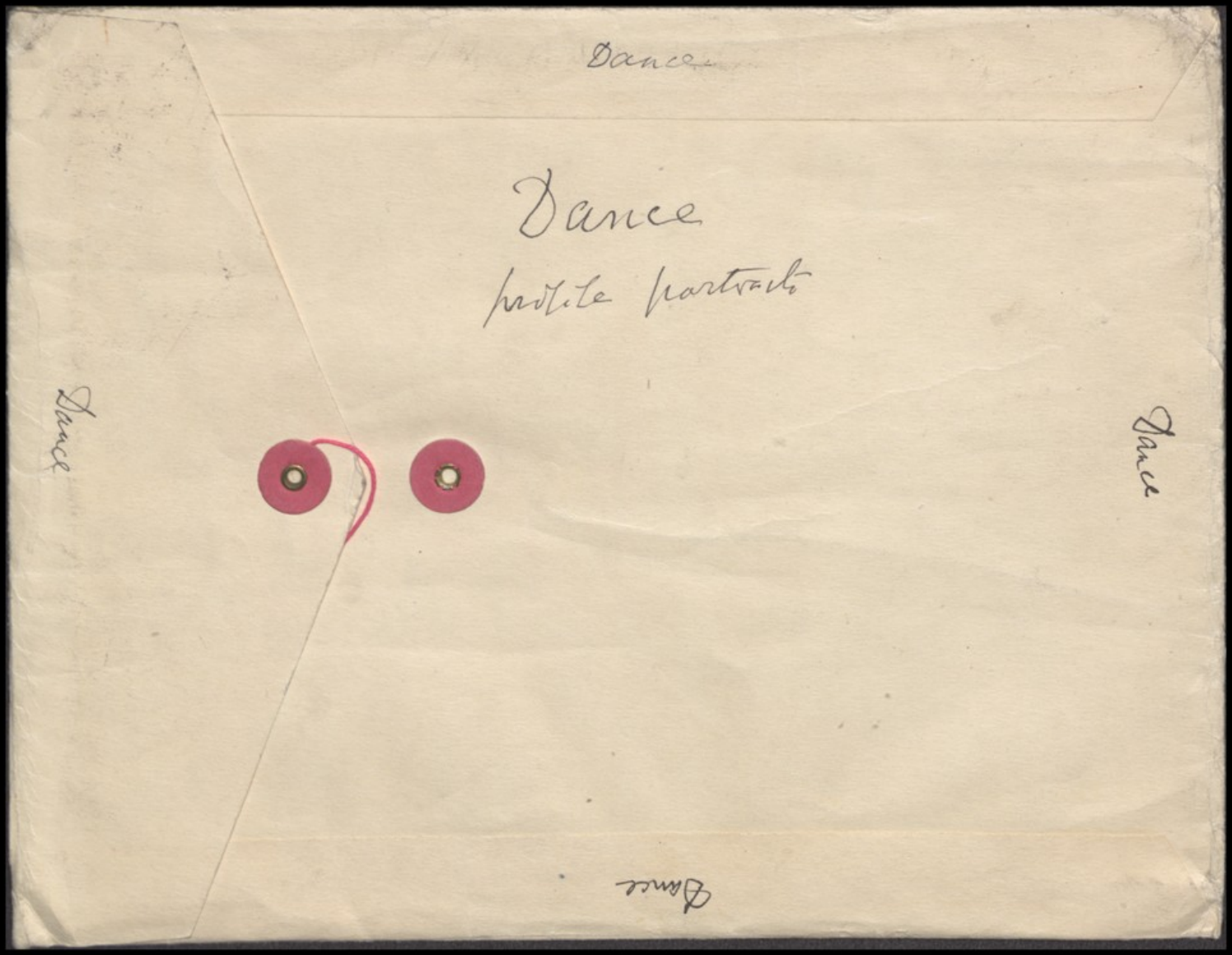
Dance
(profiles)

Sir F. Galton, F.R.S.,
42, Rutland Gate,
LONDON,
S. W.

Dance

Dance

Dance


Dance
Dance
partie partout
Dance
Dance
Dance

Groups of 4 in all, preceded by a determinant that counts as a figure

The 4 consists of 2 couplets A & B.

Preceded by Determinant X

Both couplets are in the standard unit, A is the ordinate in X, B is that in Y, both measured from bottom left hand corner of the square. ∴ They refer to a cardinal point

Y

A is measured from the last cardinal point in units, of a ..

B is an offset measured in 1/4 units to the desired point

The dots are of 2 kinds, Primary & Secondary. The unit of scale is 1/100th of the height of the square border of the picture, reckoned from the left-hand bottom corner of the frame.

The Primary dots are situated at the intersection of ordinates, without decimals, near the outline of the provisional drawing; they accepted drawing must be slightly modified until they do. [?] If no such intersections occur, with the outline certain convenient points. Each successive pair of primary dots is connected by links.

So a primary dot is located by 4 figures (A)

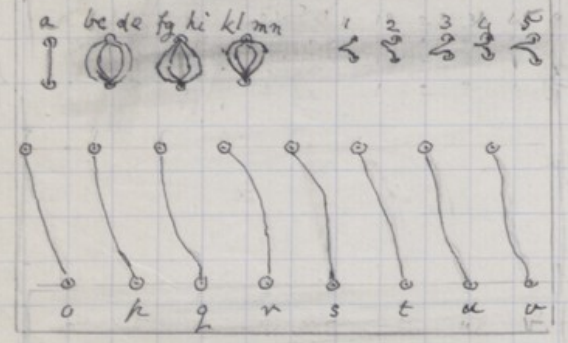
The Secondary dots are measured along the links, successively following the course of the outline from the last primary dot. They are located by offsets from these links, reckoned as negative when the offset is towards the interior, positive when it is outwards.

Refinements being required in measuring the offset, the measurements are reckoned in quarter units, and as 50 ± the lengths of the offset as the case may be.

So a secondary dot is also located by 4 figures with equal exactitude.

One of the symbol (. or /) which is accepted as reckoned equivalent to a figure in the form of a determinant, determines whether the subsequent group of 4 letters are A or B.

Outline is followed from Brow to Chin



f. 4

Upper lips

Lips are the parts uncovered by the ordinary skin, & therefore red

= above the cent

upper

distance in centre 3 3

& slopes 3

lower slopes 3

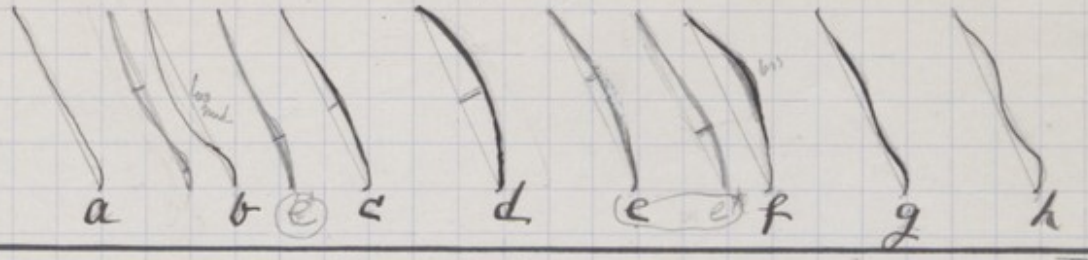
curvature

Dance's profiles

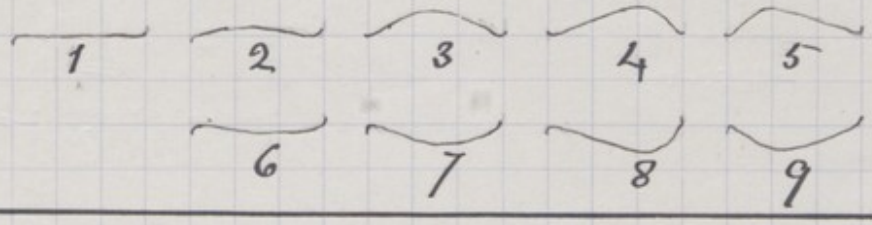
Reading Number	Length of CF	N x	N y	M x	M y	U x	U y	L x	L y	Character of the Links FN	NM	MU	UL	⊥C
I 1										a	7	6	p	2
2										g	6	2	r	3
3										c	8	9	q	4
4										c	6	1	r	4
5										b'	9	8	p	3
6										f	8	1	t	5
7										g	7	5	s	3
8										e	8	1	r	3
9										h	8	6	p	2
10										g'	8	1	q	3
11										e	7	1	p	5
12										a	8	7	p	3
13										d	8	3	t	3
14										e'	8	1	p	2
15										a	8	5	s	4
16										h	8	2	p	4
17										e	8	4	p	3
18										c	6	9	p	2
19										h	8	1	s	3
20										e	8	6	p	2
21										c	6	1	p	1
22										e	8	7	p	2
23										a	6	3	t	4
24										a	8	4	t	4
25														
26														
27														
28.														

Symbols used in the first attempt

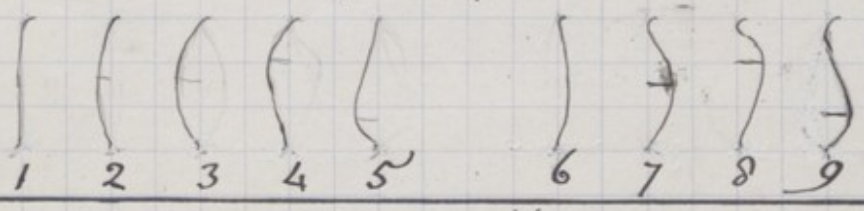
FN Ridge of Nose



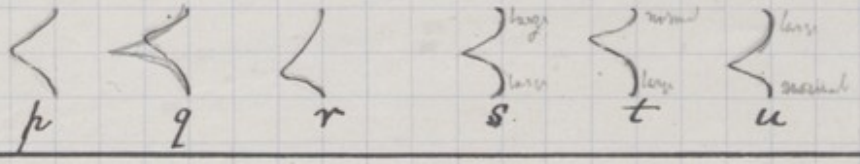
NM Base of Nose



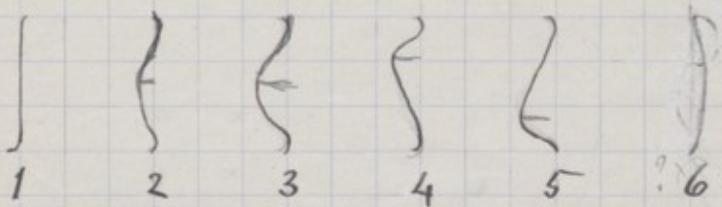
MU Upper lip

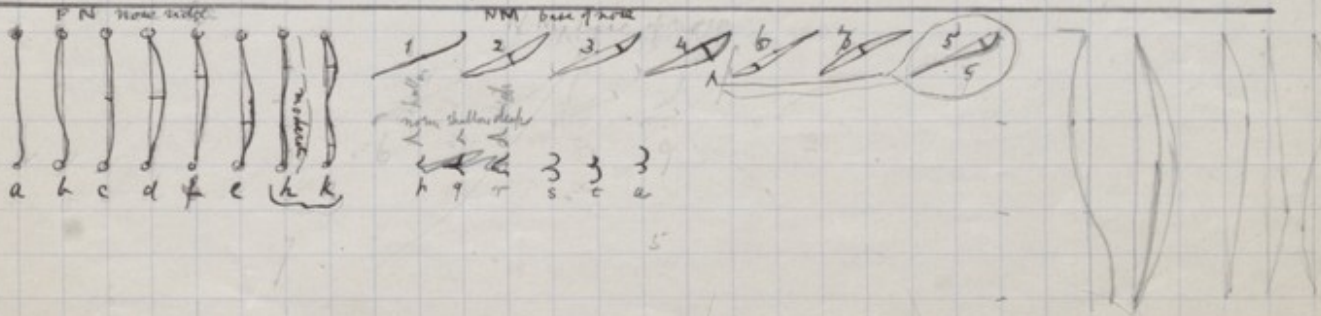


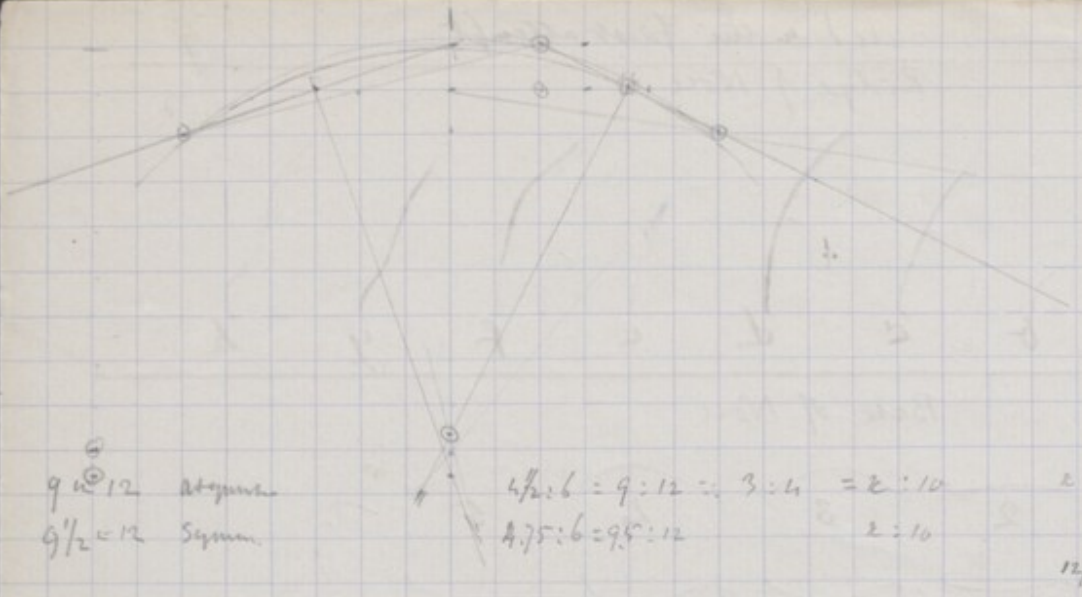
UL Parting of the lips



LC Under lip to chin





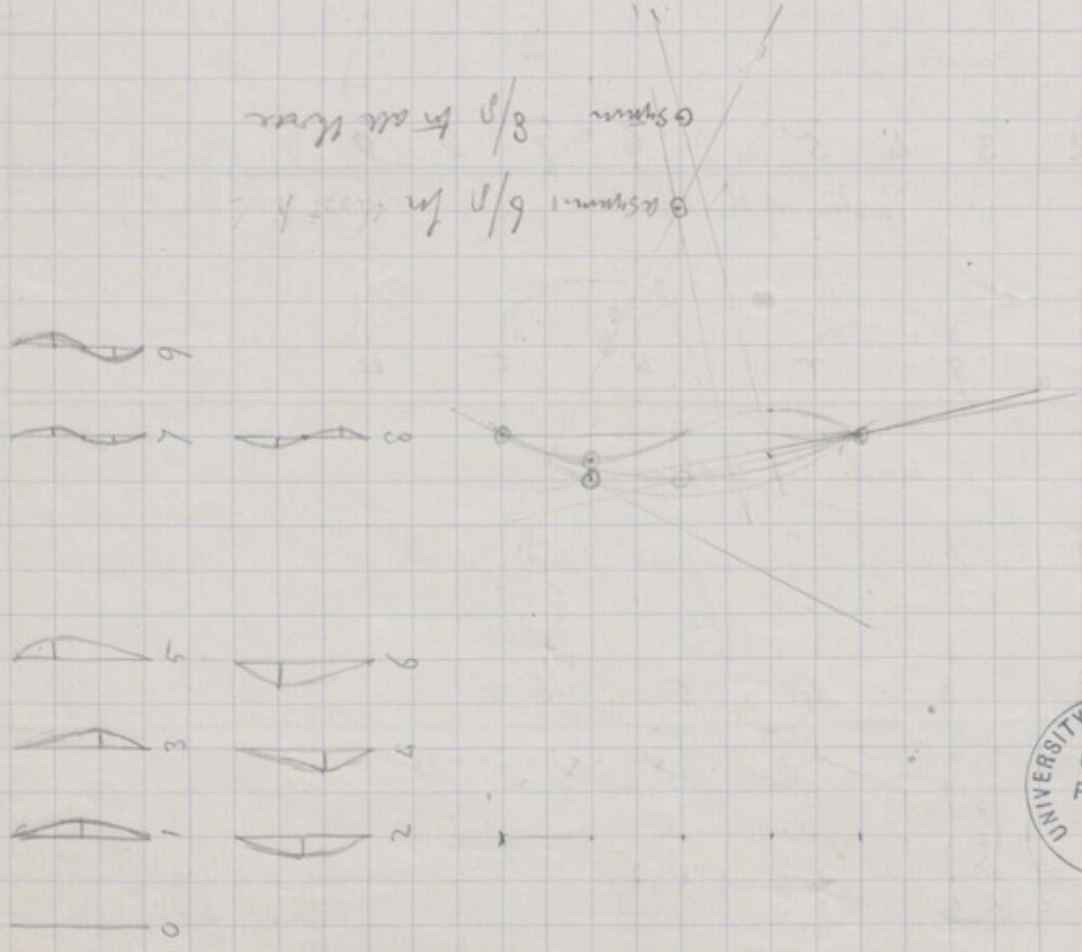


q ⊖ 12 Asymm.
q/2 = 12 Symm.

4½ : 6 = q : 12 :: 3 : 4 = z : 10
4.75 : 6 = 9.5 : 12 z : 10

z = 4/30
7.5

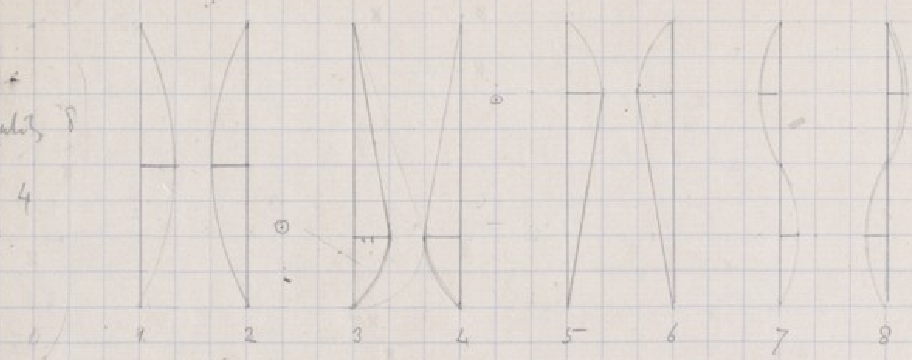
12/950 (about 0.8 =
54
110
100
7.9



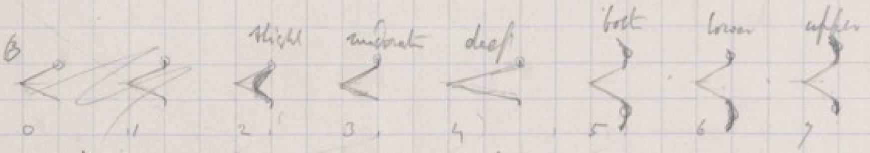
Quality 8

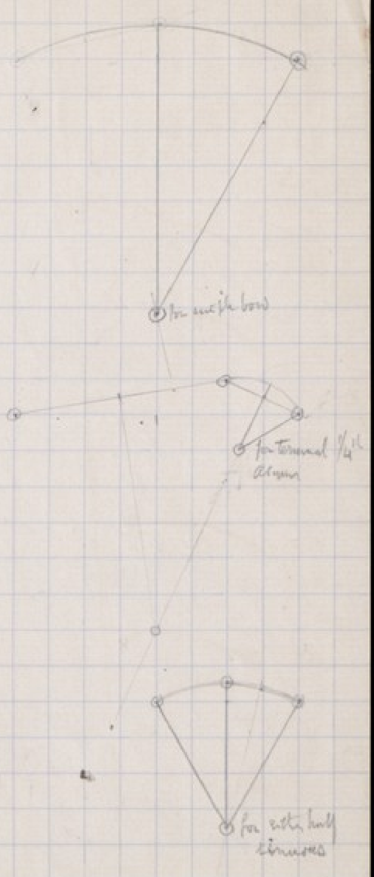
1/2 inbuilt 4

1/4 1/8 1/16.



quality 8





* means that the chords in the character that precedes it should be doubled in length.

In the diagrams the versed sines of the arcs 1 & 6 are 1/8 of the chords

" 7 " " they are 1/4 " " " "

The curves are to be read off in the same constant direction, from brow to chin

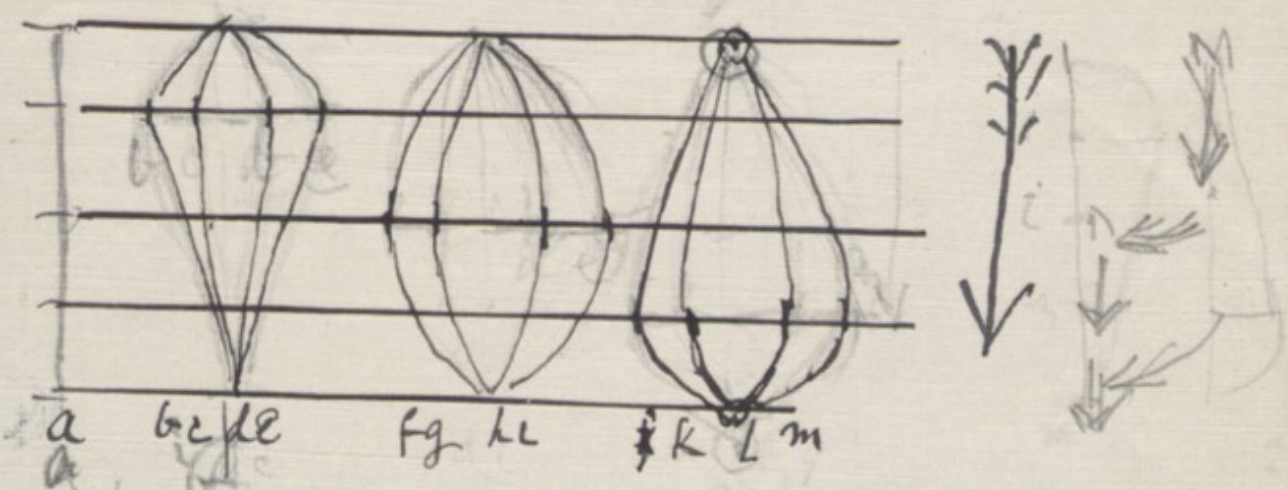
A suffix is used to express whether the versed sine should be ½ ¼ the same or twice that of the fig

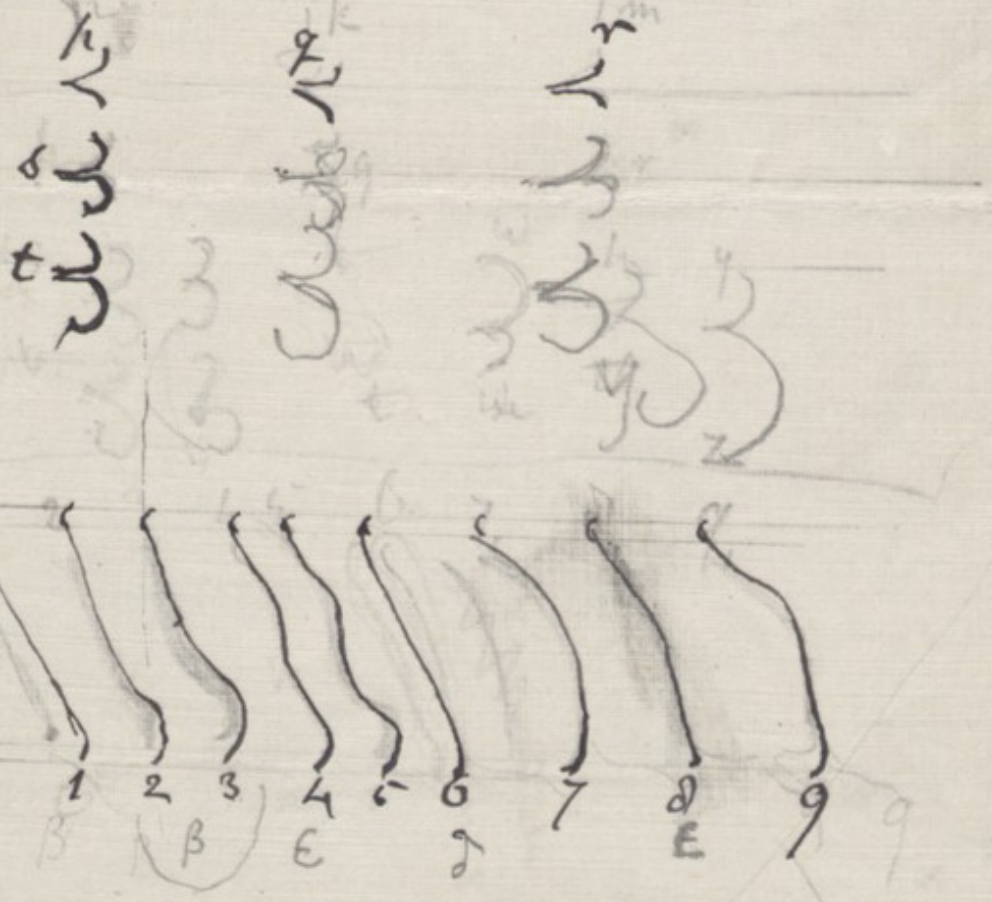
they are 0, :, [illegible] [illegible]

0 is nearly a straight line, 9 [illegible] [illegible]

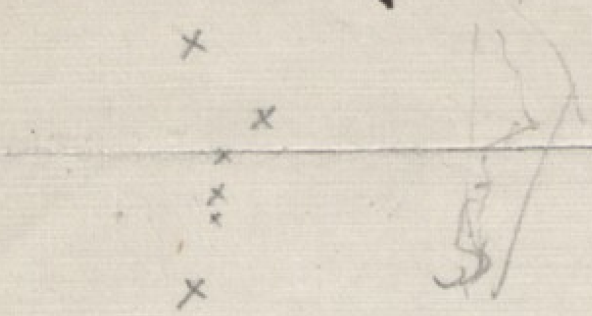
From Brow to Chin

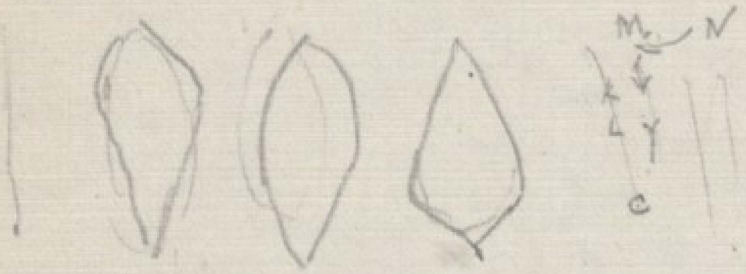
f. 8v

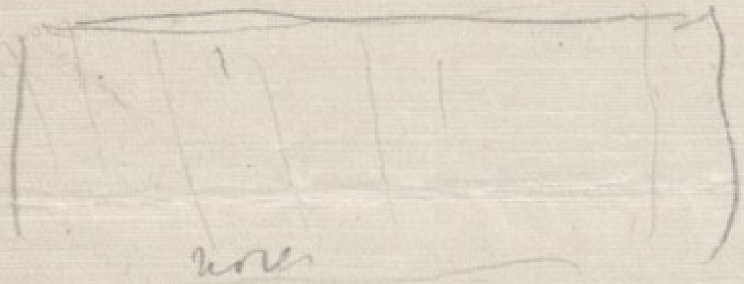




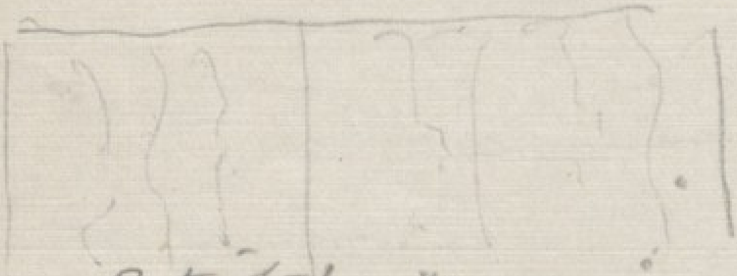
f. 8r



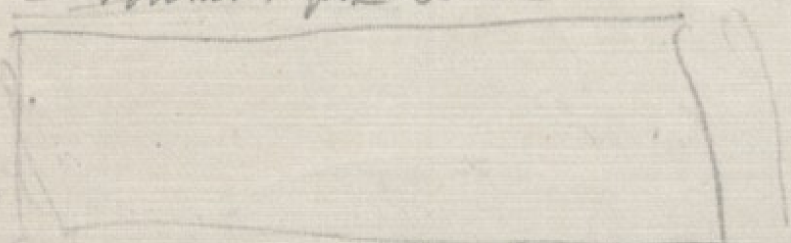




notes

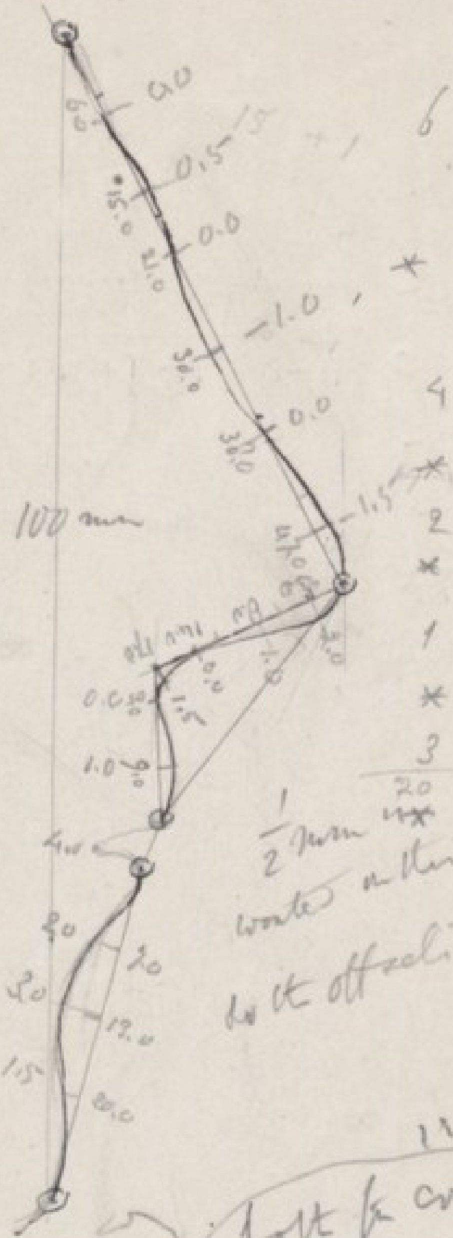


Portraits for Dance



Reproduced from formulae

f. 95



F.0	0.0			
06	0.0	4	1	
15 +	0.5	4	1	
21	0.0	4	1	
30 −	1.0	4	1	
35	0.0	4	1	
41 +	1.5	4	*	30
N 53	0.0	*		
N 0	0.0			
03 +	2.0	4	1	
08 +	1.0	4	1	
13	0.0	4	1	
M 17 +	1.5	4	*	20
03	0.0	4	1	
09 +	1.0	4		10
U 12	0.0	*		
04 −	4.0	4	1	
M04	0.0	4	*	19
07 −	2.0	4	1	
13 −	3.0	4	1	
20 −	1.5	4		
Fo	0.0			

6
4
2
1
3/20

1/2 mm wanted on this Fotog
to be offsets shown
79 = do = 16 word = 8%
or better 1/1000 th of standard

both for connecting
& for Control points
to 1/100 th of standard

01–49 +
50–99 −

10 m = 0.25
1 m = 0.025

f. 9v

nose ridge −½ −½

bar 5·1 / 4·7 / 123·0 / 11·5

1st cardinal point of pound clear direction of standard line telescope

Total figs

5 sides 2 figs each 10 ‖-‖-‖-‖-‖ -- |||-|||-|||-|||-|||

intermediate 4 or Nº CL UM MN NC 3 figs 12

LU ?1, 2, or 3) say 3

25 figs all

figs & spaces

nose	base	attn	lips	chin
3, 3, 3, 3, 3	3, 3, 3, 3	3, 3, 3, 3	1	3, 3, 3, 3, 3, 1
21	17	17	3	20

21
17
17
3
20
5/78
16 (−2) words

Divide	back	3 figs earliest	spaces 1st
nose ridge wth	5	15	5
bar	4	12

20 added 4
in all 20 words
= 10 in length

f. 10r

	dist	offset
	**	00
	06	00
N	15	+0.5
	21	0.0
	30	−1.0
	38	0.0
	41	+1.5
N	**	00
M	03	0.0
	08	+1.0
	13	0.0
	17	+1.5
M	**	00
	09	+1.0
U	12	99
Parting	4	−40
	**	99
L	00	00
	07	−2.0
	13	−3.0
	20	−1.5
	**	00

From my face portrait

22 words

	offset	**
**	00	= Cardinal point, which whose offset from same base as the immediate predecessor is given in the 2nd column

Offsets

Nose ridge	at distance from base	length of offset in 1/10th of an inch
	3 places	
	2, 2, 1 each	20 × 4
	15 (+0.4) –	
	30 (–0.1) –	15
	49 (+1.5) *	

= 8 15 for nose ridge

for cardinal points 4 [illegible] = 1 [illegible]

20 for cardinal points

15 for nose base

? 5 for lips

15 for chin

55 . [illegible]

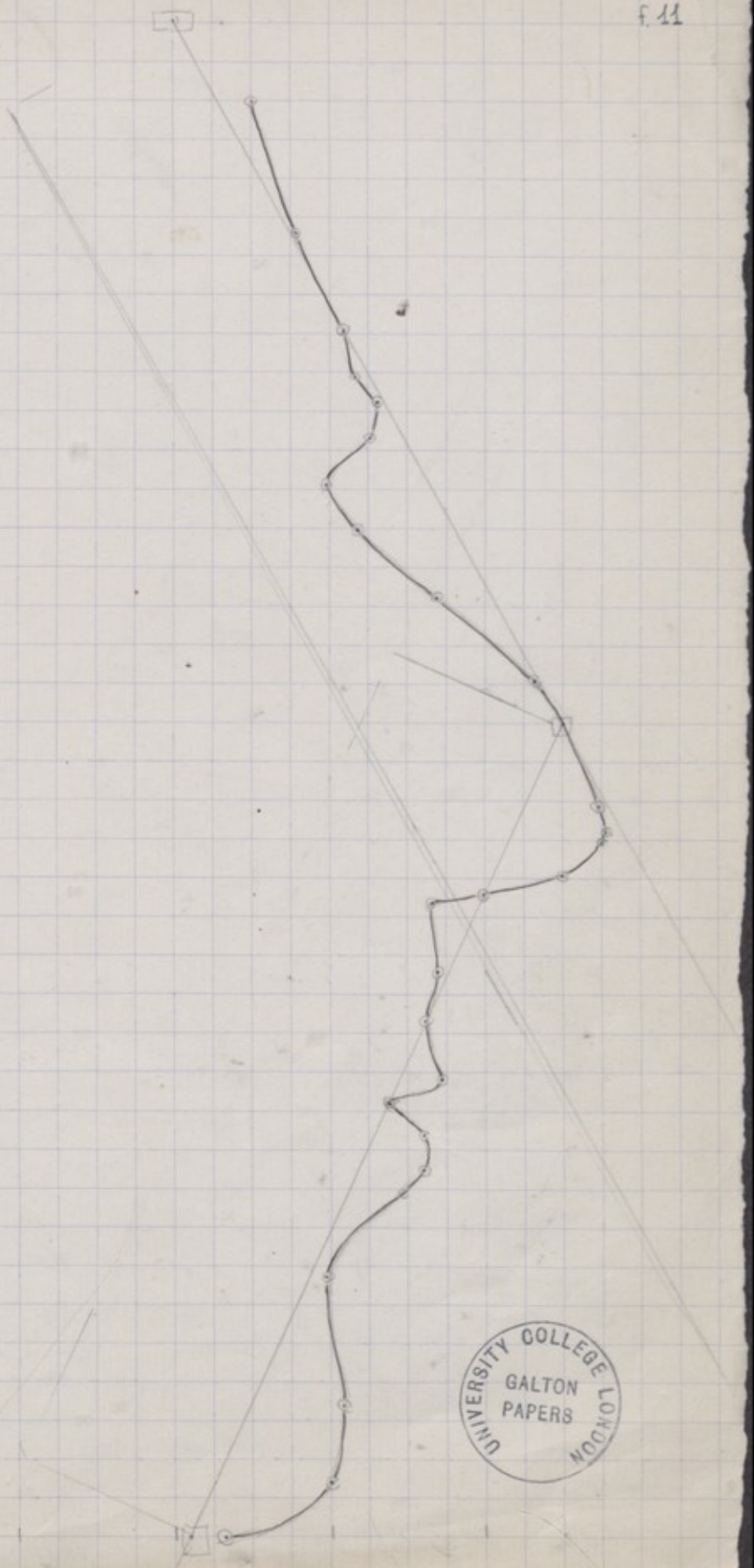
in all 77 words for profile

f 40v

Flaxman Nov 29 1907
from A with ivory scale

20	98
07	59
16	51
23	50
26	45
28	48
30	40
31	20
35	22
41	34
49	48
58	47
59	46
45	53
06	78
09	71
12	50
14	36
18	47
21	50
24	62
27	50
28	65
30	70
32	66
39	55
46	77
57	84
57	50
21	00

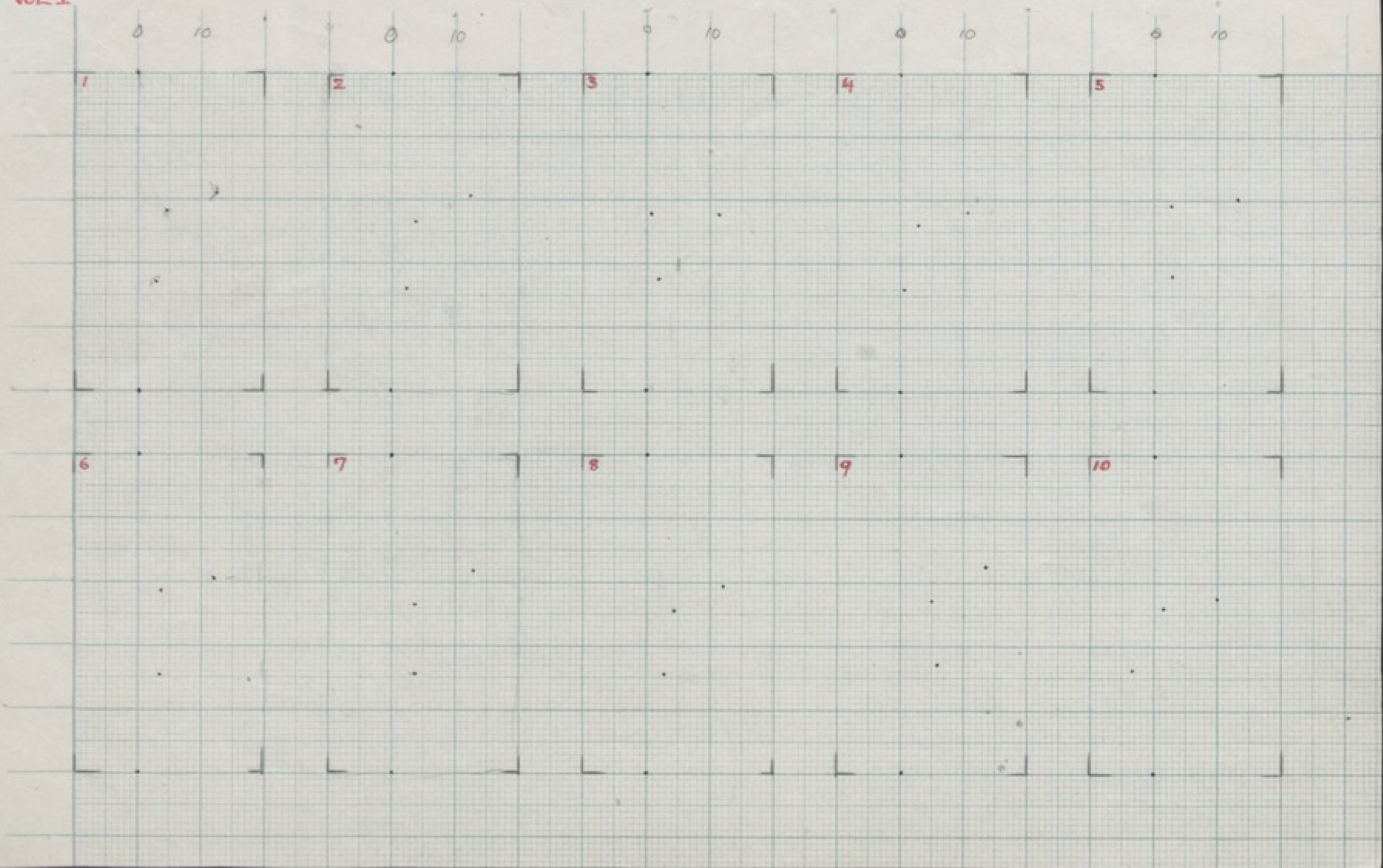
30 turns



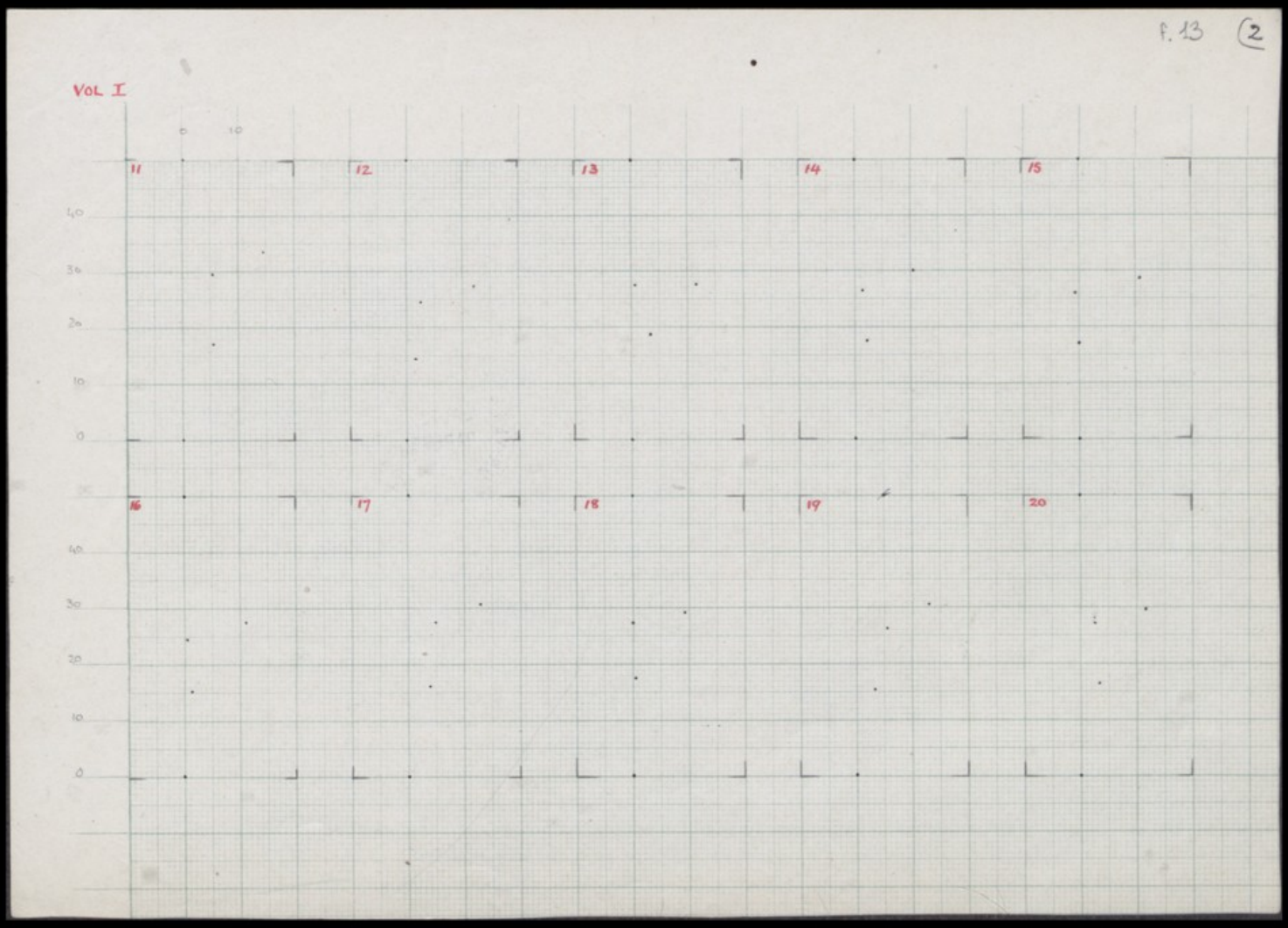
Dance Profiles

F. 12 (1.

VOL. I



VOL I



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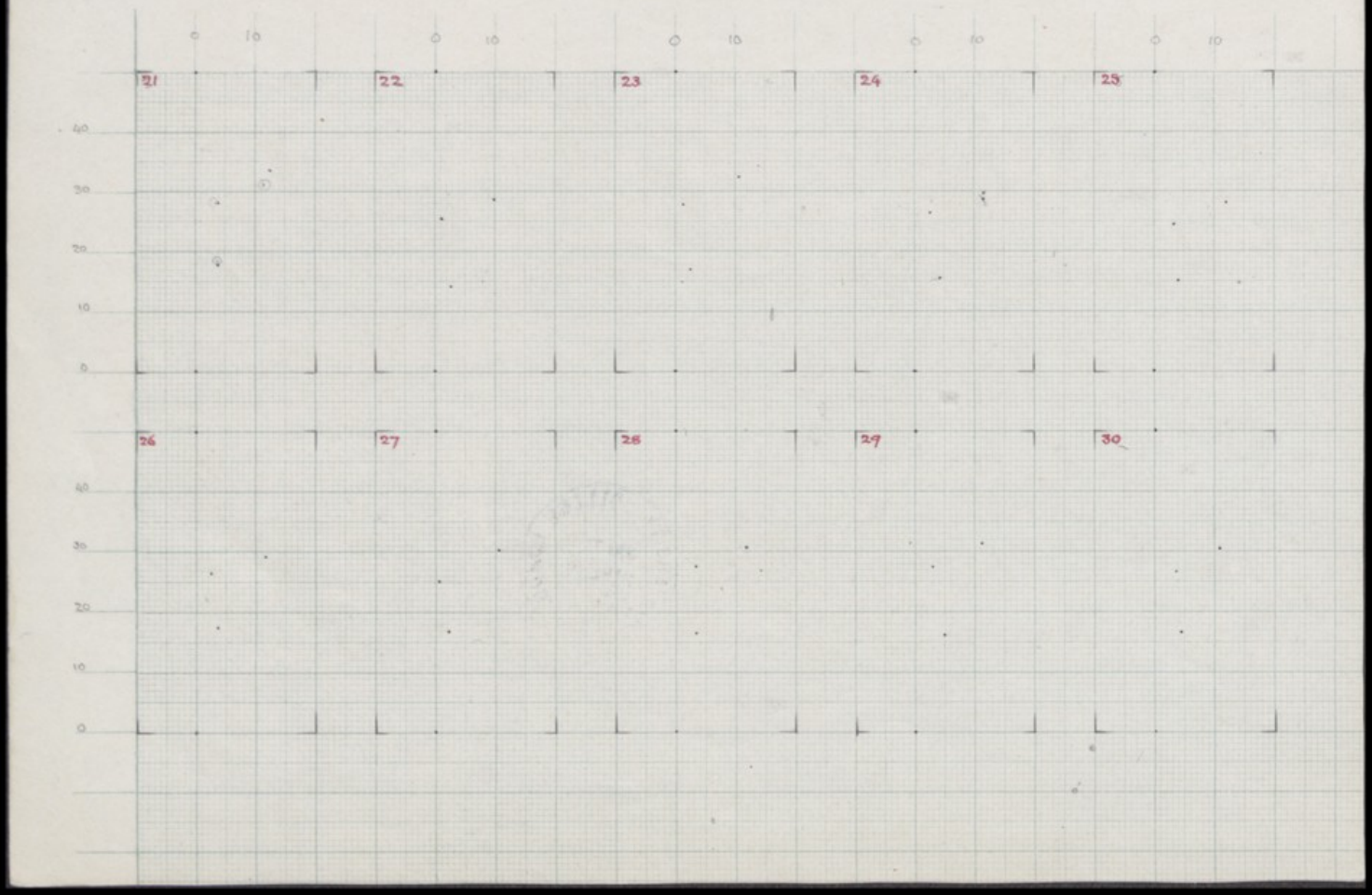

