Horse Measurement Records

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1895-1898

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f.1r

Capt^n F. Smith

Oct 1895

In Hand bag

	Brown Gladstone	Black Bag	On
	Titerns plaid trousers	Drep suit Grey suit	Blue serge
	1 Flannel Shirt	2 Flannel Shirt	1 Flannel Shirt
	1 Drawers	1 drawers	
1	~~1~~ Night Gown	2 Night Gown	
	2 Shirts	2 Shirts	
1	~~1~~ Thin Socks	2 thick ~~1~~ thin Socks	1 thin
	2 [illegible]		

Veterinary Capt F. Smith

52r

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

11. x. 95

Dear Sir,

Your letter of the 9th. Inst: reached me to-day. My appointment at Aldershot having expired I have been transferred to Woolwich.

I shall be only too pleased to give you any information within my power,

and need hardly say
how honored I feel to
being connected by you.

Yours faithfully
Robt. Smith.

F. Galton Esq F.R.S.
&c. &c.

f. 3r

13th Oct: 1895

Dear Sir,

There are several measurements which could easily be made on horses, which would be of use for the purpose of hereditary enquiry, but it would be difficult to establish any scale of proportions which would be of value to the breeder.

So long as one confines their observations to thoroughbred stock there is little chance of serious error occurring, but amongst half bred stock I fear contradictory results would be obtained, unless the observations be limited to owners who are known to feed their young stock liberally.

The points of development of young horses is largely a question of 'feeding'; the man who allows young stock to shift for themselves produces a very different type of animal to the man who can afford for three years or so to liberally feed an animal for which he is getting no immediate return. The influence of high feeding on development is nowhere better seen than in the race horse. I have seen two year old horses which from their development might readily be mistaken as having reached maturity. A friend of mine urged a native breeder in India to feed his stock liberally & let them run into troop horses. He replied, yes the main reply, I'll keep them low & sell them as pack ponies!

The reason why I believe it would be difficult to establish a scale of proportions of value to the breeder is this:- In the breeding of thoroughbreds it is not the question of make & shape which is considered, but the ability is selected on account of his performance on the turf. Speed & gameness & shape do not necessarily run hand in hand, it is more than probable that speed is a question of nervous & circulatory systems, & it is not unlikely that bones might be found conforming to a scale of perfect proportions which are utterly worthless for racing purposes.

In the breeding of half bred stock make & shape are no doubt considered, but here the eye of the breeder would probably tell him as much as the tape.

Taking the next downward step in the scale, we come to a class of animal in the production of which legislation is really required. The popular opinion throughout the country is that any mare which is useless from age, or crippled from disease, is fit for breeding; being worth little herself she is sent to a stallion at a low fee, & the foalness is got rid of as soon as any confiding member of the community can be found as a purchaser. It is no use talking to the owners of the cripples more about the ethics of the question, or of the unsuitable use of the horse from a structural point of view, his sole desire is to make something out of it: he has a certain number of acres of land on which he can keep at a much nominal cost, & that is his incentive to breeding.

However, I fear I am straying from the question of measurements. As far back as the 16th Century it is said a Stallion exhibited the 'proportions' of horses by measurement, but in the 18th Century Bourgelat in France & his pupil St Bel in this country established a table of proportions by which it was hoped "to discover" established the true conformation of the race horse, & at any time to discover whether the breed had improved or degenerated". How far they would have succeeded I cannot say, for the measurements of horses has found no favour in this country. length of the

Bourgelat adopted the head as the unit of measurement & this he divided into 216 parts. By this standard all the other parts of the body were measured. St Bel divided the head into 22 parts, but he also found his standard had to be abandoned, & he then employed the height of the back from the withers to the ground.

I enclose you a diagram & have marked the position of certain measurements. There are several others of importance, but I anticipate a little difficulty in hitting off the exact places to measure. The width between the fore legs from knee to knee might be ascertained, this is an exalted landmark on the radius for the purpose.

I hope the diagram I have sent you will be sufficiently clear, the numbers on the back refer to certain saddle injuries; & the figure is taken from a small manual I have published on the subject.

I have made no mention of measuring the height, I take it for granted that this is understood; two measurements should be made one over the withers at 1 & the other over the highest point of the croup just behind 9.

You will observe I have referred to no animal other than the horse, for the reason that I know nothing of the others, but if you would like to have the information for cattle & sheep, I think I could have little difficulty in obtaining the information for you.

If for the information I have given you is very scanty, but please do not hesitate to write again & again until you have obtained the little I can give you

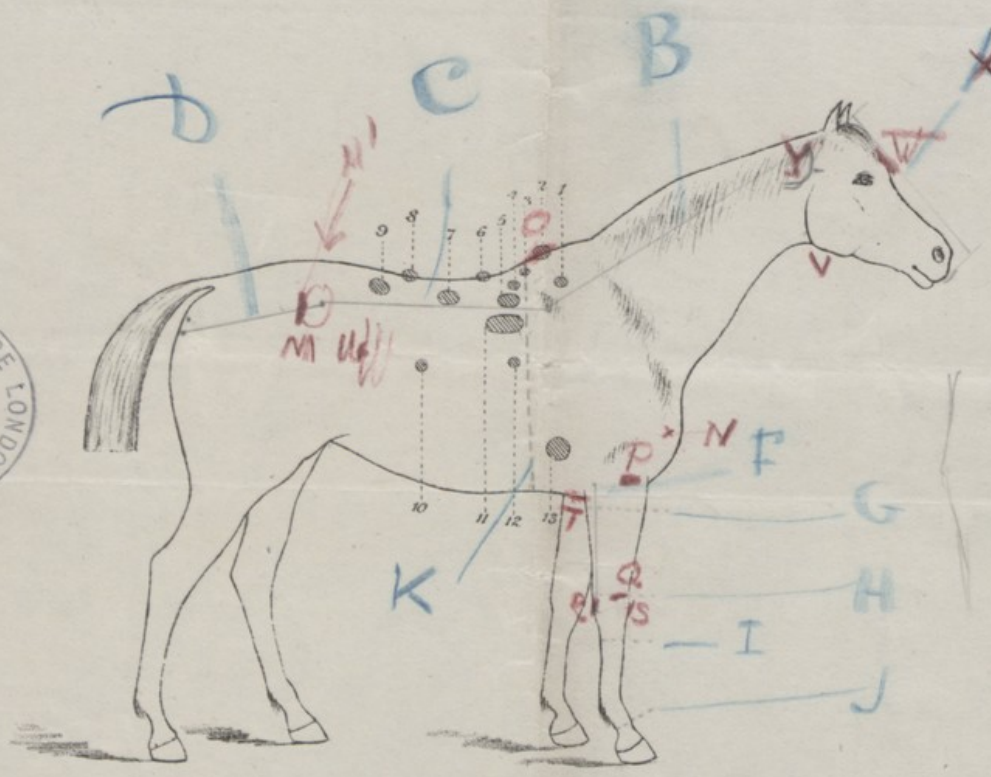
Yours faithfully
Basil Smith.

To
Francis Galton Esqr
&c &c.

FIG. XI.

f.5

THE POSITION OF INJURIES ON THE BACK.



1 *Bicule bone pressure caused by "burrs."*
2 *Front arch or pummah resting on the withers.*
7 *Uneven side boards or thin pannels.*
8 *Rear pack.*

A The length of the head from the occipital ridge to the lips. A useful head measurement would be the width of the forehead, & the distance between the eyes.

B The length from the occiput to a hollow space behind the scapula. In a riding horse great length of B is a point of beauty, but for draught purposes it can hardly be too short.

C The length of the back from the posterior edge of the scapula to the antero-inferior process of the ilium. This is an important measurement, the back can scarcely be too short.

D The length of the pelvis taken from ilium to ischium.

F The length of the ~~fore~~ arm. In speed it should be long, for high stepping short.

G & H Circumference of arm.

I .. below knee.

J . of pastern.

K . of chest.

The length of the ~~fore~~ metacarpus might be taken but the landmarks are not very easy.

The width of the pelvis should be taken from the antero-inferior process of the ilium.

The width between the fore legs at the knee should previously mentioned.

There are several measurements of the shoulder which would prove very interesting, but they are too difficult.

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

16. 10. 95

Dear Sir,

I thought I was there
the 'Stud Book', Cattle - the 'Herd
Book' & Sheep - the 'Flock Book'.
Is there not a book - kept
for 'Hackneys', 'Hunters' Improvement
Society', & 'Shire Horse'.

How far any of them will be
of value to you I cannot say. I
have only once consulted the 'Stud book'
& that was some years ago when

I wanted some reliable statistical information for a text book, on the mean duration of life in horses.

I do not think the height of the ancients is given, but you will easily see a copy in the British Museum.

The only measurements you would be likely to obtain without difficulty would be those relating to the carpus.

The perfect horse a breeder has

is to have a horse 'small under the knee'. It certainly is most unsightly, & such legs are commonly supposed to be weak & fail early.

It is common amongst good judges of horses to see them measure the circumference of the leg below the knee by clasping it with the hand, doubtful cases are referred to the tape. It is probable, therefore, that any suggestion of yours to have accurate measurements made on this question would meet with

favour instead of obstruction. I
do not think they would be enthusiastic
for you & they are naturally a
most conservative class, but
their co-operation instead of
opposition is desirable.

They would probably not
mind working three measurements
of the knee & they could
please their readily lends itself
to the tape; but perhaps for
one purpose not to have two
or three measurements made

16/10/95

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

close together?

Respecting the Ox, sheep &
Assembly Pig, I shall have
no alone instrument to obtain
reliable information for you,
though some little delay may
occur.

I have asked my publishers
to send you a copy of my 'Veterinary
Physiology' - There are a few
words devoted to growth & development

Perhaps you would like
to discuss the subject of your
letter - the measurement of the equine.
I could then give you an
object lesson - the measurements
I have suggested.
If you think this necessary
I shall be very pleased to find
the subject & see you here.

f. 10

Below me

from family folk

K. Smith.

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

20th October 1895

Dear Sir.

Your two delightful books have come to hand. Please accept my warmest thanks; I shall really value them very highly. I am now studying 'Hereditary Genius'.

I hope the remarks I made on the influence of feeling on pronouns will not delay you from making measurements of thoroughbred

horses & Mens equally well
cared for. I regret the influence
of feeling as a caution, it was
not intended to point you off;
I am sure reliable material
is available.

I might have added that it
is generally believed horses reared
on a limestone formation grow
more bone than those off it.

Re geological formation

f.12

might possibly be another factor you would have to consider.

Believe me

Yours faithfully

Fred. Smith.

F. Galton Esq
F.R.S.
&c &c

f. 13r

THE CROFT,
LITTLE HEATH,
CHARLTON. S.E.