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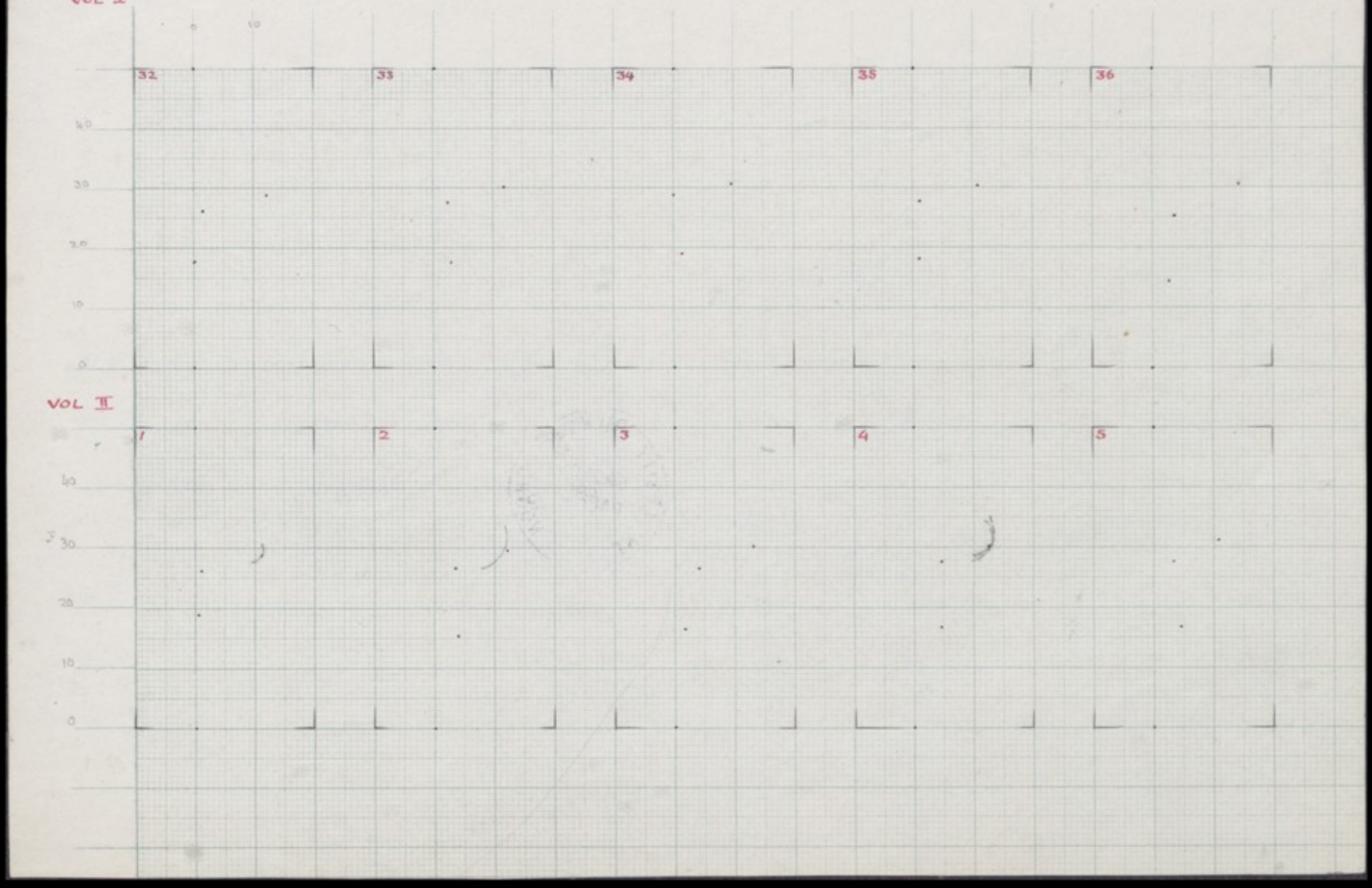
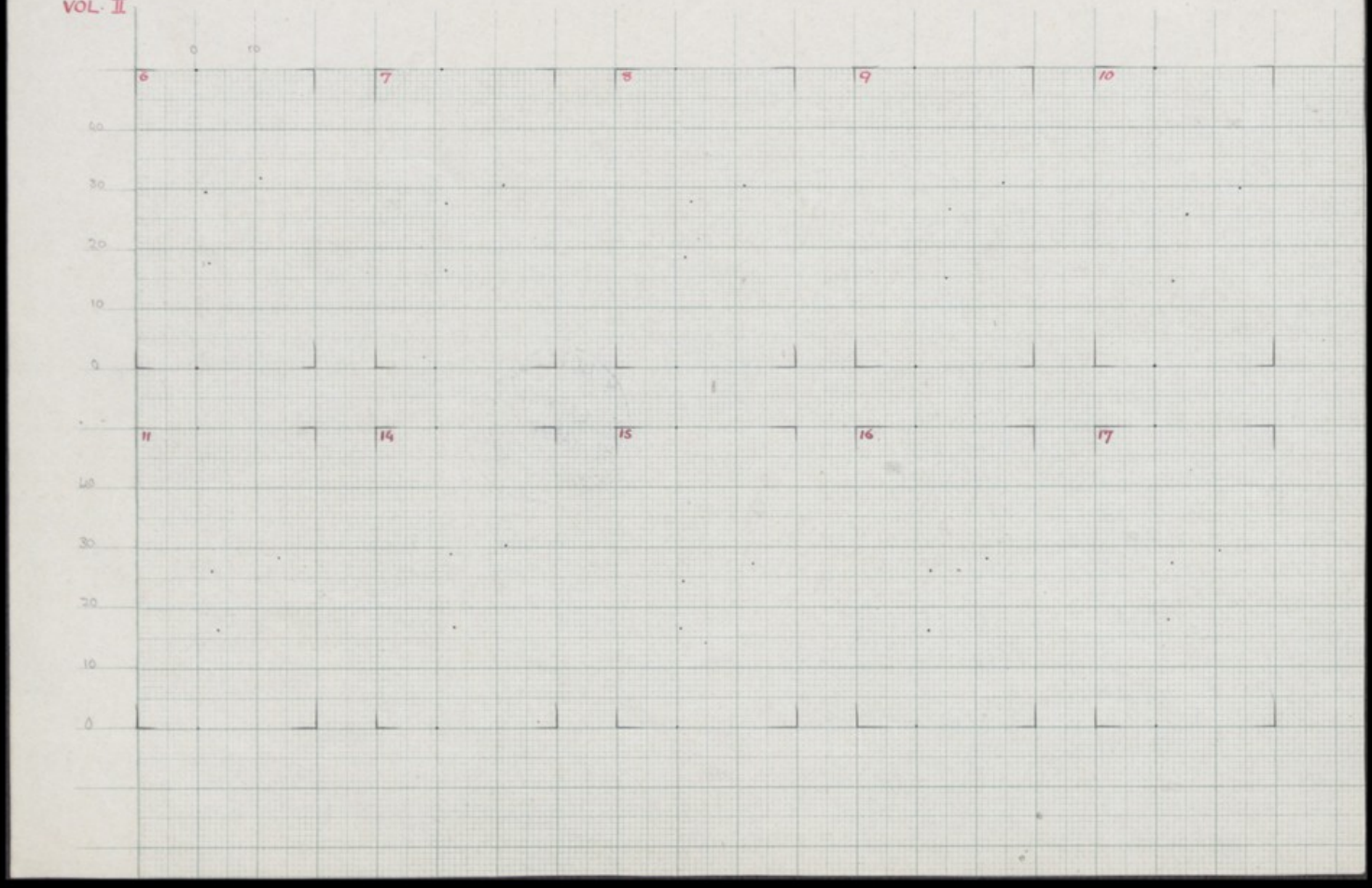
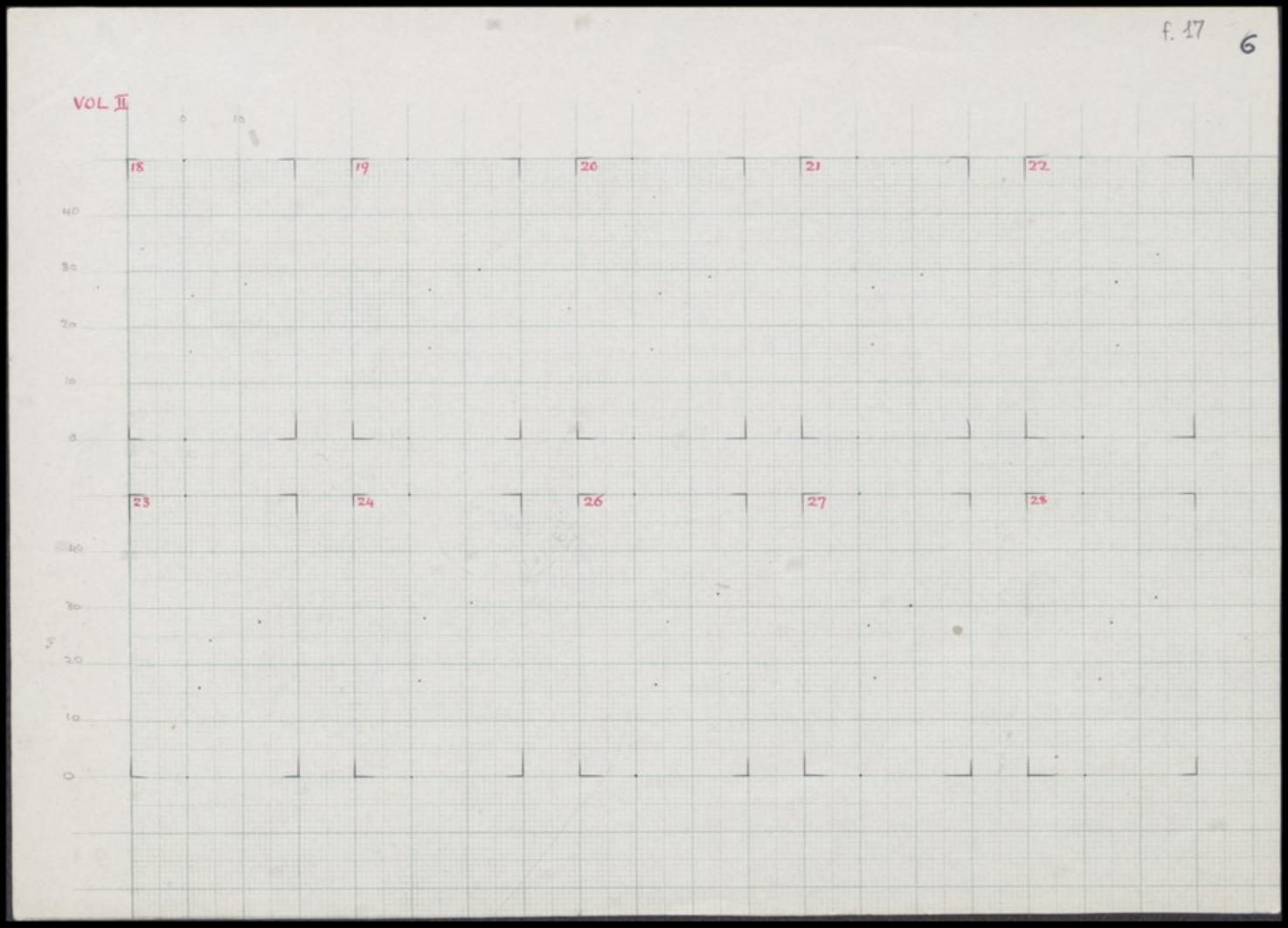


VOL II

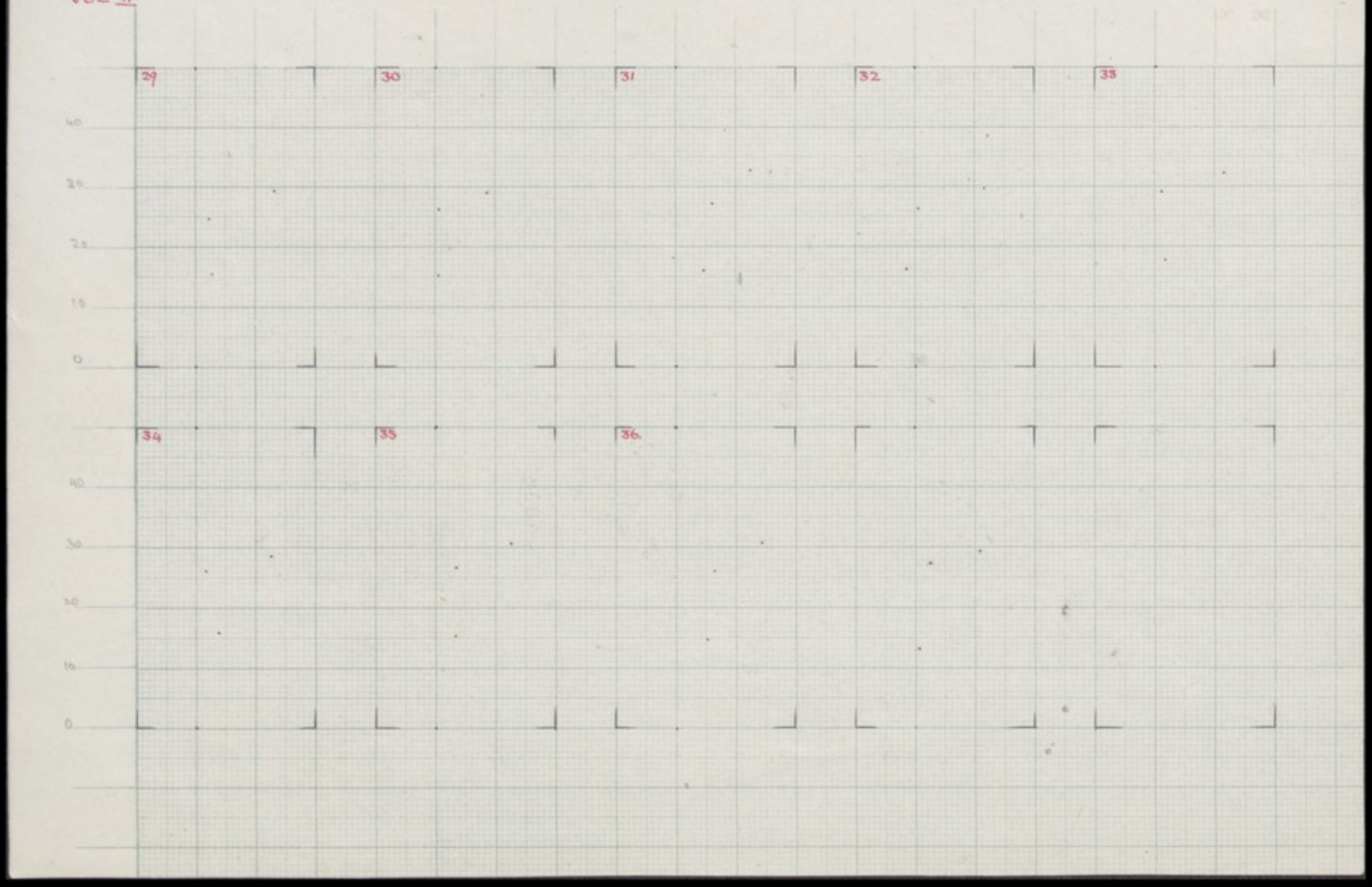
VOL. II



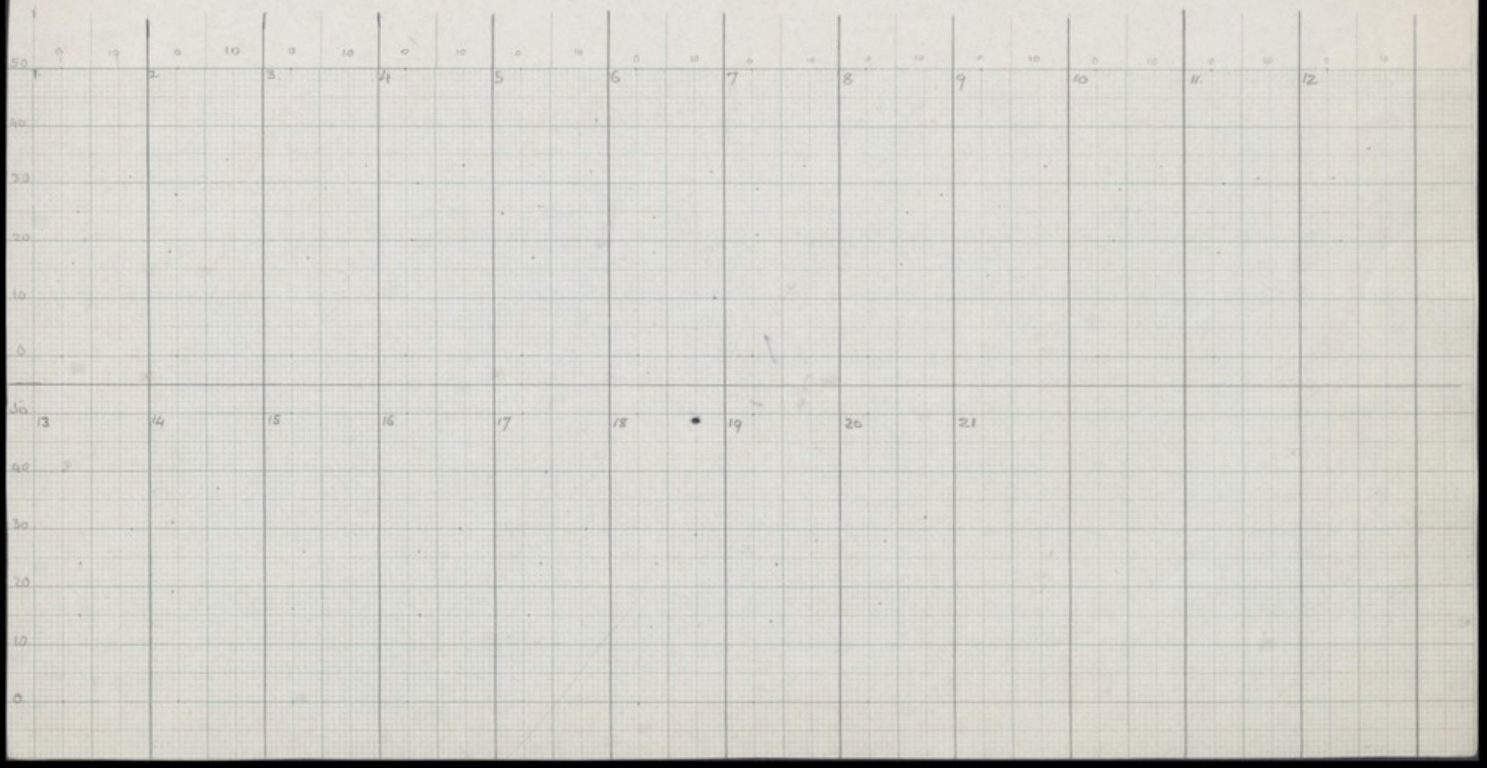
VOL II

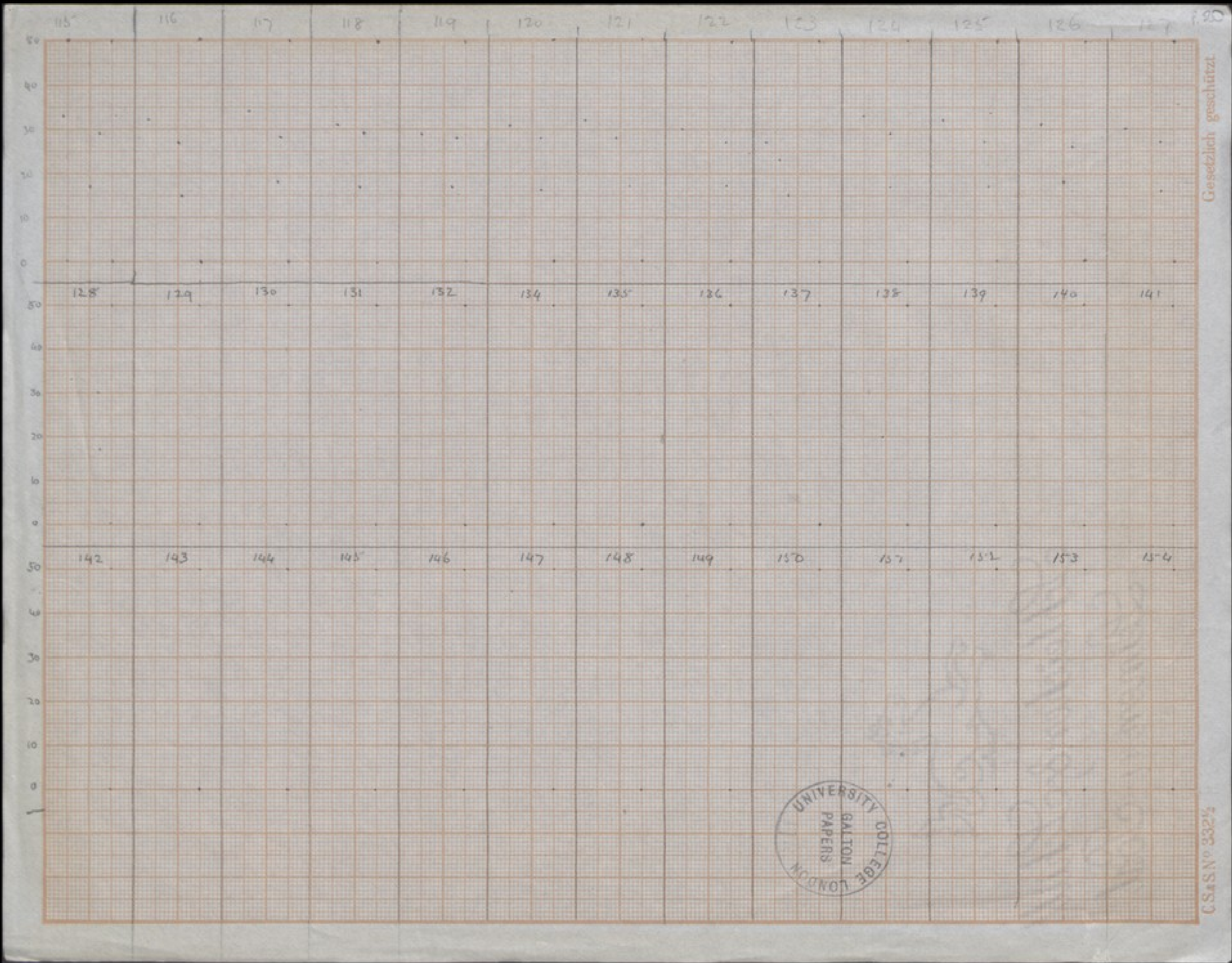


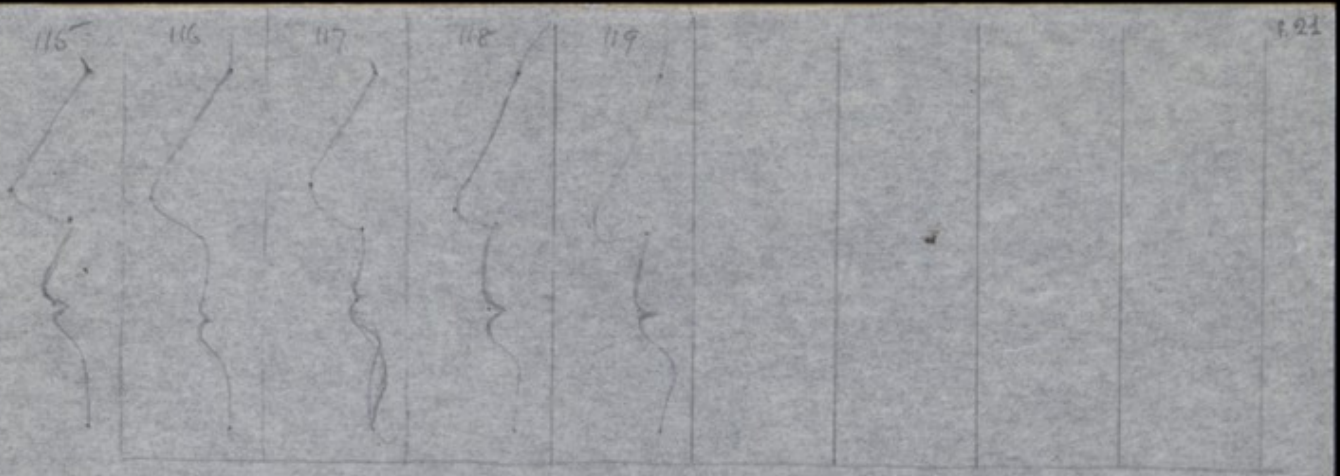
VOL II



Mrs Baden-Powell's Outlines (21)



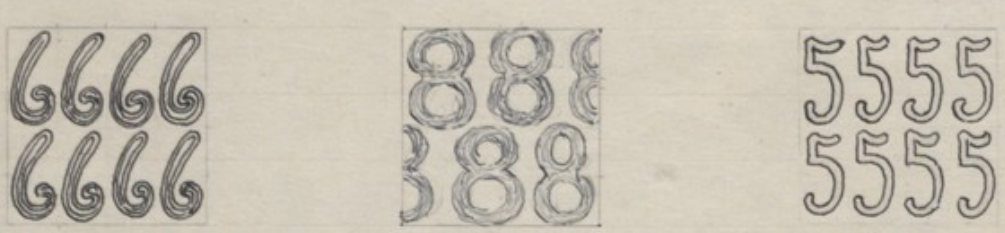




Reciprocals

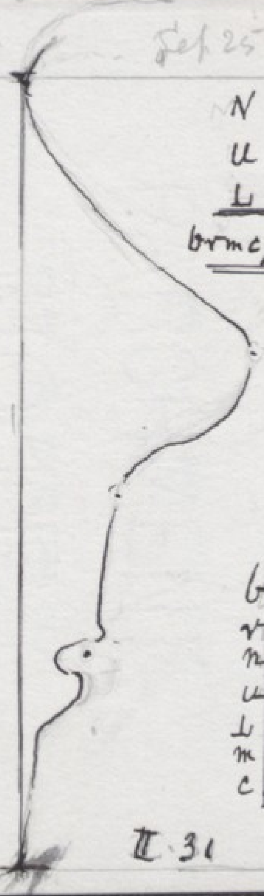
	R			
13.	386		26	
13.25	377	8	265	
13.5	370	7	27	
13.75	364	6	275	
14	357	7	28	
14.25	351	6	285	
14.5	345	6	29	
14.75	339	6	295	
15	333	6	30	
15.25	328	5	305	
15.5	322	6	31	
15.75	317	5	315	
16	312	5	32	
16.25	308	4	325	
16.5	303	5	33	
16.75	298	5	335	
17.	294	4	34	
17.25	290	4	345	
17.5	286	4	35	
17.75	282	4	355	
18	278	4	36	
18.25	274	4	365	
18.5	270	4	37	
18.75	267	3	375	

	A	A	A
	115	116	117
b	3	5	6
g	6	2	2
n	7	7	7
u	6	1	1 3
y	4	5	8
z	5	2	2
k	5	4	2 4



115 116 117 118 119 120

II · 30 Sep 25/1904 II · 31 F. 26



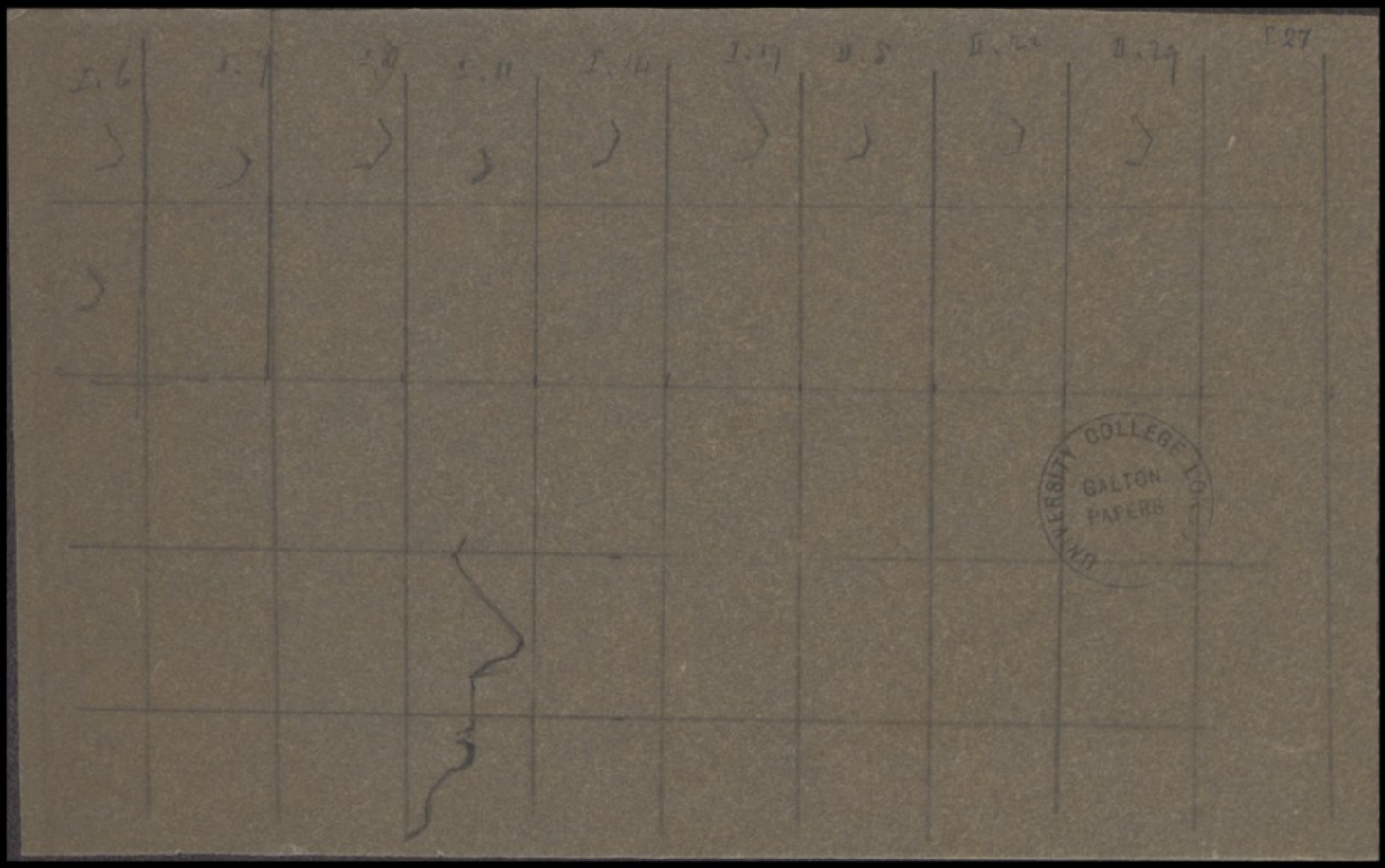
N	29	1	65
u	12	0	47
L	09	6	27
brmc/	6221/		

Bc = 100

	x	y
N	29	05
u	12	47
L	09	27

b	II c	6
v	vs. cve	2
n	I ~	1
u	II str	0
L	over, obey	6
m	small, red	2
c	L uppa	1

II · 31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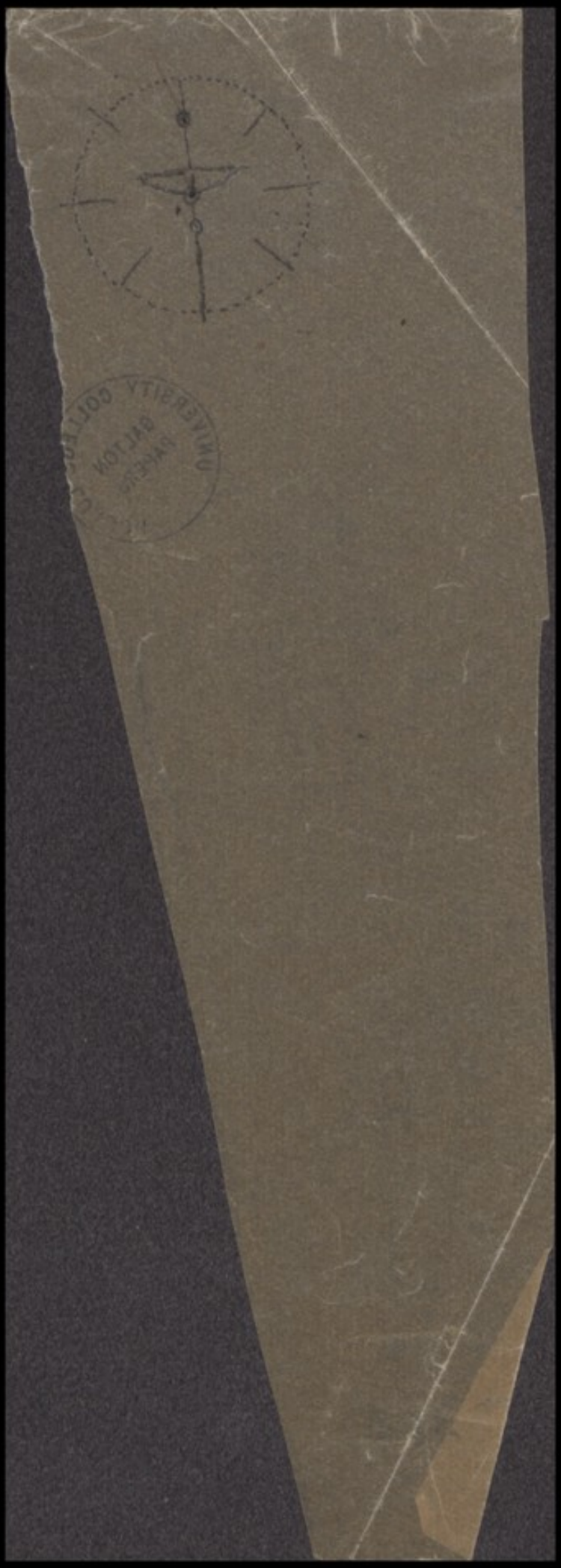
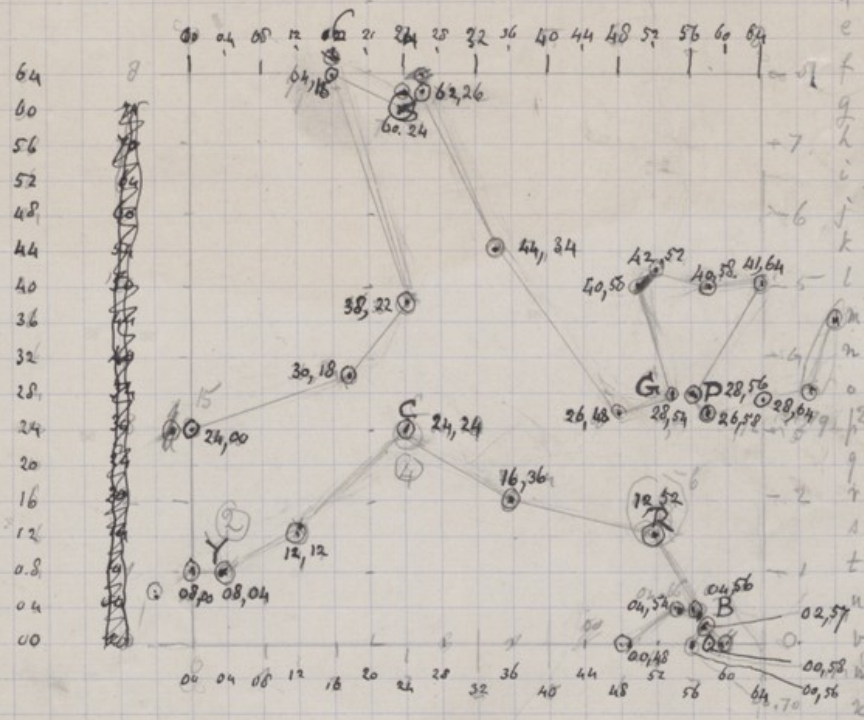
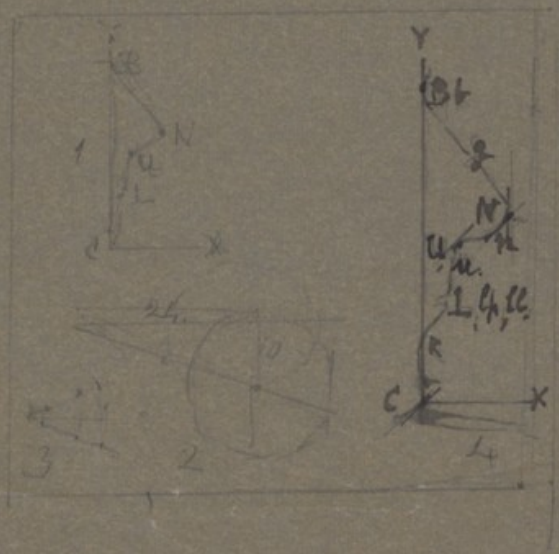


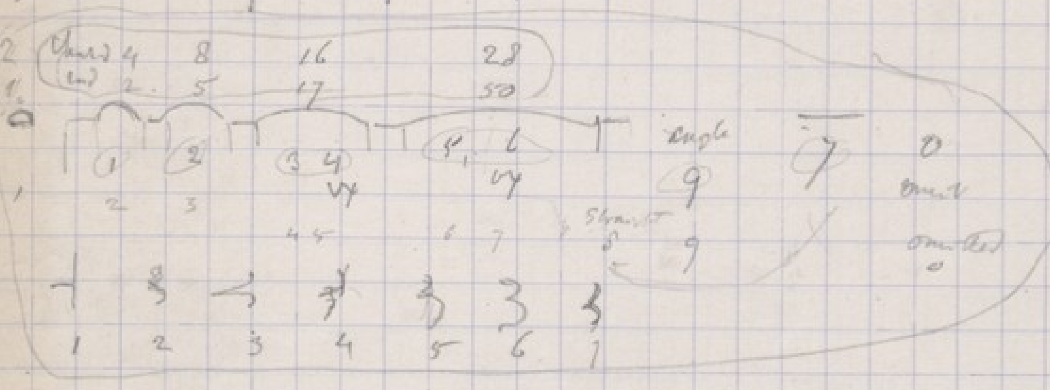


a	1	08	00		
b	2	08	04	Y	88019
c	3	12	12		
d	4	24	24	C	88024
e	5	16	36		
f	6	12	52	R	88039
g	7	04	56	B	88049
h	16	04	54		
i	9	00	48		
j	8	08	56		
k	3	02	57		
l	4	00	58		
m	5	24	00		
n	6	30	18		
o	7	38	22		
p	10	64	16		
q	21	60	24	S	88059
r	22	62	26		
s	23	44	34		
t	24	26	48		
u	25	28	54	G	88069
v	26	40	50		
w	27	42	52		
x	36	40	38		
y	37	41	64		
z	38	28	56	P	88079
	3	26	58		
	4	28	64		

f. 32



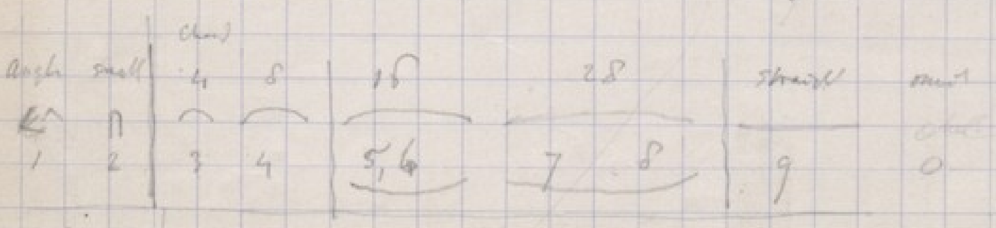
	I.15	I.16	I.17	I.18	I.19
Below nose notch	2	9	2	2	2
Upper nose	1	1	1	1	1
Most depression	1	4	6	4	6
Lower nose	1	3	1	6	5
Nose tip	2	2	1	7	2
Nostrils	1	1	4	3	1
Lip nose notch	1	1	2	1	9
Upper lip	1	1	1	3	4
Lips parting	5	2	4	2	7
Under lip	0	1	3	1	1
Chin dent	1	1	2	3	1
Front of chin	2	2	1	3	2
Chin tip	2	2	2	2	2