21st October 1895.

Dear Sir,

Unless something unforeseen occurs I can promise you the whole of Wednesday afternoon.

We lunch at 1.30 & hope to see you. My infirmary is but a short walk from my house.

You best station is probably Woolwich Dockyard, but we are about 20 minutes walk from

f. 13v

both Charlton & the Dockyard Stations.

I should offer to meet you, but I am almost certain to be engaged until after 1 o'clock on Wednesday.

Should anything occur to interfere with our arrangement I will write or wire. Being a Govt. Servant my time is not entirely my own.

Yours faithfully
Frank S. Smith.

THE CROFT,
LITTLE HEATH,
CHARLTON. S.E.

24th October 1875

Dear Mr. Galton

I send the diagrams illustrating our measurements of Yesterday.

I fear I have misled you during over the arm measurement. It was not until I made the tracing of the bone that it occurred to me our whole measurement of Yesterday was from the humerus & not the radius. I have obtained on the

f. 14v

Figure only the upper prominence

was not radius. You will

see in the rough letter of the skeleton

the position of the humerus, & I think

you will be able to make out the

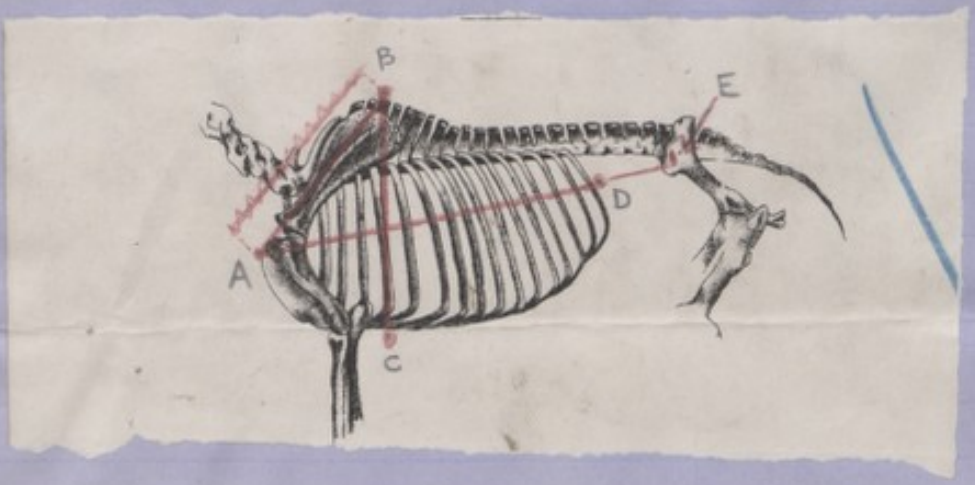
External condyle.

I hope you got back to Town

safely?

Yours truly

Fred. Smith.



A The upper rounded anterior bluish & limit of the cartilage of the sternum

B The longest superior spinous process of the dorsal vertebræ.

D Posterior edge of the last rib

E Hollow behind the antero-inferior spinous process of the ilium.

C The inferior surface of the sternum - front of the xiphoid cartilage.

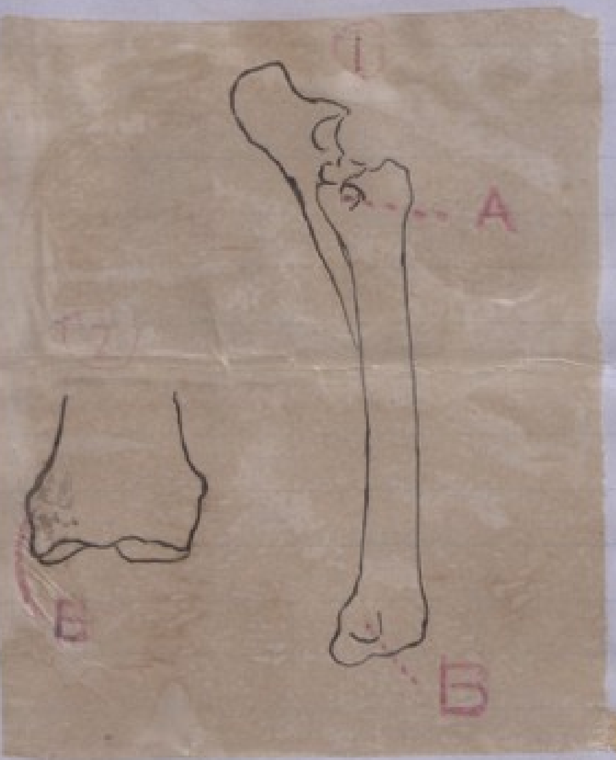
The following are the measurements.

A to B

B . C

A . D

D . E

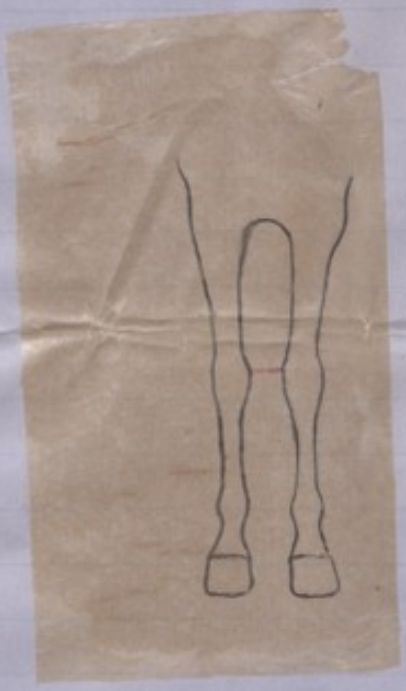


N.B. It has just occurred to me that we did not measure from A precisely, for this prominence is so covered by the lateral ligt. of the joint as to be ill defined; our upper measure must have been from the outer condyle of the humerus a point 1½ inches above A Fig 1. If this is an important point I will rectify.

(1) The right radius & ulna viewed from their external surface.
(2) Enlarged view of the inferior extremity of the radius viewed from the front.

A. Superior-external tuberosity of radius
B Inferior external tuberosity " "

Head measurements



Distance between the two inner tuberosities of the radius

Circumference under the knee.

~~On Her Majesty's Service.~~

Francis Galton Esq
F.R.S.
42 Rutland Gate.
London S.W.

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

26th October 1895

Dear Mr. Galton,

There is no doubt that the method of measuring from the arm, in the outer condyle of the humerus.

The mistake I made was due to the fact that in thinking over the point to measure from, I determined to introduce in your notice the proportionate found on the two thirds of the radius,

I for many remember that the
first horse me inherited, (the
thin one which was sick) gave
us a well marked prominence
at the head of the radius, but which
we failed to clearly define –
the the animals, & had as a
result to go higher up the limb
under the biceps muscle.

It did not occur to me
that we had left the radius for

f. 20r

the humerus until I was making a sketch of the parts for you, but to place everything beyond doubt I will pay at an early date a visit to the dissecting room & verify the prominence, though I am positive from its position under the lower edge of the triceps that it is humerus & not radius.

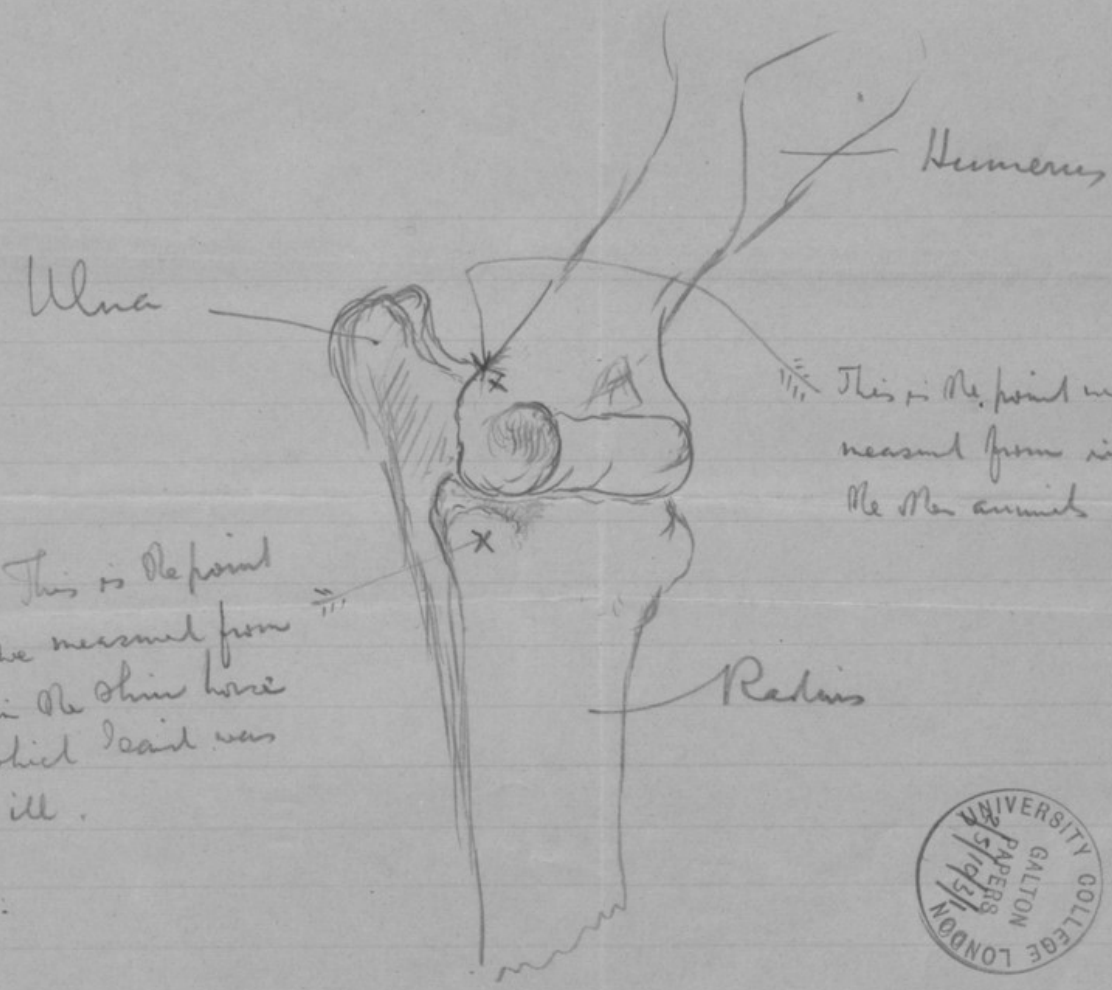
I shall be pleased to carry out any measurements for you

f.20v

& the instrument you have sketched looks like being very useful.

Though I contributed to Koch's Encyclopedia I do not know German, I was therefore glad of the translation. The Radius of the ox & that of the horse are very different. The horse has a well marked prominence on the outer & upper part of the radius, but it is too well covered to be of use to us.

Yours truly
Fred. Smith.



THE CROFT,
LITTLE HEATH,
CHARLTON. S.E.

31. 10. 95

Dear Mr. Galton,

Mr. Clement Stephenson F.R.C.V.S. of Newcastle has said that he will gladly do anything to assist you in the question of the measurements of cattle.

This gentleman besides being a member of the Veterinary profession is one of the leading authorities on cattle breeding, & is also a large & successful breeder. His advice & opinion will, I am sure, be of the greatest value, & I am pleased to

have secured for you his hearty
co-operation.

I think also Rutherford will be able
to do the needful in respect of sheep,
& also probably of pigs.

I have explained to him your
requirements, but perhaps it would
be well if you gave him, as you
did me, an outline of what you
proposed to do.

Mr Stephenson is a most capable

man, & he has endowed either
at Newcastle or Durham, a chair
of Comparative Pathology.

Believe me
Yours truly
Fred. Smith.

PS

Mr. Stephenson's address is

Sandyford Villa
Newcastle-on-Tyne.

f. 24r

I should like to think over one or two points & will reply to your letter in a day or two.

You nearly lost your photographs by forgetting to close the envelope - however the P. O. authorities did the needful.

The photographic method seems Excellent.

Fred. Smith.

3. 11. 95

f.24v

POST CARD

THE ADDRESS ONLY TO BE WRITTEN ON THIS S[illegible]E

Francis Galton Esq F.R.S.

42 Rutland Gate

London

S.W.

f. 25.

THE CROFT,
LITTLE HEATH,
CHARLTON. S.E.

7 Nov 95

Dear Mr. Galton

If photographs give reliable measurements there are many points in Equine construction which could be worked out. I am thinking more particularly of that part which every horseman talks of & knows so little about, viz the shoulder, but the length of the arm & metacarpus,

Height, breadth & metatarsus,
length & obliquity of the posterior,
are all points of the perfect
importance in Equine conformation.

To determine how far these
measurements are practicable one
would have to look over a large
number of subjects & compare
the measurements thus obtained
with those of the skeleton.

I would suggest to you that
before photographing the animals,
points which are likely to give
trouble in focusing in the photograph
from shadow or otherwise
should be touched with chalk. For
instance the last pic. I have
pursued this method in other
kinds of enquiries with great success.

Why do you propose to
photograph your horse during a slow
walk? I am only asking for
information, as it seems to me to
be greatly increase your difficulties.

I used to stand my horses
shoulder to a dead white wall
as I found the outline so much
clearer. A wall of white
canvas would give the same
result.

The measurement below the knee
can readily be carried out in
the Photograph - I will let you
know what the diameter should
be. I am extremely glad that
Everything looks so hopeful.

Yours truly
Fred. Smith.


1840, C.R.
"SHOTOVER."

Skotroer 1 1840

~~ON HER MAJESTY'S SERVICE.~~

Francis Galton Esq F.R.S.
42 Rutland Gate
London
S.W.

f.23r

Horse Measurements f.29r

F. Smith

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

30. 11. 97

Dear Mr Galton

There should be no difficulty in carrying out the method for purpose for measuring horses. If you will give me a few days I will get the needful cards made, & send you a photograph of a horse wearing the apparatus.

You can test the accuracy

If the method by measuring
the ~~[illegible]~~ combined heights
: the shortest, & then comparing
them with the measurements made
on the animal either by me, or
if you would prefer to make
them yourself we should be
delighted to see you.

f.30

I trust you are keeping well

[illegible] [illegible] [illegible] [illegible]

Believe me

Yours truly

F. Smith

f. 30r

THE CROFT,
LITTLE HEATH,
CHARLTON. S.E.

3 12/97

Dear Dr Galton

I am sending you by this post two photos. I must apologise for their tanning, but they were done in a hurry & of course badly done; something went wrong with the batt

I have marked them A & B.

A has on it- side & two front views; B has a space forward

f. 30v

divided it into alternately
black & white. The same
will be found on the bridle

Each horse bears certain
marks. I measured them carefully
on the living animal. Will you
measure them on the photo &
we can compare results

The measurement of A I
have left at my Infirmary.

And B. as follows :- Calling
the white spots 1. 2 3 4 from
the Commencement.

From 1 to 2 = 13¼"
2 . 3 . 13"
3 . 4 = 13"

I will send you A tomorrow -

The white marks are pairs
of circular white summer paths.
2 I measured from the centre of
the circle.

You will see better when
moved the heads.

I think your method will work
and quite well.

I will send for observations for
Iris of all obtainable colours.

Can you lend me a 'Galton'
whistle for some observations
on the sensitiveness of hearing -
hours, also any instruction for
it use will be gratefully observed

by yours obliged
F Smith.

f.32v

A

f.33v

B

f.34c

Nurse A.

Fore Arm measurement 13 inches

Thigh measurement 14½ "

Inch cord from the centre

of the circle

F. S.

6/XII/97

f.34r

POST CARD

THE ADDRESS ONLY TO BE WRITTEN ON THIS SIDE.

Dr Galton F.R.S.

42 Rutland Gate

London

S.W.

THE CROFT,
LITTLE HEATH,
CHARLTON. S.E.

9' December 1897

Dear Mr. Galton

I hope the week after next to take some more photos for you on improved lines; this week I am very busy, & next week I am away at my December Examinations, so will have no opportunity

I see the difficulties in the matter, but not quite so terribly the way to overcome them but: the question I ask most seriously under your direction.

Very many thanks for the subscription, I must write to you again on the subject

f.36

when prepared to start

the observations

with final copies

F Galton.

f.37r

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

4th January 1898

Dear Mr Galton

I am sending for your criticism a paper on "The Effective weight a horse should carry." I shall be very much obliged if you will consider it interesting enough for the Proceedings Royal Society.

I should, however, in the
first instance be glad to
learn from you what the
method employed in bringing
the data reliable.

I must ask you before
I can say I can reply
for more in connection with

f. 38

Yours photographically.

How close to the ear do you use your whistle.

With kind regards

Believe me

Yours truly

F. Smith

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

f.39

9th January 1898

Dear Mr Galton

I hope you are better
& cheerful again. I can quite
understand how desirable it
is to avoid exposure to wet
& damp. Let me say how
I should of course during
the winter, by making the most of

observations for you; this would still leave it open to you to come down: the warm weather.

First I must ~~thank~~ thank you for your kindly criticisms of my letter. I will amend the direction suggested, & ask you to look at it again.

To save you the trouble of writing to Foster I will, if you think it desirable, get it communicated by a Physiologist.

// I have carefully read your paper in 'Nature', & though the conditions are quite simple, I doubt if you will find many breeders of stock who will take the needful trouble to pose the horse with accuracy,

I have the necessary patience.
I think you will probably have to
have a professional photographer, though
my theories of the latter is
that he is almost helpless when
a special feature is required &
effect not wanted. That is one
reason why I dabble with the
art.

I think your method can
be simplified & on the lines
you originally suggested. I will
see what I can do to-morrow

f 41r

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

if he would be favourable.

I shall have a circle over the ribs, another in the median plane of the body, & then as many suggested Remedies - further, the pieces of tube for marking the points shall be so arranged as to represent a unit of measurement.

You will hear from me

on the subject next Lecture,
I hope, then the middle of
the week.

Believe me
Yours Sincerely
F. Smith.

f.42r

11/1/98.

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

Dear Mr. Galton

I should be glad if
the Anthropometric Laboratory
could give satisfactory
results as the principle
is sound & ingenious.

The scale between the fore
leg & in the machine
plane of the body. The small
pieces of chalk on the ground

individuals when the median
plane cuts the ground.

Unfortunately, (as I shall
not notice it until the plate
was developed) the ground
is not horizontal, there is
a slope from back to front,
while the axes of the
diagonal grooves slope

f. 43r

slightly towards the centre. A straight edge placed on the ground over the spot where the horse stands shows that the centre is five eighths of an inch below the ~~horizontal~~ level.

The spots on the body are half inch squares. They may act as a scale when the larger scales are not available.

Here are the measurements

f. 43.

Height 15.3.

From Bracket to ground 33 inches.
(Measured the bracket just where the front foot is placed in the frame)
Calling the Scapula agree A
Post or shoulder B &c.

A to B	=	13 inches
B . C	=	12 "
D . E	=	13 "
F .. G	=	18 1/2 "
G . H	=	19 3/8

J. Smith.

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E.

14. 1. 98

Dear Mr Galton

The measurement B.C. should be 13" & not 12 inches

From A to B. & F to G. are not fixed points so that the length of the limb will alter the distance I should have stated this at first but forgot. You may wonder why I marked these No

f.44v

measurements of which were
useless, but the whole thing
was done in great haste to
save the light, & I was
anxious to put on several
'units of measurement' in different
places, so that you might
ascertain whether any one method
of measurement they could be
adopted.

The measurements of the following
points are correct as far
as I know & can

Height
Distance from front to Bracket
(a measurement I find has
not mentioned)
D to E & G to H. which
are our old fixed points.

With reference G to H. We have
run a little nervous at having
the thing touched, as I could
not find the tube or the skin
but held it over the marked

area. This will account for
any difference between the observed
& the calculated values.

In the whole I think the
measurements promise well
for the future, & are very similar.

I will report them with
greater care & take more time. In
the next photo I will also employ
the rope. - If the rope alone
without any body screen is sufficient
the method is still simpler.

Yours truly
F. Smith.

19/98

THE CROFT,
LITTLE HEATH,
CHARLTON. S.E.

Dear Mr Sallon

I took a photo for you a day or two ago, but the light was bad & the exposure long, so there was some movement. I will take another the first opportunity. The rope did not work well; it was not possible to keep it taut.