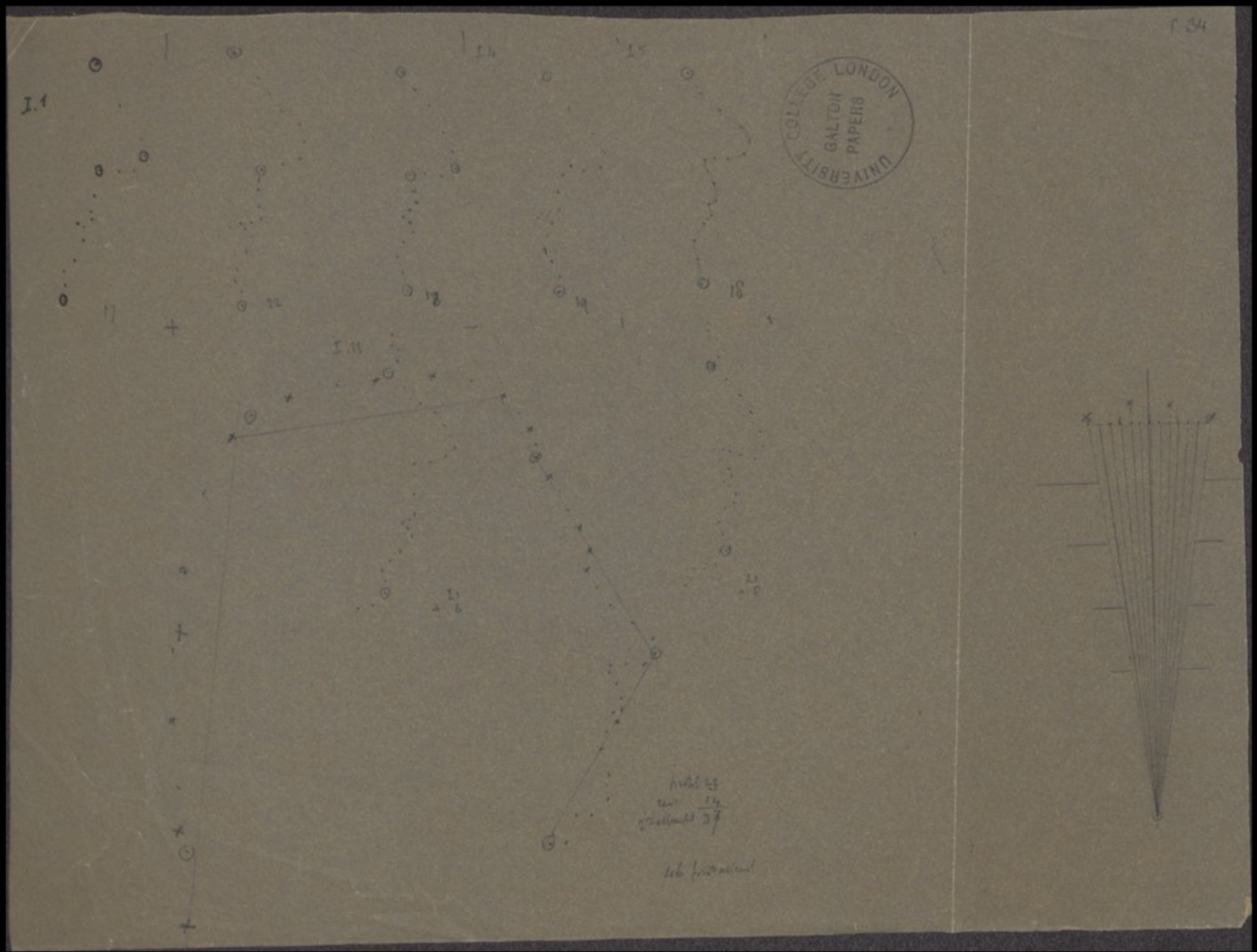
superseded

Code adopted
7 − 2 = 5 cardinal forms with curves at end
8 links 3 forms last + 6 intermediate

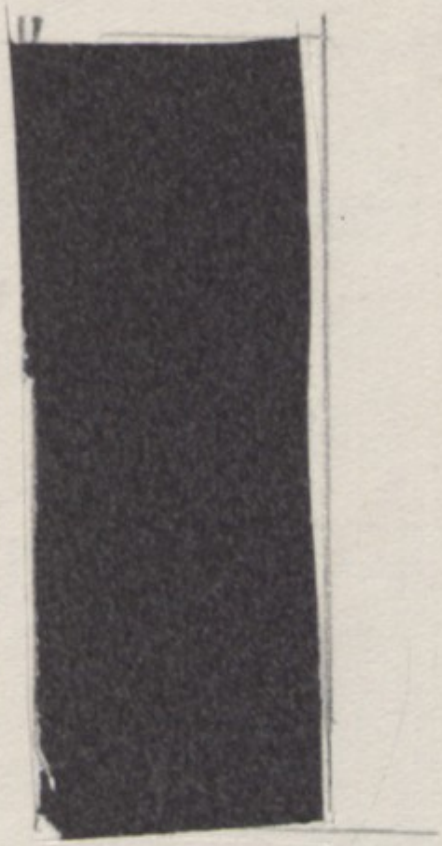
1
5
2
8



2	chord	4	8	16	28
1	arc	2	5	17	50

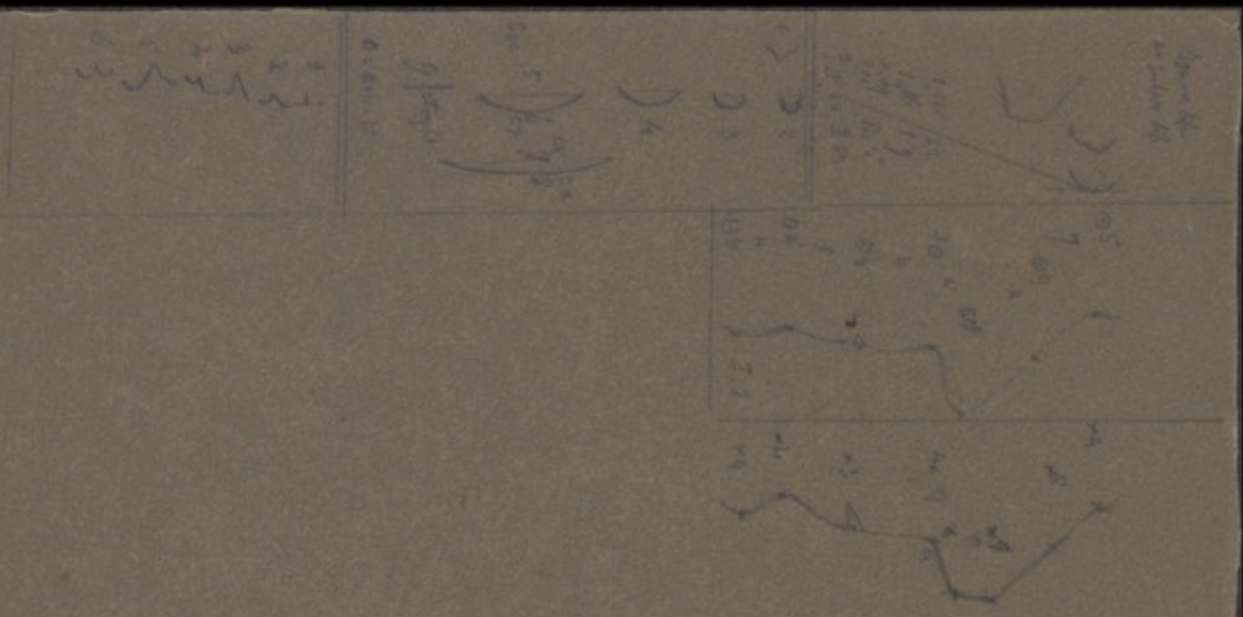


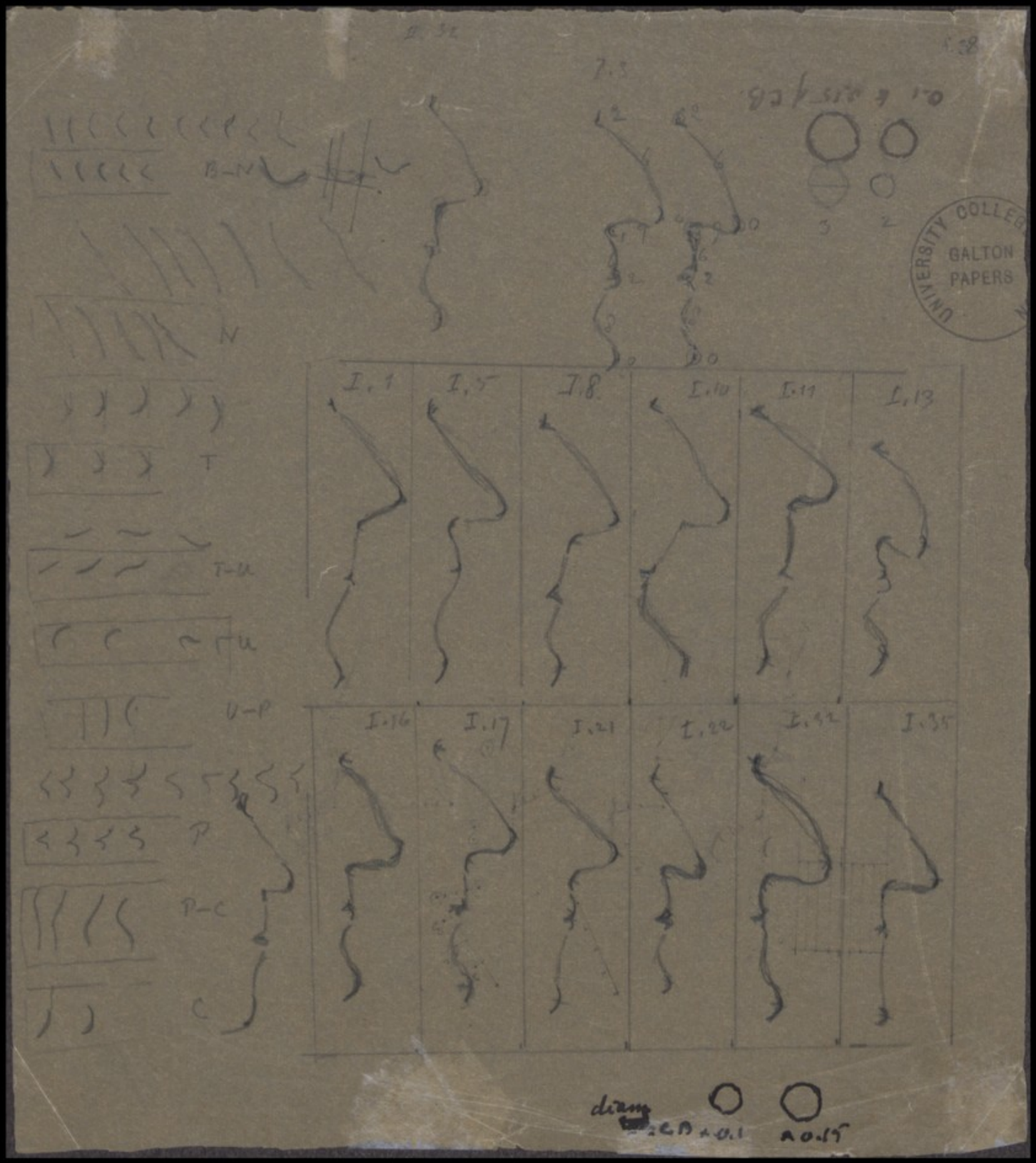
f. 35



f. 36

79

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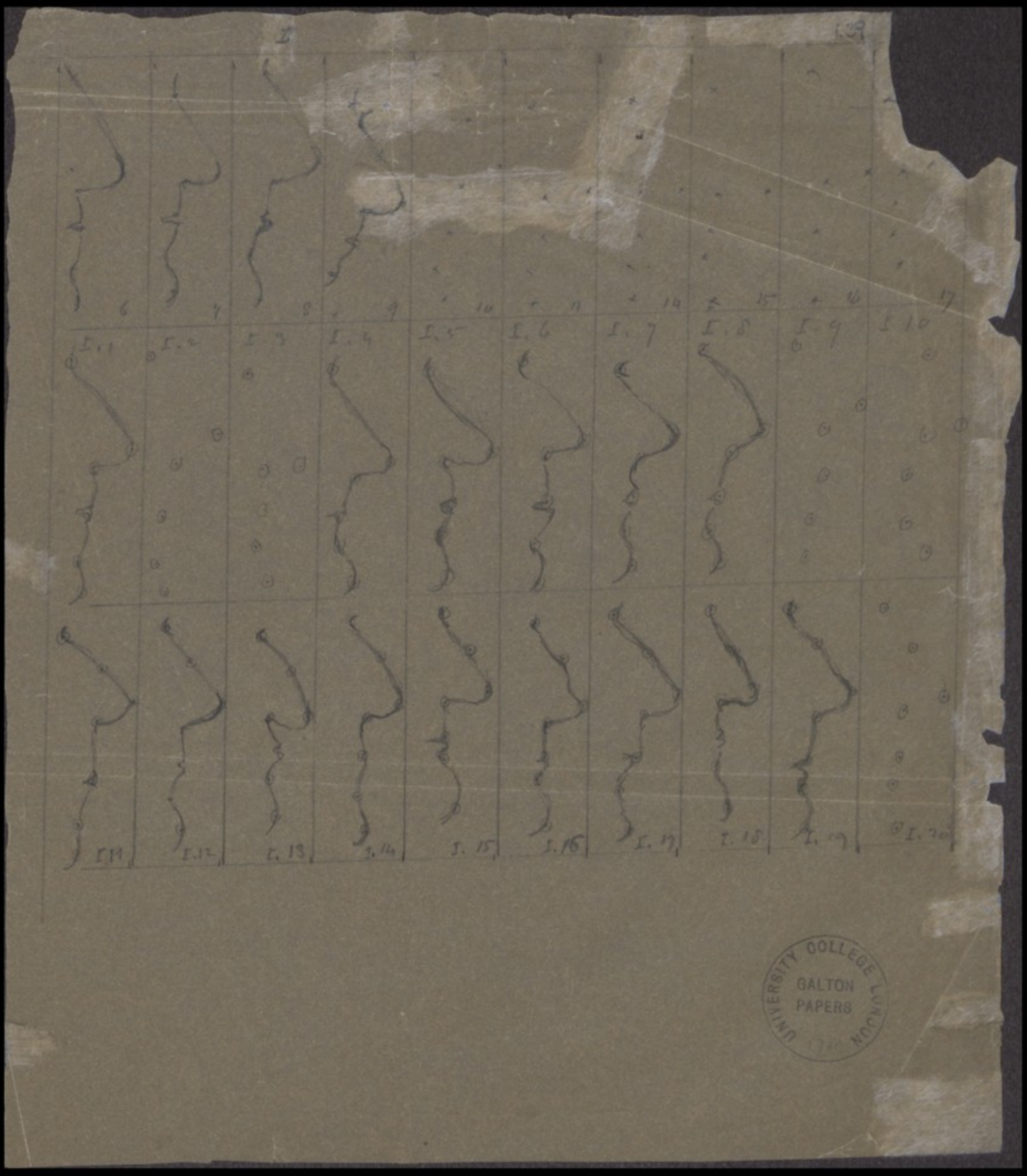
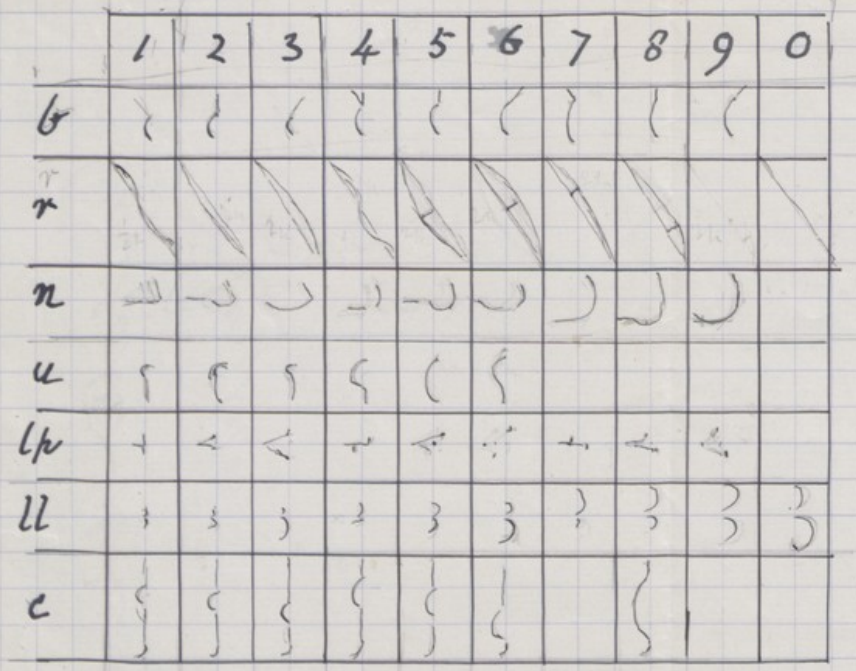


Carefully drawn
Templates

Carefully drawn
Templates



Somewhat altered twice

Template

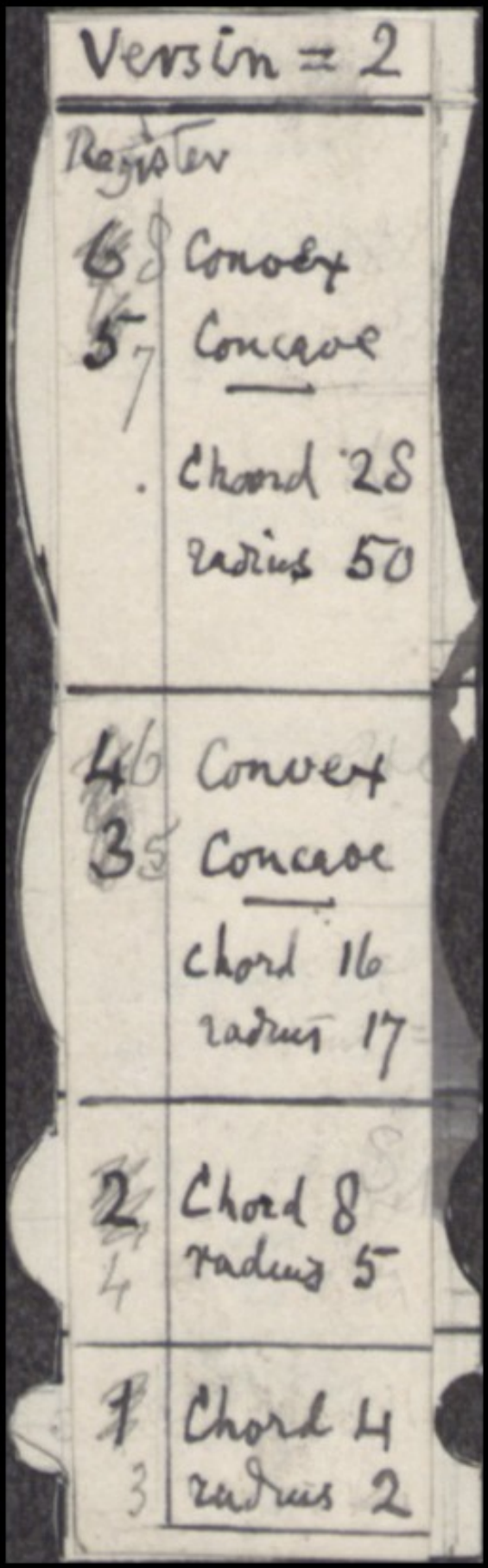
for portfolios

f. 42 av

over

42, RUTLAND GATE, S.W.

over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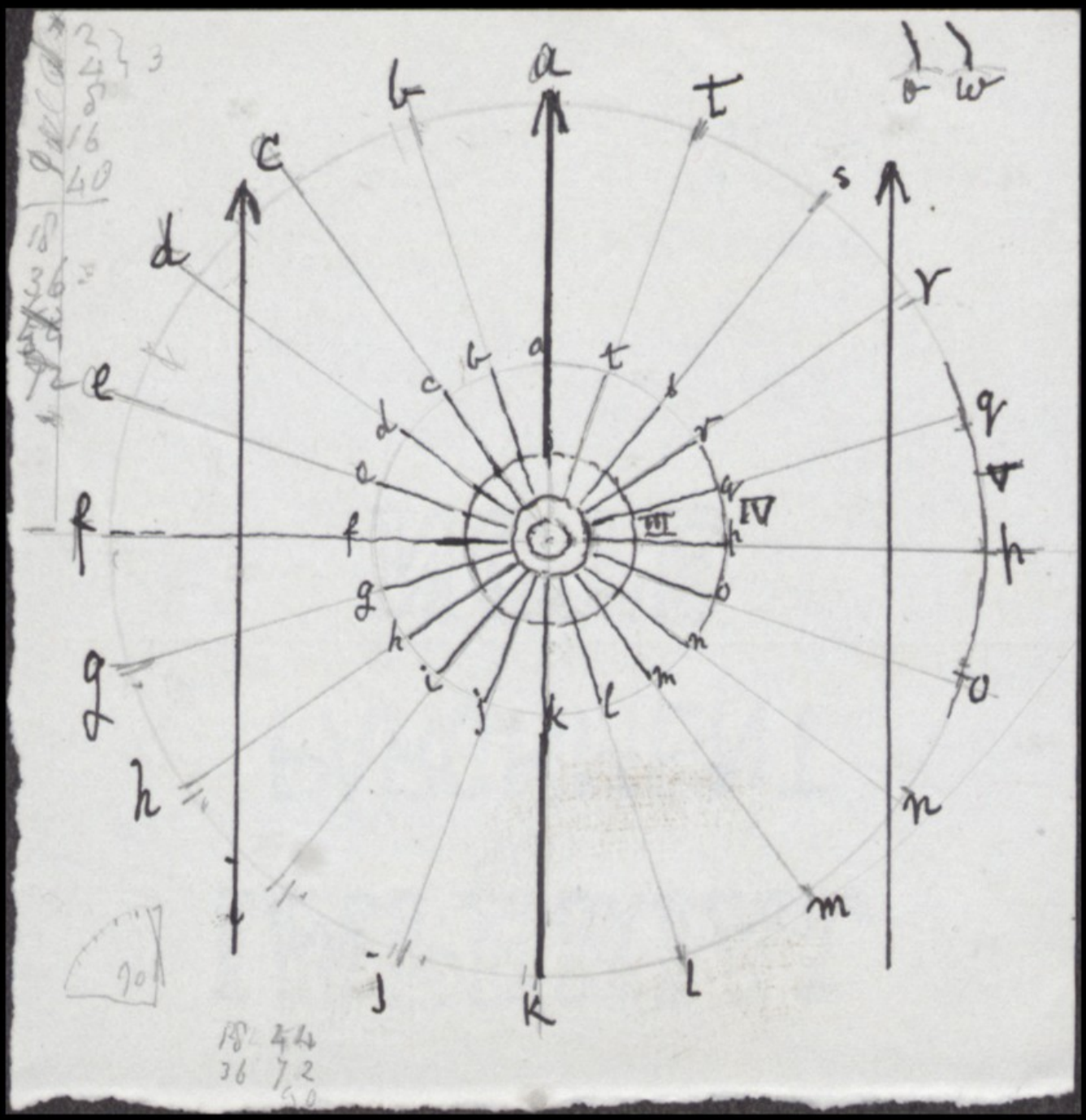
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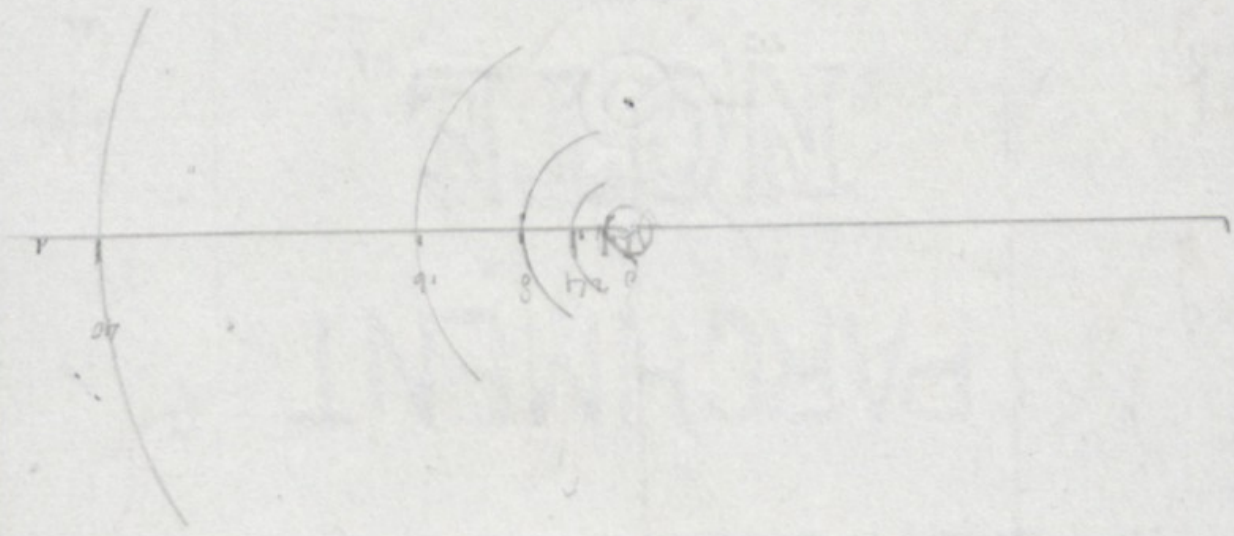
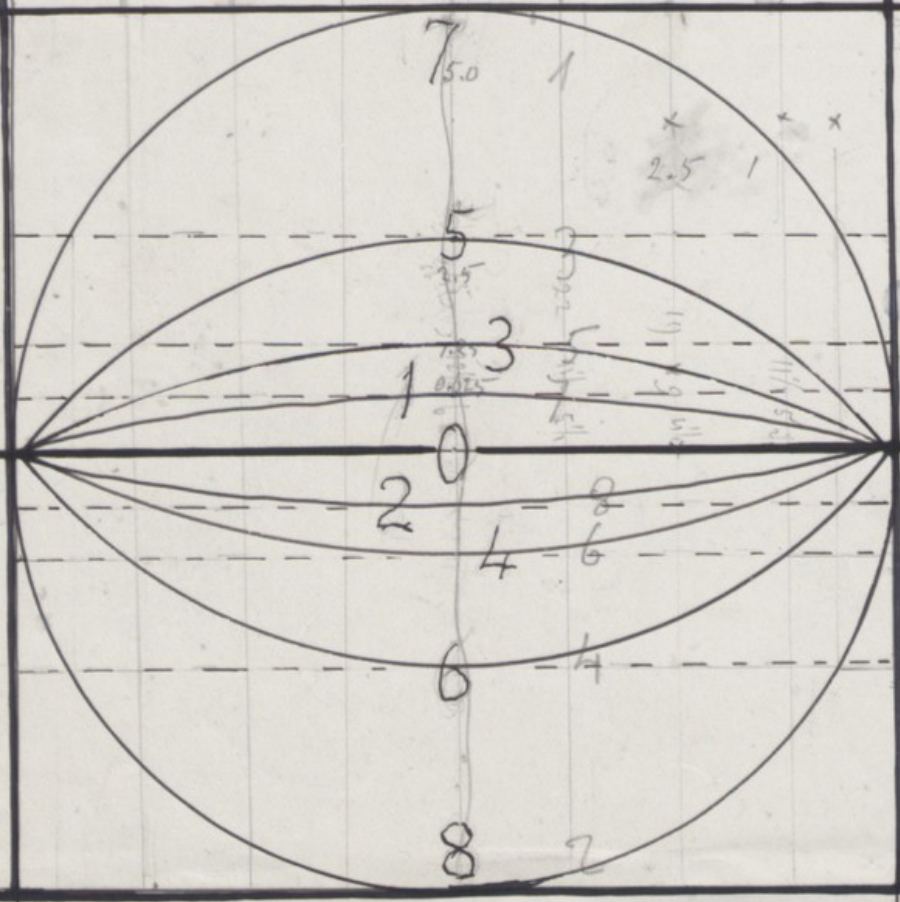
f. 43v



STANDARD CURVES AND THEIR SYMBOLS



	V/C	r/C
7	1/2	0.500
5	1/4	0.625
3	1/8	1.062
1	1/16	2.031
0		infin:
2	1/16	2.031
4	1/8	1.062
6	1/4	0.625
8	1/2	0.500

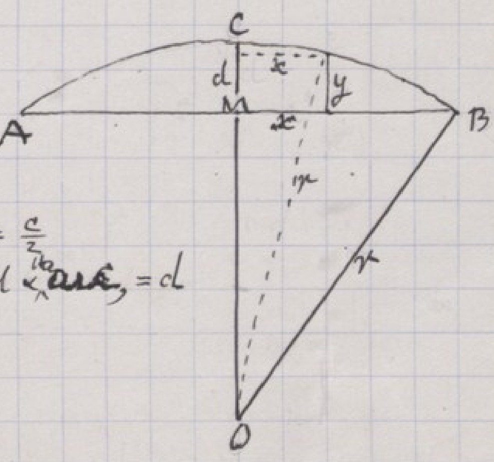
F. 45

In circular arcs whose chord = 10.00

* Symbols expressing the Curvature	I or II	III or IV	V or VI	VII or VIII
Radius of curvature	5.00	6.25	10.62	20.31
Distances of arc from chord				
at the middle of the chord	5.00	2.50	1.25	0.63
at its 1st and 3rd quarter parts	4.33	1.98	0.93	0.49
at its 1st and 7th eighth parts	3.36	1.29	0.57	0.27

Note the numbers are changed I & II with VII & VIII

In those curves whose convexity is outwards in respect to the profile, bear even numbers; those whose convexity is inwards bear odd numbers



Given the chord AMB of a circular arc, in which MA = MB = $\frac{c}{2}$
and MC, the intercept between the middle of the chord and the arc, = d
to find r in terms of c and d

$$r^2 = (r-d)^2 + \left(\frac{c}{2}\right)^2$$

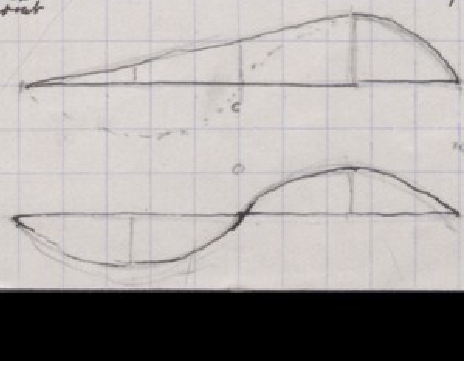
whence $r = \dfrac{4d^2 + c^2}{8d}$.

Given also a point on the chord whose distance from M = ± x
to find the intercept, y, at that point

$r^2 =$ [illegible]

$$= \{(r-d) + y\}^2 + x^2$$

whence $y = \sqrt{r^2 - x^2} - (r-d)$.



In these arcs the length of the chord is ½ c, consequently the tabular values when halved, will apply to them

f. 46r

$$r^2 = \{(r-d) + f\}^2 + e^2$$

write it $v = r-d$ $\quad r^2 = \{v+f\}^2 + e^2$

$v^2 = r^2 - 2d + f^2$ $\quad r^2 = v^2 + 2vf + f^2 + e^2$

$v.2f = r2f - d2f$ $\quad r^2 = r^2 - 2d + f^2 + f\{2r - 2d\} + e^2$

~~$f(2d-2r) = f^2 + e^2 - 2d$~~

$$f^2 + 2fv = 2d - f^2 - e^2$$

$$f^2 + 2fv + v^2 = v^2 + 2d - f^2 - e^2$$

$$= (r^2 - 2rd + d^2) + 2d - f^2 - e^2$$

$f + (d-r) =$

$$r^2 = (r-d+f)^2 + e^2$$

write v for $(r-d)$. This becomes $r^2 = (v+f)^2 + e^2$

$v^2 = r^2 - 2rd + d^2$ $\qquad = (v^2) + (2vf) + f^2 + e^2$

$2f.v = 2fr - 2fd$

$$r^2 = (r^2 - 2rd + d^2) + 2f(r-d) + f^2 + e^2$$

$$0 = -2rd + d^2 + e^2 + f^2 + 2f(r-d)$$

$$f^2 + 2f(r-d) = 2rd - d^2 - e^2$$

$$\{f + (r-d)\}^2 = (r-d)^2 + 2rd - d^2 - e^2$$

$$= r^2 - 2rd + d^2 + 2rd - d^2 - e^2$$

$$= r^2 - e^2$$

$f + r - d = \sqrt{r^2 - e^2}$

$f = \sqrt{r^2 - e^2} + d - r$ $\quad$ (use of 2nd working.)

(A)

Quality

1 plain symmetrical

2 pear shaped, stalk browward

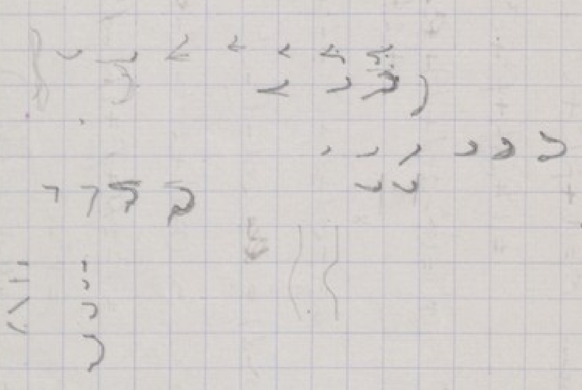
3 " " , " chinward

4 Sinuous beginning [illegible] ward

5 Hump with hollow in middle

Intensity I to VIII

1 convolution – direction of concavity



f. 46v

	2	25.0 12.5
	at	37.5

$$y = \sqrt{r^2 - x^2} + d - r$$

Curves VII or VIII	Curves V or VI	Curves III or IV	Curves I and II
Quartile $r = 50$ $d = 50$	$r = 62.5$; $d = 25$	$r = 10.62$	$r = 20.31$
$\pm x = 25$	$\pm x$ 25	$d = 1.25$	$d = 0.65$
		$r-d = 9.30$	$r-d = 19.66$
r^2 2500	$r^2 = 3906$	$\pm x = 2.5$	$x = 2.5$
x^2 625	x^2 625	$r^2 = 112.40$	$r^2 = 412.5$
$r^2 - x^2$ 1875	$r^2 - x^2 = 3281$	$x^2 = 6.25$	$x^2 = 6.25$
		$r^2 - x^2$ 106.15	$(r^2-x^2) = 406.25$
$\sqrt{r^2 - x^2}$ 43.3	$\sqrt{r^2 - x^2} = 57.28$	$\sqrt{r^2 - x^2} = 10.30$	$\sqrt{()} = 20.15$
	$+d$ 25.00	$-(r-d) = 9.37$	$r-d$ 19.66
	82.28		0.49 ✓
	$-r$ 62.5		
Q. $y = 43.3$ ✓	$y = 19.8$ ✓	$y = 0.93$ ✓	
Octile $r = 50$ $x = 37.5$	$r = 62.5$ $d = 25$	Octile $x = 3.75$	$x = 3.75$
	$\pm x = 37.5$	$r-d = 9.37$	
$r^2 =$ 2500	3906	$r = 10.62$	
$x^2 =$ 1369	x^2 1369	$r^2 = 112.40$	$r^2 = 412.50$
$r^2 - x^2$ 1131	2537	$x^2 = 13.69$	$x^2 = 14.06$
		$r^2 - x^2 = 98.71$	397.44
$\sqrt{r^2 - x^2}$ 33.63	50.37	$\sqrt{()} = 9.9535$	$\sqrt{()}$ 19.93
$+d$ 50.00	$+d$ 25.00	$r-d = 9.37$	19.66
$-r$ 50.00	75.37		
	$-r$ 62.5		
y 33.63 ✓	12.9 ✓	$y = 0.57$ ✓	0.27 ✓

Values of y

$\pm x$	Curves VII & VIII $r = 5.0$	Curves 5 & VI $r = 2.5$	Curves 3 & IV $r = 1.25$	Curves I & II 0.65
d 0	5.0	2.5	1.25	0.63
Quart. $\pm$ 25	2.5	19.5	0.93	0.49
Octile $\pm$ 37.5	1.25	12.9	0.57	0.27
Subocttile x 0				

$\sqrt{r^2 - z^2} \rightarrow (r-d)$

$C = 10 \quad d = \frac{1}{8} = 1.25$

Curve III or IV

$r = 10.62 \quad , \pm z = 2.5$

$d = 1.25$

$r - d = 9.37$

$r^2 = 112.40$

$z^2 = 6.25$

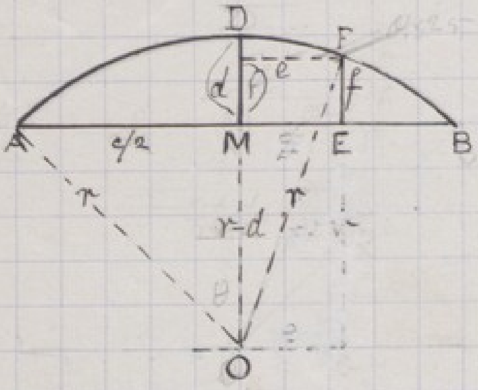
$(r^2 - z^2) = 106.15$

$\sqrt{(\ )} = 10.30$

$-(r-d) \quad 9.37$

0.93 ✓

F. 48v



AB is a chord to a circular arc (= c)
MD a perpendicular through its centre (= d)
find O in the line DM produced that shall be
the centre of the circle through A, D, & B. (DO = r)

$r^2 = (r-d)^2 + (\frac{c}{2})$

whence $r = \frac{4d^2+c^2}{8d}$

Given in addition ME (= e)
draw EF perpendicular of ⊥ A, meeting the circle in F. EF = f
find f. (write v for r-d)

$r^2 = (v+f)^2 + e^2$

$r^2 = v^2 + 2vf + f^2 \quad + e^2$

$= r^2 - 2rd + d^2$

$+ 2rf - 2fd + f^2 + c^2$

$o = r 2(d+f) + d^2 - 2fd + f^2 + c^2$

whence $r = \frac{d^2+f^2+c^2 - 2fd}{2d-f}$

$(v = r-d)$

$f^2 + 2vf = r^2 - f^2 - e^2$

$f^2 + 2vf + v^2 = r^2 + e^2 \quad (+f^2 - f^2)$

$f + v = \sqrt{r^2+e^2}$

$f = \sqrt{r^2+e^2} - r + d$

$e = 0.25 \quad r = 0.625 \quad d = 0.25$

$r^2 = 0.3906$
$e^2 = 0.0625$
$r^2 + e^2 = 1.0156$

$.625^2 = 39.06$

$\frac{4}{4} + \frac{1}{16}$

$16 / 9.00 \ 0.56$

Circular arcs of chords = 10 – 10.00

distance of arc from chord at ...

distance of ...