The double acute method

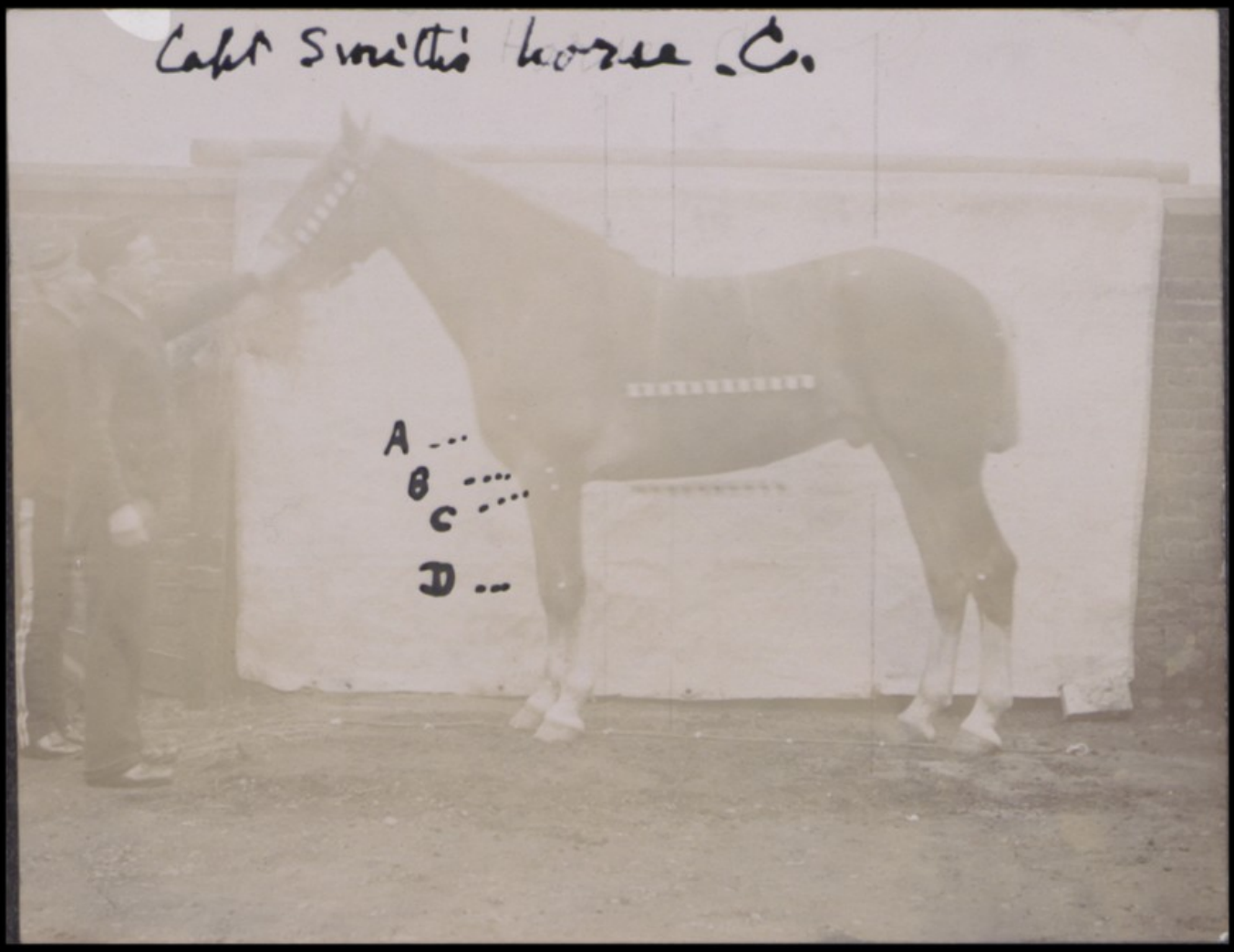
[illegible] to me to be the best
up to the present. Your method
of the four leaf strips would be easy
if some arrangement existed for the
camera (as I think you suggested)
for indicating the verticality of the
book.

There should be no difficulty
in getting the authorities to measure
all those required, but such

height would not be of use until the animals had ceased to grow.

The enclosed has been for days on my writing table. I regret I forgot to send it before.

Yours truly
F Smith.


Capt Smith's horse Co.
A
B
C
D

1847

Double marks on Rope
mark feet.

lbs.

Weight 16.0 3/4 lbs

" at bottom of beck 15 lbs

" at bracket 34 1/4 inches

A to B 8 inches

C to D 18.

Have moved.

THE CROFT,
LITTLE HEATH,
CHARLTON. S.E.

26.1.98

Dear Mr Elton

I am very sorry not to have been able to send you photos on Monday. I made all arrangements to photograph on Sunday, but there was no light, we were going the whole day. I received two very important photos on

Monday which will definitely
decide the value of the latent
& mechanism under method. I
am now only waiting for light
to print them, & this might-
have been managed today, but I
have been away.

I like to think of home
to-morrow; if the latter

f. 50r

cannot be managed, to
prevent delay I will send
them untoned.

I do not care much
for the robe, & there is no
doubt of the difficulty of
getting it in position. I see
according to your diagram
you have dragged the robe
down at each end. My
robe was free, so that it
could be adjusted to the

horse; you will have the great difficulty in adjusting the horse to the rope.

I am very sorry for the unavoidable delay in getting these photos off, and I am most anxious to learn the results.

I had almost given up the notion of reading in my short paper for the Proc. R.S., but if you really think it a suitable publication I should be glad to submit it.

Yours truly

F. Smith.

f. 51r

27. 1. 98.

THE CROFT,
LITTLE HEATH,
CHARLTON. S.E.

Dear Mr Galton:

I have endeavoured to redeem my promise, but am ashamed of what I am sending you. Again I have been away the whole day, & had to leave the printing to them; none of the prints are toned & the one the envelope has not

finished printing, the paper
is still sensitive, the then can
be exposed.

The third photo sent was
taken several days ago. You
will see the rope on the ground;
the horse moved

The pony moved, but both
it & the Hunter are important

pictures, if the measurements
come out correctly you may
perfectly adopt the method.
The medium scale need not
be placed under the bracket. It
can hang from the middle link of
the neck, if considered easier
of access, but there is perhaps
risk of movement.
I find I have kept the
length of the Hunter's Ring of
my Watch, so will send you a

f.52v

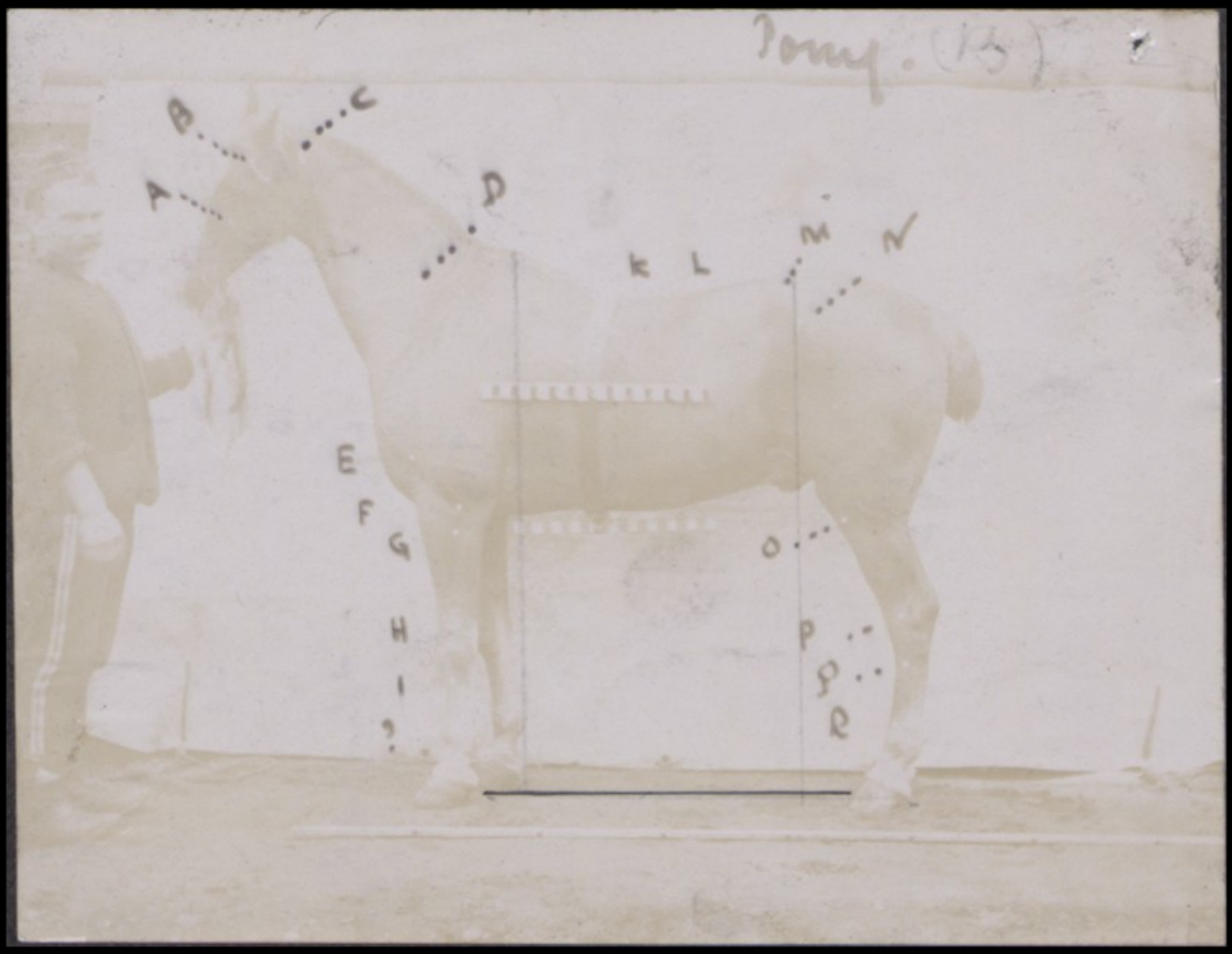
Post Card to morrow morning.

Excellent notion that of framing the hair of celebrated horses. Plaits might also be made of hair of mane & tail, got up tastefully as in the old fashioned locket!

You will be pleased to hear I recd. a medal the other day from the Council of the V-Imperial for my research work.

Yours truly

F Smith


Tony. (13)
A
B
C
D
E
F
G
H
I
?
K
L
M
N
O
P
Q
R

(53)

A.	B	6½ miles
C	D	19 .
E	F	7 .
G	H	10 .
I	J	4½ .
K	L	9½ .
M	N	4¼ .
O	P	12 .
Q	R	6⅜

I doubtful ffs.

Long measured.

f.54r

	Hunter	Pony
Height at withers	15.3 3/4	14.1 3/4
" . hollow of back	15.0	13.0
. . Brisket	33 1/8"	30"
" . Croup	15.3 1/4	14.0 1/8

28/1/98.

F.G.

f.54v

POST CARD

THE ADDRESS ONLY TO BE WRITTEN ON THIS SIDE.

Francis Galton F.R.S.

42 Rutland Gate

London

S.W.

f.55r

THE CROFT,
LITTLE HEATH,
CHARLTON.S.E

4. 2 98

Dear Mr Galton

I am glad to get
your post card just now.
& I feared your attack
had proved more formidable
than you had anticipated.
I trust you are well on

Be sent to recovery.

I have been away from home nearly every day this week, so have had no time for knitting or sewing. I hope to be free with Sunday next week, & which case if I can get any light I will

f.56

represent a properly tone

the photos previously sent

you.

Trusting you are making

good progress, with kind regards,

Believe me,

Yours faithfully

F. Smith.

P.S. I will not trouble you with

the paper for the Proc. R.S. until

you send for it.

Racing N° 8 Title Page (1) F.1 (a)

Carbine

		diff			
Withers (rt of picture)	125.6	2	(1)		
Base line	36.5	89.1	1.12	1.13	88.5
Bracket	85		×	×	
Base	37	48	53.8	53.4	49
Croup	127	53.8			
base	39.5	87.5	98.0	98.3	87
Extreme oblique length	83.0		93.0	93.8	83.0

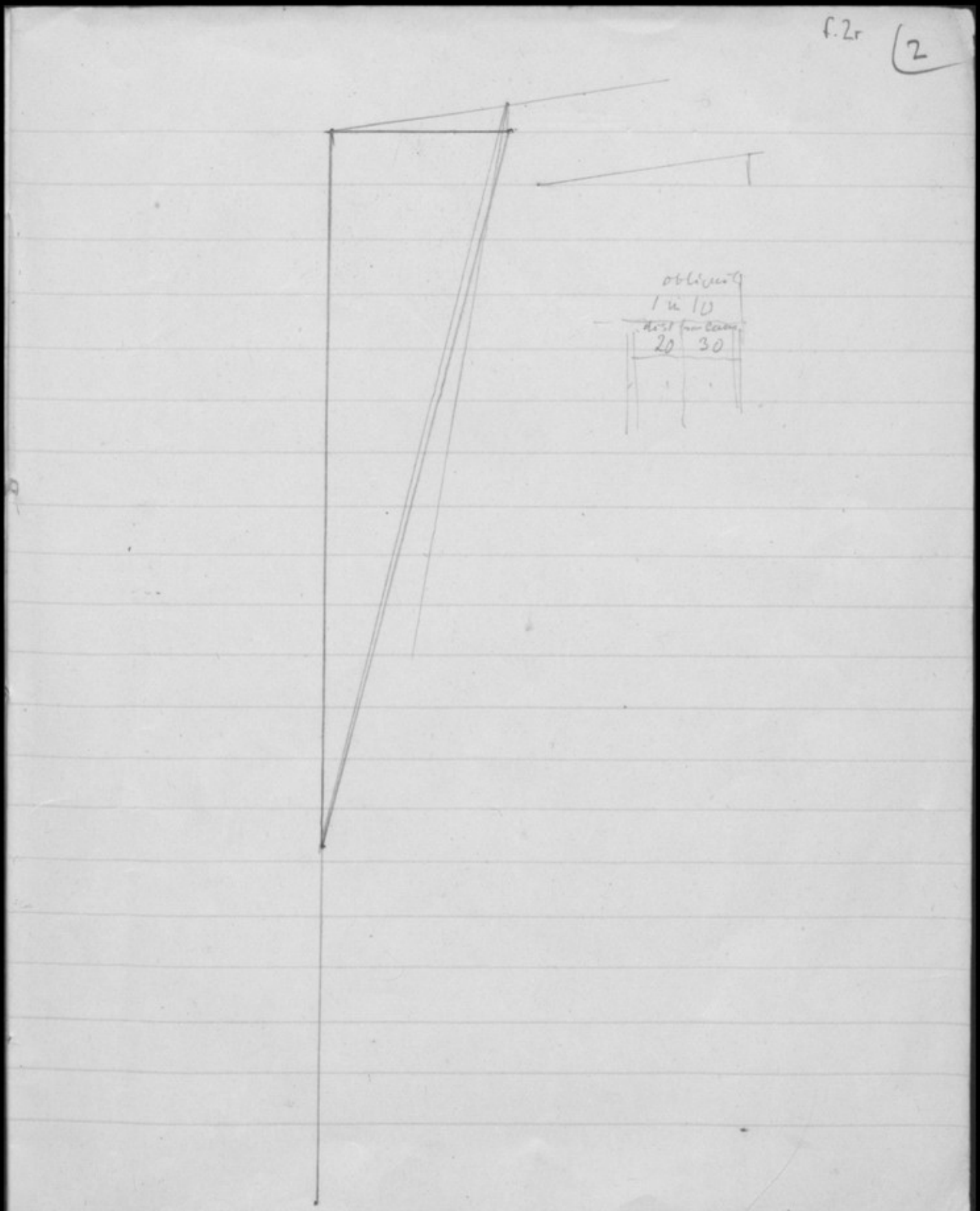
Obliquity 1 in 12.6 · 31 } width of picture
11
42 }
139 width of [illegible]

tan .0794
= tan 4°.33
sec = 1.003

$\frac{11}{139}$ = tan

11/10/12

f.2r (2)



f. 2v

190 / 500 (.0263
380
1200
1140
600

f.35 (b) 3

Racing No 8

	base 124	diff^{a}		Recip	diff
Withers	88.5	80.5	124	124	81.0
Base	8.0			x recip.	
Bris	52.3	44.3	54.9	55.2	44.5
base	8.0				
Croup	90.0	80.5	99.8	100.0	81.0
Base	9.5				
Length	75.5		93.6	94.8	76.0

Obliquity 5 } 5
in 38 10 }
.0263 = tan 1°31' 190.

		diff	(c) recip	Recip	diff
Withers	81.0				73.5
Base	7.0	74.0	136	135	74.0
			x recip	x recip	
Brisket	45.5	38.0	51.7	54.0	40.0
base	7.5			53.3	39.5
Croup	79.0	69.0	93.8		
base	10.0			96.5	71.5
Length	68.0		92.5	91.1	67.5
Obliquity	0 15				
	15				

.079
1 in 12.7 .0787 4°30' 190
Sec 1.0031

$$\begin{array}{r} 118 \\ 26.5 \\ \hline 91.5 \end{array}$$

$$15 \overline{)123} \; 8$$
$$\underline{120}$$
$$3$$

f.4

Page 117

Withers	116.5				diff
base	24.0	92.5	recip 1.08	109	92.0
			× recip	× recip	
Briskit	74.0				
base	19.5	54.5	58.9	54.5	50.0
Croup	117.5				
base	36.5	81.0	87.5	99.7	91.5
Length	87.5		94.5	95.9	88.0
Obliquity	$\frac{16}{31} = \frac{15}{27}$				

1 in 18.2

.0549 = tan 3°.8'
Sec = 1.0015

	Tillefuge a	124 b	124 bottom c	117 d	f.5
real height				63"	
withers ~~100~~	100	100	100	100	
Height of Bracket	53.8	54.9	×51.7	×58.9	
Croup	98.0	99.8	×93.8	87.5	
Length	93.0	93.6	92.5	94.5	
Withers	100	100	100	100	
Brisket	55.4	55.2	53.3	54.5	
Croup	98.3	100.0	96.5	99.7	
Length	93.8	94.0	91.1	95.9	
Obliquity 4°32'	4°.33	1°31	4°.30	3°.8'	

No 5 R 4 Tibben Page (a) f.6 16

Carbine

	height	Diff.	Recip.
Withers	125.0	88.2	113
Base	36.8		
			x Recip
Brisket	84.0	47.0	53.1
Base	37.0		
Croup	126.5	87.0	98.3
Base	39.5		
Length	79.0	79.0	89.3
Obliquity	33		
	41.5		
1 in 16.4	8.5 / 39		
x 5 = 16.4 2.0	.0583		
= 1 in 3.4			
Angle	3° 20′		
Secant	1.002		

No 8 P. 124. Top. (6) f.7 47

Carbine

	height	diff	Recip
Withers	89.0	80.7	124
Base	8.3		
			× recip:
Brisket	53.0	44.5	55.2
Base	8.5		
Croup	89.5	80.3	99.6
Base	9.2		
Length	75.5	75.5	93.6
Obliquity	5 base		
	10		
1 in 36	5 190		
	.0263		
Angle	1° 30′		
secant	1.0003		

No 8 T. 124 Bottom (Carbine) (C) F.8 18

		Diff:	Recip:
Withers	79.0	73.5	136
Base	5.5"		
			× reciprocal
Brisket	45.5"	39.5	53.7
Base	6.0		
Croup	79.0	70.5	95.9
Base	8.5		
Length from Shoulder.	54.0	64.0	87.0
Obliquity	12 / 0 / 12	bad	
	189		
	.0635		
tan⁻¹	3° 38'		

No 8 P. 117 (D.) 19 (9

Carline

	Height	Diff	Recip:
Withers	116.5	92.0	109
Base	24.5		× Recip.
Brisket	74.0	49.5	54.0
Base	24.5		
Croup	117.5	91.0	99.2
Base	26.5		
Length	87.5	87.5	95.4
Obliquity	31/16		
1 = 18.2	15 273		
	.055		
Angle	3° 9'		

10

Comparison

	A	B	C	D	Mean
Withers	100	100	100	100	100.0
Brisket	53.1 (0.9)	55.2 (1.2)	53.7 (0.3)	54.0 (0.0)	54.0
Croup	98.3 (0.1)	99.6 (1.4)	95.9 (2.3)	99.2 (1.0)	98.2
Length	89.3 (2.0)	93.6 (2.3)	87.0 (4.3)	95.4 (4.1)	91.3
Obliquity	3°.20'	1°.30'	3°.38'	3°.9	

Errors, assuming horses height = 16 hands = 64"

					Mean Error
Brisket	0.58	0.77	0.19	0,00	
Croup	0.06	0.90	1.50	0.64	
Length	1.28	1.47	2.69	2.62	

f. 11

11

Actual

	Perspective	Height in 50" distance of camera at 240 ft	at 30 feet	angle	secant	Proj. length	actual
a	1 in 16.4	1 in 3.3	0.303	16° 52′	1·05	89.3	93.8
b	1 in 36.0	1 in 7.2	0·139	7° 55′	1·01	93.6	94.5
c	1 in 15.8	1 in 3.2	0·313	17° 23′	1·05	87.0	91.4
d	1 in 18.2	1 in 3.4	0·295	16° 26′	1.04	95.4	99.2

18 9
94.7

Old error

2 0
2.3
4·3
4·1
4 | 12.7
3.2

	from 64"
Errors 0·9	0·58
0.2	0·13
3.3	2.10
4.5	2.90
4 | 8 9	5·71
2.2	1·43

Jan 24-98

Donovan. 8.121

(A) f.12 (12

		Diff	Recip
Withers	106.0		1.32
Base	30.0	76.0	132
Croup	107.5		97.5
Base	30.0	74.5	90.39
Brisket	70.5	40.5	53.0
Base	30.0		
Length	72.0	72.0	95.04
Obliquity	30 28.5		