$f = \sqrt{r^2 - e^2} + d - r$

At first quartile from middle

$c = 10.;\ d = 2.5;\ r = 6.25;$

(V)	(Nos 3 or 4) III	(Nos. I or II)
$e_q = 2.5$ — find f_q	$e = 2.50;\ d = 1.25;\ r = 10.62$	$e = 2.50;\ d = \frac{1}{16} = 0.625;\ r = 20.31$
$r^2 = 39.06$	r^2 112.400	r^2 = 412.5
$e_q^2 = 62.50$	e^2 6.250	e^2 = 6.25
$r^2 - e_q^2 = 23.44$	$r^2 - e^2$ 106.150	$r^2 - e^2$ = 406.25
$\sqrt{(r^2 - e_q^2)} = 4.841$	$\sqrt{(r^2-e^2)}$ 10.30	$\sqrt{(r^2-e^2)}$ = 20.15
$+d$ 2.500	$+d$ 1.25	$+d$ 0.62
7.341	11.55	20.77
$-r$ 6.250	$-r$ 10.62	$-r$ 20.31
$f =$ 1.991	$f =$ 0.93	f 0.46

(q₃) first (or) outside

	Nos (3 or 4)	
$e = 3.75$	$e = 3.75;\ d = 1.25;\ r = 10.62$	$e = 3.75;\ d = 0.625;\ r = 20.31$
$e^2 = 14.06$	r^2 112.40	r^2 = 412.5
$r^2 = 39.06$	e^2 14.06	e^2 14.06
$r^2 - e^2 = 25.00$	$r^2 - e^2$ 98.34	398.44
$\sqrt{r^2 - e^2} = 5.00$	$\sqrt{r^2-e^2}$ 9.917	$\sqrt{r^2-e^2}$ 19.96
$+d$ 2.50	$+d$ 1.250	$+d$ 0.625
7.50	11.167	20.585
$-r$ 6.25	$-r$ 10.62	$-r$ 20.31
$f =$ 1.250	$f =$ 0.54	$f =$ 0.275

Values of f

$c = 10$

		Nos VII or VIII	V or VI	III or IV	I or II
$d =$	median	5.0	2.5	1.25	0.625
e_q	1st quartile		1.09	0.93	0.46
e	first octile from outside end of c			0.54	0.27

^67 J

$$f = \sqrt{r^2 - e^2} + d - r$$

$C = 10$

$d = 2.5$

$e = 2.5$ $\quad e^2 = 6.250$

$r = 6.25$ $\quad r^2 = 39.060$

$r^2 + e^2$	45.31
$\sqrt{\quad}$	6.73
$+ d$	2.50
	9.23
$- r$	6.25
	2.98

$r^2 - e^2$	32.81
$\sqrt{\quad}$	5.73
$+ d$	2.50
	8.23
$- r$	6.25
	1.98

$e^2 = 6.250$

$r^2 = 39.06$

$r^2 - e^2 = 32\ 81$

$\sqrt{r^2 - e^2} = 5.73$

$+ d \quad 2.50$

8.23

$- r \quad 6.25$

1.98

$e = 25$ — find f_{25}

$C = 100 \quad f_{25} = 19.8$

$e = \frac{4}{5} \times 50 = 40$

$e^2 = 1600$

$r^2 = 3544$

$r^2 - e^2 = 2244$

$\sqrt{r^2 - e^2} \quad 47.37$

$+ d \quad 25.00$

$72,37$

$- r \quad 62.50$

9.87

$$r^2 = \{(r-d)+f\}^2 + e^2$$

$r-d = v$

$$r^2 = v^2 + 2vf + f^2 + e^2$$

$v^2 = r^2 - 2rd + d^2$

$2f \cdot v = 2fr - 2fd$

$$r^2 = r^2 - 2rd + d^2 + 2fr - 2fd + f^2 + e^2$$

$$0 = f^2 + 2f(r-d) + 2rd + d^2 + e^2$$

$$f^2 + 2f(r-d) = 2rd - d^2 - e^2$$

$$\{f + (r-d)\}^2 = (r-d)^2 + 2rd - d^2 - e^2$$

~~$f + v = \sqrt{v^2 + 2rd - d^2 - e^2}$~~

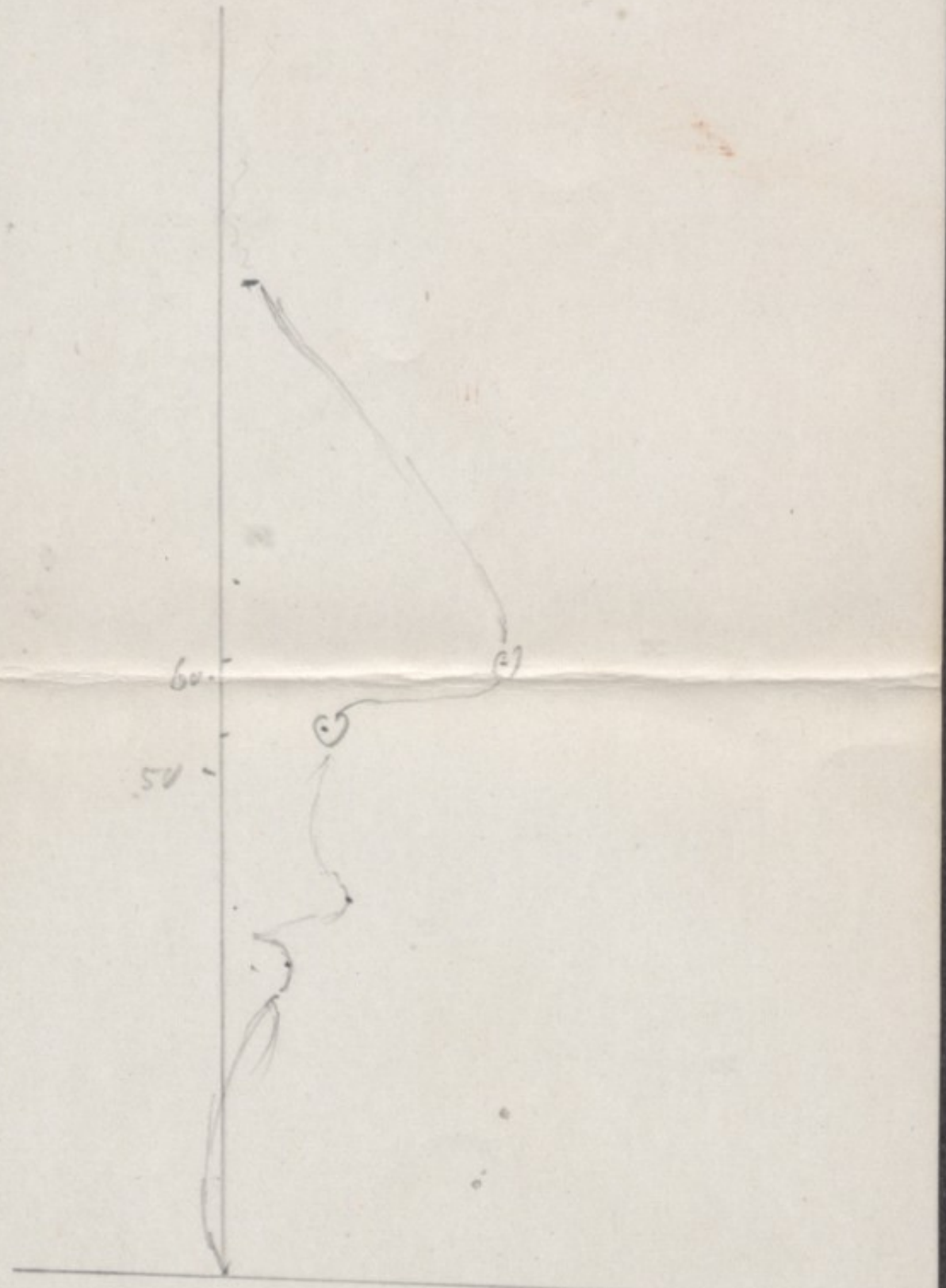
$$= r^2 - 2rd + d^2 + 2rd - d^2 - e^2$$

$$= r^2 - e^2$$

$$f + r - d = \sqrt{r^2 - e^2}$$

$$f = \sqrt{r^2 - e^2} + d - r$$

(A) right. so with sheet



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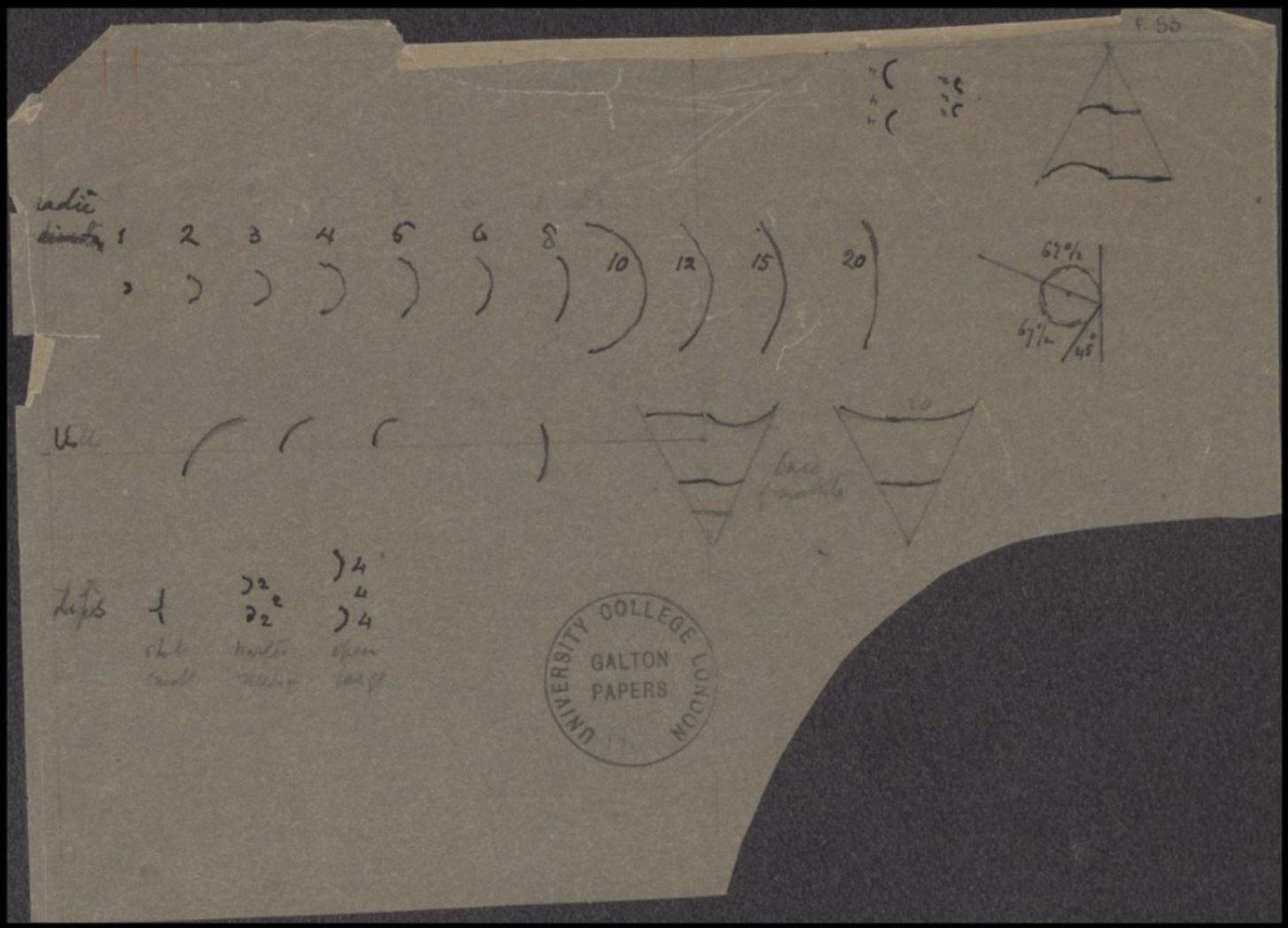
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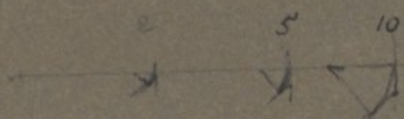

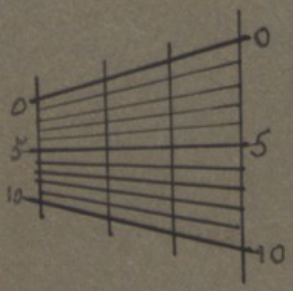

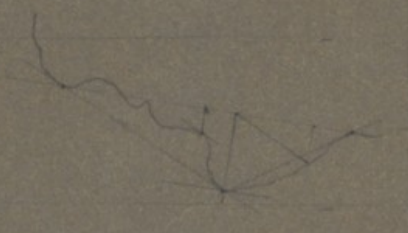

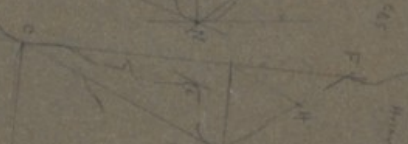

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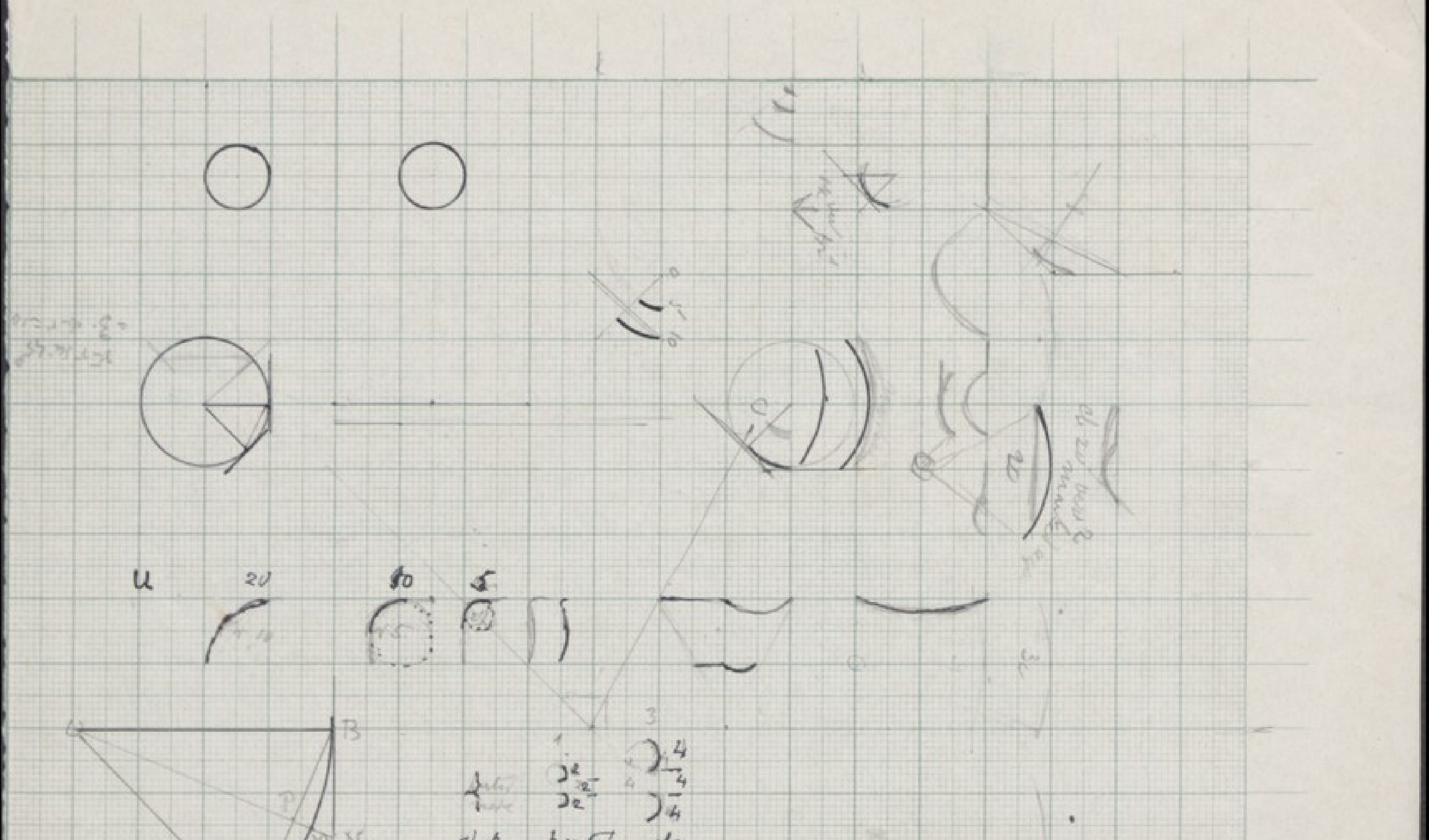

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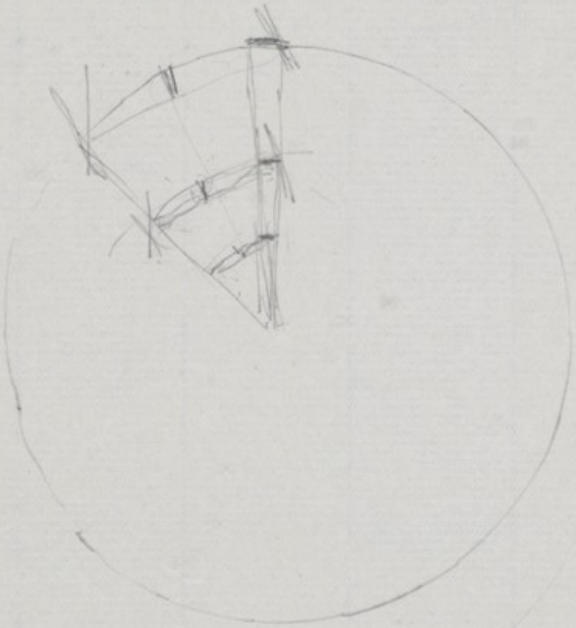

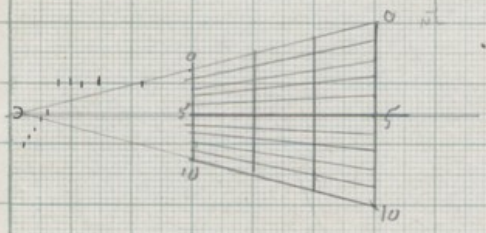

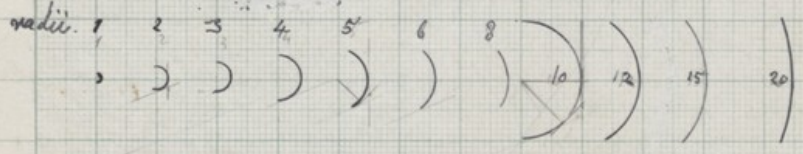

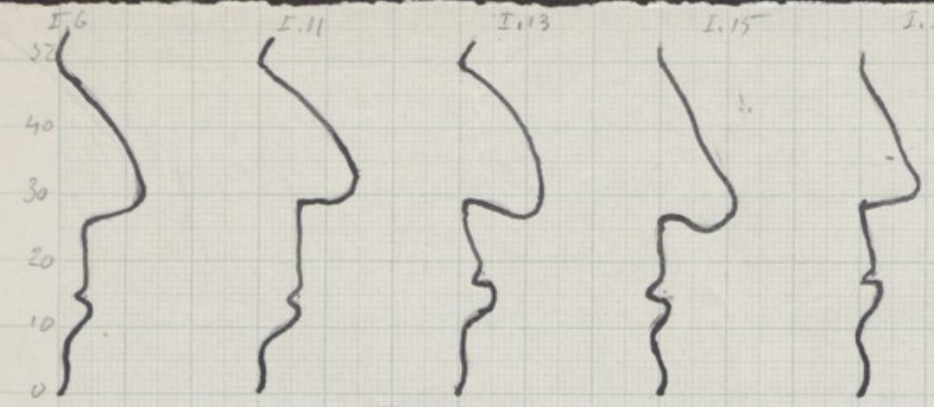

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3	**4**
34 2 15 — 17 2 06 30 1 06 — .6 8 26	28 5 12 — 14 3 03 28 2 01 — .3 6 64
5	**6**
28 2 14 — 16 1 04 26 3 02 — .5 8 25	30 7 13 — 16 9 04 27 2 04 — .5 7 35
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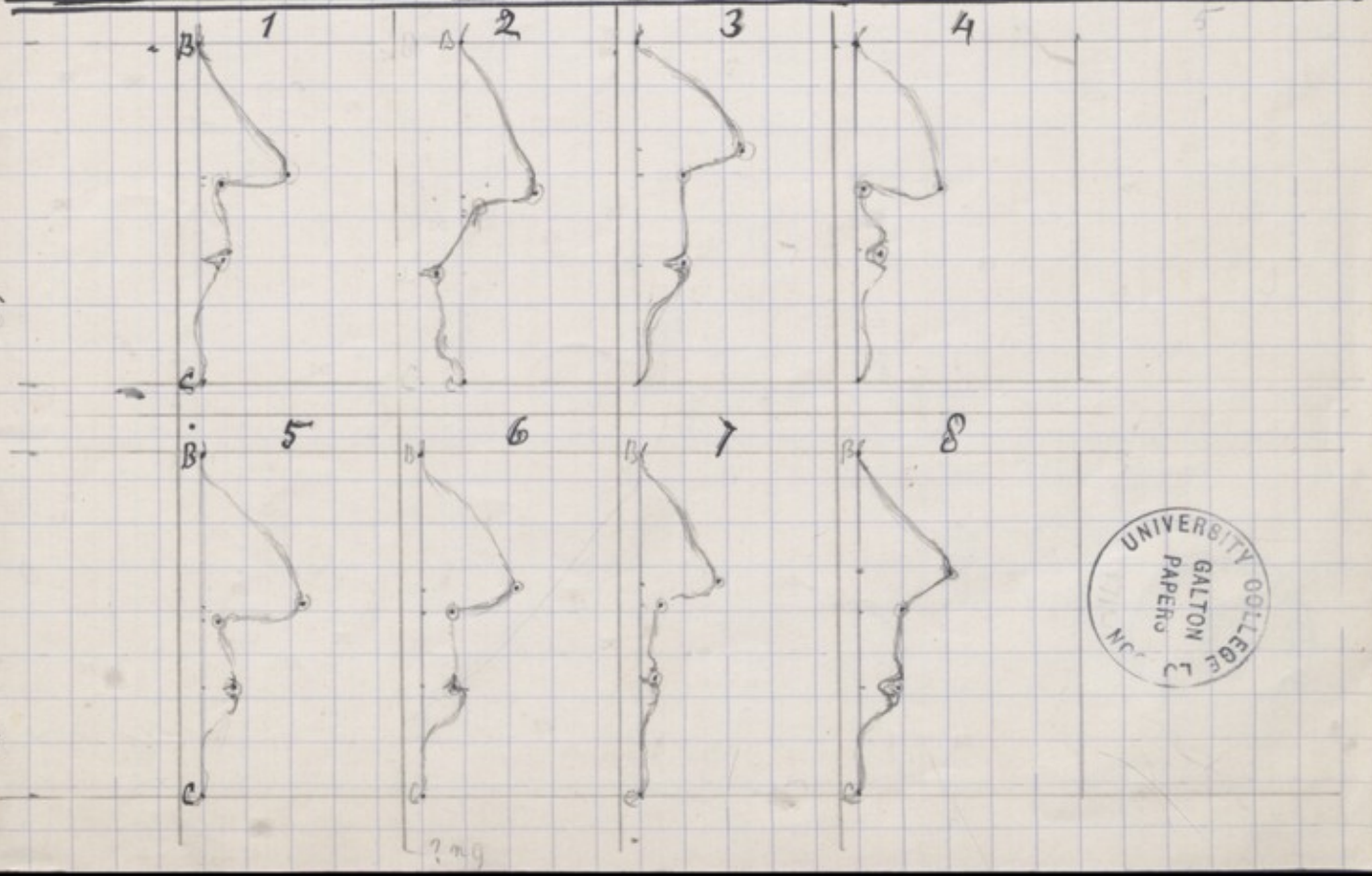


Head measurements of

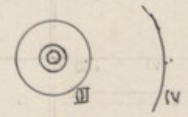
8 Profiles referred to in "Numeralised Profiles.

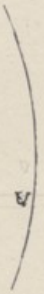
I 5 not measured

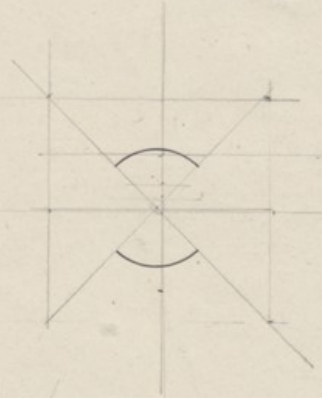
I 10	d' = 43		− OB' + d' =	+2
	e' = 40		− OB' + e' =	−1
	f' = 42		− OB' + f' =	+2
	g' = 41 = OB'			
I 11	d' = 36		− OB' + d' =	−0
	e' = 33		− OB' + e' =	−3
	f' = 34		− OB' + f' =	−2
	g' = 36 = OB'			
I 13	not measured			
II 11	d' = 45	− OB' + d' =	+6	
	e' = 46	− OB' + e' =	+7	
	f' = 42	− OB' + f' =	+3	
	g' = 39 = OB'			
II 19	d' = 37	− OB' + d' =	−1	
	e' = 35	− OB' + e' =	−3	
	f' = 36	− OB' + f' =	−2	
	g' = 38 = OB'			
II 24	d' = 41	− OB' + d' =	+4	
	e' = 40	− OB' + e' =	+3	
	f' = 41	− OB' + f' =	+4	
	g' = 37 = OB'			
II 31	d' = 27	− OB' + d' =	−3	
	e' = 30	− OB' + e' =	0	
	f' = 32	− OB' + f' =	+2	
	g' = 30 = OB'			

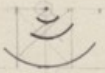
1.2 – I
2.4 – II
7.2 – III
21.6 – IV
64.8 – V

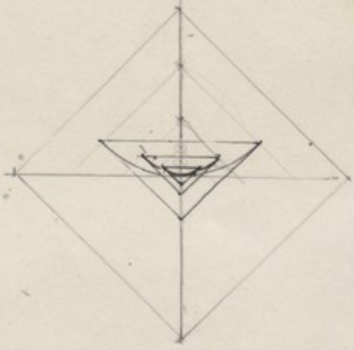
Scale for Dance, fairly exact,
SC = 40 mm.











f. 69

few word portrait (see over)

one in a special occasional quintette, beginning & ending with a dot (·),
2 = +
3 = −

0 omitted =
1 straight,
2 convex, radius 1/2 Brow to Chin
3 concave " " "
4 convex radius 1/4 B to C " "
5 concave " " "
6 Curve " $\frac{1}{8}$
7 Curve " $\frac{1}{16}$
8 Curve, radius less than $\frac{1}{16}$

direction of curvature is determined by the context

9 angle, whose width is determined by context

	No. words
Code signal	1
− 1 2 3 4	1
1′ 2′ 3′ 4′ /	1
(Possibly one for negatives) ÷ * * * −	(1)
A B C D* E — Cardinal points	5
Total	8 or 9

1 1
2 2
3 3
4 4
5 5
6 6

(1 Brow
12
B OA F
13
C OB E
CO -4-
1/|
E D
12′
B OE
13′
A J4′ chin

F. 63v

Do not mention)

(how much can be expressed pictorially by means of a few [illegible] coordinately & the general character of the [illegible]

Now how easily the conditions of telegraphy, which count five "figures" as the equivalent of a "word", enable simple outlines to be sent by wire.

(A "figure" may be any one of the 10 numerals 0 to 9; or any one of the 3 symbols a dot . , a hyphen –, or the oblique stroke used to signify a fraction)

I find that a profile from brow to chin can be adequately conveyed by eight or nine telegraphic "words" of which the first is a Code word, and that a specifically exact outline of the entire head & face can be conveyed by from 40 to 50 words.

The outlines of [illegible] coasts & harbours, of the [illegible] of groups or shapes, admit of similar treatment, but they will not be discussed now. The feasibility of the method would largely depend on the skill of newspaper correspondents in adapting it to the simple plan. ~~[illegible]~~ [illegible] verbal descriptions

By confining the following remarks to profiles, I have done [illegible] of which the measurements of the profile derived from the cardinal points & the "straight" lines that connect these points (forming as a [illegible] or triangulation) [illegible] the features of different portraits may be compared in equal terms, thus affording a groundwork for accurate anthropology in respect to family features [illegible]

I have already said something about this in Nature [illegible]

The radius, r, of curvature of a small circular arc can be found by measuring its chord arc = 2s and its versine = v. Then

$r^2 = r^2 - 2rv + v^2 + s^2$

$r^2 = (r-v)^2 + s^2$ whence $r = \frac{1}{2v}(v^2 + s^2)$

For present purposes I adopt one ~~it is convenient to have two alternative~~ constant value for v. ~~the one when the arc is very small, the other when it is larger that gives more trustworthy results.~~ Taking AC = 100 millimetres (for purposes of illustration) the ~~alternative~~ values of v, that I employ, is ~~3 and 6~~ 2, in which ~~in the~~ first case $r = \frac{1}{4}(4 + s^2)$ and ~~in the second $r = \frac{1}{12}(36 + s^2)$~~. The typical curves which are employed to description ~~have s = 3, 6, 12, 21 & 30 v~~ are in number & have for chords (= 2s) the respective values of 2, 4, 8 & 14 millimetres ~~[illegible]~~ with corresponding radii of 2, 5, 17 and 50 millimetres

$\frac{1}{2v} = \frac{1}{4}$; $v^2 = 4$

$s = 2$, $r = \frac{1}{4}(4+4)$, $r = 2$ chord = 4 $r = 2$	$s = 4$ — $r = \frac{1}{4}\{4 + 16\} = \frac{1}{4}.20$, $r = 5$ chord = 8 $r = 5$
$s = 8$. $r = \frac{1}{4}(4 + 64) = \frac{1}{4}.68 = 17$. chord = 16 $r = 17$	$s = 14$. — $r = \frac{1}{4}(4 + 196) = \frac{1}{4}(200) = 50$ chord = 28 $r = 50$

(5) is the space between adjacent curves

distances from beginning		distance of centre from arc(?) with chord	Radii
0 + (5) =	5	+ 2 = 7	2
5 + 4 =	9		
9 + (5) =	14	+ 4 = 18	5
14 + 8 =	22		
22 + (5) =	27	+ 8 = 35	17
27 + 16 =	43		
43 + (5) =	48	+ 14 = 62	50
48 + 28 =	76		
+ (5)	81		

f.65

L. Boswell from EB's secondary traces

1.

228	–	40	224	0	51	16	0	61	14	2	70	02	1	76
00	.	77	02	–	76	02	1	80	04	0	81	07	0	82
08	3	82	08	0	85	12	1	89	18	0	88	22	1	88
25	2	89	27	2	91	28	1	91	29	1	92	32	1	92
35	0	91	37	0	90	38	0	90	38	0	96	38	1	98
40	0	99	43	1	98	44	3	97	46	0	95	51	0	90
55	1	87	58	2	86	61	0	87	65	0	86	68	2	83
76	0	80	79	0	77	82	.	71	81	–	77	87	0	75
92	2	71	96	0	65	97	0	60	98	0	50	97	.	40
40	–	85	38	3	84	37	0	87	38	1	88	38	-	94

James Boswell Dec 24/1908 (revised) Dec 25
Dance I. 5

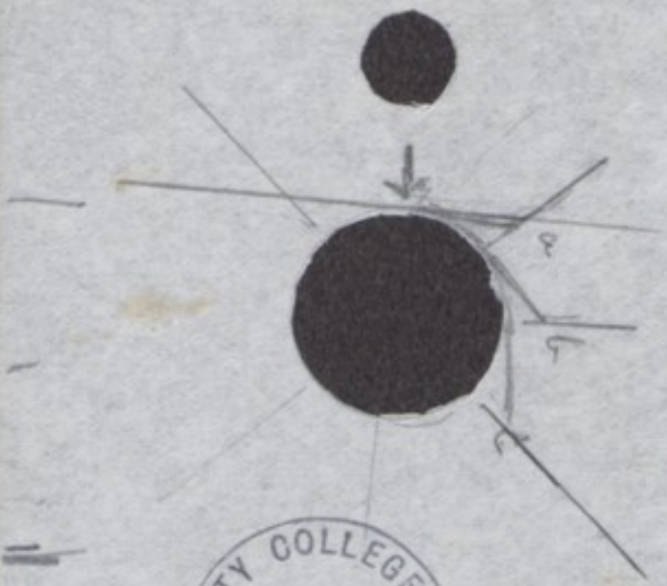
01	begin	74	48	47½	91
01		77½	53	51 87½ 86	87
02½		79	56		86½
05		80	59		87
07		80	63½		86
06½		84	66½		84
			71½		82
10½		87½	75		80
17½		86½	78		78
20½		86½	79½		75
23½		88½	80	slow	74
24		89			
25		90½	38	begin	84
			36½		83½
27		89½	35		86
28		91	36		86½
30		91	37		87
35		89	37	slow	93
36		89			
36		95			
37		98			
38		98½	78	begin	78
40		98	84		77
42½		97	89	slow	74
43½		95½			

Dec 26

01	begin	74	48		90½
01		78	53		87
02½		79	56		86½
05		80	59		87
07		80	63½		86
06½		85	66½		84
			71½		81½
10½		87½	75		80
17½		86½	78		77
20½		86½	79½		75
23½		88½	80	slow	74
24		89			
25		90	38	begin	84
			36½		83½
27		89½	35		86
28		91	36		86½
30		91	37		87
35		89	37	slow	93
36		89			
36		95			
37		97½			
38		98	78	begin	77
39½		97½	84		76½
42½	42 96½	96	89	slow	74
43½		95			
45		93			

f. 66v

f. 67

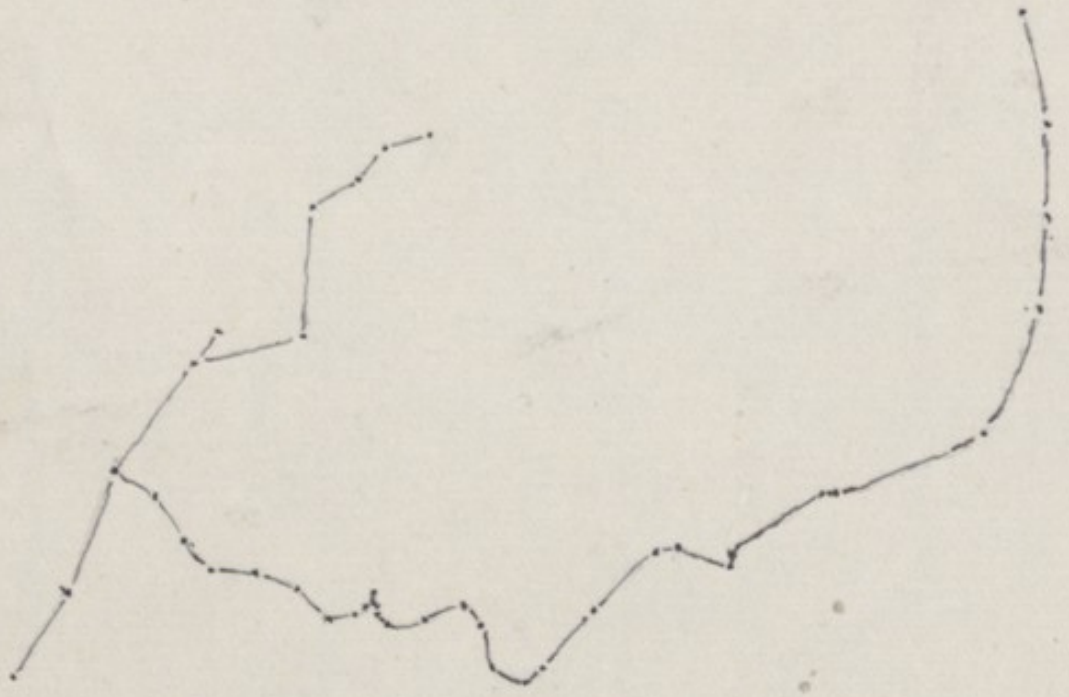


KC = 34 | KC = 100

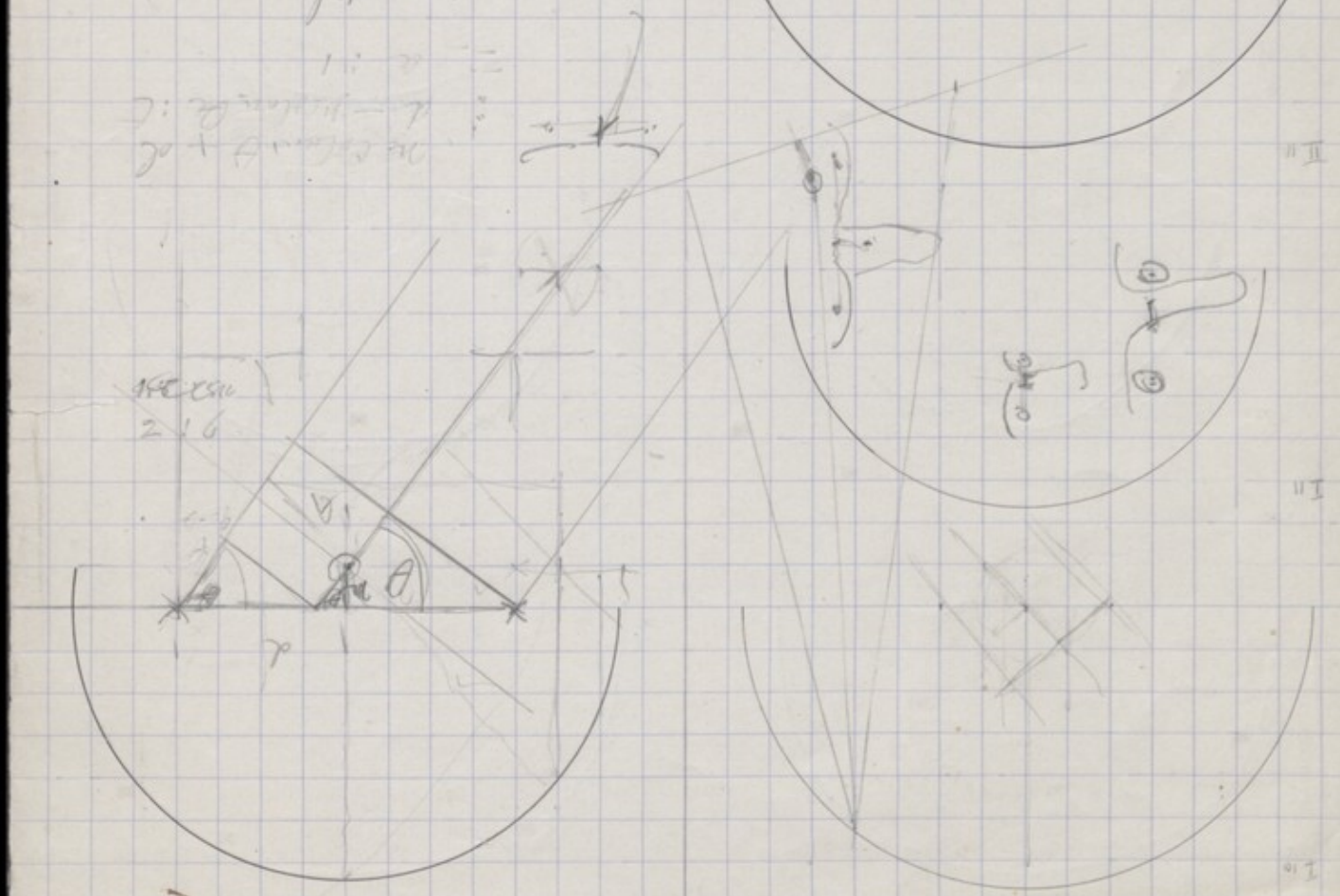
	x'	y'	x	y
N	10	09·5	24	28
U	04	16	12	47
L	03	09	9	65

f. 68

Samuel Arnold Mac D II p 22

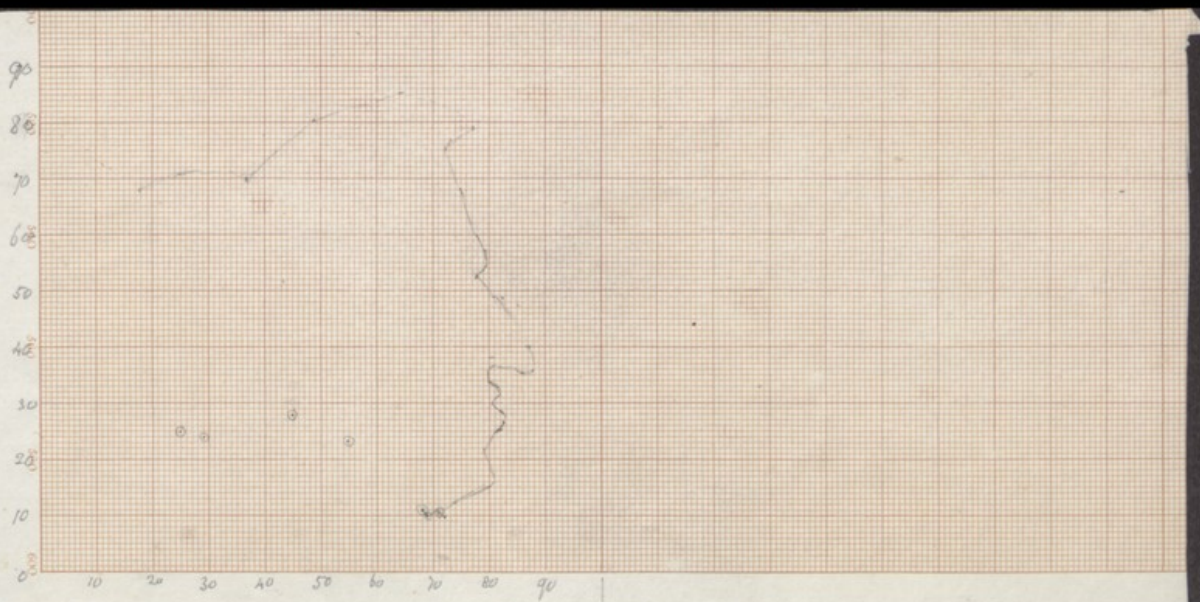


	1st				
Earl of Derby	57	55	60		50
Lord Stanley	60	70	60		70
M Walpole	60	62	50	70	80
M G. Hardy	45	60	57	58	40



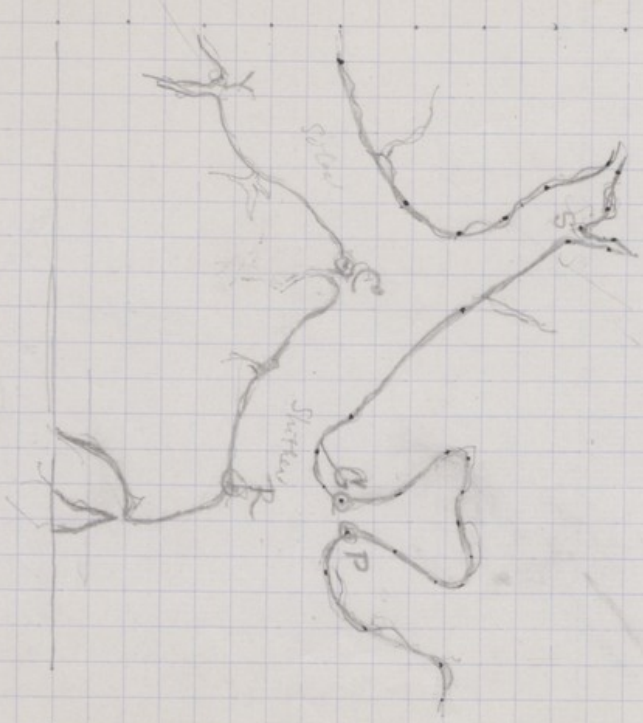
Tracings and Reconstructions

Tracings and Reconstructions

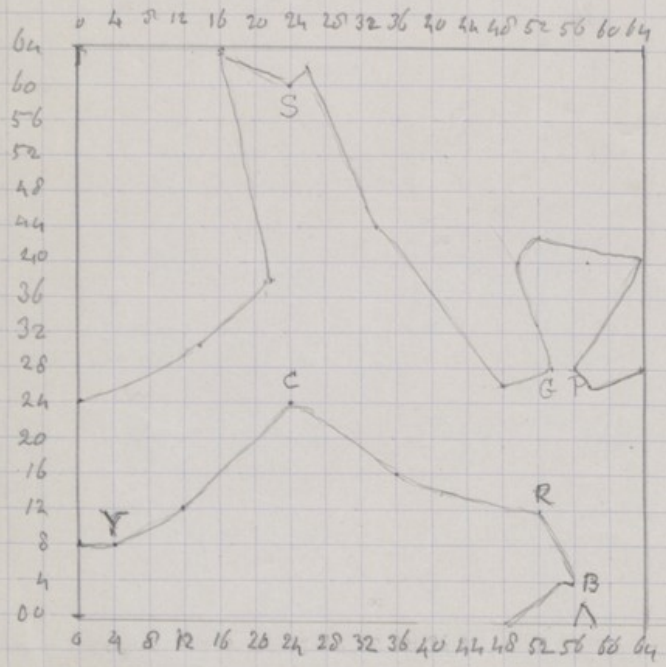


105

174



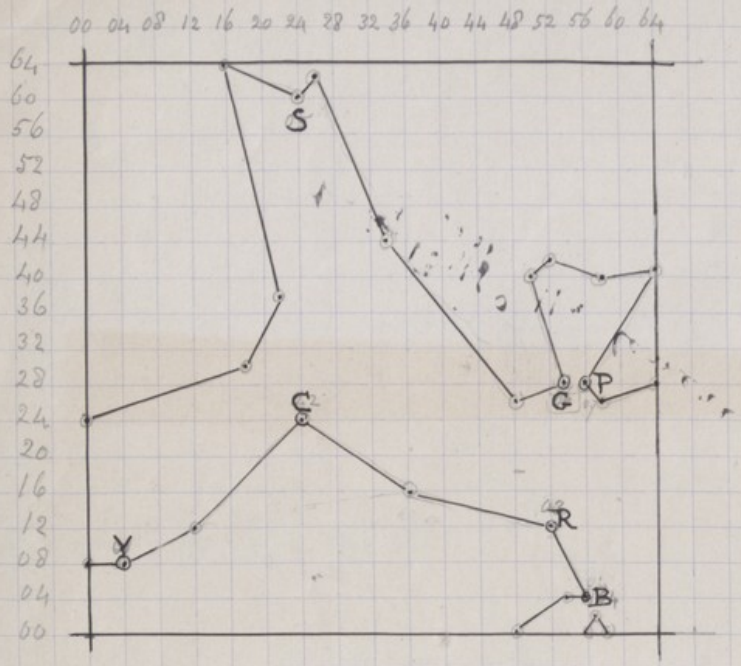
F.73



Letter	XY
a	01
b	02
c	03
d	04
e	05
f	06
g	07
h	10
i	11
j	12
k	13
l	14
m	15
n	16
o	17
p	20
q	21
r	22
s	23
t	24
u	25
v	26
w	27
x	30
y	31
z	32

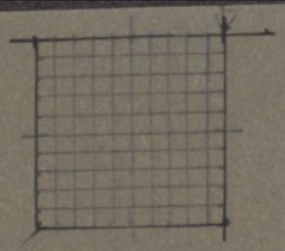
-08	08
-08	04
--3	1-
-12	12
-24	24
--0	3-
-16	36
-12	52
-=2	2-
-04	56
-04	54
-00	48
--9	--
-99	96
-02	57
-00	58
-999	9

- 24	00
- 30	18
- 38	22
- 64	16
- 60	24
- 62	26
- 44	34
- 26	48
- 28	54
- -0	7-
- 40	50
- 42	52
- 40	58
- 41	64
- 28	56
- -2	0-
- 26	58
- 28	64

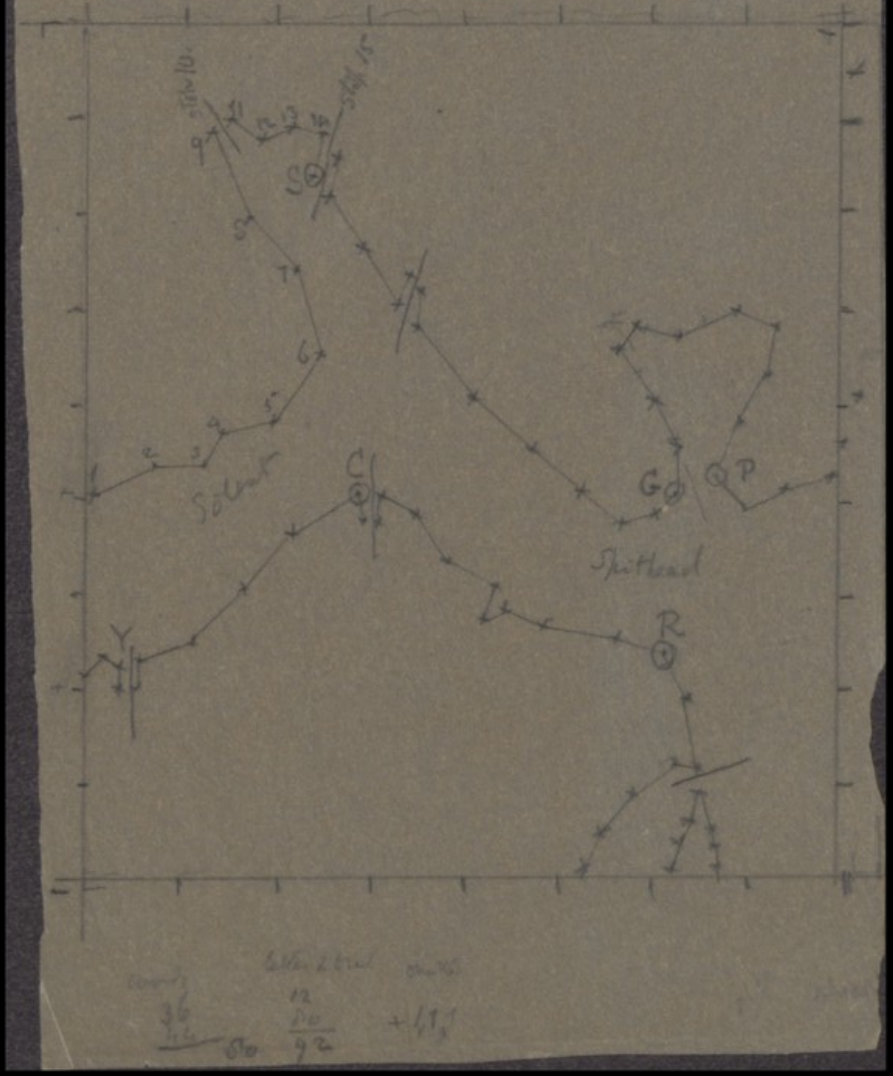


08	00	
08	04	Y - 31 -
12	12	
24	24	C - 03 -
16	36	
12	52	R - 22 -
04	56	
04	54	
00	48	- 9 -
00	56	
02	57	
00	58	
24	00	
30	18	
38	22	
64	16	
60	24	S - 23 -
62	26	
44	34	
26	48	
28	54	G - 07 -
40	50	
42	52	
40	38	
41	64	
28	56	P - 20 -
26	58	
28	64	

f. 74v



Toh



	Outlines.
1	Straight.
2	Slightly convex.
3	" Concave.
4	Markedly convex.
5	" Concave.
6	Arc, somewhat wider than it follows.
7	Arc, when radius = 5 profile-units.
8	Sharp Curve.
9	Angular notch.
0	Omitted.