Donovan. q. 134 (B) f.13 13

		Diff	Recip
Withers	93.0		
Base	45.0	47.0	2.13
Brisket	71.0	25.0	53.25
Base	46.0		
Croup	93.0	47.0	100.11
Base	46.0		
Length	46.0	46.0	98.0
Obliquity	45.5 46.5		

f. 14r (14

Comparison

	A.	B	A	B
Withers	100	100	64'	64'
Brisket	53.0	53.25	33.9	34.1
Croup	97.5	100.0	62.4	64.0
Length	95.0	98.0	60.8	62.7

Bracket FB 52.0 52.2

FJ 54.1 53.3

Crank FB

FJ 42.3 42.3

Fly Donovan / 121 Racing

	A	Diff. (A)	Rec.	B	Diff. (B)	Reci
Withers	104.0			91.5		
base	28.0	76.0	1.32	46.3	45.2	2.22
						x Recip.
Brisket	69.0			71.3		
base	28.0	41.0	54.1	46.3	25.0	53.3
Croup	103.0			92.0		
base	28.5	74.5	98.3	45.0	47.0	104.3
Length	72.0	72.0	95.0	46.05	46.5	103.2 91.0

	A	B	A'	B
			in hours of 64"	
Withers	100	100	64	64
Brisket	54.1	53.3	34.6	34.1
Croup	98.3	104.3	62.9	66.6
Length	95.0	103.2	60.1	65.9

Donovan FB - FG

		Differenz Ct. mem
Brisbane FB	33.9	.3
	34.1	.1
FG	34.6	.4
	34.1	.1
	16 7 34.1/2	
Crohyn FB	62.4	1.6
	64.0	0.0
FG	62.9	1.1
	66.6	2.6
	15 9 64.0	
Leyhe FB	60.8	1.6
	62.7	.3
FG	60.1	2.3
	65.9	3.5
	9 5 62.4	

Sir Visto II 22.

f.17 XI 166 (17)

	(A)	Diff	Recip	(B)	Diff	Recip
Withers	135.0			114.5		
Base	33.0	102.0	.981	18.0	96.5	1.04
			× Recip			× Recip
Brisket	88.0	54.7	53.7	71.0	53.0	55.1
Base	33.3			18.0		
Croup	136.8	101.3	99.3	116.5	96.5	100
Base	35.5			20.0		
Length between verticals	99.0	97.0	95.2	94.5	94.0	97.7
" greatest	98.0	98.0	96.1	95.0	95.0	98.8
Obliquity	39.5					
	27.0					
	12.5 in 272.					

Comparison.

	A	B	A	B	Error
Withers	100.0	100.0	64′	64′	0
Brisket	53.7	55.1	34.4	35.2	.8
Croup	99.3	100.0	63.5	64′.0	.5
Length between verticals	95.2	97.7	60.9	62.5	1.6
" greatest	96.1	98.8	61.5	63.2	1.7

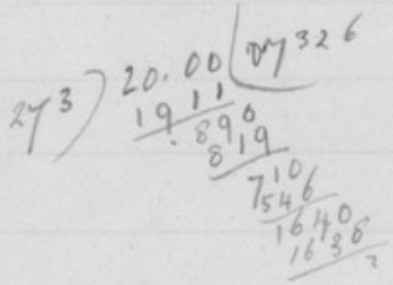
Solaro. XI 175.

A.

Withers	110.0
Base	23.5
Brisket	71.0
Base	24.0
Croup	109.0
Base	25.0
Length a vertical (1) line	79
(2) Extreme	81

B

Same Photo



V 71. (A) Horizel II by F.B. (B) C.H. p.242

		Diff.	Recip.		Diff.	Recip.
Withers	123.5	95.5	1.05	109.0	58.0	1.73
Base	28.0			51.0		
Brisket	79.0	51.0	53.5	83.0	32.0	55.4
Base	28.0			51.0		
Croup	122.2	91.2	95.8	109.0	58.0	100.0
Base	31.0			51.0		
Length (1)	83.0	83.0				
(2)	85.0	85.0	89.2	56.0	56.0	96.9
Obliquity	20 in 273					
=	.0732					

Comparison in inches.

	(A)	(B)	Error
Withers	64.0	64.0	0
Brisket	32.2	35.4	1.2
Croup	61.3	64.0	2.7
Length	57.0	62.0	5.0

Hourgel II by 79.

V 7' (A) (B)

		Diff.			Diff.	
Withers	124.0	95.5	1.04	56.7	56.7	1.77
Base	28.5			0		
			×Recip			×Recip
Brisket	79.0	51.0	53.0	31.5	31.5	55.8
Base	28.0			0		
			103.0			
Croup	122.0	91.0	94.6	57.3	57.3	101.4
Base	31.0			0.		
Length	85.0	85.0	88.4	56.0	56.0	99.1

Final Hourgel II

	7A			7B	
	A.	B		A	B.
Withers	64.0	64.0	0		
Brisket	33.9	35.7	1.8		
Croup	66.0	65.0	1.0		
Length	59.4	63.4	4.0		

Allowing four times the perspective obliquity.

Carbine

	A	B	C	D	Mean
Withers	64.0	64.0	64.0	64.0	64.0
Brisket	33.9	35.3	34.3	34.6	34.5
Croup	62.9	63.7	61.3	63.4	62.6
Length	57.1	59.9	55.6	61.0	58.4

A = N° VIII Title Page | C = N° VIII P. 124²
B = N° VIII P. 124. | D = N° VIII P. 117.

FB. **Donovan** FG.

	A	B	Error	A	B	Error
Withers	64.0	64.0	0.0	64.0	64.0	0.0
Brisket	33.9	34.1	0.2	34.6	34.1	0.5
Croup	62.4	64.0	1.6	62.9	66.6	3.7
Length	60.8	62.7	1.9	60.1	65.9	5.8

A = N° VIII P. 121.
B = N° IX P. 134

Sir Visto

	A	B.	Error
Withers	64.0	64.0	0.0
Brisket	34.4	35.2	0.8
Croup	63.5	64.0	0.5
Length	60.9	62.5	1.6

A = N° II 22
B = N° XI 166

Horizel II

	By 78. A	By 78. B	By 78. Error	By 79.* A	By 79.* B	By 79.* Error	
Withers	64.0	64.0	0.0	64.0	64.0	0.0	*medicated
Brisket	34.2	35.4	1.2	33.9	35.7	1.8	**allowing
Croup	61.3	64.0	2.7	66.0	65.0	1.0	4 times per-
Length	57.0	62.0	5.0	59.4**	63.4	4.0	spective ob[illegible]

A = Nº V P. 71

B = Capt. H. P. 242

Persimmon

	A Heights	A Diff	A Recip	B Heights	B Diff	B Recip
Withers	121.8				57.0	1.76
Base	19.5	102.3	.981			
			x Recip			x Recip
Brisket	77.0				31.5	55.4
Base	20.0	57.0	55.9			
Croup	121.8				57.0	100.0
Base	24.0	97.8	95.9 [103]			
Length	87.0	88.0	86.2 [92.2]		57.0	100.0
Obliquity	25.5 in 272				0	

A = N° V. 76

B = Capt H. p. 242

.094 × 4 = .376 = $\tan^{-1}$ 20° 36

Sec = 1.07

1.07 × 95.9 = 102.6

< 85.3 = 91.2

Withers = 64.0

	A	B	Diff
Brisket	35.7	35.4	0.3
Croup	65.0	64.0	1.0
Length	59.0	64.0	5.0

St Simon

	A Heights	A Diff.	A Recip.	B Heights	B Diff.	B Recip.
Withers	119.0	85.5	1.17		57.0	1.76
Base	33.5		xrecip			xrecip
Brisket	79.0	45.5	53.2		30.0	52.8
Base	33.5					
Croup	118.0	85.0	99.7		56.0	98.6
Base	33.0					
Length	82.5	82.5	96.5		54.5	95.9
Obliquity	3.5 in	272				

A = N° VIII p. 120
B = Capt. A. p. 128

Comparison in inches.

	A	B	Diff.
Withers	64.0	64.0	0.0
Brisket	34.0	33.7	0.3
Croup	63.6	63.1	0.5
Length	61.7	61.3	0.4

Take the measured height at withers as the scale

55.1 : 63.7 :: m : x $x = \frac{63.7}{55.1} \times m = r \cdot m$ $r = 1.15$ (A) $1.15 - \delta$ (B)

Photo mean B × 1.16	Diff from B	Photo mean A × 1.15	measured on horse	Diff from A
63.9	−0.2	63.3	63.7	+0.4
33.2	−0.1	32.9	33.1	+0.2
63.3	−0.1	62.8	63.2	+0.4
61.1	−1.1	60.6	60.0	−0.6
11.6	+0.2	11.5	11.8	+0.3
8.2	+0.5	8.2	8.5	+0.3
12.3	+0.3	12.2	12.0	−0.2
5.7	+0.2	5.6	5.5	−0.1
10.6	−0.6	10.5	10.0	−0.5
4.8	+0.9	4.7	5.7	+1.0
14.5	−1.0	14.4	13.5	−0.5
7.5	−0.3	7.5	7.1	−0.4

Capt. Smith's hunter (A) Feb 11/98 f.25 (25)

Scale on Side 20" measure 18.1 mm (1)

along Belly " " 17.8 mm (2) ×

$20'' : 18.1^{m} :: x'' : m_1 \quad x_1'' = \frac{20}{18.1} \times m_1 = 1.10 = r_1 \times m_1$

$17.8 : m_2 \quad x_2'' = \frac{20}{17.8} \times m_2 = 1.12 = r_2 \times m_2$

	in mm on Photo	(1) × 1.10	(2) × 1.12	actually measured on horse	
height withers	55.1	60.6	61.7	63.7"	+ 2.0
at brisket	28.6	31.5	32.0	33.1	+ 1.1
Croup	54.6	60.1	61.2	63.2	+ 2.0
Hollow/Back	52.7	58.0	59.0	60.0	+ 1.0
AB	10.0	11.0	11.2	11.8	+ 0.6
CD	7.1	7.8	8.0	8.5	+ 0.5
EF	10.6	11.7	11.9	12.0	+ 0.1
GH	4.9	5.4	5.5	5.5	—
IJ	9.1	10.0	10.2	10.0	− 0.2
KL (around back)	4.1	4.5	4.6	5.7	+ 1.1
MN	12.5	13.8	14.0	13.5	− 0.5
OP	6.5	7.2	7.3	7.1	− 0.2

Capt Smith's Pony (B)

Scale on side 12" measures 10 mm (1)

also along belly 12" " 10 mm (2) x

10 mm : 12" :: m : x" $x = \frac{12}{10} m = 1.2 m$

	(1) Measured in mm on photo	(2) ×1.2	measured in inches on horse	Diffᵉ
Height at withers	47.5	57.0	57.7	+0.7
Hollow of back	43.5	52.2	52.0	-0.2
Bracket	24.7	29.6	30.0	+0.4
Croup	46.0	55.2	56.1	+0.9
A B ?	5.5	6.6	6.5	-0.1
C D ?	15.5	18.6	19.0	+0.4
E F	6.0	7.2	7.0	-0.2
G H = double shoulder	8.5	10.2	10.0	-0.2
I J = dropped off	—	—	4.5	—
K L	7.9	9.5	9.5	0.0
M N on curve of back	x 3.0	3.6	4.2	+0.6
O P	9.7	11.6	12.0	+0.4
Q R	5.3	6.4	6.7	+0.3

(1) $36'' : 24.5 :: x : M \qquad x = \frac{36}{24.5} M = 1.47\ M$

(2) $\frac{19}{13} . M = 1.46\ M$

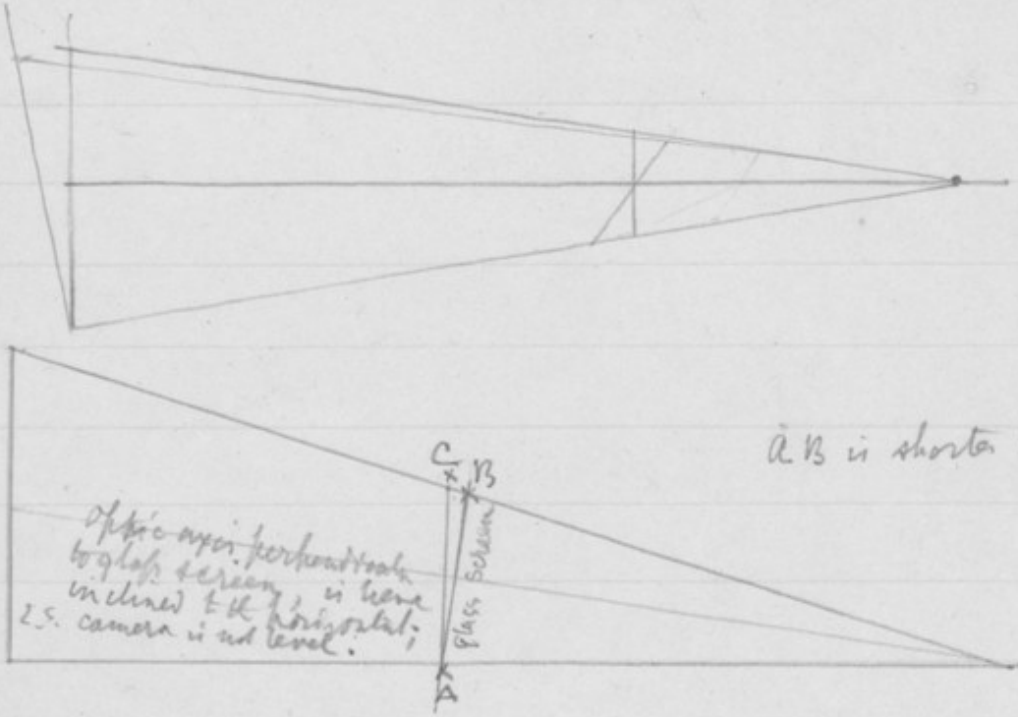
(3) $\frac{21}{15} . M = 1.40\ M$

Capt Smith's Horse C

f.27 (27)

Scale on ground between feet 36" measures 24.5" mm (1) ×
" along belly 19 " 13 mm (2)
" on side 21" " 15" mm (3)

	measured on photo in mm	(1) × 1.47	(2) × 1.46	(3) 1.40	measured on Horse in inches	diff
Height withers	42.8	62.9	62.5	59.9	64.7	+1.8
Hollow/back	40.5	59.5	59.1	56.7	60.0	+0.5
of Bucket	22.1	32.5	32.3	30.9	34.2	+1.7
A-B	5.6	8.2	8.2	7.8	8.0	-0.2
C-D	8.7	12.8	12.7	12.2	13.0	-0.2


C
B
A
Glass Screen
Optic axis perpendicular to glass screen, is here inclined to the horizontal; i.e. camera is not level.
AB is shorter than AC

Collins horse ~~No (1)~~

	Straight		Oblique 1 in 5.5			
Height of Cam.	3'7" 4'2"		3'7"	4'2"	4'9"	5'3"
	No (1)	No (2)	No (3)	No (4)	No (5)	No (6)
Height at withers	50.2	50.2	49.5 (mm)	49.5	49.1	48.8
— brisket	26.2	26.2	26.0	26.0	26.0	25.1
— Croup	50.2	50.2	49.5	49.5	48.5	48.2
Length diagonally	53.5	53.5	52.8	52.5	52.5	51.6

Scale on belly 18" measures 13½mm
× 1.33 (really 1.39)

	in inches					
	No (1)	(2)	(3)	(4)	(5)	(6)
Withers	65.3	65.3	64.4	64.4	63.8	63.4
Brisket	34.1	34.1	33.7	33.7	33.7	32.6
Croup	65.3	65.3	64.4	64.4	63.1	62.7
Diag. Length	69.6	69.6	68.6	68.3	68.3	67.1

Scale on ground 65."5* measures 49mm (1.33) × 1.3

	(1)	(2)	(3)	(4)	(5)	(6)
Withers						
Brisket						
Croup						
Diag. Length						

$13 : 18 :: M_1 : x_1 \qquad x_1 = \frac{18}{13} M_1 = 1.39 M_1$

$49 : 65.5 :: M_2 : x_2 \qquad x_2 = \frac{65.5}{49} M_2 = 1.34 M_2$

Collins' Horse

Horse square & Camera

Height of Camera

	3' 7"	4' 2				
	(1)	(2)	(1) 1.39	x 1.34	2 x 1.39	x 1.34
	mm	mm				
Height at withers	50.5	50.5	70.2	67.7	70.2	67.7
" hollow of back	47.3	47.2	65.7	63.4	65.6	63.4
" Brisket	26.3	26.6	36.6	35.2	36.9	35.6
" Croup	49.8	50.0	69.2	66.7	69.5	67.0
Extreme diag: length	53.2	53.2	73.9	71.3	73.9	71.3
Length between verticals	52.5	52.9	73.0	70.4	73.5	70.9
Scale along belly	13.0	13.0	.764			
Distance between nearest edges of bricks	49.0	49.0	.192			

	inches
Scale along belly	18"
Distance between nearest edges of bricks	65.5

Collins' horse

	1 3'-7"	2 4'-2"	3 3'-7"	4 4'-2"	5 4'-9"	6 5'-3"	Scale
Between White marks	49.0	49.0	49".1	49".1	49".0	48.7	1.35
Side of stone slab	—	—	22".2	22.7	22.3	22.0	
Dist. Beyond normal line —							
of: Mid fore-feet	~~-2"(?)~~	~~-2"~~	+4"	+6"	+2	+3	
Mid hind-feet	0	~~-3"?~~	+8."	+8"	+12	+12	
~~Withers above normal line~~	~~49".7~~	~~50".6~~	~~50".3~~	49.2			
~~Croup " "~~	~~50".0~~	~~50".3~~	~~51.0~~				
dist from Camera	240"	240"	{244. 248}	{246 248	{242 252	{243 252	
withers above mid foot line	49".7	50".6	49.8	49".8	49".7	49".0	
Croup " " "	50".0	50".3	50.0	50.0	49.3	49.0	
Refer to 1.35 withers	67.0	68.1	67.2	67.2	67.0	66.2	
Croup	67.5	68.0	67.5	67.5	66.5	66 2	

Corrected for dist fr Camera

Collins Horse

	Withers	Rump		Rump/withers	greatest Diff.
1.	51°	51.1	square to line of sight	998	× about 2% in 64" Diff = 1 1/4"
2.	50.8	51.4		101	
3.	50°	50.9	oblique	102	
4.	50.5	51.1		101	
5.	50°	50.8		102	
6.	49.5	50.6		102	

2% in 64" = 1.28"

The horse was photoed at 20 feet distance

f.1

Horse Measurements & results

Royal Veterinary College

Camden Town

N.W.

Dec 23/95

f.2

25 pp

5 students
measurements
of noises

/ 53

Sheet No. 1

Date. December 16th 95

Name of Student: Rich.d B. Wood

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext angle of Ilium	**Horse I** A. 14hh B. 5ft C. 1ft 10½in D. 3ft 11½in
Horse II A. 15hh 3½in B. 3ft 2½in C. 1ft 9½in D. 3ft 3½in	**Horse III** A. 15hh 2½in B. 3ft 2½in C. 1ft 9½in D. 3ft 3¼in
Horse IV A. 15hh ¾in B. 2ft 11½in C. D. 3ft 2½in	**Horse V** A. 15hh 3¾in B. 3ft 2¼in C. 1ft 9½ D. 3ft 6¾in

2 f.4

Paper N° 2

Date. December 16/95

Name of Student. Richd. B. Woods

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	**Horse I** A. 14 hds — B. 3 ft. 6 in C. 1 ft. 10 in D. 3 ft. 11½ in
Horse II A. 15 hds 3 in B. 3 ft 2½ in C. 1 ft 9 in D. 3 ft. 3½ in	**Horse III** A 15 hds 2½ in B. 3 ft 3½ in C. 1 ft. 10 in D. 3 ft 4½ in
Horse IV A. 15 hds 1 B. 3 ft 1¾ in C. 1 ft 8½ in D. 3 ft. 4 in	**Horse V** A 15 hds 3½ B. 3 ft. 3 in C 1 ft 8½ in D. 3 ft 5½ in

3 f.5

Paper No 1

Date. Decb 17th 1895

Name of Student. R B Wood

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext angle of Ilium	Horse I A. 17 hands B. 3 ft 9½ inch. C. 1 ft 9½ in D. 3 ft 11 in
Horse II A. 15 hands 2 inches B. 2 ft 1 inch. C. 1 ft 8 inch. D. 3 ft 2½ in	Horse III A 15 hands 3 hands B. 2 ft 2½ inches C. 1 ft 8½ — D. 3 ft ½ inches.
Horse IV A. 15 hands ½ inch. B. 2 ft ½ inch. C. 1 ft 8½ inches. D. 3 ft 2 inches	Horse V A 15 hds 3 ¼ inch B. 2 ft 9 inches C 1 ft 9½ — D. 3 ft 6 inches