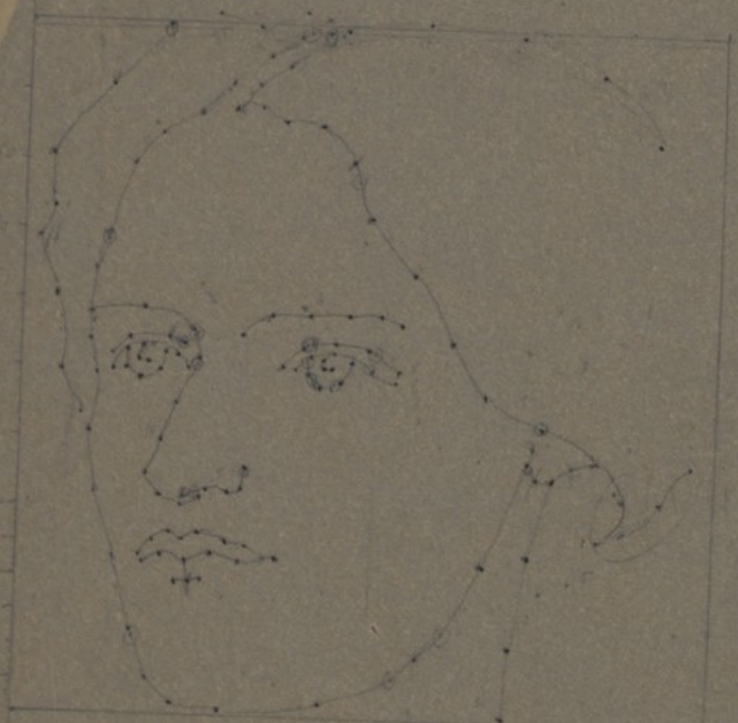
	Lips.
. 1	Compressed.
. 2	Normally parted slightly.
. 3	Opened.
. 4	Upper lip overhangs.
. 5	Under lip protrudes.
. 6	Both lips protrude.

Seabrooke
2nd attempt
July 31 1908

122 entries

left eyebrow and arch

Seabrook 2nd attempt
July 31. 1908
(The same tracing as below
but some small changes in it)



178

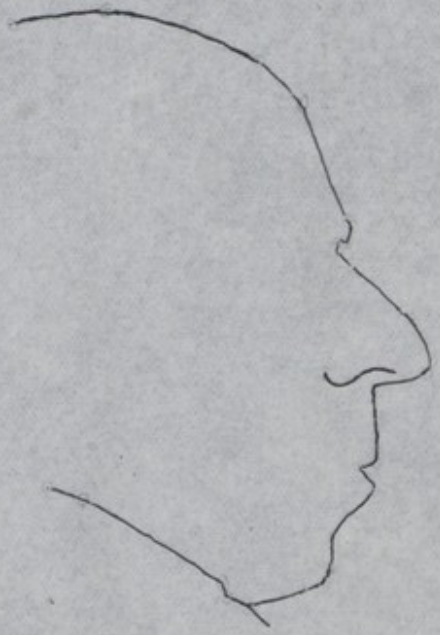
Sea Brook 2nd attempt. July 31 1908

01	—	30	72	▽	50	55	—	32		upper Eyelid	
01	1	23	64	0	56	58	0	36	50	—	39
05	0	19	54	1	62	58	2	41	52	3	41
11	0	16	40 47	0	67	58	0	47	53	0	45
22	1	14	40 43	0	75	58	⌒	52	51	0	50
32	0	11	38	0	83	57	.	55	49	•	54
41	0	10	35	△	77	Left Eyebrow			50	—	39
49	1	11	24	0	73				52	2	41
54	0	10	11	0	71	52	—	13	60 49	⌒	42
58	0	10	01	•	71	54	0	15	48	0	45
60 64	2	10	43	—	75	54	.	23			
69	0	12	37	0	73				52	.	48
79	3	15	35	▽	77	50	—	13	53	—	45
84	0	19	40 37	—	73	53	0	15	51	3	43
87	2	24	50 22	0	67	53	1	19	51	.	45
91	1	29	13	0	62	52	⌒	23			
95	0	34	06	2	54	50	•	24	23	—	17
99	•	40	02	0	44	52	—	15	25	3	19
99	—	20	01	.	30	50	⌒	15	27	0	22
90 91	0	12	Contour of face & of hair			49	⌒	17	110 26	2	23
80	3	03				50	⌒	20	27	0	22
73	0	04				52	.	21	25	1	30
68	1	02	58	—	10	90 53	—	17	25	0	33
60	1	05	58	3	17	52	2	16	23	.	38
49	3	05	55	△	25	51	.	19			
43	.	09	51	2	25				22	—	18
99	—	43	60 45	2	22	50	—	37	23	2	20
99	distant	71	40	0	20	54	0	41	22	0	24
94	0	83	35	0	18	54	0	45	23	0	28
84	.	91	32	0	20	53	1	50	22	0	32
35 99	—	43	30	3	23	50	.	55	120 23	.	38
94	0	37	31	•	26	51	—	40	19	—	23
91	0	33	32	—	25	52	1	42	19	:	26
88	0	30	32	1	27	130 54	0	45			
88	△	34	32	1	30	53	0	51	122 entries		
86	0	37	33	0	32	50	.	55			
77	△	48	70 35	.	32						

Left Eyebrow not used

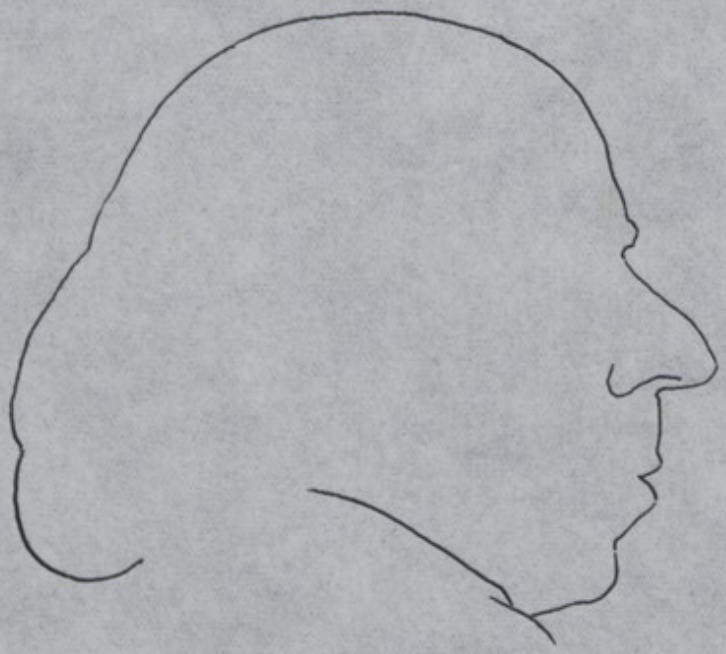
J. Flaxman RA I.11

f. 81



J Flaxman RA. I. 13.

f. 82.



John Flaxman RA.

Dante I. II

f. 83

J. Hayman RA. I. 11.

23	—	45
21	1	56
10	6	69
08	0	70
06	3	72
08	1	80
10	0	83
12	2	84
16	3	84
22	1	90
24	1	89
26	0	88
27	0	90
28	2	90
29	0	90
32	2	90
37	0	90
39	0	97
41	0	98
43	0	97
46	2	95
53	3	86
56	0	85
57	0	85
57	2	86
59	0	87
60	1	86
67	2	83
76	0	80
82	2	74
89	0	53
87	.	40
09	—	68
07	0	73
03	.	76
41	—	84
38	1	83
37	0	85
38	1	88
39	1	90
39	.	93

41 inches

F. 84

	10, 11	12	13	14
Notch between brow & nose	8	7	8	8
Upper half of ridge of nose	2	1	2	1
lower half " "	2	1	2	2
Tip of Nose	9	6	7	6
base of nostrils	4	1	1	4
Notch between nostrils & lips	9	8	8	6
Parting of the lips	.3	.2	.5	.2
Interture of the chin	3	5	5	3
Tip of the chin	4	4	2	4

f. 88

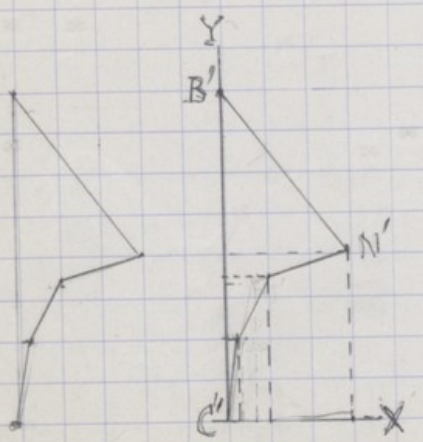


Fig 1

Fig 2

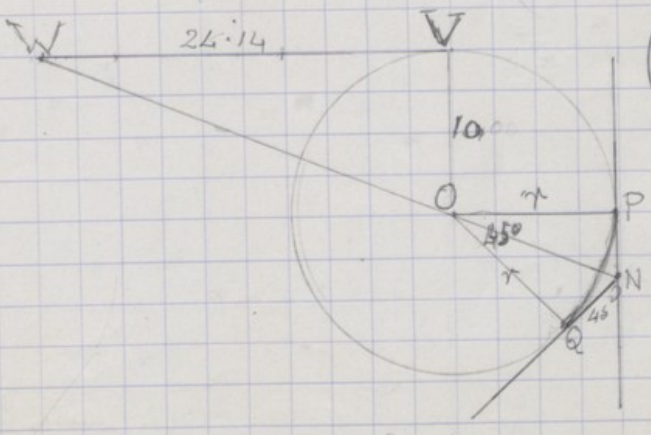
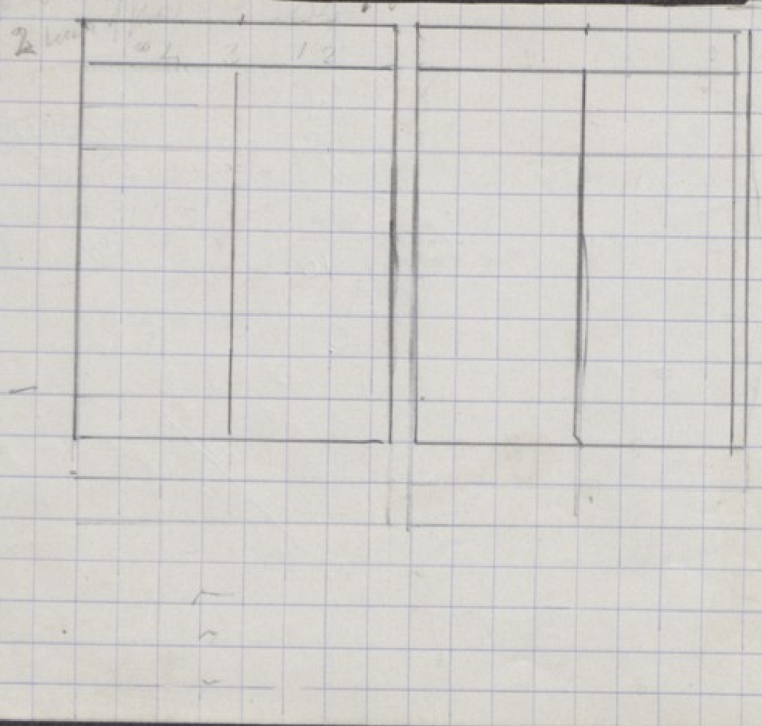


Fig 3

f. 90v



2 [illegible]

EGYPTIAN PROFILES

SHEET NO. 1.

	1		2		3		4		5	6		7	8	9
B	23.5				24		22.25			23.5				
N	13	4.75			14	4.75	11.75	4.25		14.25	5			
U	11.5	1.75			12.5	1.25	10	.5		13	3			
L	7.5	1.5			8.75	1.25	6	.5		8	2.5			
C	0 0													
	213 ✓				208		225 ✓			213				
B	50				50		50			50				
N	28	10			29	10	26			30				
U	24	4			26	3	22			28				
L	16	3			18	3	13			17				
C														

bgnulk

f. 92

EGYPTIAN PROFILES — SHEET NO. 2.

	10.		11		12		13		14		15		16		17		18	
B'	17.75		16		18.5		18.75						24.75				27	
N'	11.75	3	10.5	3	11	4	10.75	4					13.	6			15.75	5
U'	10	00	9.25	1.25	9.75	1.5	10	2					10.75	2			14	1.5
L'	6.75	.5	6	1	6.5	1.75	7	1					6	1.25			8	1.5
C'																		
	283		312		270		268						203				1855	
B	50		50		50		50						50				50	
N	33	8	33	9	29	10	29	10					26	12			29	9
U	29	00	29	4	27	4	27	5					22	4			26	3
L	19	1.5	18	3	18	5	18	3					12	2.5			15	3
C																		

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EGYPTIAN PROFILES

SHEET NO. 3. f.93

	19	20	21	22	23	24	25 is on next page
B'N'U'L'C				26		24.5	
				16.25 4.75		15 5	
				14 2.		13 1.75	
				8.5 2.		8 1.75	
				1922		204 ✓	
BNULC				50		50	
				31 9		31 10	
				27 4		27 4	
				16 4		16 4	
bgnullk							

EGYPTIAN PROFILES.

SHEET NO. 4.

	25		26		27		28		29		30		31		32		33	
B'	16.		14.75		14.5		15.25		15.75		15.		16.75		14.75		15.5	
N'	9.75	2.75	9.	3	8.75	2.75	9.5	2.75	9.5	2.75	9.5	3.	11.	3.	8.25	3.5	9.	3.25
U'	8.25	1.25	8.	1	8.	1.5	8.5	1.	8.25	.75	8.	1.	9.5	1.	7.25	1.5	8.	1.
L'	5.	1.	5.25	1.5	5.	1.25	4.75	1.	5.25	.75	5.25	.5	6.	1.	4.25	1.25	4.75	.75
C'																		
	312		339 340		345		328		317		333		298		339		322	
B	50		50		50		50		50		50		50		50		50	
N	30	8.5	31	10	30	9	31	9	30	9	32	10	33	9	28	12	29	10.4
U	26	4	27	3	28	4	28	3	26	2.5	27	3	28	3	24	5	26	3.2
L	15	3	18	5	17	4	16	3	17	2.5	17	2	18	3	14	4.25	15.3	2.4
C																		

bgnullk

EGYPTIAN PROFILES.

SHEET NO. 5.

	34		35		36		37		38		39		40		41		42	
B.	17.25		15.		14.5		14.5		14.75		18.25		16.		15.25		14.75	
N.	10.5	4.	9.5	3.25	9.	3.75	9.25	3.	8.75	3.	12.	4.	9.	3.75	8.75	3.25	9.75	3.
U.	9.	2.	8.	1.	8.	2.	8.25	1.25	7.25	.5	10.5	1.75	8.	2.	7.5	1.	8.5	.75
L.	5.	2.	4.75	1.	5.	1.25	5.	1.5	5.	.5	6.5	1.75	4.75	1.75	5.	.75	5.25	.25
C.																		
	290		333		345		345		339		274		312		328		339	
B	50		50		50		50		50		50		50		50		50	
N	30	12	32	11	31	13	32	10.3	30	10	33	11	28	12	29	11	33	10
U	26	6	27	3.3	28	7	28	4.3	25	2	29	4.8	25	6	25	3.2	29	6
L	14	6	16	3.3	17	4.3	17	4	17	2	18	4.8	15	5.4	17	2.4	18	4.2
C																		

bgnullk

EGYPTIAN PROFILES.

SHEET No. 6.

	43		44		45		46		47		48		49		50		51	
B	15.75		17.		14.		15.		15.		16.25		15.25		14.5		15.5	
N	10.5	3.5	10.75	3.75	8.	3.	9.	3.	9.	3.25	9.75	3.5	9.25	3.25	8.5	3.5	10.25	3.5
U	9.	1.5	9.25	2.	6.75	.5	8.	.5	8.	.75	8.5	1.5	8.	1.5	8.	1.5	9.25	1.
L	5.5	1.75	6.	2.	4.5	.75	5.5	.75	5.	.5	5.5	1.	4.75	1.	4.5	1.5	5.5	1.
C																		
	317		294		357		333		333		308		328		345		322	
B	50		50		50		50		50		50		50		50		50	
N	33	11	31	11	29	11	30	10	30	11	30	11	30	11	29	12	33	11
U	28	4.7	27	6	24	2	27	2	27	3	26	4.6	26	5	28	5	30	3
L	17	5.5	18	6	16	2	18	3	17	2	17	3	15	3	16	5	18	3
C																		

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EGYPTIAN PROFILES.

SHEET No. 7.

	52		53		54		55		56		57		58		59		60	
B	15.	0.0	15.		13.25		14.75		15.		18.5		16.5		15.		14.5	
N	9.25	3.5	9.	2.5	8.25	3.25	9.	3.25	9.5	3.	12.	3.5	10.25	3.25	9.5	3.25	10.	3.
U	8.	1.5	8	.75	7.	1.	8.	.75	8.	1.	10.5	1.5	9.	1.25	8.5	1.25	8.5	1.
L	5.	1.5	5.25	1.	4.5	.75	5.	1.	5.	.75	7.	1.25	5.5	1.	6.	1	4.75	1.
C																		
	333		333		377		339		333		270		303		333		345	
B	50		50		50		50		50		50		50		50		50	
N	31	12	30	8	31	12	30	11	32	10	32	9	31	10	32	11	34	10
U	27	5	27	2	26	4	27	2.5	27	3	28	4	27	4	28	4	29	3
L	17	5	17	3	17	3	17	3	17	2	19	3	17	3	20	3	16	3
C																		

b g n u l l l k

EGYPTIAN PROFILES.

SHEET NO. 8.

	61		62		63		64		65		66		67		68		69	
B'	15.75		15.5		14.25		14.		15.5		13.75		16.5		16.75		15.	
N'	9.5	3.5	9.	3.	9.	2.5	8.75	3.	9.	3.25	8.75	3.75	10.5	3.75	10.5	4.	9.25	3.
U'	8.	1.25	8.	1.25	8.5	1.	7.5	1.25	7.5	1.25	7.	1.75	9.5	1.75	9.25	1.	8.	1.25
L'	5.	1.	5.25	.75	5.	.75	6	.75	5.	.75	4.75	1.75	6.	1.75	6.	1.	4.75	.75
C																		
	317		322		351		357		322		364		303		298		333	
B	50		50		50		50		50		50		50		50		50	
N	30	11	29	10	31	9	31	11	29	10	32	14	32	11	31	12	31	10
U	25	4	26	4	30	3.5	27	4	24	4	25	6	29	5	27	3	27	4
L	16	3	17	2	17	3	18	3	16	2.4	17	6	18	5	18	3	16	2.5
C																		

bgnullk

EGYPTIAN PROFILES.

SHEET NO. 9. f 99

	70		71		72		73		74		75		76		77		78	
B'	17		15.5		16.5		17.25		14.25		15.		17		17.25		15.	
N'	11	3.5	10.	3.	9.25	3.5	10.5	3.5	8.25	3.	9.5	3.	11	3.75	10.5	4.25	10.	3.5
U'	10	1.5	8.5	.5	8.25	1.5	9.5	1.25	7.5	1.25	8.5	.5	9.5	1.75	9.25	1.75	8.5	1.25
L'	6.5	1.5	5.75	.5	6.5	1.	6.5	1.5	4.	1.5	5.5	.75	6.5	1.75	6.	2.	5.25	2.
C'																		
	294		322		303		290		351		333		294		290		333	
B	50		50		50		50		50		50		50		50		50	
N	32	10	32	10	28	11	30	10	29	10	32	10	32	11	30	12	33	12
U	30	4	27	2	25	4.5	27	4	26	4	28	2	28	5	27	5	28	4
L	19	4	18	2	20	3	19	4	14	5	18	2.5	19	5	17	6	17	7
C																		

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EGYPTIAN PROFILES

SHEET NO. 10. F 200

	79		80		81		82		83		84		85		86		87	
B'	15.		16		16.25		14.75		17		17.		17.5		17.		15.	
N'	10.	3.25	9.5	3.	10.5	2.75	9.25	3.75	10	4	9.25	3.5	11.5	3.	10.5	4	9.25	3.5
U'	8.5	.25	8.5	.75	9.75	1.25	8.25	2.	8.75	.75	8.	1.5	10.	1.	9.5	1.25	8.	1.5
L'	5.25	1.	5.5	1.	6.25	1.25	5.	1.5	5.25	1.	5.5	1.5	6.75	1.25	6.75	1	4.75	1.5
C'																		
	333		312		308		339		294		294		286		294		333	
B	50		50		56		56		50		50		50		50		50	
N	33	11	30	9	32	8	31	13	29	12	27	10	33	8	31	12	31	12
U	28	8	26	2	30	4	28	7	26	2	23	4	29	3	28		27	5
L	17	3	17	3	19	4	17	5	15	3	16	4	19	3	20	3	16	5
C																		

bgnulpllk

EGYPTIAN PROFILES

SHEET NO. 11.

	88		89		90		91		92		93		94		95		96	
B.	14.75		15.5		15.25		14.5		16.		15.5		15.		15		14.5	
N.	9.	2.5	9.5	2.5	10.	3.5	8.75	3.5	10	3.5	9.25	3.75	9.	3.	9	2.75	8	3.
U.	8.25	.5	8.	0.0	8.25	1.25	8.	1.5	8.75	1	8.	2.	8.	1.25	8.75	.25	7	.25
L.	4.75	.75	5	.25	5.	1.5	5.	1.25	5.	.75	5.	1.5	5.	1.25	5.	.75	4.75	.25
C.																		
	339		322		328		345		312		322		333		333		345	
B	50		50		50		50		50		50		50		50		50	
N	30	8	31	8	32	11	30	12	31	11	29	12	30	10	30	9	28	10
U	28	2	26	00	27	4	28	5	27	3	25	6	27	4	29	1	24	1
L	16	2.5	16	1	17	5	17	4	16	2	16	5	17	4	17	2.5	16	1
C																		

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EGYPTIAN PROFILES

	97		98		99		100		101		102		103		104		105	
B'	14.75		16.5		16.		14		16.5		15		15.5		16.5		15.5	
N'	9.25	2.75	9.75	4.	11	3.25	9	2.5	10	3.5	8.5	3.75	9.5	3.5	9.5	3.	10.5	3.25
U'	8.5	.75	8.5	1.75	9.25	.75	8	.5	9	2.	7.5	2.	8.75	1.75	8.5	1.	9.	1.
L'	5.	1.75	5.	1.75	5.	1.5	5	1.	4.5	1.5	4.25	.75	5.25	1.75	6.	1.	5.5	1.
C'																		
	339		303		312		357		303		333		322		303		322	
B	50		50		50		50		50		50		50		50		50	
N	31	9	29	12	34	10	32	9	30	11	28	12	30	11	29	9	34	10
U	29	2.5	26	5	29	2.3	28	2	27	6	25	7	28	6	26	3	29	3
L	17	6	15	5	16	6	18	3.5	14	4	14	2.5	17	6	18	3	18	3
C																		

bgnulplk

EGYPTIAN PROFILES

SHEET No. 13.f103

	106		107		108		109		110		111		112		113		114	
B'	15.5		14		14		13.5		15		16		15.25		15.5		14.75	
N'	9.5	2.5	9	2.5	9	3.5	8.25	2.25	8.5	3.75	10.25	3.75	9.5	3.	10.5	3.25	8.75	2.75
U'	8.25	.5	8	1.	8	1.	7.	.5	7.75	.75	9	1.75	8.5	1	8.75	.75	8.	1
L'	5.	.5	4.5	1.5	5	1	4.5	.5	5.	.25	5	1.	5.	.5	5.5	1.	5.	1
C'																		
	322		357		357		370		333		312		328		322		339	
B	50		50				50		50		50		50		50		50	
N	30	8.	32	9	32	12	30	8	28	12	32	12	31	10	34	10	30	9
U	26	1	28	3	28	3	26	2	26	2.5	28	5	28	3	28	2.4	27	3
L	16	1	16	5	18	3	17	2	17	1	16	3	16	2	18	3	17	3
C																		

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EGYPTIAN. RROFILES

SHEET NO. 14 C104

	115		116		117		118		119		120		121		122		123	
B'	16.		16.5		14.5		15.75		14		15.25		15		13.75		15.	
N'	10.5	3.5	10.75	4.	9.75	2.75	10	3	8.25	2.75	9.5	3.	9.75	4.	8.25	3.	8	3.5
U'	9.25	1.	9.	1.75	8.25	.5	9.25	1	7.75	.5	8.5	1	8.5	1.75	7.5	.25	7	1.25
L'	5.5	1.5	5.	1.25	5.25	.75	5.25	1.25	4.75	.75	5.	1	5	1	4.75	.25	4.5	.5
C'																		
	312		303		345		317		357		328		333		364		333	
B	50		50		50		50		50		50		50		50			
N	33	11	32	12	34	9	31	9	29	10	31	10	32	13.	30	11	27	12
U	29	3	27	5	28	2	29	3	28	2	28	3	28	6	27	1	23	4
L	17	5	15	4	18	2.5	17	4	17	3	16	3	17	3	17	1	15	2
C																		

b	6		9		6		7		8									
g	0		0		0		2		2									
m	4		4		9		7		5									
w	1		2		2		3		3									
lh	4		1		2		3		1									
ll	8		2		3		5		4									
k	7		7		5		5		5									

EGYPTIAN PROFILES

SHEET NO 15.

F.105

	124		125		126		127		128		129		130		131		132	
B.	14.75		15.		15.25		18.5		14.5		15.5		16.25		15.5		16.25	
N.	9.75	3.	9.5	3.5	9.5	3.	11	4	9.5	2.5	9.75	3.25	10.25	3.5	9.75	3.75	10.25	3.25
U.	8.5	1.25	8	1	8.	1	10	1.25	8.75	1	8.5	1.25	9.5	2.	8.25	1.25	9	.75
L.	5	1.25	5	.5	5.5	1.5	6	1	5.	.75	6.	1	5.75	1.25	4.75	.5	6	1.75
C.																		
	339		333		328		270		345		322		308		322		308	
B	50		50		50		50		50		50		50		50			
N	33	10	32	12	31	10	30	11	33	9	31	10	32	11	31	12	32	10
U	29	4	27	3	26	3	27	3	30	3	27	4	29	6	26	4	28	2
L	17	4	17	2	18	5	16	3	17	2.5	19	3	18	4	15	2	18	5
C																		

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EGYPTIAN PROFILES

SHEET NO. 16.

	133		134		135		136		137		138		139		140		141	
B'	15		15.75		15.		15.25		17		13		15.		15.5		15.	
N'	9.25	3.25	9.75	3.25	9.25	3	9.5	3	11	3.25	8	2.75	8.	3.	10.	3.5	9.5	3.75
U'	8.25	1	8.25	1	8.5	1	8.75	2	9.5	2.	7	.25	7.	.75	8.5	1.5	8	1
L'	5	1.25	5.	1	5.	.75	5.25	2	6	2.25	4.5	.5	4.5	1.	5.	1.5	4.75	1
C'																		
	333		317		333		328		294		385		333		322		333	
B	50		50		50		50		50		50		50		50			
N	31	11	31	10	31	10	31	10	32	9	30	10	27	10	32	11	32	12
U	27	3	26	3	28	3	29	6	28	6	27	1	23	2.5	27	5	27	3
L	17	4	16	3	17	2	17	6	18	7	17	2	15	3	16	5	16	3
C																		
b																		
q																		
n																		
u																		
l,																		
ll																		
k																		

EGYPTIAN PROFILES

SHEET NO. 17 f. 107

	142		143		144		145		146		147		148		149		150	
B'	15.5"		16.25		15		13.5"		15.25"		15		15.75"		15		15.5"	
N'	10.	2.75"	10.	4.5"	9.5"	3.25"	9.5"	3.	9.25"	3.25"	9.5"	3	10	3.25"	9.5"	3.25"	9	3
L'	8.75"	.75"	8.25"	2.25"	8	1	8	1.	8.5"	1.5"	8	1	8.75"	1.5"	8	1	8	1
C'	5.	1.75"	4.	1.75	5.25"	.75"	5"	1.	5.	1.5"	4.75"	1.25	5.25"	2.	5"	1.5"	5"	1
	322		308		333		370		328		333		317		333		322	
B	50		50		50		50		50		50		50		50			
N	32	9	30	14	32	11	35"	11	30	11	32	9	32	10	32	11	29	10
U	28	2	25"	7	27	3	30	4	28	5"	27	3	28	5"	27	3	26	3
L	16	6	12	5	17	2	18	4	16	5"	16	4	17	6	17	5"	16	3
C																		

bgnulk

EGYPTIAN PROFILES

SHEET NO. 18

F.108

	151		152		153		154		155		156		157		158		159	
B	14.		15.5		15		17		16		17		14.5		15.5		14.25	
N	9	2.75	9.25	3.5	9.5	3	10.75	3.5	9.75	3.75	10.5	2.25	9	3.5	9.5	3.5	10	2.75
U	8	1	8	1.5	8.5	1	9	2	8	2	9.5	1	8	1	8.25	1.5	8.5	1
L	4.75	1.25	4.75	.75	5	1	6.75	2	5	1.75	5.5	2	4.5	1	5.5	.75	5	1.25
C																		
	357		322		333		294		312		294		345		322		357	
B	50		50		50		50		50		50		50					
N	32	10	30	11	32	6	31	10	30	12	31	9	31	12	31	11	35	10
U	28	3	26	5	28	3	26	6	25	6	28	3	28	3	26	5	30	3
L	17	4	15	2	17	3	20	6	16	5	16	6	15	3	18	2	17	4
C																		

bgnullk

EGYPTIAN PROFILES

SHEET NO. 19 (109)

	160		161		162		163		164		165		166		167		168	
B	14.25		15.5		14.75		16.75		15.75		16.		15.25		14		15.5	
N	8.75	3.5	9	4	9.25	3	9.75	4.25	10	4	10.25	3	9.25	2.75	8.5	3.25	9.	3.75
U	7.5	1.25	8	2	8.25	1.5	8.5	1.75	8.75	1.5	9	1	8.5	1.5	7.75	1.5	8	2
L	4.25	.75	4.75	2.25	5	1.5	5	1.75	5.5	2	5.5	.75	5	1.25	4.75	1.5	4.75	1.75
C																		
	351		322		339		298		317		312		328		357		322	
B	50																	
N	31	12	29	13	31	10	29	13	32	13	32	9	30	9	30	12	29	12
U	26	4	26	6	28	5	25	5	28	5	28	3	28	5	28	5	26	6
L	15	3	15	7	17	5	15	5	17	6	17	2	16	4	17	5	15	6
C																		

bgnulfllk

EGYPTIAN PROFILES

SHEET NO. 20.1110

	169		170		171		172		173		174		175		176		177	
B'	16		15.25		15		16		15.25		15.5		16.5		16.25		14	
N'	10	4	9.25	2.75	9.25	3	10.5	3	9.5	4	9.5	3.5	9.75	3.5	11	3	8.5	3
U'	9	2	8.5	.75	7.75	1	9	1	8	2	8.5	.75	8.5	.75	9.5	1	7.5	1.25
L'	5.5	2.75	5.75	1	4.75	.5	6	1.5	4.5	1.5	5	.75	5.25	1	6	1	4.75	1
C'																		
	312		328		333		312		328		322		303		308		357	
B	56		56		50		56		50		50		50					
N	31	12	30	9	31	10	33	9	31	13	30	11	29	11	34	9	30	11
U	28	6	28	2	26	3	28	3	26	6	27	2	26	2	29	3	27	4
L	17	8	19	3	16	2	19	5	15	5	16	2	16	3	18	3	17	3
C																		

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EGYPTIAN PROFILES

SHEET NO. 21.

F. 111

	178		179		180		181		182		183	
B'	14.25"		15.75"		15		15.75"		14		16.5"	
N'	8	3	9.5"	3.75"	10	3	9.5"	3.25	9	2.	10.25"	3
U'	7.75"	1	8.75"	1.5"	9	.5	8.5"	1.25	8	.5	10	.75"
L'	4.75"	1	5"	1.5"	5	.75	5.25	1	5	.5	6.75"	1.25
C'												
	351		317		333		317		357		303	
B												
N	28	10	30	12	33	10	30	10	32	7	31	9
U	27	3	28	5"	30	2	27	4	28	2	30	2
L	17	3	16	5"	17	2	17	3	18	2	20	4
C												

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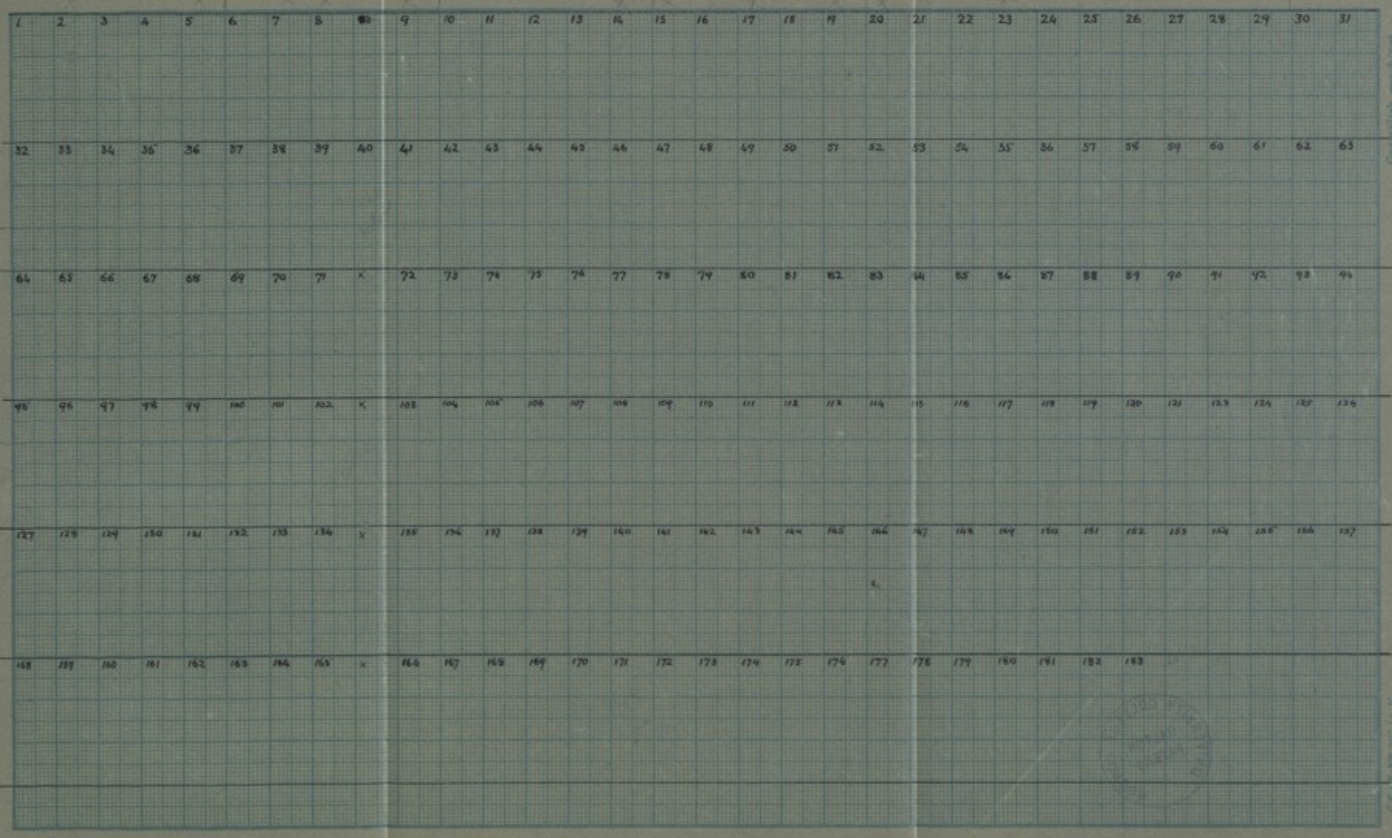


f. 1r

Grand Union Hotel
Dresden
Friday Mar 4

My dear Uncle Frank.

I hope I have found what you want in the way of paper - I enclose the address where it is to be got for future reference - but I will go & buy any you would like while I am here - if you will send me a line - The small size is in books of 100 sheets - or one can buy it by the sheet. The large size in rolls. one can buy by the yard - 70 cent wide - I should send it without asking - but am not sure what size you want -

We had a most beautiful
crossing. on Monday night, &
after a weary train journey
got here 10. P.M. Tuesday.
On the journey we were
most struck with the windmills
in Holland - & the hopeless state
of damp - it must have rained
far worse than in England.
& much land was flooded -
There was nothing in the fields
but an occasional pig - &
a Gk headed crow -
we went through a desolate
country of peat - rather like
Ireland - & then came

f. 2r

to the extensive cultivation
of Germany - I don't remember
it 28 years ago - but perhaps one
did not notice them. Acres &
Acres of ploughed land - & large
peasant proprietors houses -

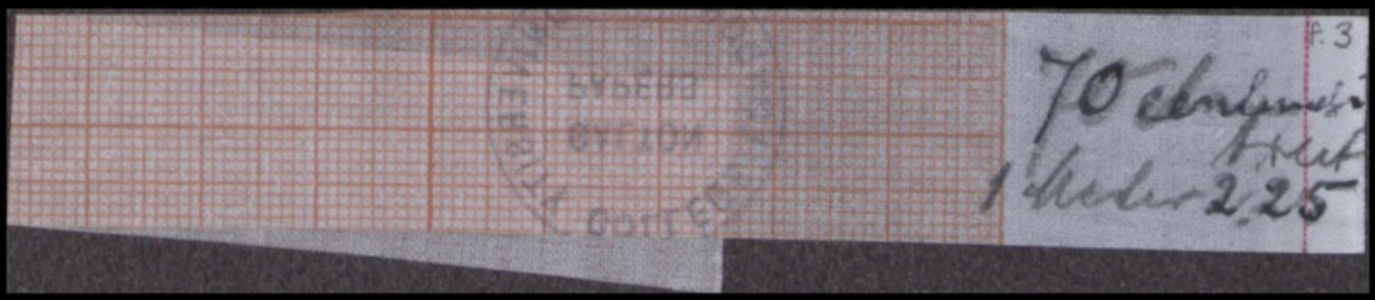
all on this
sort of plan -
the upper rooms
apparently used as store rooms. the
entrance for family - carts & fowls
by double door - The country was
not yet dried till we had passed
Hannover - but here it is dry
and sunny - We saw the "art treasures"
"grüne Gewölbe" have been
yesterday - & today

f. 2v

to the picture gallery - & are now just off for a drive - It is unfortunate poor Alice can't walk more - a very little makes her very lame - We are enjoying ourselves very much. Last night we went to the Opera - Wagner's "Das Rheingold" - Alice & I dare not own to it here - but we don't appreciate Wagner operas!

Much love - to you & Eva! & let me know about the paper -

Yr. affecte. niece
Mary L. Wheler.



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DRESDEN- 4.3.10.6-7N

Sir Francis Galton. F.R.S.

Haslemere Rectory

Surrey

England.

M L
Tracia[illegible] [illegible]
[illegible] [illegible] Strasse
Dresden

1

2 THE PREMIER HOTEL OF THE WEST OF ENGLAND.

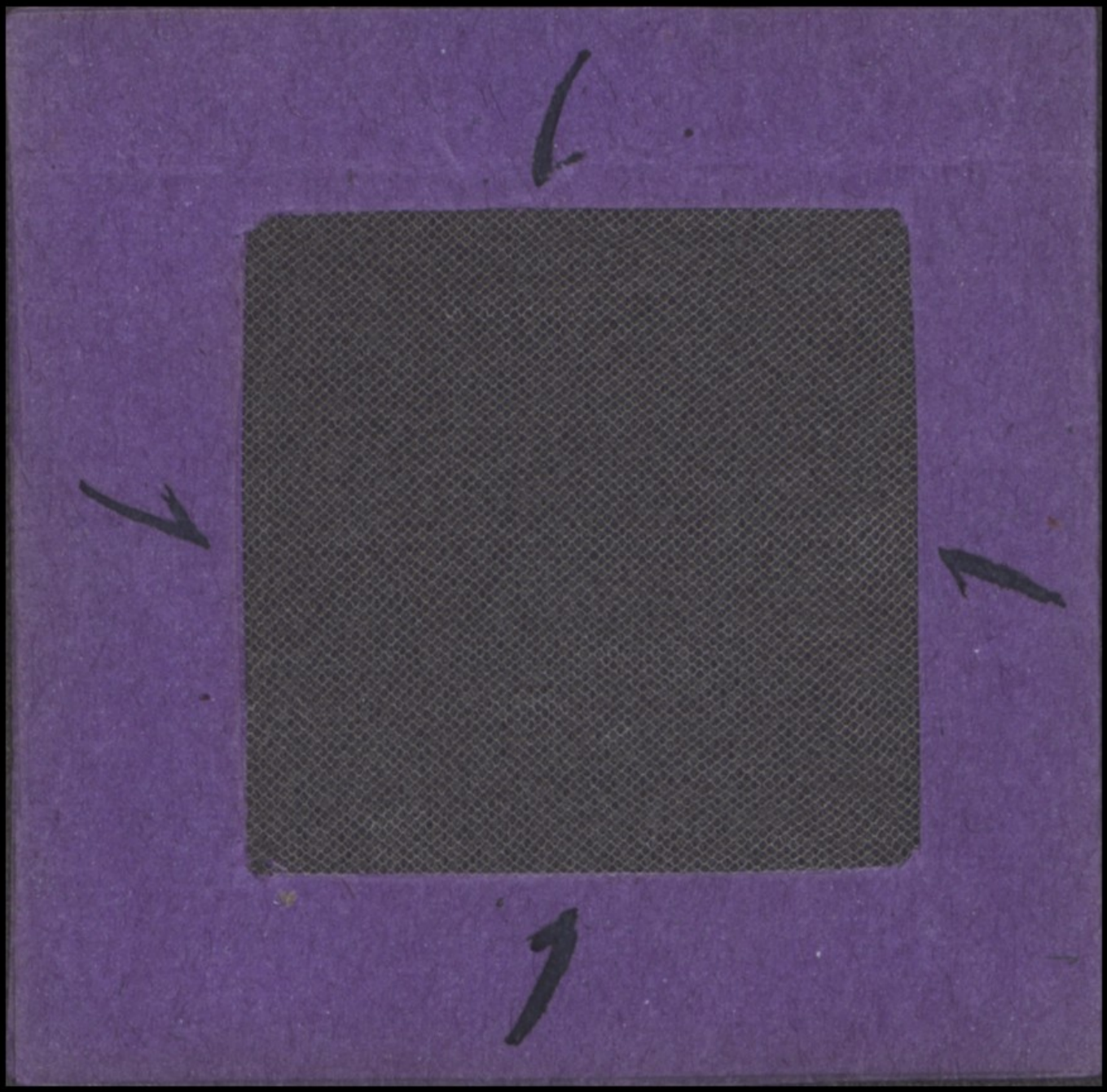
3 LAKER'S HOTEL,

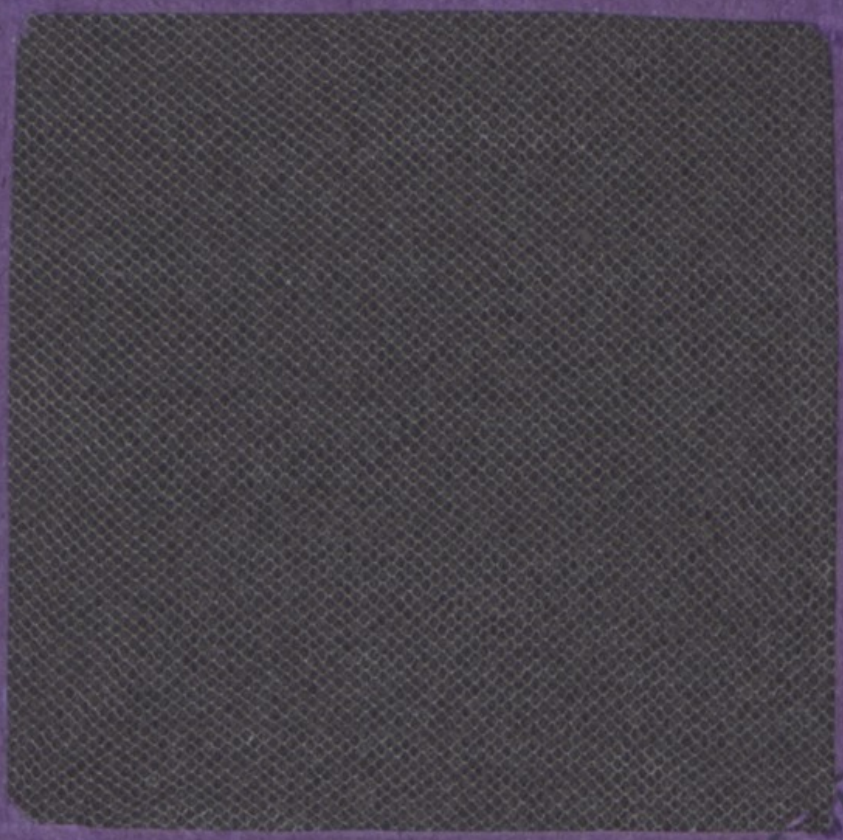
4 SPEEDWELL

5 KEPPEL'S HEAD

6 RANDOLPH HOTEL,

7 CLARENDON HOTEL





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DALTON
PAPER
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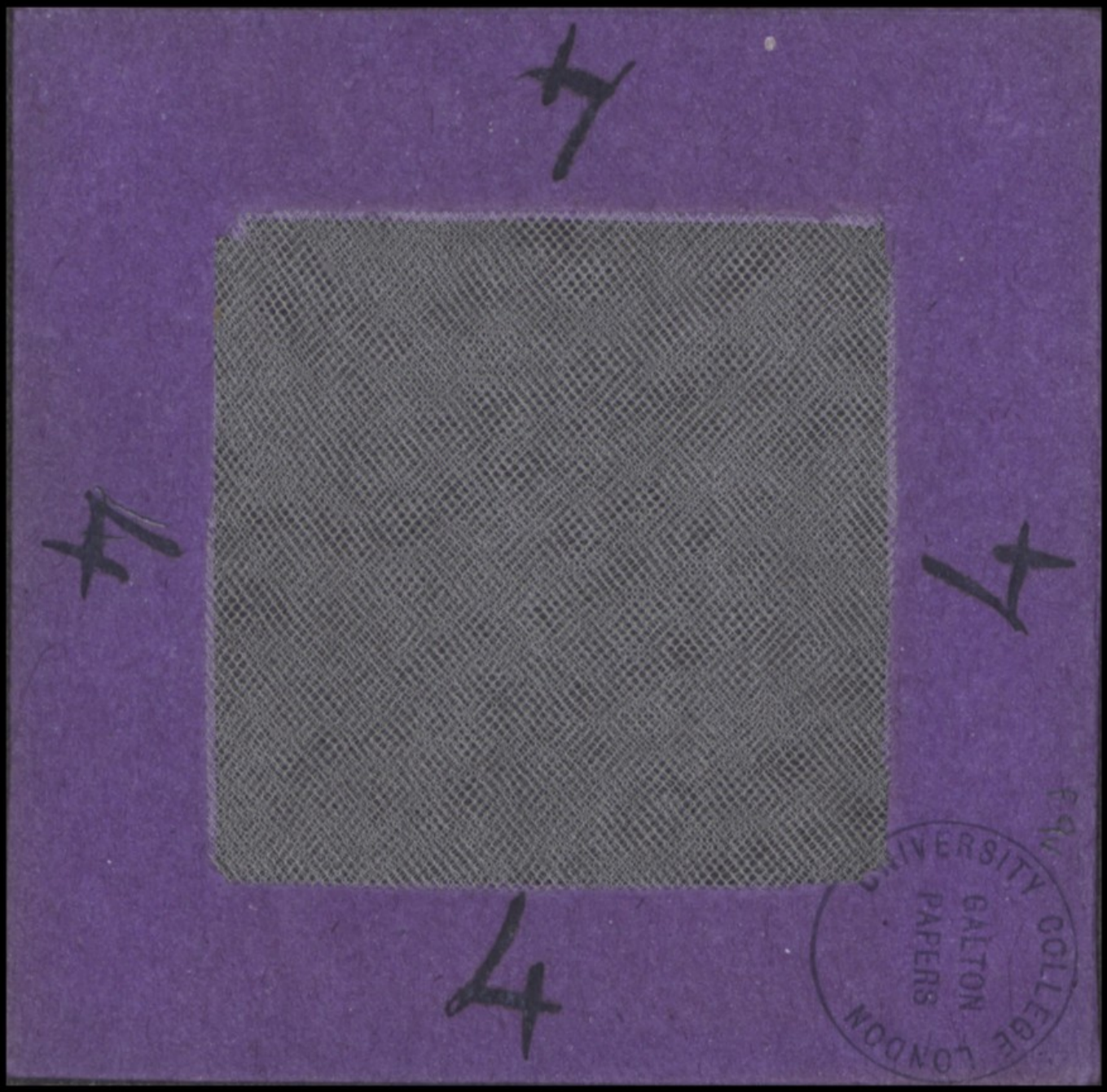

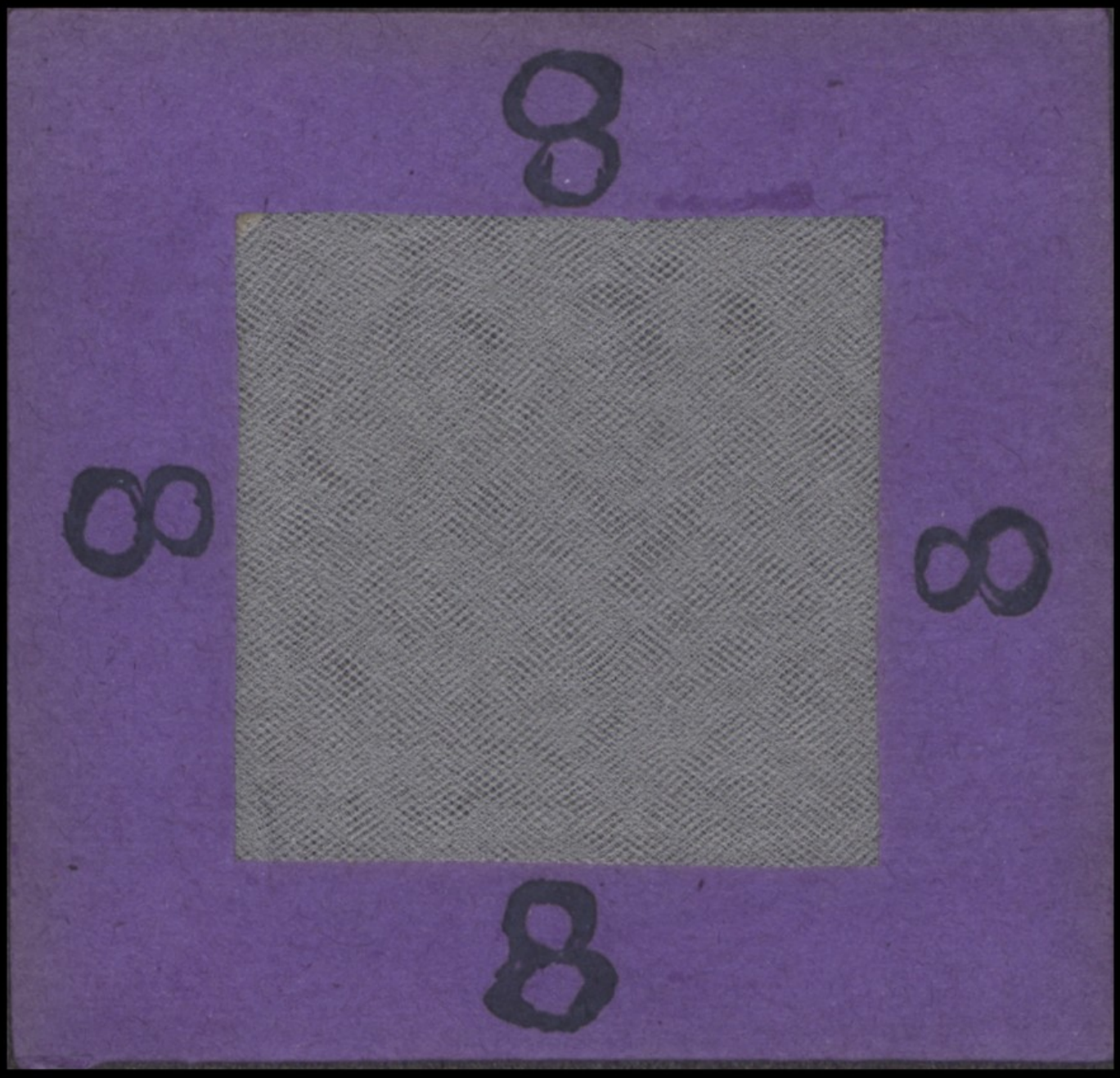

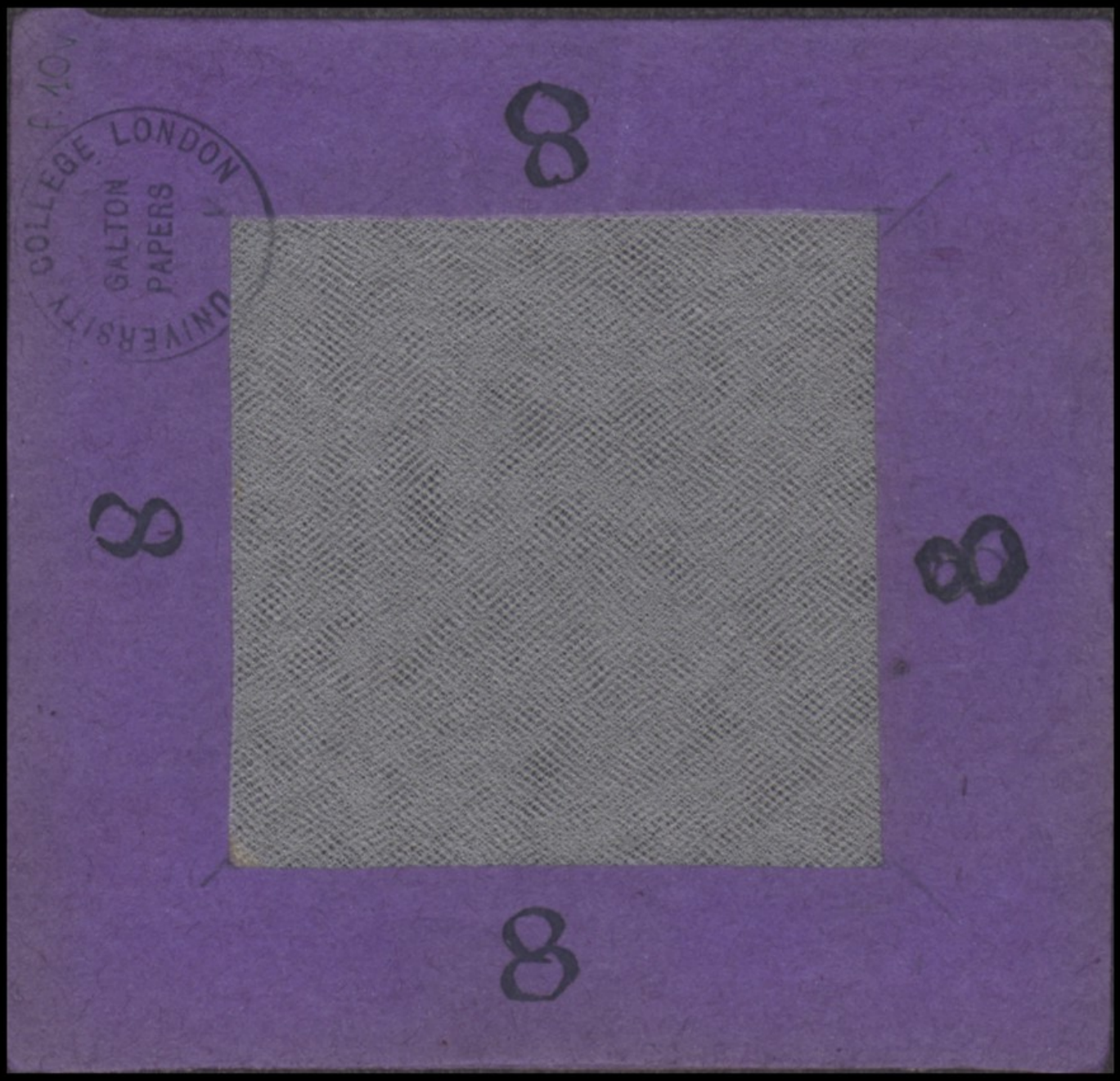
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UNIVERSITY COLLEGE, LONDON
GALTON
PAPERS
f. 10

f. 11v

read with spectacles at 13 inches

(87)

112 7/16	109 1/2	110 1/2
138 3/4	135 1/8	135 1/8
66 7/8	65 1/8	65
91 5/8	89 1/4	89
92 3/8	90	90 1/8
81 1/8	79 3/4	79 3/4
88 5/16	86	86
38 1/4	37 1/4	37 1/4
60 3/16	59	59
124 1/2	121 1/4	121 1/8
161 3/16	157	157
32 3/16	31 3/8	31
104 1/4	101 1/2	102
15 13/16	15 5/8	15 1/4
27 3/16	26 1/2	27 1/4
86 3/8	84 1/8	84 1/2
143 3/8	139 3/8	139 1/2
177 1/8	172 1/2	172 1/2
163 1/4	159	158
71 3/8	70	70 1/2
12 13/32	12 1/8	12 5/8

Bushels.	Bushels.	Bags.	Bushels.	Bushels.
110,000	230,000	65,000	19,000	—
—	—	3,000	—	—
60,000	110,000	66,000	—	—
20,000	50,000	173,000	3,000	—
310,000	—	7,000	—	—
40,000	30,000	21,000	48,000	—
—	—	25,300	—	—
—	—	—	} —	—
180,000	160,000	11,000		
—	50,000	39,000		
—	—	3,000		
720,000	630,000	413,000	70,000	—
1,360,000	1,144,000	337,000	32,000	10,000

Bacon.	Lard.	Butter.	Cheese.	Tallow.
Boxes.	Lb.	Tubs.	Boxes.	Lb.
13,500	2,030,000	2,400	37,700	570,000
100	980,000	—	1,600	—
3,400	470,000	—	33,800	—
1,500	390,000	560	6,600	40,000
800	410,000	—	2,600	400,000
800	460,000	11,100	15,900	—
—	10,000	—	—	—
2,600	12,070,000	—	—	630,000
22,700	16,810,000	14,060	98,200	1,640,000
29,300	9,170,000	22,540	114,400	2,280,000

£2,000,000
£84,000
£500,000
£4,100,000

Cut out Circles

& small diagrams

15 Hyde Park Gardens

Kindly keep for
future reference.

GENUINE FRENCH TOILE, "EMPRESS" size

(from the Courbevoie Mills, near Paris).

2/6 5 quires, **9/-** Ream (480 sheets), per 3 reams, **8/6** ream.

Envelopes to match, 2/6 100.

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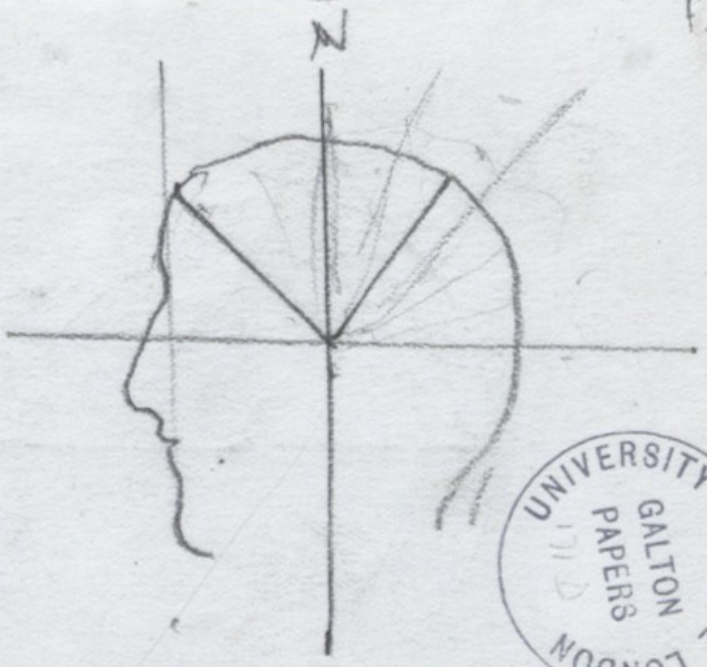
f. 13r



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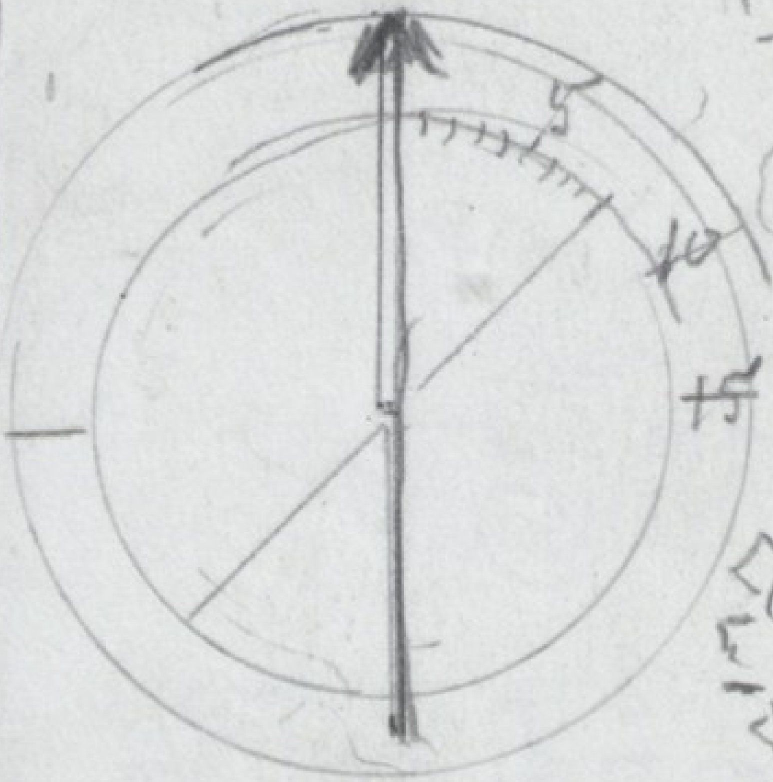

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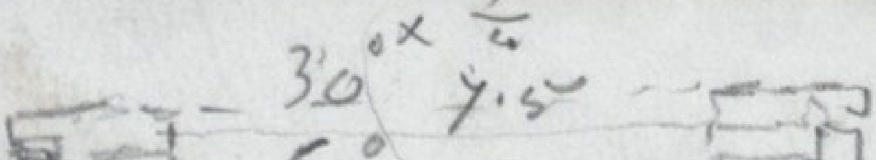

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f. 141

Society of Great Britain.

OF MEETINGS.

9.

sitors to each meeting.

L SQUARE. AT 8 P.M.

acial types in South Africa, and the
eene, F.R.P.S., L.A.A.S., I.I.

"The Bible of the Middle Ages." By

photographs by F. J. Mortimer, F.R.P.S.
er, and the exhibition will be open daily

ting. "The way we look at things." By

P.T.O.

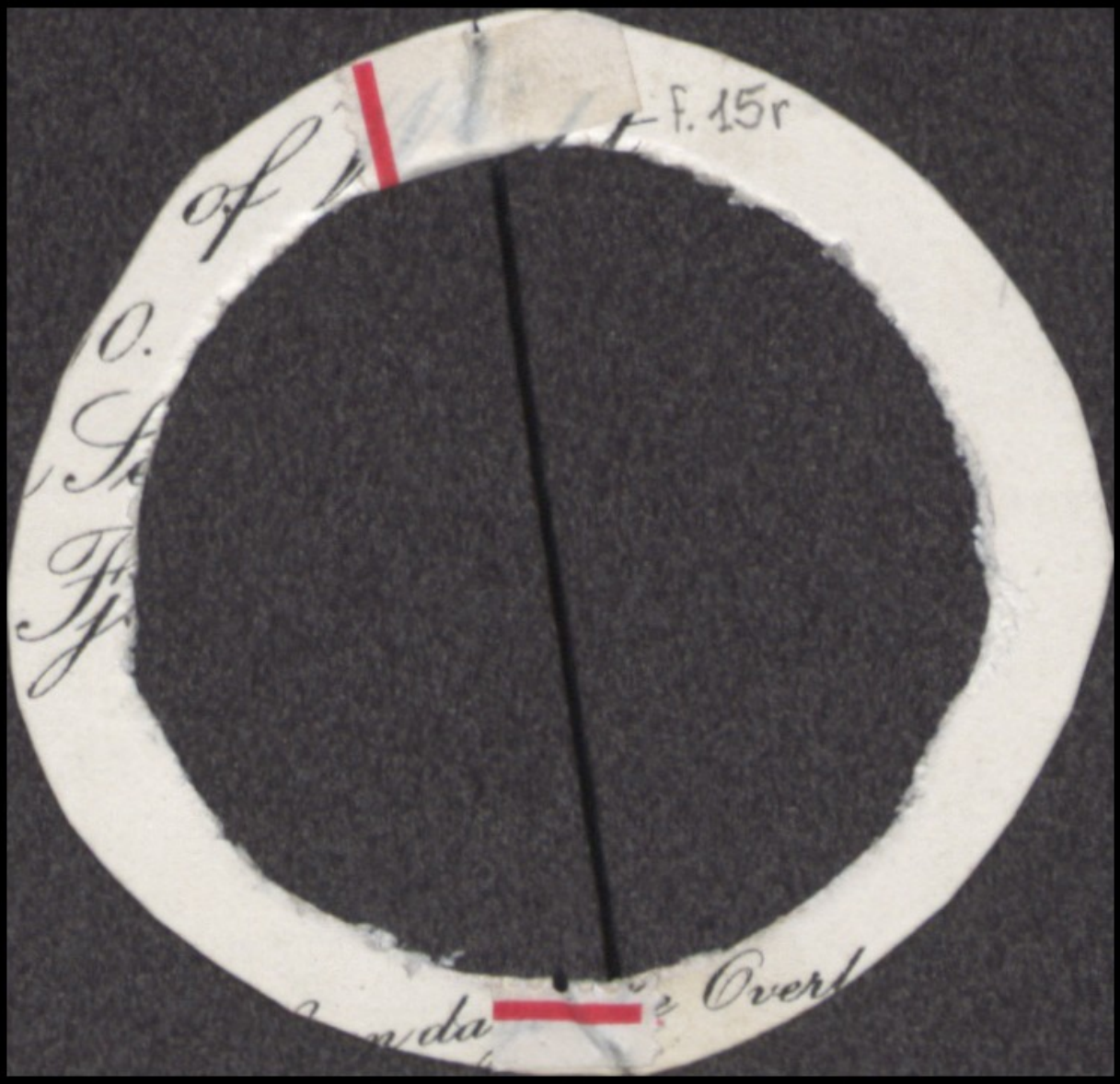
f. 14v

Tuesday, May 18th.—Lantern Evening. "
of South Essex." By C. W. Forbes.

Tuesday, May 25th.—Technical Meetin
W. Bennett, F.R.P.S.

Tuesday, June 1st.—No Meeting.

Tuesday, June 8th.—Ordinary Meet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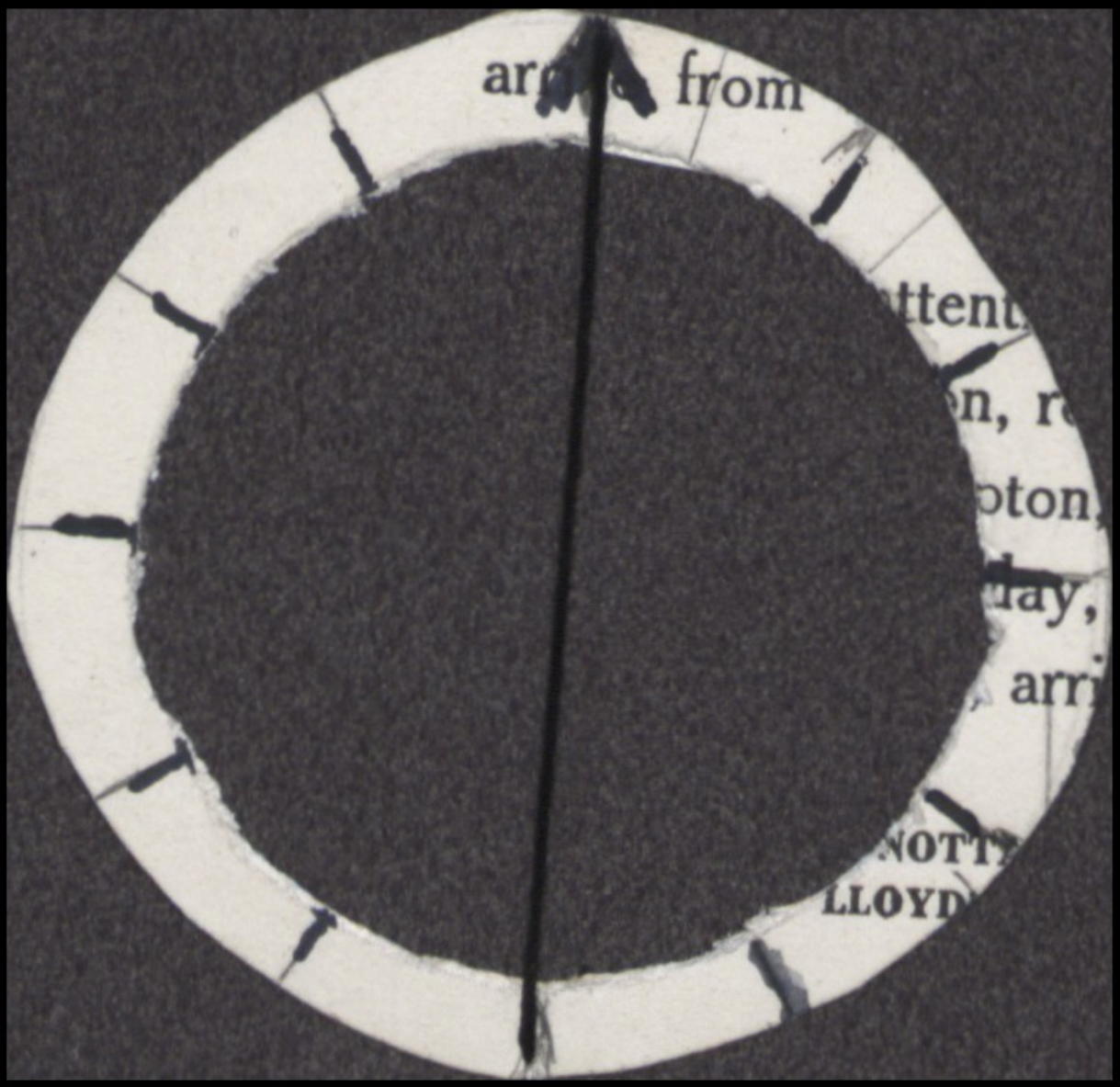
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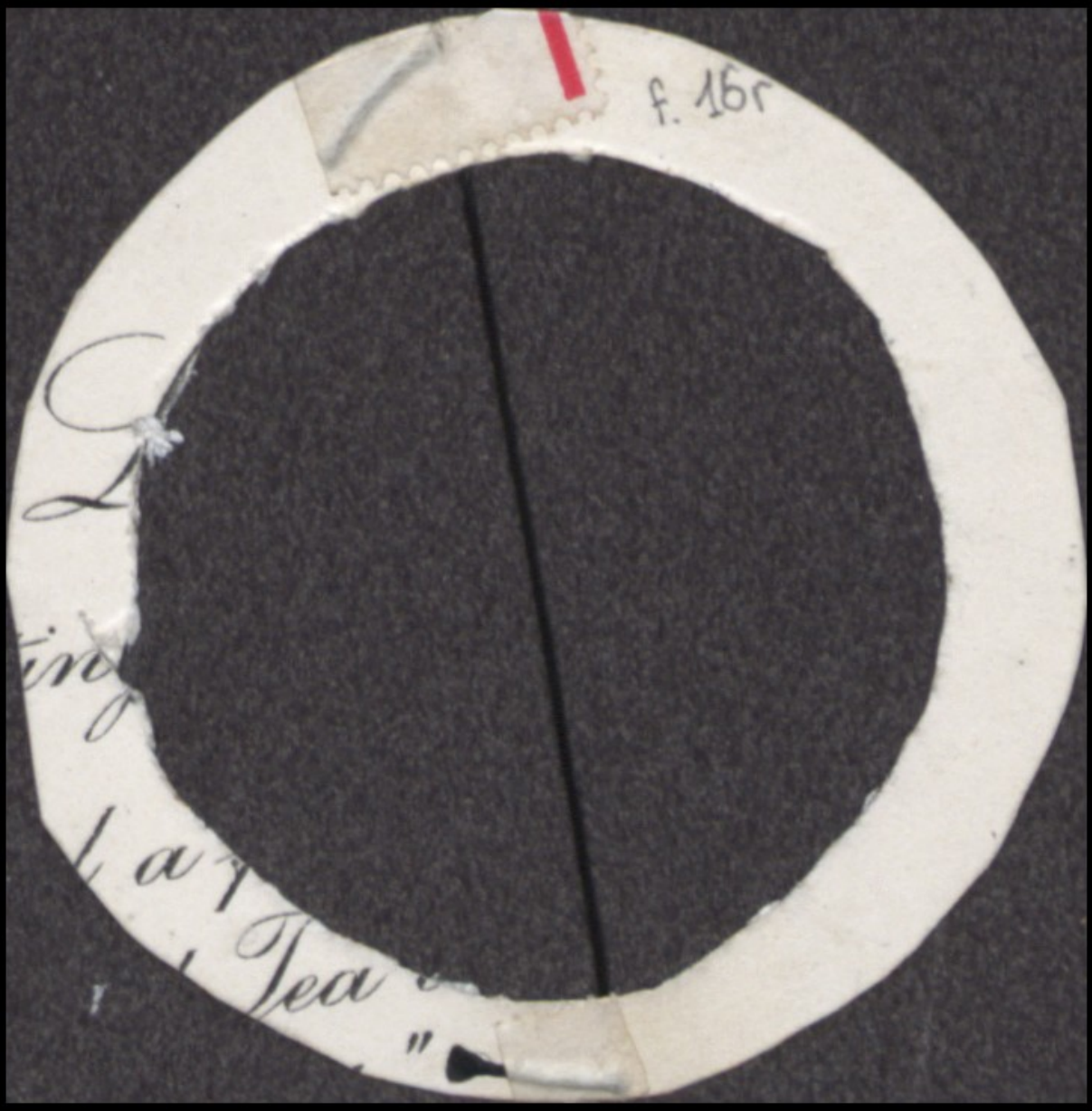
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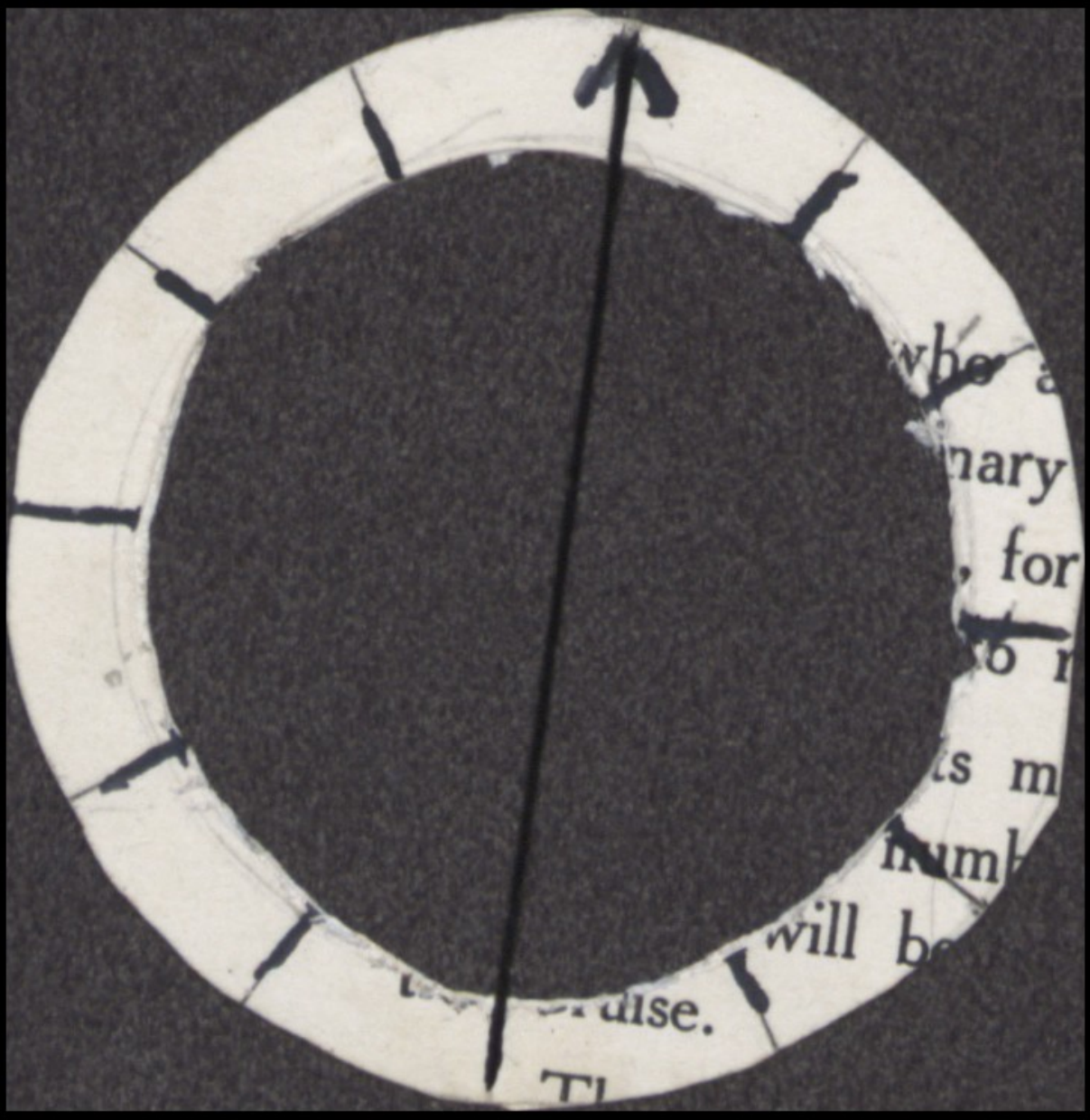
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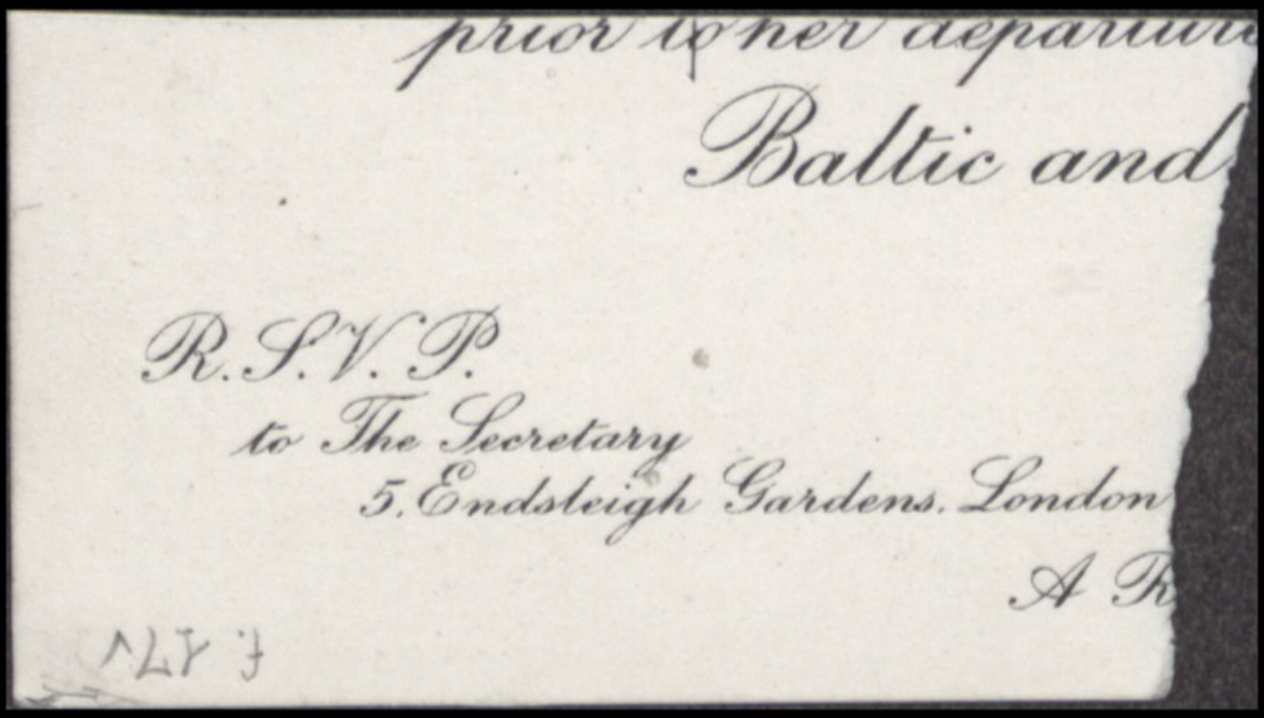
the morning of the Saturday
Tuesday morning by Special

IS THE ONLY VESSEL CLASSED
NEAN AND NORWAY CRUISES.


prior to her departure
Baltic and
R.S.V.P.
to The Secretary
5. Endsleigh Gardens. London
A R
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Some ancient Abbeys and Churches

g. "Toning bromide prints." By Henry

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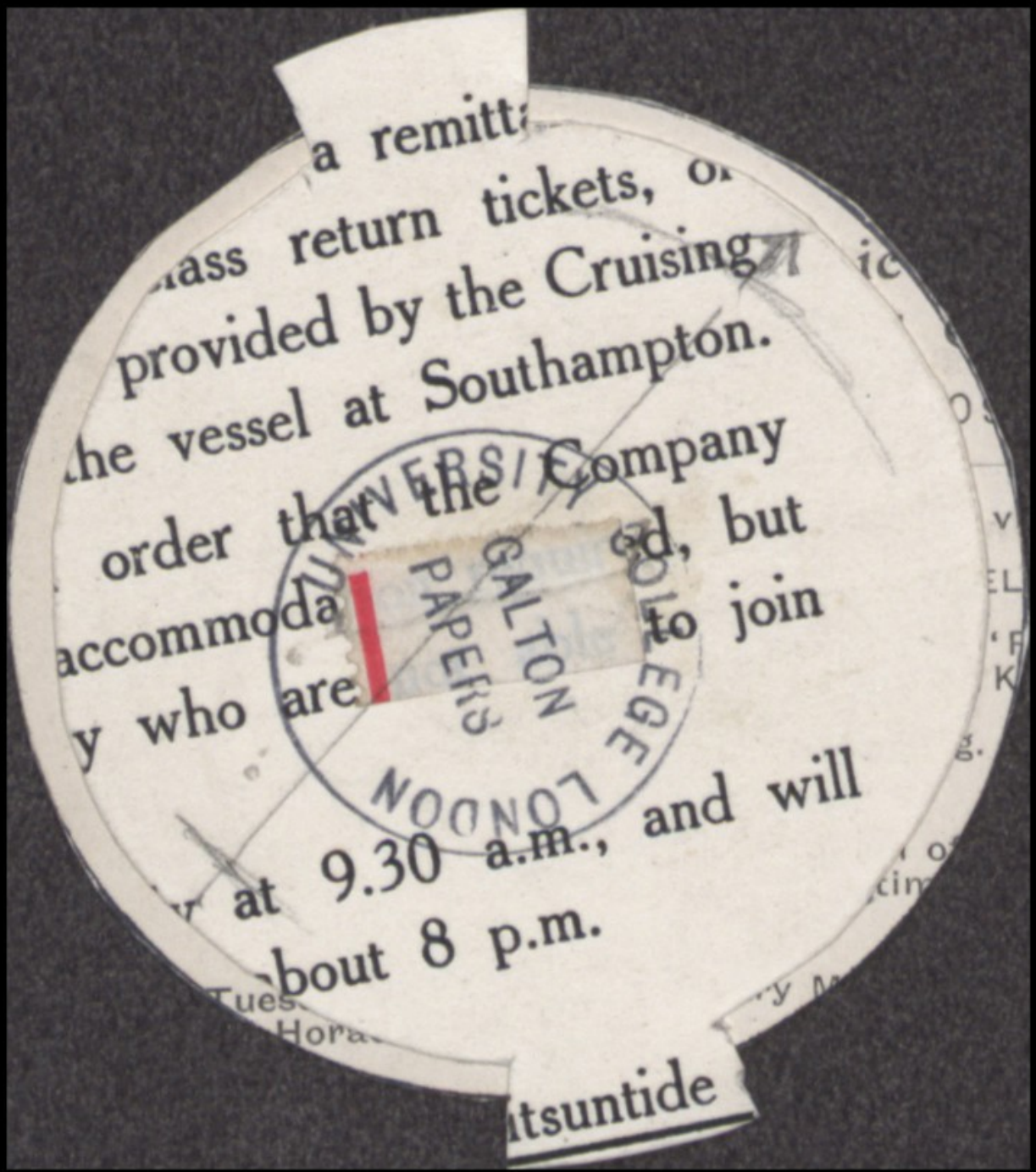
P.T.O.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lass return tickets, o
provided by the Cruising
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bout 8 p.m.
UNIVERSITY COLLEGE LONDON
GALTON PAPERS
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5, Endsleigh Ga

I have pleasure in acceptin

of the Cruising Company, Lim

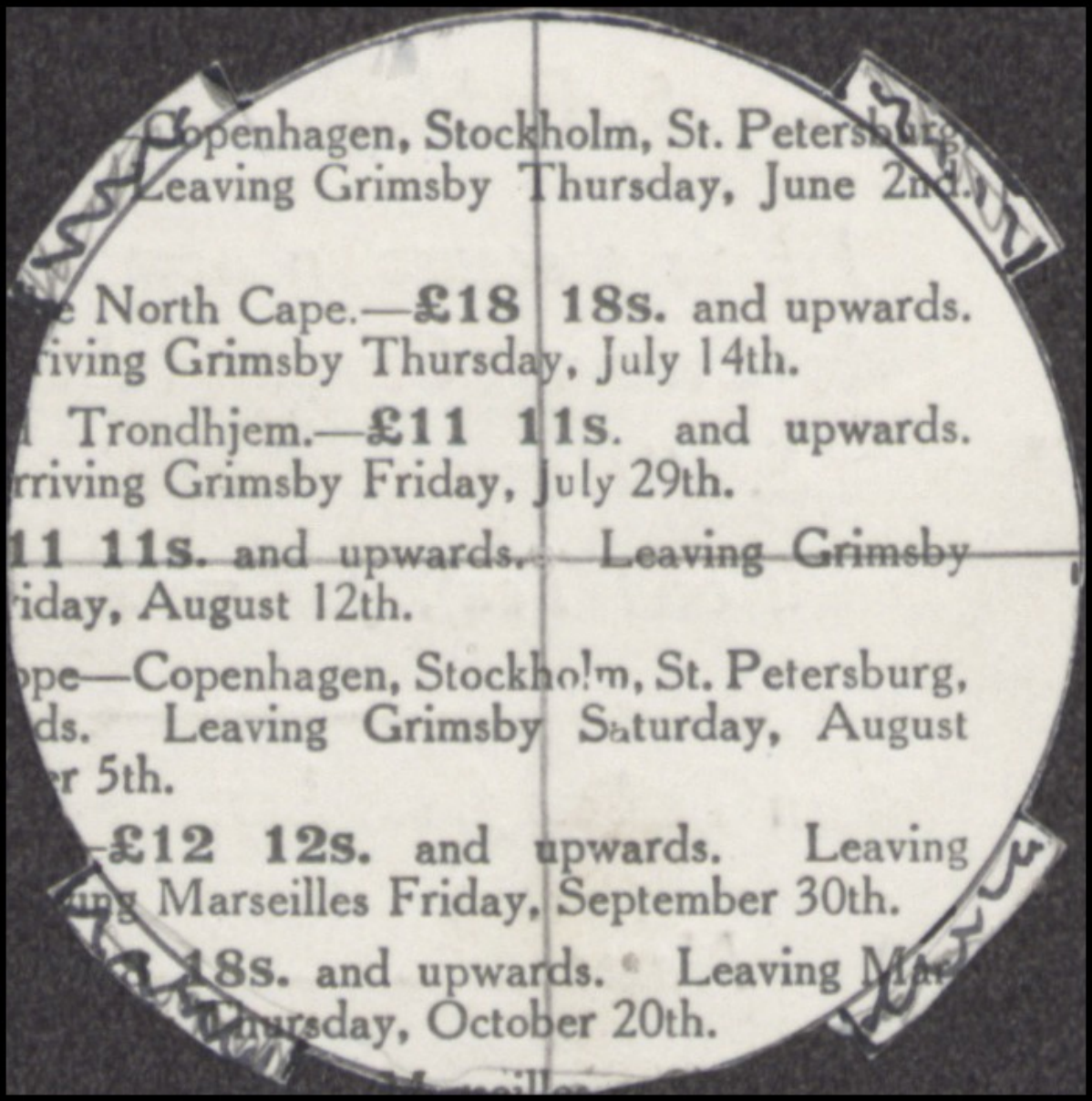
R.M.S. "Dunottar Castle"

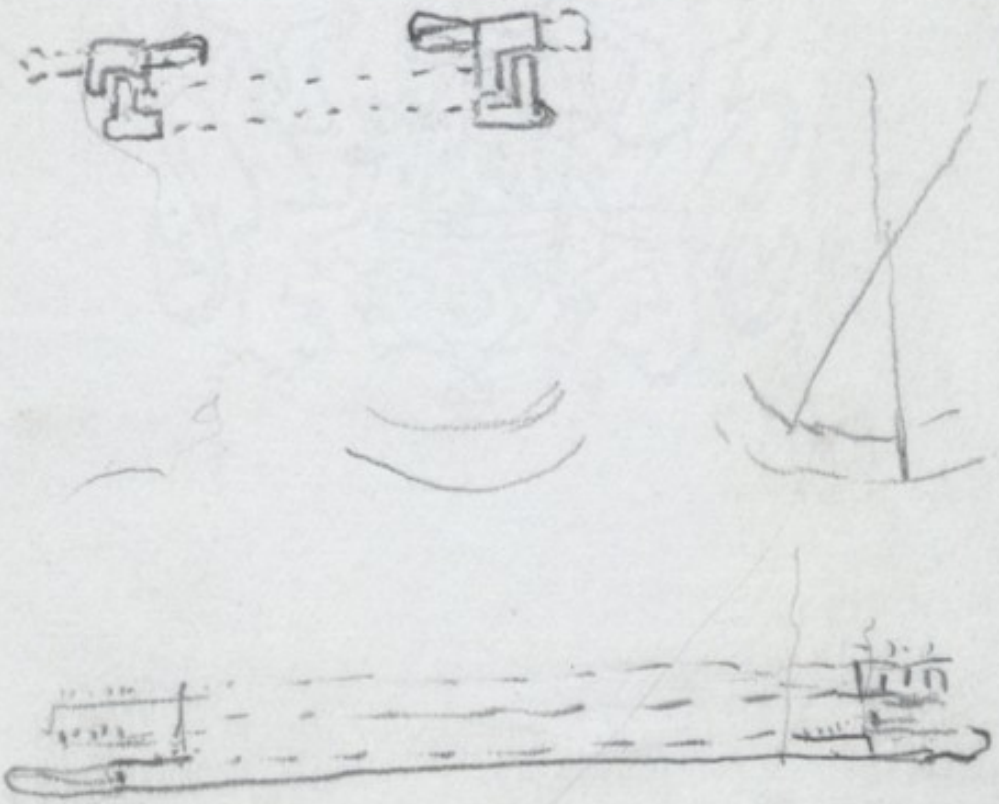
(Lunch and Tea), for myself

and I enclose.....

Return Tickets from London t

Name.....


Copenhagen, Stockholm, St. Petersburg,
Leaving Grimsby Thursday, June 2nd.
North Cape.—£18 18s. and upwards.
riving Grimsby Thursday, July 14th.
Trondhjem.—£11 11s. and upwards.
rriving Grimsby Friday, July 29th.
11 11s. and upwards. Leaving Grimsby
iday, August 12th.
ppe—Copenhagen, Stockholm, St. Petersburg,
ds. Leaving Grimsby Saturday, August
r 5th.
£12 12s. and upwards. Leaving
ng Marseilles Friday, September 30th.
18s. and upwards. Leaving Mar
hursday, October 20th.



A THEATRICAL ENGAGEMENT.

MR. CHARLES QUARTERMAIN AND MISS MADGE TITHERADGE, WHO ARE TO BE MARRIED ON THE 8th OF MARCH.

Miss Titheradge is a beautiful and talented actress who has been playing for some time with Mr. Lewis Waller, and Mr. Quartermain is now playing the name part in "Don" at the Kingsway Theatre. The bridesmaids will be Miss Stella Patrick-Campbell, Miss Marie Löhr, Miss Rosalie Toller, and Miss Beatrice Terry.

THE "DAILY GRAPHIC" FREE MEAL FUND.

A MEAL OF BREAD—PURCHASED BY THE SALE OF PUSSY.

DONATIONS TO DATE: £3,835 3s. 6d.

(BY OUR SPECIAL COMMISSIONER.)

When visiting a Plumstead family a DAILY GRAPHIC investigator found them dividing a piece of bread for their dinner. The pennyworth had been obtained by selling the cat for that sum to a neighbour who, strange to say, was anxious one of the feline species—strange, because in mean streets poverty seems to be no excuse for not keeping a cat. These poor people, I may add, have one cripple child very ill, while a son aged sixteen is suffering from heart disease.

As an example of the way in which disease is spread, the case of a Peckham family may be cited. Eight occupy two small rooms, and most of them occupy one room at night. The father, a printer's labourer, is ill with bronchitis, and one child has hip disease and is an epileptic. The rooms are very nearly bare, and there is no bedding.

An unemployed journalist, who went through the Boer war and has lately been helped by the DAILY GRAPHIC Fund, writes:—

"I thought I would let you know that I received the articles, and now wish to express my gratitude to you. I think that nothing inspires more confidence in a man than the feeling that he is well clad and shod. I know that few in London have suffered more than I have this winter from want and hunger, tramping the streets all night long, with no prospect when morning arrived save a repetition of each previous night. Notwithstanding my hardships, I ever had the feeling of being merely repulsed, not defeated.

"There is a little matter that I feel a delicacy in putting before you, and yet you may be good enough to consider it. Last November I was compelled to pawn my war medal, with six clasps, including one for the relief of Ladysmith. I obtained 5s. on it, and the parting with it has worried me much ever since, as I have been unable to redeem it. Believe me, it was dire poverty alone that caused me to part with it. Would it be possible, through your fund, to obtain its release?"

Cheques and postal orders, which will be acknowledged in these columns, should be crossed and made payable to the "Daily Graphic," and addressed to the "Free Meal" Editor, "Daily Graphic," Milford House, Milford Lane, Strand, W.C., the words "Free Meals" to be written on the left hand corner of the envelope.

DONATIONS.

	£	s.	d.
Total acknowledged	[illegible]	[illegible]	[illegible]
R. K.	[illegible]	[illegible]	[illegible]
J. M.	[illegible]	[illegible]	[illegible]
H. W.	[illegible]	[illegible]	[illegible]
M. E. S.	[illegible]	[illegible]	[illegible]
S. A. L.	[illegible]	[illegible]	[illegible]

D. M. 5s.; L. and H. C. M. 5s.; A. E. M. 5s.; Patricia, 5s.; A. B. Z. 5s.; W. E. 2s. 6d.; E. A. L. 2s. 6d.; Colonial (Tipperary), 2s. 6d.; E. N. L. 2s.; Hydes, 2s.; Colchester Peggy, 1s.

Total donations	**£3,835**	**3**	**6**

The Free Meal Coupons are available during three days. Will readers please cut them out and hand them to deserving people, or forward them to this office, addressed to the Free Meal Editor. A halfpenny stamp is sufficient postage.

The "Daily Graphic" Free Meal Coupon is on page 16.

DEATH AT A BALL.

During the progress of Edinburgh University ball on Tuesday night, the death occurred, with tragic suddenness, of Mr. R. H. Johnston, Writer to the Signet, and secretary to the university curators. Mr. Johnston dropped down in a faint, and died soon afterwards.

Mr. Johnston was a noted amateur golfer, one of the hardest hitters of his time in Scottish cricket—he twice captained an eleven at Edinburgh against the Australians—and he was a good three-quarter of the Edinburgh Academicals in Mr. H. J. Stevenson's time.

In presence of the Emir of Bokhara, who presented the site for the building, the foundation stone of the first Moslem mosque built in St. Petersburg was laid yesterday.

HOW A LIFEBOAT WAS INVENTED.

The story of the invention of the self-righting lifeboat was told by Sir John Cameron Lamb last night in an address before the Society of Arts on "The Lifeboat and its Work." The inventor was William Greathead, of South Shields, who received £1,200 from Parliament and a gold medal and fifty guineas from the Society of Arts, besides other rewards. He conducted his experiments in a tank at a local brewery. In a ramble, early in 1789, he happened to see a woman who had just been drawing water from a well. On the surface of the water floated the half of a circular wooden dish. While he chatted with her he tried to make the wooden fragment turn over, but at his every attempt it righted. He ran back to his tank, and soon afterwards announced he had discovered the principle he was looking for.

CITY CEREMONY RESTORED.

The ceremony of confirming the election of Bishops of the Southern Province in the Church of St. Mary-le-Bow, Cheapside, has been restored by the Archbishop of Canterbury. It was abandoned in 1901 in consequence of the disorder attending the confirmation of the present Bishop of London, and the place was changed to Church House, Westminster. The confirmation of the Bishop designate of Norwich will take place in Bow Church, the home of the provincial judicature from which the Court of Arches takes its name.

TO-DAY'S CAUSE LIST.

PRIVY COUNCIL.—10.30.—Appeals: Wertheim v. Chicoutimi Pulp Co.—Hamilton Gas Co. v. Mayor, etc., of Hamilton.

COURT OF APPEAL.—Court II.—The Master of the Rolls and Lords Justices Fletcher Moulton and Buckley.—10.30.—Appeals—Judgment.—Probate and Divorce [illegible] [illegible]

CHANCERY.—Lord Chancellor's Court.—Mr. Justice [illegible] [illegible]

KING'S BENCH.—Court VII.—Divisional Court.—[illegible] [illegible]

PROBATE, etc.—Court I.—Sir John Bigham.—10.30. [illegible] [illegible]

OFFICIAL REFEREES.—Court I.—Room 195.—Mr. Terry.—10.30.—[illegible] [illegible]

TO-DAY'S ARRANGEMENTS.

Captain Jessel, M.P., at House Dinner of Ladies' Imperial Club; Discussion on "The Issues of the Forthcoming L.C.C. Elections."

Viscount Tredegar presides at Annual Dinner of Glamorgan Society, Holborn Restaurant, 7.

English Church Union: Meeting to consider Education Question, Viscount Halifax presiding, Church House, 7.30.

Festival of Empire and London Pageant: Mr. Kenneth H. Vickers gives First of Series of Lectures on "The History of London," London Day Training College, Southampton Row, 8.

Rev. W. Marshall on "English Medieval Fonts and Monuments," Dean of Westminster presiding, Carpenters' Hall, 8.

Royal Institution: Professor S. P. Thompson's First Lecture on "Illumination, Natural and Artificial," 3.

Royal Society of Arts: Mr. G. O. W. Dunn on "The Bombay Housing Question," Lord Sandhurst presiding, 4.30.

Royal Geographical Society: Dr. Vaughan Cornish's Third Lecture on "Waves in Water, Sand, and Snow," 3. Child Study Society: Mr. J. Lionel Tayler on "Types of Children: Their Observation and Nature," 90, Buckingham Palace Road, 7.30.

Royal Historical Society, 5; Royal Academy of Arts, 4; Royal Anthropological Society, 8; Society of Antiquaries, 8.30; Optical Society, 8; Institute of Electrical Engineers, 8; Chemical Society, 8.30; Institute of Mining and Metallurgy, Burlington House, 8.

Hockey: Oxford University v. Southern Counties Association; Blackheath v. Cambridge University.

Football: Rugby—Richmond, Guy's Hospital v. Charing Cross Hospital.

Racing: Warwick.

SALE AT DICKINS AND JONES, Regent Street. Further reductions in all departments.

What are They Doing?

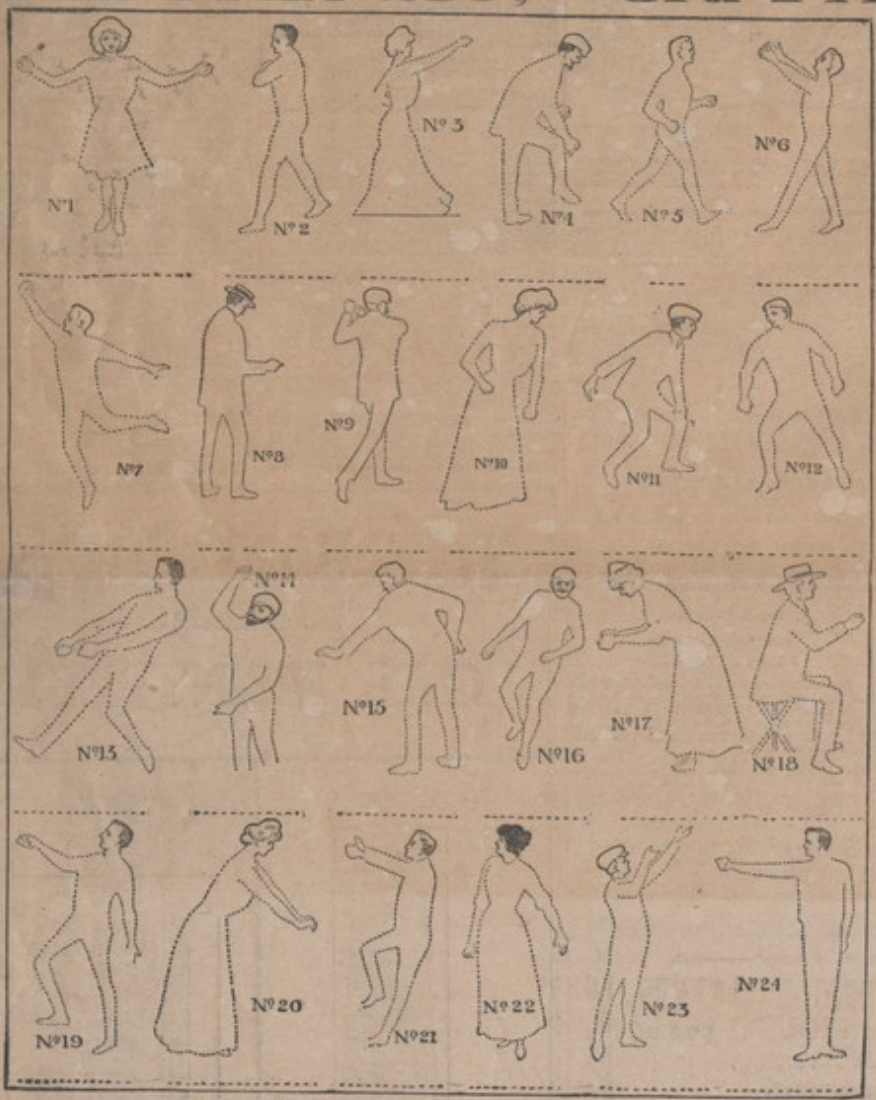
£150 IN PRIZES

offered by the Proprietors of **WRIGHT'S COAL TAR SOAP** for the solution of this novel Competition.

Apart from the chances of a big prize, the Competition should prove most interesting to both young and old.

1st PRIZE £100;

2nd Prize £30; 3rd Prize £20.



Read carefully what you have to do, and also the conditions.

WHAT YOU HAVE TO DO.

The dotted outline simply indicates position or attitude of a person in the act of doing something.

All that is required is to write ONE WORD (in ink) underneath each of the pictures in the space provided, and describe in that ONE word what each figure is doing (see example).

If preferred, however, competitors may give their solutions, numbered 1—24 consecutively, on a sheet of paper.

Then post the set of pictures, and coupon, or the list with name and address added, to Proprietors, Wright's Coal Tar Soap, 66/68, Park Street, Southwark, London, S.E., accompanied by three outside wrappers of WRIGHT'S Coal Tar Soap. It is sold everywhere in boxes of three tablets for 1s. Competitors may send as many lists as they like, provided each one has the requisite three wrappers attached to it and otherwise complies with these conditions, but anyone sending any other wrappers than WRIGHT'S will be disqualified.

The keys of all these figure positions, with the words describing what they are doing printed beneath each sketch, are deposited in a sealed packet, and will not be opened until the Competition is closed.

If competitors cannot solve ALL the picture positions, send in as many as possible.

The words supplied by the successful competitors must be the same as those printed on our Key.

Example Key

Jumping

CONDITIONS.

Every attempt sent in will be carefully examined before awards are made. In the event of ties prizes will be divided.

No correspondence can be entertained. The decision of the Advertising Manager will be final.

Last day for receiving replies, March 31st.

Results will be advertised in the "Daily Mail" on April 30th, when the complete key to all the positions will be published.

Additional copies of this advertisement can be obtained from "Competition," Wright's Coal Tar Soap, 48, Southwark Street, S.E., on receipt of a stamped directed envelope.

WRIGHT'S COAL TAR SOAP COUPON.

NAME .....

ADDRESS .....

.....

The structure of the retina sets a physiological limit to the ~~acuity or~~ sharpness of vision which is further blurred by faults in ~~the optical perfection~~ of the eyeball, considered purely as an optical instrument. In the normal eye the sharpness of vision is usually reckoned to be such as to be able to distinguish well definable ~~[illegible]~~ objects at one minute of a degree apart, which in the above decimal nomenclature is between a third & a fourth part of a millerad, ~~[illegible]~~ ~~[illegible]~~ which itself is as already explained one hundredth part of an inch viewed at ten inches from the eye. It would be just possible for a normal eye to discriminate a ~~[illegible]~~ row of between 30 & 40 similar specks ranged side by side across the disc of the sun, when it is sufficiently veiled by cloud or mist to enable the eye to view it in comfort. ~~On the other hand~~ When the objects are not sharply defined the power of discrimination suffers so much that an interval of even one millirad or the 100th part of an inch at a 10 inches distance is barely noticeable. Taking it all in all the half of a millirad may be taken as the smallest interval worthy of consideration under ordinary circumstances; in short that a row of 200 dots within the length of an inch, clearly visible as dots under a lens would be indistinguishable by the naked eye from a continuous line, at the distance of 10 inches.

There are two ways of looking at an object, that of taking the whole in to equal view at once and that of scrutinising it in details. The latter is expressed sufficiently well by the term inspection, but there exists no word for the former. Circumspection means looking round it, retrospection means looking back at it; the desired word is to express ~~the~~ looking at it. For present purposes I will coin the word aspection, of which the a stands for ad, as in 'aspect' (which is the appearance of an object 'aspected' from a particular point of view). Aspection, visual scrutiny, when the attention ~~and is directed~~ is confined to a minute area such as a millerad or less, & is sharply focussed & specific ~~[illegible]~~, When no special direction of the eye or attention is given to any portion of the wide field of view & no effort is made to focus the eye the picture is large but indistinct. Between these wide limits there is an infinity of ~~degrees of aspection~~ intermediate stages of aspection.

The art of looking for an object on the ground ~~[illegible]~~ of finding it with a minimum of trouble is to keep uniformly to a suitable area of aspection, small if the object be easily overlooked, large if it conspicuous, and to go over the whole methodically backwards ~~[illegible]~~ and forwards like a ploughman. It is fatiguing to do so, but it pays in the end. Having fixed on the suitable width of the area of aspection it is well to standardise it roughly, by the length of a finger or

finger joint held at a ~~suitable~~ constant distance from the eye. Uncivilized man are quick at finding lost objects and I used to be surprised to find the frequency with which quickness in this respect was associated with incompetence of scrutiny. I feel sure that the attention is often unduly narrowed by overmuch reading. We should be more alive to what is going on about ~~us~~ it is were not for this habit of contracting the field of inspection.

The travel of the eye in a strange place is extraordinarily rapid and irregular. It is best appreciated by training the hand to move a pencil in accordance with the direction of the glance and to allow it to scrawl freely on paper. The irregularity of its motion is partly due to the muscular ~~arrangement~~ attachment to the eye ball, which work somewhat on the principal of coordinates and therefore not with equal ease in every direction. Those who have used a pentagraph are familiar with this restriction to its freedom of motion, the hand that works it is conscious of a varying amount of strain. So when the axis of the eye is compelled to ~~travel in a circle~~ ~~and to~~ follow an imaginary circle on the wall, there is a sense of jar and roughness. The ~~axis of the~~ eye travels very irregularly in speed as well as direction, darting from one point to another, fixing itself for a moment & then darting off again. There must be considerable individuality in the travel of the eye of different persons, at least as much as in their handwritings, but I know no way of testing the ~~fact~~ supposition except by comparing the above mentioned scrawls. It has often seemed to me that the repose felt in returning home was largely due to repose of the eye. It is not tempted to explore ~~or~~ ~~scrutinize~~ Every thing is recognized to be in its proper place by vague inspection, without ~~the~~ need of directing & focussing the eye ~~upon~~ upon a multitude of details successively.

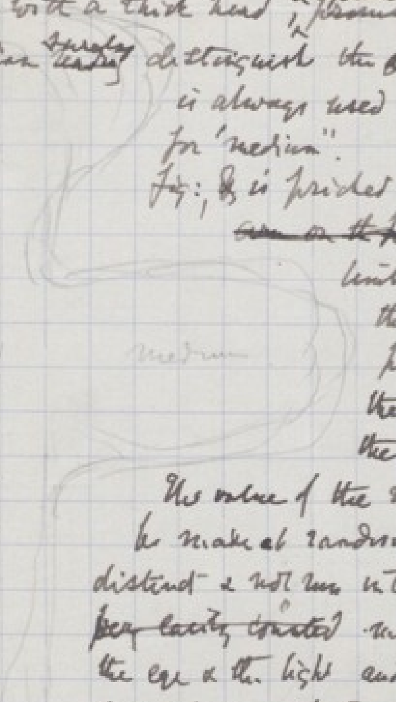
The sense of repose given by the best pictures composed by great artists is due chiefly to what is seen by general inspection only. I have spent some ~~an~~ hours in picture galleries armed with a pencil as above described or ultimately with one that I made faggot-wise out of four differently colored cores Red blue green & ordinary black lead. I cut them out of colored pencils; they were square in section and easily admitted of ~~being~~ ~~[illegible]~~ wrapped & pasted up in thin paper forming a single poly chromatic pencil. When held slopingly the lowermost crayon alone made a mark. Turning this slowly in the hand while scrawling, the sequence of the parts of the entangled drawing was more easily traced. The complexity of the scrawl seemed to me independent of the quality of the picture for every part of it had in each case to be gone over. ~~Sti~~ Still, I am not quite sure of the trustworthiness of my conclusions. Others should test it. It would be interesting to compare the independent records by different persons.

Perspective deformation. ~~The~~ By life long training unconsciously given to the brain almost incapacitates us from perceiving objects, such as the furniture in a sitting room, in the way they really appear. Imagine an adult who had been blinded all his life by some removeable cause, as a congenital cataract, to have been successfully operated on and after wholly recovering from the operation in darkness to be introduced into a room with which he was familiar. It must further be supposed that he possessed by hereditary instinct, the power of directing and focussing his eyes, to the same extent as a chicken which ~~is found~~ learns almost immediately to pick up crumbs after having been hatched & allowed to grow strong in a dark bag. His surprise at every step at the corresponding deformations in the appearance of the chairs & tables would be extreme. He would have assured himself by frequent handling, during his period of blindness that their shapes were constant, yet he would see those shapes to change as he moved. Each square topped table would appear to be an irregular rhomboid, the ~~relative~~ lengths of whose several sides, & the angles ~~at~~ which they made with one another would vary with every ~~and after~~ movement ~~of~~ his. We have quite ceased to be troubled about this. A square table is always perceived by us to be square however much its image may be deformed perspectively. If not square, we should observe its deficiency by rapid but unconscious brain work.

Perception differs from observation in many noteable ways one is as to ~~the~~ angular size, for instance that of the sun. We know it is roughly one centesimal, that is ~~the same size~~ its apparent diameter is one tenth of an inch at 10 inches from the eye, a quarter of inch at 25 inches distance, but if a person even a professed artist, is asked to draw a circle that should represent the ~~size~~ sun at ~~any~~ either of these or any other distance, he will almost invariably draw it too large.

Again it ~~seems also~~ is hard to appreciate the fact that a coarse mosaic can be indistinguishable at a distance from a highly finished picture, and that the degree of coarseness that becomes unseen at a ~~certain~~ specified distance ~~can~~ be easily calculated, as already explained. These considerations will be seen to have a close bearing on what is discussed later on.

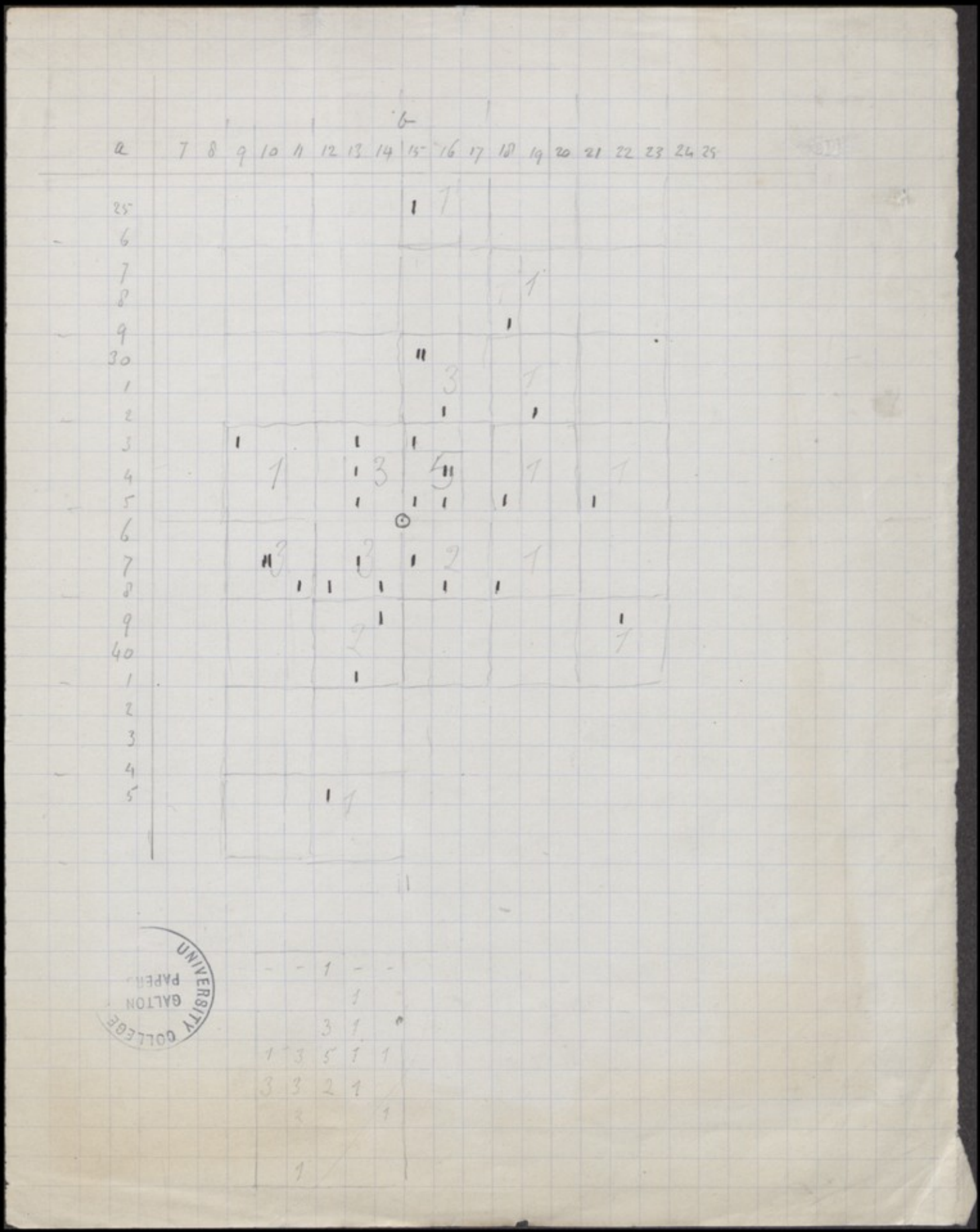
Estimation of types or likenesses. Most of our conclusions about typical characteristics are based on the recollection of the estimates of our individual selves. A further step towards ~~statistical~~ scientific treatment is to record those ~~estimates~~ and treating the records ~~scale~~ statistically to compare them with those of others. We can therefore learn something of our personal equation whether dependent on inaccuracy of judgement or on having a mental standard of reference that differs from those of others. A simple and sure way of making records is therefore a desideratum, and one that can be carried on without attracting observation. I will mention a method that I have found very successful and describe one way in which it has been used, in illustration. Beauty of feature is very unequally distributed about the United Kingdom. Different persons have different standards and it would be interesting to compare them. All I do now is to describe my own procedure according to my own standard in attempting a Beauty-map of the British Isles. I prefer I have to make my records by pricking a piece of paper that has been torn into a suitable shape ~~roughly torn, for the purpose~~ from any spare paper at hand, as the envelope of a letter or a piece of newspaper. The pricker is a needle, (not a pin) pasted or sealing-waxed between two small strips of card, leaving the point projecting between a twentieth and a tenth of an inch. It can be held firmly, flatways, between the fore and middle fingers of the right hand. This is easily kept in my card case. The paper is torn into the shape, (rudely resembling that of an F dotted) ~~(Keyhole)~~ with a thick head, a protruding middle ~~prominent projection~~, and a long tail, so that the touch alone can speedy distinguish the three divisions ~~head middle & tail~~. The head is always used for 'much', the tail for 'little', the middle for 'medium'. It is held by the left thumb as in the Fig.; & is pricked by ~~the passing the pricker with appropriate~~ taking the appropriate limb between the first two fingers and the thumb of the right hand and pressing down on the pricker through the paper against the thumb. There is no need to hurt the thumb, which might be drawn if desired.



The value of the method is that a multitude of pricks may be made at random in a small area and yet ~~they~~ each be distinct and not run into each other, as pencil marks do. They are ~~very easily counted~~ most easily seen by holding the paper between the eye and the light and easily counted either in that position or when looking down on the embossed side. They are also durable. It is easy ~~when~~ in a crowd to record in this way the much, little, or medium of any observed characteristic, as statistical data. Of course a more elaborate plan can be devised to meet special requirements.

As illustration I will mention one inquiry to which it has been applied more or less fitfully, namely the distribution of beauty of feature among the female population of the British Isles. Each person has of course his own standard of beauty and maps of distribution made by different observers would be expected to disagree, but not very much. My procedure was when in a new place and the whim seized me to prick down my quick estimate of the features of every woman of what might be described as a dancing-age, whom I met, & classifying them as highly attractive, indifferent, or repellent. The constancy of my judgement was tested and shown to be trustworthy by the agreement of the statistical data derived from different portions of the same crowd. I carried on this inquiry in a desultory way, as occasion served, but carelessness in preserving the data prevents me now from charting the results in the form of a Beauty map. London ranks highest in my list; and I also found two poles of ugliness, one in the North (under restrictions) the other in the South, of which I will say no more. Perhaps the average beauty of the female face, would perhaps rank highest of all in some parts of Ireland.

Refer to paper in Brit: Assoc..

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PAPERS

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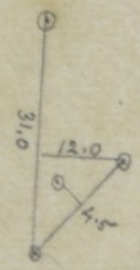

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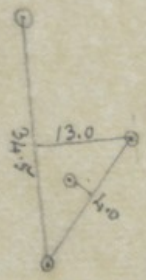

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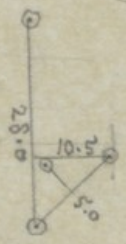

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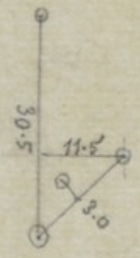

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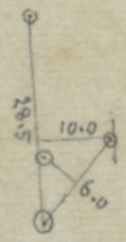

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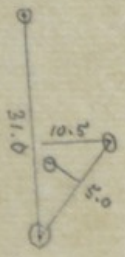

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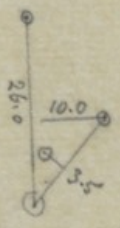

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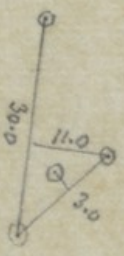

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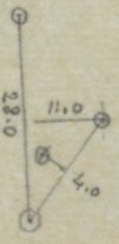

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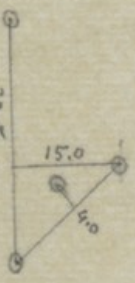
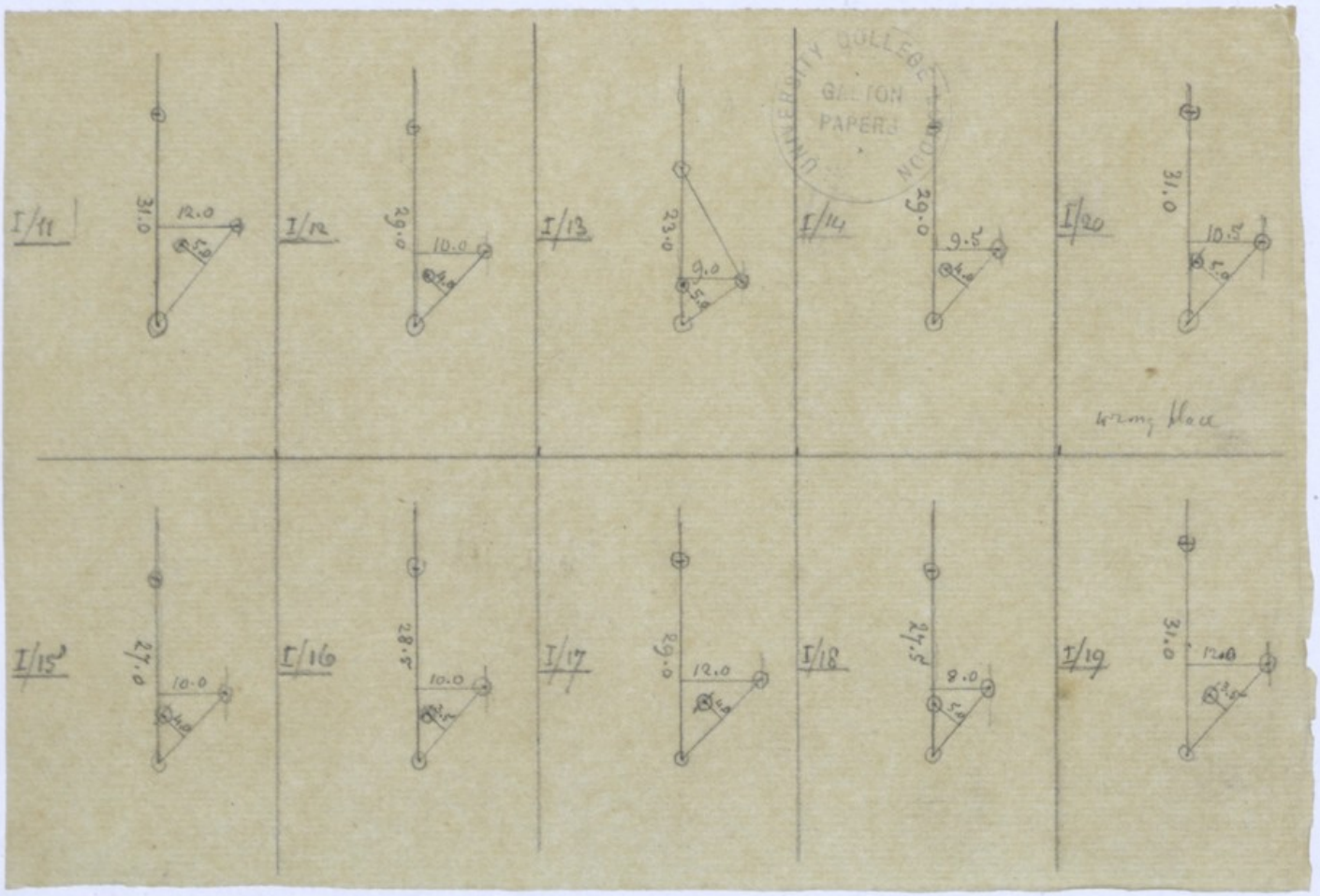
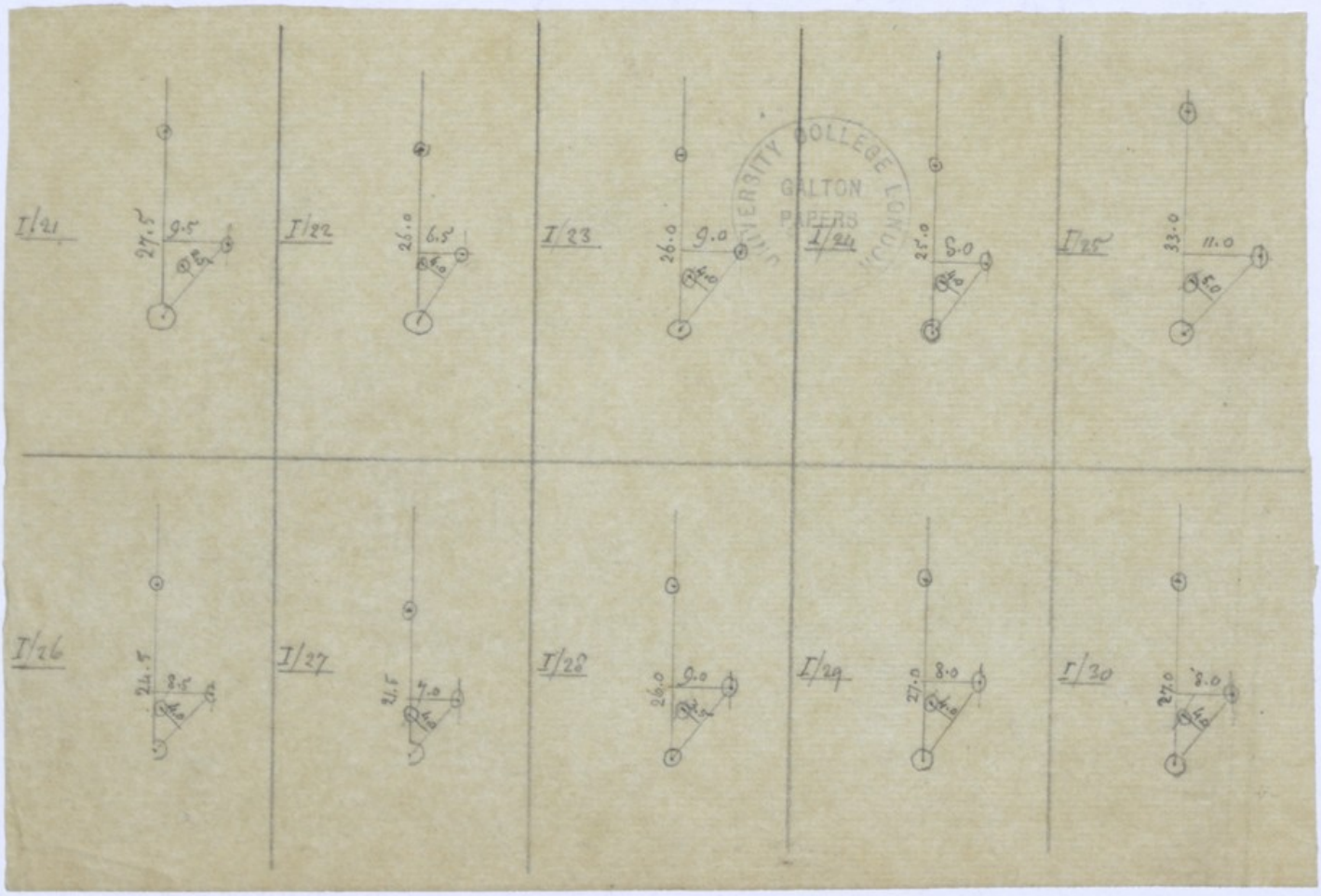
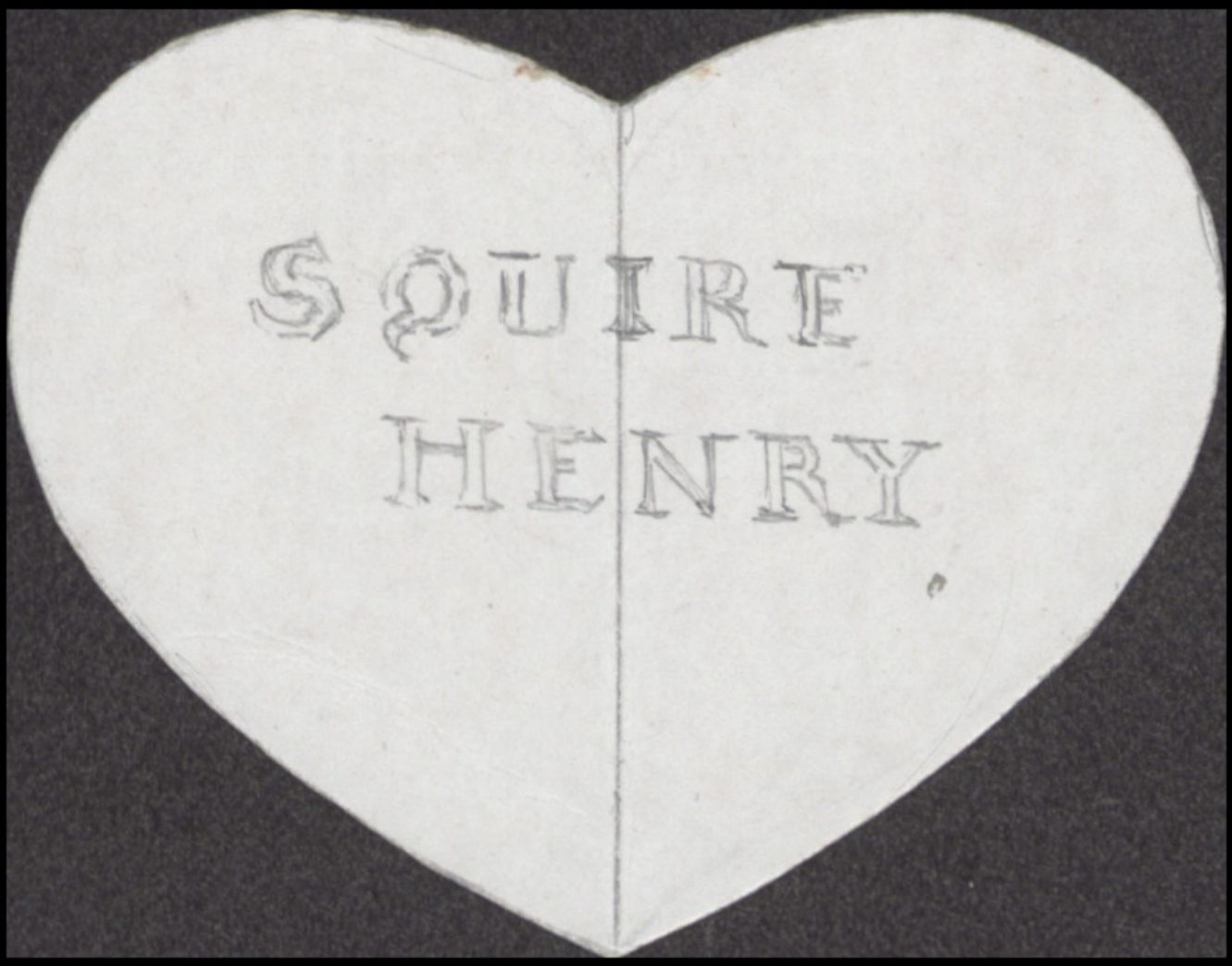






Tracings
of Proportions of Faces

General Paoli Vol 1. 15 Dance
Feb 15 1909


SQUIRE
HENRY


FARM, BRAM
Present Prices:
New Laid Eggs....1/10.....
Fowls ....2/9.....
Ducklings ...3/3.....
Chickens ....3/3.....

Differentiated Description

Descriptions with reference to types

One does many things without recognizing their precise character; and one of these is the subject of these remarks. Their object is more generally the advantage of using definable types to describe complex social arrangements.

The subject of description being then an enumeration of differences.

To take a concrete case it is desired to describe the administration of a particular learned society. Now all such societies have normally 5 elements

President, Secretary, Treasurer, Council and place of meeting

This is a stable and well defined organisation a typical form basis of societies. This being taken as the basis, the particular society can be described by its peculiarities in each of the above 5 respects much more easily than if it were a disconnected phenomena and no such basis were supplied. Again each of the 5 elements admits of sub classification.

A President may be merely a man of social eminence, or a man of distinction in the subjects with which the society is concerned itself. The Secretary may be active or the reverse, or may be practically autocratic

The treasurer may take a large or a small part in administration

The Council is formally nominated by the preceding one, though formally elected at a general meeting, but its quality is various. Frequently business is largely in the hands of a few active members. Attendance may be frequent or rare, and discussions useful or progressive or controversial

(See over)

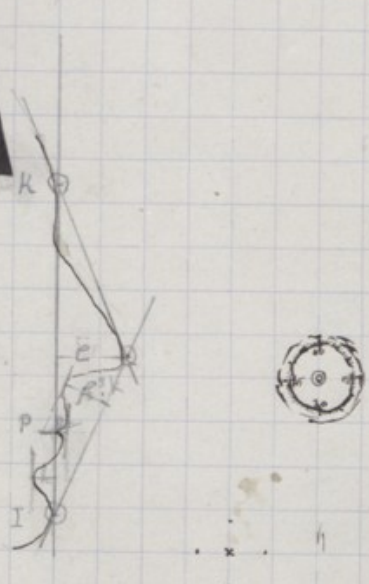
Classification of objects that are ill defined

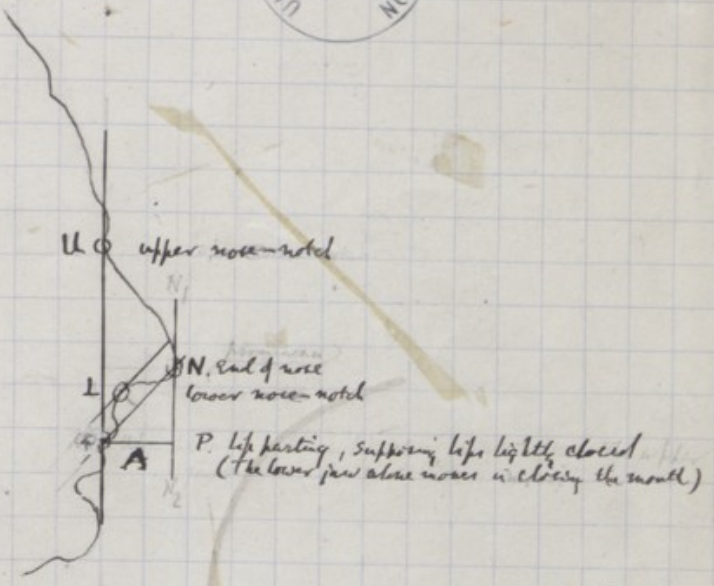
Each may fall into 2 or more categories.

A skeleton key = nearly each w.d. open a particular lock

N a number — how to express N ± a

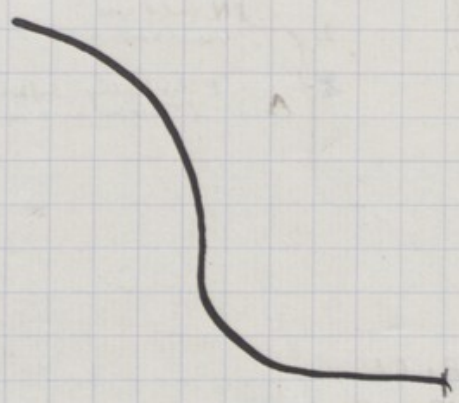
How to Index. given $N_{\pm x}$, $N \pm x_1$ &c





H = UP
A = distance between UP and N
B = distance between NP and L

a = 100 A/H
b = 100 B/H



General Paoli

Dance I. 18 Feb 16 1909

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03½	80	33 dots	13
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05	84½		
08	84		
13½	82	30 begin	87
16	82	30½	84½
19	83½	30	81
20½	82½	29	79
21	83	36	78
22	84	31½	77½
25	82½	34 end	78
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28	82½		
29	85		
28½	89		
29½	90		
31	90½		
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General Paoli

Vol	Page	Name	H	A	B	a	b	a	b
I	1		31.0	12.0	4.5	38	14	25	5
	2		34.5	13.0	4.0	38	12	6	6
	3		28.0	10.5	5.0	38	18	7	7
	4		30.5	11.5	3.0	37	10	8	8
	5		28.5	10.0	6.0	35	21	9	9
	6		31.0	10.5	5.0	34	16	30	10
	7		26.0	10.0	3.5	37	13	1	1
	8		30.0	11.0	3.0	37	10	2	2
	9		28.0	11.0	4.0	39	14	3	3
	10		33.5	15.0	4.0	45	12	4	4
	11		31.0	12.0	5.0	38	16	5	5
	12		29.0	10.0	4.0	34	13	6	6
	13		23.0	9.0	5.0	39	22	7	7
	14		29.0	9.5	4.0	33	13	8	8
	15		27.0	10.0	4.0	37	15	9	9
	16		28.5	10.0	5.0	35	18	40	20
	17		29.0	12.0	4.0	41	13	1	1
	18		27.5	8.0	5.0	29	18	2	2
	19		31.0	12.0	3.5	38	11	3	3
	20		31.0	10.5	5.0	34	16	4	4
	21		27.5	9.5	2.5	33	9	5	5
	22		26.0	6.5	4.0	25	15	6	6
	23		26.0	9.0	4.0	35	15		
	24		25.0	8.0	4.0	32	16		
	25		33.0	11.0	5.0	33	15		
	26		24.5	8.5	4.0	35	16		
	27		21.5	7.0	4.0	32	19		
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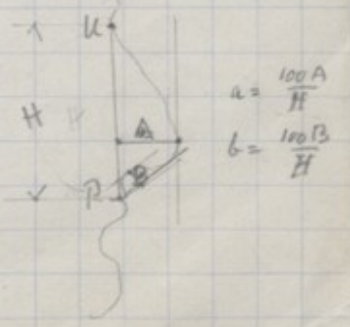

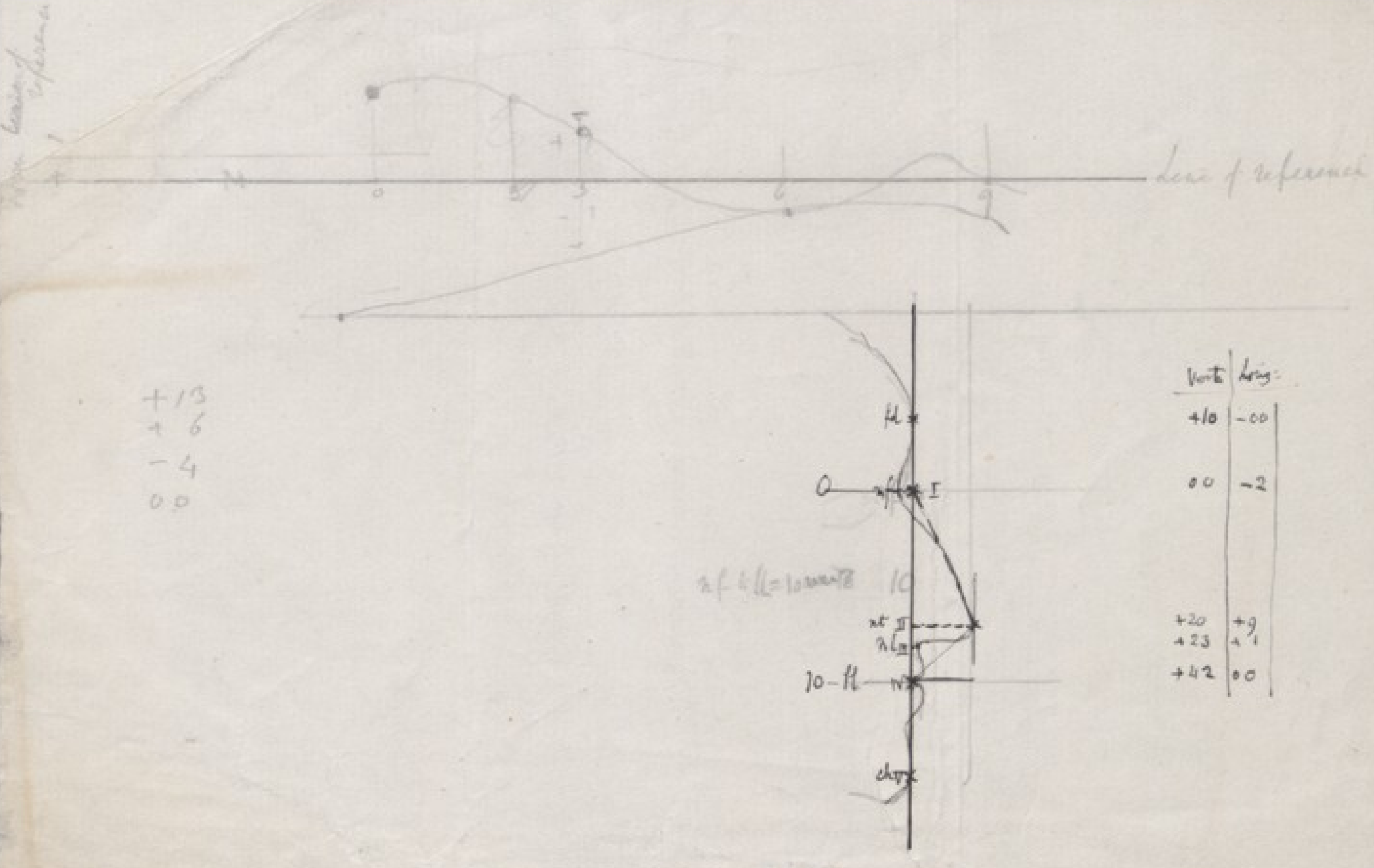

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+20	+9
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From my ignorance of ~~the~~ facts

I ~~cannot~~ am unable to testify to your qualifications in respect to the ~~subjects~~ duties of the post you desire to fill but I can testify heartily to the admirable ~~contents~~ Record of Family History which you sent me years ago in a prize competition. You were if not the very best, an equal best with one other of ~~any~~ the numerous competitors. I heard then of your strenuous efforts under great difficulties to educate yourself & have always respected you for them. It would give me great pleasure to know ~~that~~ if you gain the post

POST CARD.

3 6 10 2

Inland Correspondence

Address Only

WOODLAND GROVE,
TORQUAY.

7. 4. 10.

My dear Sir Francis Galton,

Since I read the article I have been very "full" of profiles, & as you may see have had my own taken to see what I look like!

The friendship of the Superintendant of police here - a nice fellow - has turned my thoughts to profiles of criminals & their recognition. Especially as he told me that a pick pocket was caught at the Easter races here & no one knew him. He at once ordered his finger prints to be taken, sent up to Scotland Yard(?) & by return came 23 previous convictions!

Now my idea has been why only chart the profile, when there's really the whole head to work at?

We will suppose the enclosed card is made in very transparent celluloid, & hangs vertically, that the centre of this "head-meter" is put over the tragus of the ear, & the angles & distances of certain points - the head recorded - I have suggested a few by red dots on my profile - would that not give for police purposes an easy method of making the head-chart, & one easy to describe? for the angles & distances would always be taken in the same serial order, & therefore each one need not be defined.

If you think anything of this idea, a celluloid one could be easily made & tried. The circles are one centimetre apart, & the lines 15°. You want want further explanation!

With a little practice one minute would suffice for completing any head measures.

Should you follow your article up by a sequel. I do wish you would deal fully with the question of accents & portraits other than profiles, for the idea has always troubled me.

Would it be any use for you to have my face taken full-face & then every 15° & profile? I could easily get it done cheaply (2½ pence each) & you need not mention my name if it were published. Such a series would be instructive & many.

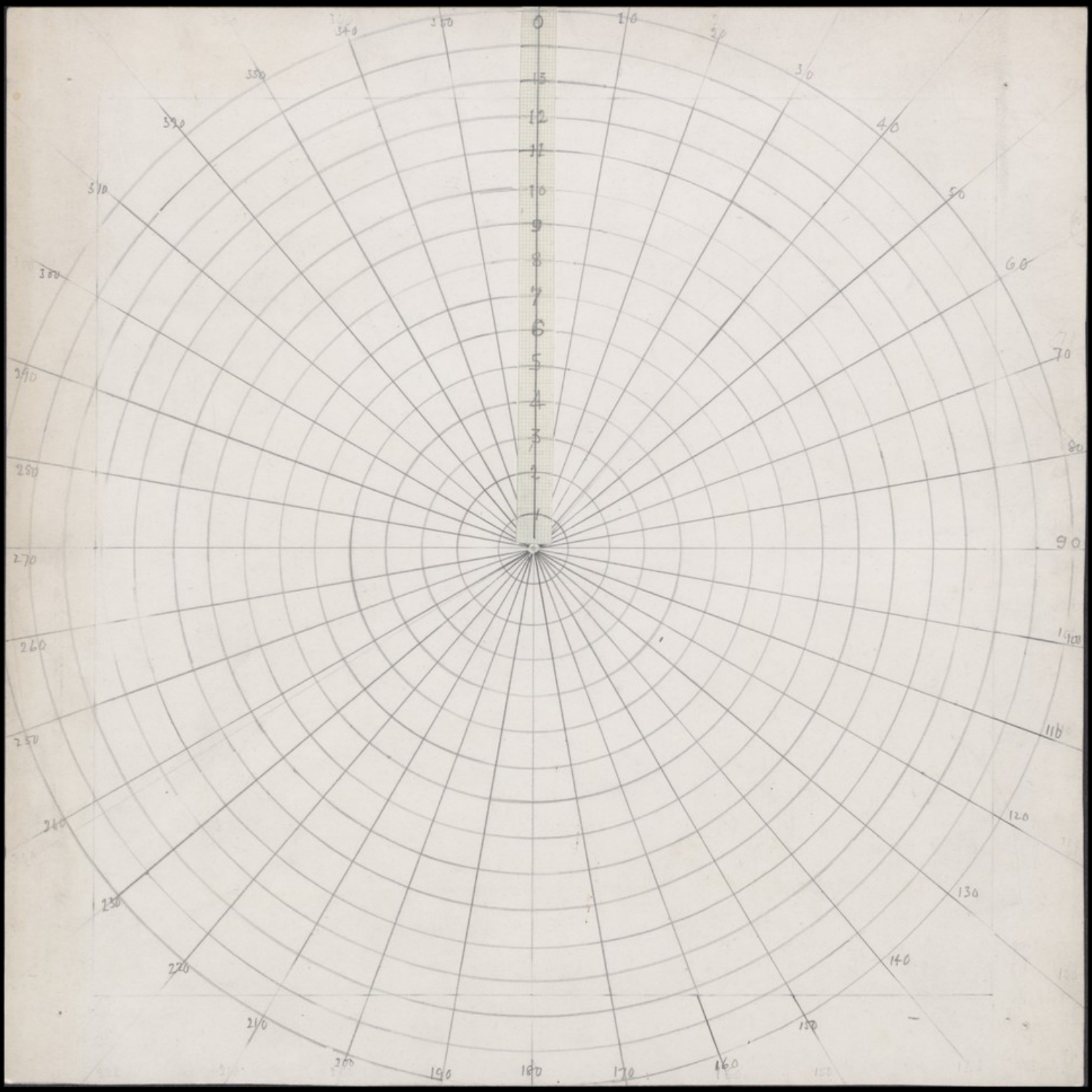
I hope you will soon be well. This weather tries one dreadfully.

Ever yours

F. Howard Collins

Please thank Miss Biggs for her post card.

F. H. C.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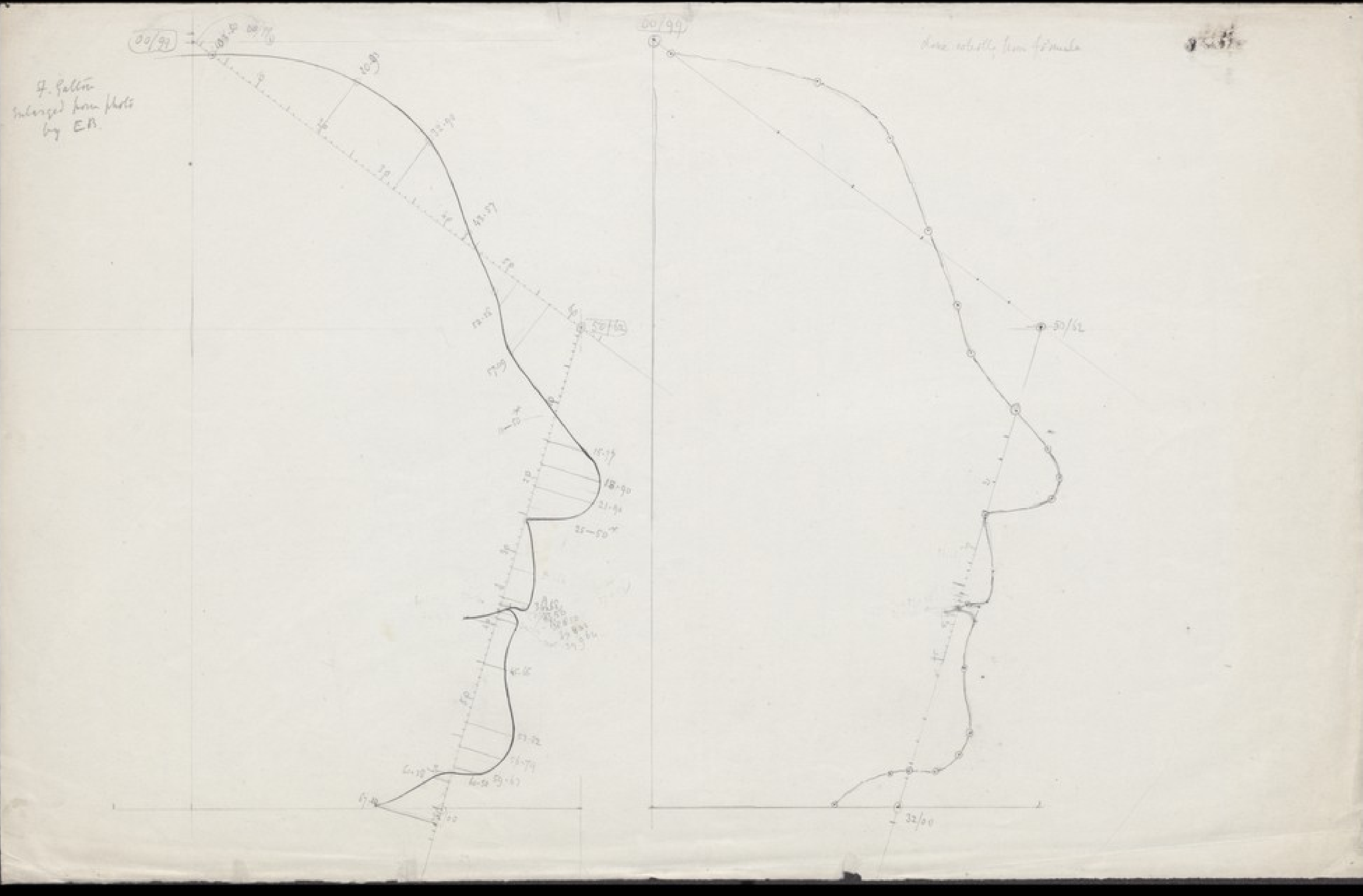
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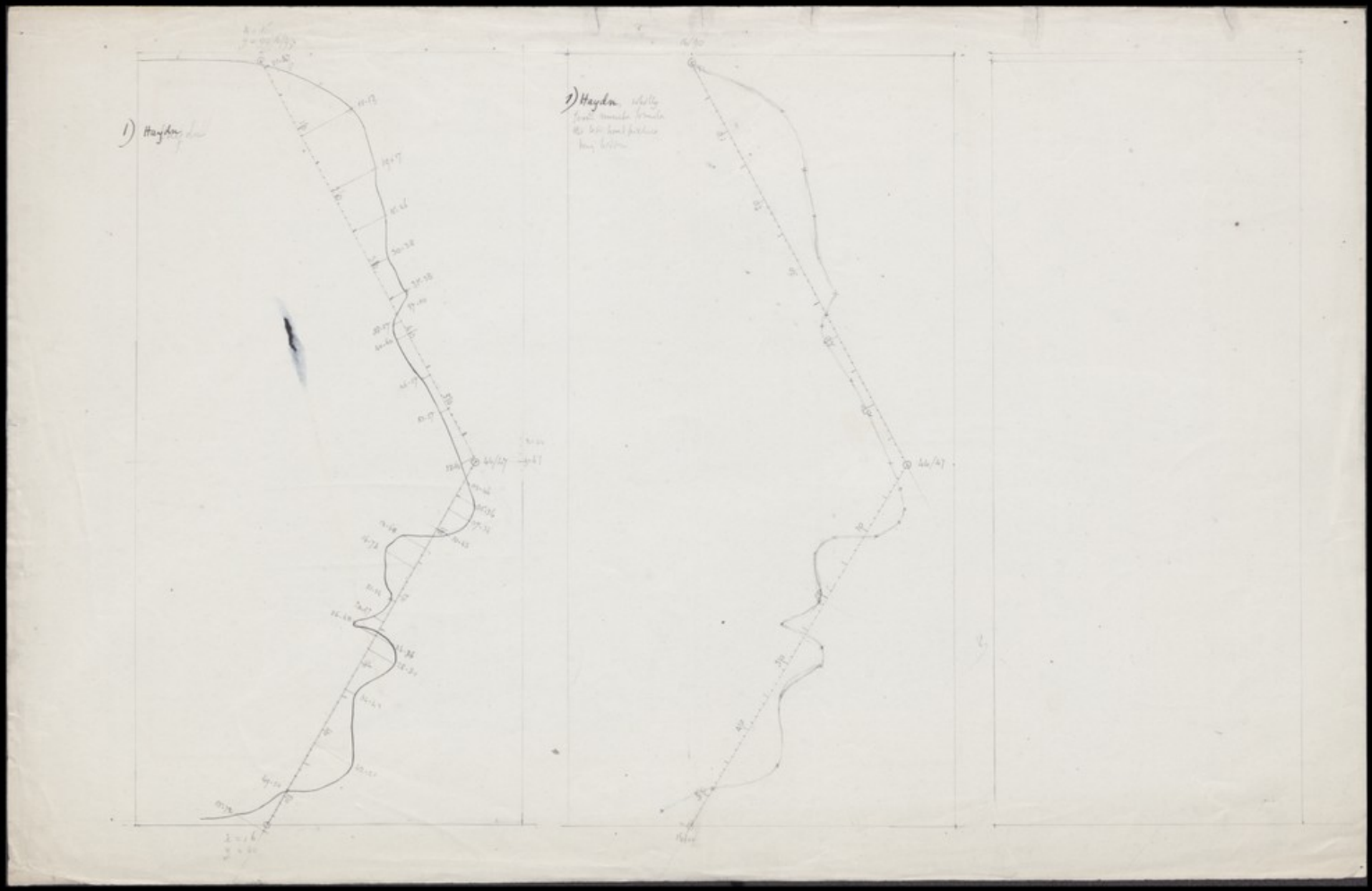
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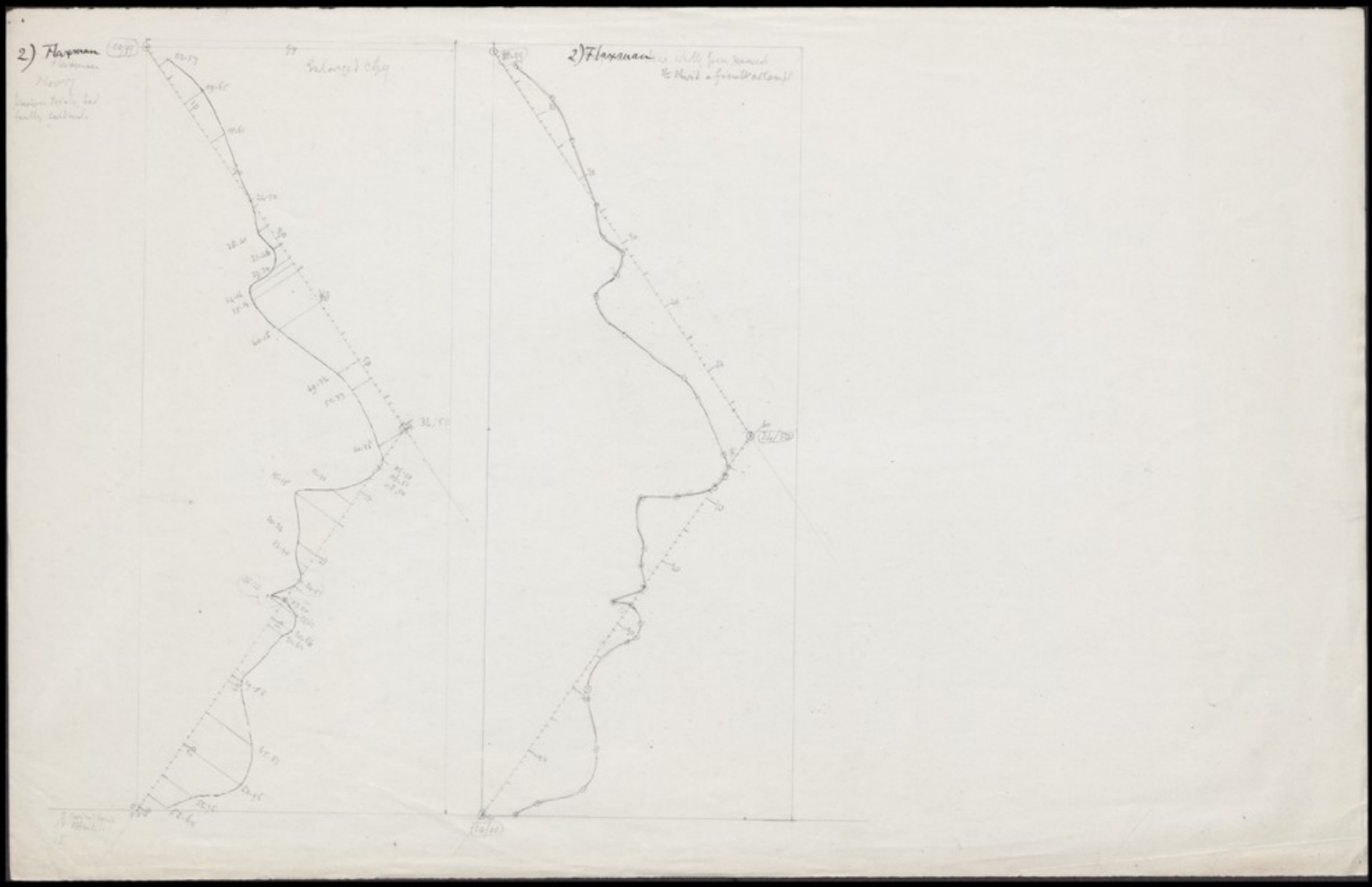
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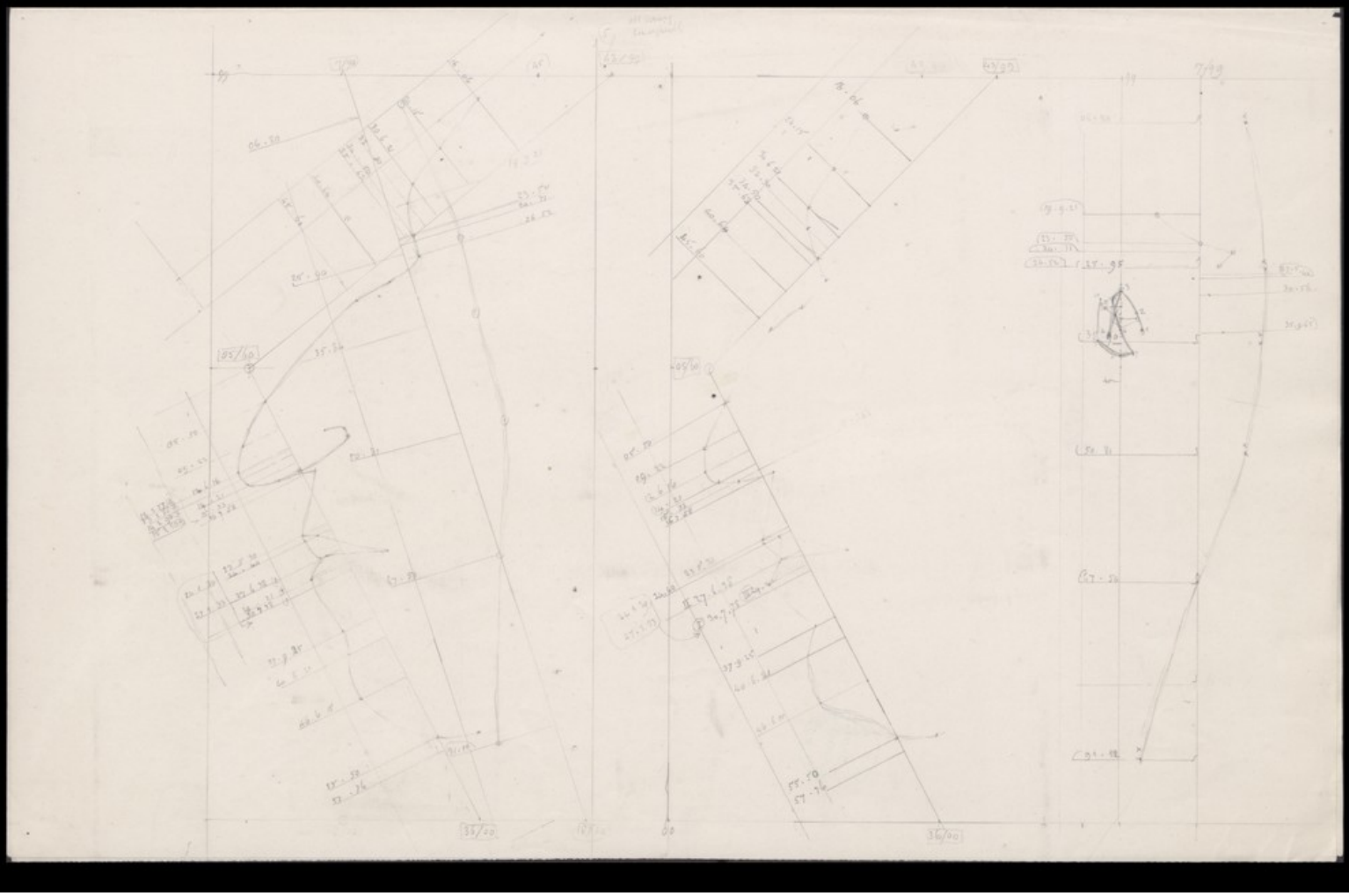

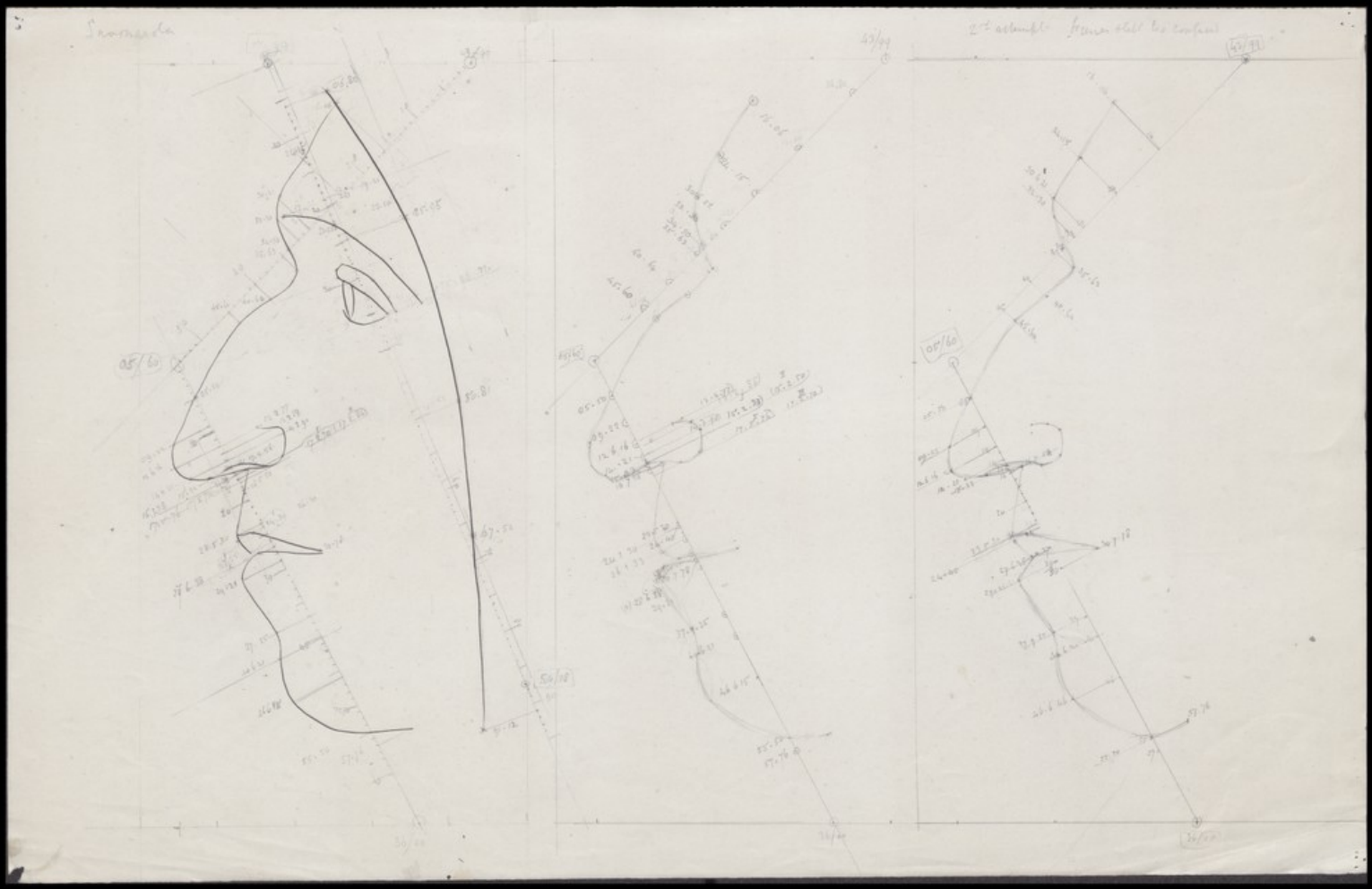

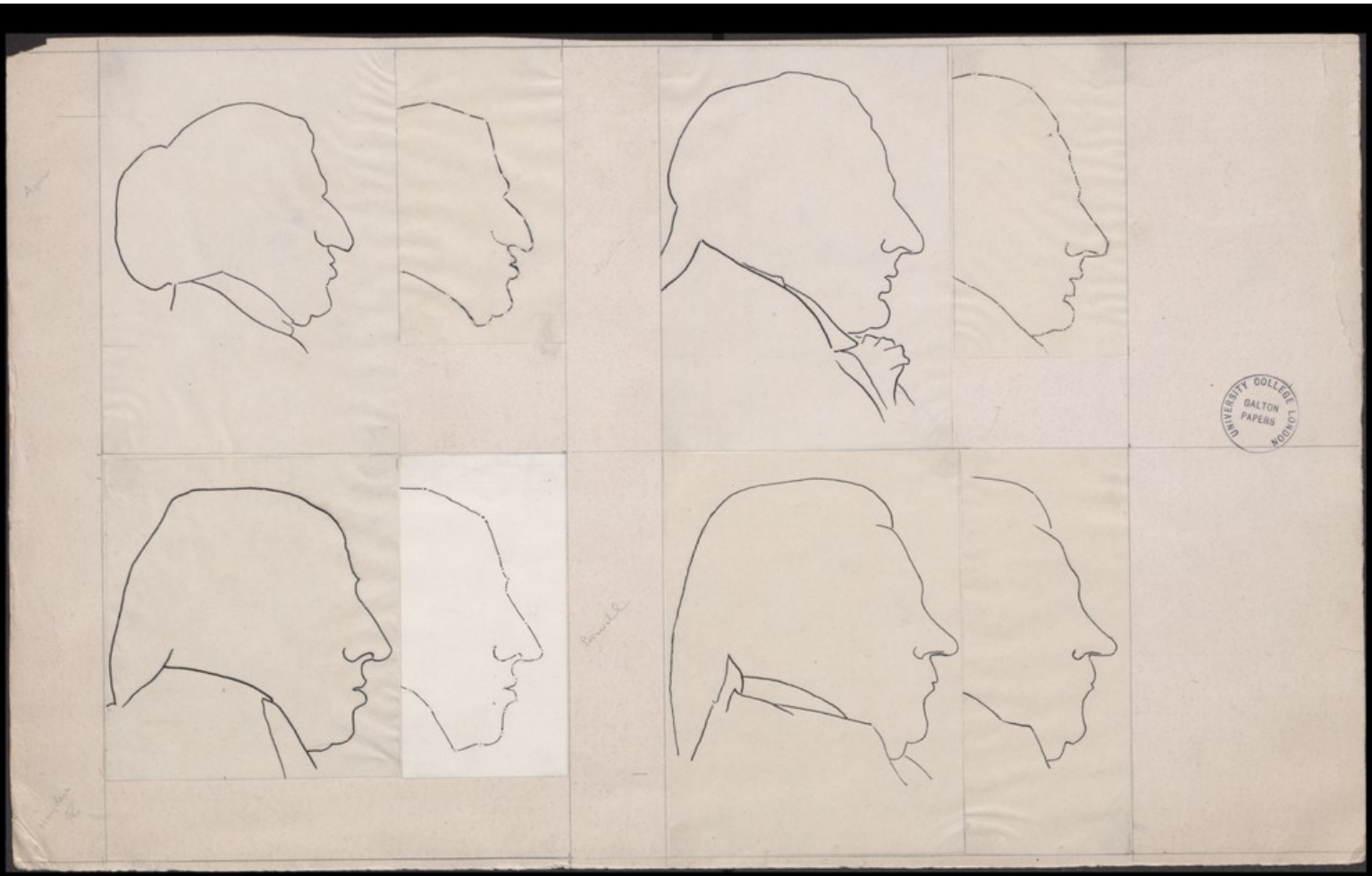

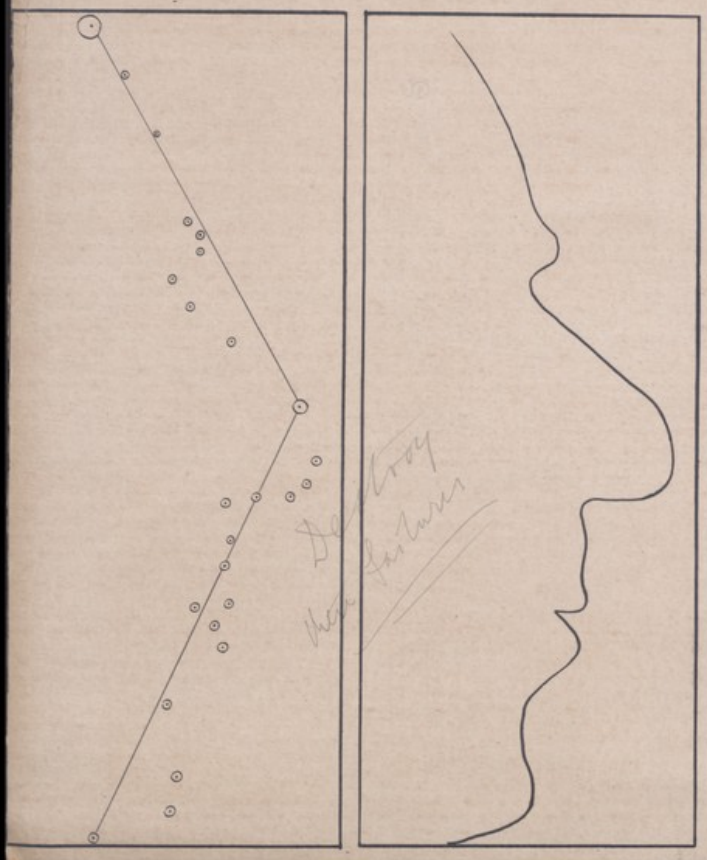

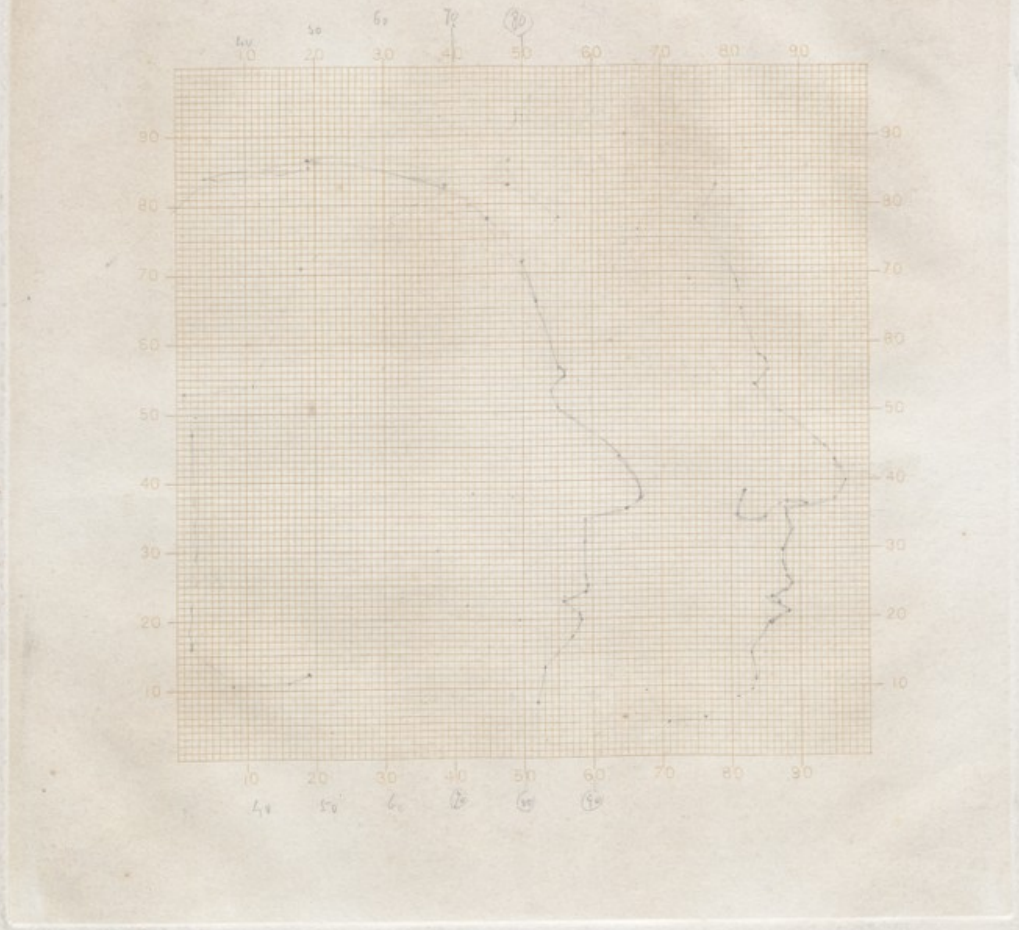


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