N° 2

Date. December 17th 1895

Name of Student. R P Wood —

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	Horse I A. 14 hands B. 2 ft 3½ inches. C. 1 ft 9½ — D. 3 ft 11 —
Horse II A. 15 hds 3 inches B. 3 ft 2½ in C. 1 ft 9 in D. 3 ft 9 —	Horse III A 15 hands 2½ ins B. 3 ft 1 inches C. 1 ft 8 — D. 3 ft 4½ —
Horse IV A. 15 hands ½ inch B. 3 ft 1 inches. C. 1 ft. 7½ inches. D. 3 ft. 2½ —	Horse V A 15 hands 2½ ins. B. 3 ft 1½ inches. C 1 ft 9 — D. 3 ft 7½ —

5 57

N° 3

Date. December 17th 95

Name of Student. R B Wood —

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	Horse I A. 14 hands B. 3 ft 4½ inches. C. 1 ft 10 — D. 3 ft 11 —
Horse II A. 15 hands 3 inches B. 3 ft 4½ inch C. 1 ft 9 — D. 3 ft 3 —	Horse III A 15 hands 2¾ inch B. 3 ft 3 inches C. 1 ft 9 — D. 3 ft 6 —
Horse IV A. 15 hands ½ inch B. 3 ft 1½ inch. C. 1 ft 7½ — D. 3 ft 3 —	Horse V A 15 hands 2½ inch B. 3 ft. 5 inches C 1 ft. 9½ — D. 3 ft 6½ —

Paper 3 [illegible] (6

Date. Dec 16th 1895

Name of Student. C. E. Wells

A. Height at Withers
B. Olecranon to the Ground
C. Pisiform to the Ground
D. Spine of Scapula to Ext. angle of Ilium

Horse I

A. 16 Hands 3 3/4 inches
B. 3 feet 5 1/2 inches
C. 1 foot 11 1/2 inches
D. 4 feet

Horse II

A. 15 Hands 3 inches
B. 3 feet 3 3/4 inches
C. 1 foot 10 inches
D. 3 feet 2 inches

Horse III

A 15 Hands 2 inches
B. 3 feet 2 3/4 inch
C. 1 foot 9 1/2 inches
D. 3 feet 6 1/2 inches

Horse IV

A. 15 Hands
B. 3 feet 1 1/4 inches
C. 1 foot 8 1/2 inches
D. 3 feet 3 1/2 inches

Horse V

A 15 Hands 2 1/2 inches
B. 3 feet 3 inches
C 1 foot 10 inches
D. 3 feet 5 inches

Paper 2 f.9 (7)

Date. Dec 16th 1895

Name of Student. C. E. Wells.

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	**Horse I** A. 17 Hands. B. 3 feet 6 ½ inches. C. 1 foot 11½ inches. D. 3 feet 9½ inches.
Horse II A. 15 Hands 3 inches. B. 3 feet 3 ¾ inches. C. 1 foot 9½ inches. D. 3 feet 2 inches.	**Horse III** A 15 Hands 2 inches. B. 3 feet 4 inches. C. 1 foot 9½ inches. D. 3 feet 3 ¾ inches.
Horse IV A. 15 Hands ½ inch B. 3 feet – ¾ inch. C. 1 foot 9 inches. D. 3 feet 3 inches.	**Horse V** A 15 hands 3½ in B. 3 feet 3½ inches. C 1 foot 9½ inches. D. 3 feet 6 inches.

Paper I f.10 (8)

Date. Dec: 16th 1895

Name of Student. C. E. Wells

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	**Horse I** A. 17 hands B. 3 ft 5½ in C. 2 feet D. 3 feet 10 inches
Horse II A. 15 " 2¾ B. 3 ft 2¾ inches C. 1 ft 9½ in D. 3 ft 2 in	**Horse III** A 15 hands 2 in. B. 3 feet 1¾ in C. 1 foot 9½ in D. 3 feet 5 in
Horse IV A. 15 Hands 1 in B. 3 feet 1 inch C. 1 foot 8½ inches D. 3 feet 3½ inches	**Horse V** A 15 Hands 3½ in B. 3 feet 4 in C 1 foot 10½ in D. 3 feet 6 inches

Paper 3 F.II 9

Date. Dec 17th 1893

Name of Student. C. E. Wells

A. Height at Withers
B. Olecranon to the Ground
C. Pisiform to the Ground
D. Spine of Scapula to Ext. angle of Ilium

Horse I
A. 17 Hands
B. 3 feet 6 inches
C. 1 foot 11¼ inches
D. 3 feet 10 ¾ inches

Horse II
A. 15 Hands 2½ in
B. 3 feet 3 inches
C. 1 foot 9½ inches
D. 3 feet 4 inches

Horse III
A 15 Hands 2½ inches
B. 3 feet 2½ inches
C. 1 foot 9¼ inches
D. 3 feet 5¼ inches

Horse IV
A. 15 Hands – ½ in
B. 3 feet 2 inches
C. 1 foot 9 inches
D. 3 feet 1½ inches

Horse V
A 15 Hands 3½ inches
B. 3 feet 3 inches
C 1 foot 10 inches
D. 3 feet 6½ inches

F.12 (10)

Paper 4

Date. Dec. 14th 1895

Name of Student. C. E. Wills

A. Height at Withers
B. Olecranon to the Ground
C. Pisiform to the Ground
D. Spine of Scapula to Ext. angle of Ilium

Horse I

A. 14 Hands
B. 3 feet 5 3/4 inches
C. 1 foot 11 1/4 inches
D. 3 feet 11 1/2 inches

Horse II

A. 15 Hands 3 in
B. 3 feet 3 inches
C. 1 foot 9 1/2 inches
D. 3 feet 3 3/4 inches

Horse III

A 15 Hands 2 1/2 inches
B. 3 feet 3 inches
C. 1 foot 9 inches
D. 3 feet 5 inches

Horse IV

A. 15 Hands 1 in
B. 3 feet 2 inches
C. 1 foot 9 inches
D. 3 feet 3 1/2 inches

Horse V

A 15 Hands 3 1/2 inches
B. 3 feet 3 1/2 inches
C 1 foot 9 1/4 inches
D. 3 feet 6 3/4 inches

Date. Dec 16th 1895

Name of Student. H. A. Bull

A. Height at Withers
B. Olecranon to the Ground
C. Pisiform to the Ground
D. Spine of Scapula to Ext. angle of Ilium

Horse I

A. 17 hands ¼ ins
B. 3 ft 4 ins
C. 1 ft 11 ins
D. 3 ft 10½ ins

Horse II

A. 15 hands 3 ins
B. 3 ft 2¾ ins
C. 1 ft 10 ins
D. 3 ft 5 ins

Horse III

A 15 hands 2¼ ins
B. 3 ft. 3 "
C. 1 ft 9½ "
D. 3 ft 6 "

Horse IV

A. 15 hands 1 ins
B. 3 ft. 1 in
C. 1 ft 7½ "
D. 3 ft 4½ "

Horse V

A 15 hds 3 in
B. 3 ft. 1½ in
C 1 ft. 10 "
D. 3 ft 6 "

Date. Dec 15th 1895

Name of Student. W. A. Bull.

A. Height at Withers
B. Olecranon to the Ground
C. Pisiform to the Ground
D. Spine of Scapula to Ext. angle of Ilium

Horse I

A. 3.16 Hands 3 1/4 ins
B. 3 ft 5 ins
C. 1 ft 10 1/2 ins
D. 3 ft 11 ins

Horse II

A. 15 Hands 3 1/2 ins
B. 3 ft 3 ins
C. 1 ft 9 ins
D. 3 ft 3 ins

Horse III

A. 15 Hands 2 ins
B. 3 ft 3 ins
C. 1 ft 9 1/2 ins
D. 3 ft 4 3/4 ins

Horse IV

A. 15 Hands 1 ins
B. 3 ft 1 3/4 ins
C. 1 ft 8 1/2 ins
D. 3 ft 6 ins

Horse V

A. 15 Hands 2 1/2 ins
B. 3 ft 4 1/2 ins
C. 1 ft 9 1/2 ins
D. 3 ft 4 ins

Date. Dec 16th 1895

Name of Student. H. A. Bull

A. Height at Withers
B. Olecranon to the Ground
C. Pisiform to the Ground
D. Spine of Scapula to Ext. angle of Ilium

Horse I

A. 14 Hands ~~1 Inches~~
B. 3 feet 3 3/4 Inches
C. 1 " 10 1/2 "
D. 3 " 11 1/2 "

Horse II

A. 15 Hands 3 Inches
B. 3 feet 3 1/2 "
C. 1 " 9 "
D. 3 " 2 "

Horse III

A 15 Hands 2 Inches
B. 3 feet 3 "
C. 1 " 9 "
D. 3 " 6 "

Horse IV

A. 15 Hands 1 Inch.
B. 3 feet 1 "
C. 1 " 8 1/2 "
D. 3 " 4 1/2 "

Horse V

A 15 Hands 2 1/2 inches
B. 3 ft 2 1/2 inches
C 1 foot 10 inches
D. 3 feet 6 1/4 inches

Date. Oct 17th 1895

Name of Student. H. a. Bull.

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	**Horse I** A. 17 hands B. 3ft 6 ins C. 1ft 11¼- D. 4ft
Horse II A. 15-2½ B. 3ft 2½ in C. 1ft 9¾ in D. 3 ft 4½ in	**Horse III** A 15-2 B. 3ft 3in C. 1- 9½- D. 3- 7-
Horse IV A. 15 hands B. 3ft 1in C. 1- 8½- D. 3- 3½-	**Horse V** A 15 hands 2¾ B. 3ft 2½- C 1- 10- D. 3- 7-

f17 15

Date. dec 17th 1895

Name of Student. H. A. Bull

A. Height at Withers
B. Olecranon to the Ground
C. Pisiform to the Ground
D. Spine of Scapula to Ext. angle of Ilium

Horse I
A. 17 hands
B. 3 ft 5 in
C. 1 — 11½ —
D. 3 — 8¾ —

Horse II
A. 15 hands 2 in
B. 3 ft 2½ in
C. 1 — 9½ —
D. 3 — 5 —

Horse III
A ~~15 — 2¼~~ 15 — 2¼
B. 3 ft — 3 in
C. 1 — 9 —
D. 3 — 7 —

Horse IV
A. 15 hands
B. 3 ft. 1¼ in
C. 1 — 8½ —
D. 3 — 5 —

Horse V
A 15 — 2
B. 3 ft — 2 in
C 1 — 10 —
D. 3 — 8 —

Date, Dec: 16th 1895

Name of Student. Arthur H Berry.

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext angle of Ilium	Horse I A. 16.3½ B. 3ft 6 C. 1ft 11½ D. 4ft 3¼
Horse II A. 15.3½ B. 3ft 4 C. 1ft 10 D. 3ft 6	Horse III A 15.2¾ B. 3ft 3¼ C. 1ft 10 D. 3ft 5½
Horse IV A. 15.1 B. 3ft 1 C. 1ft 8½ D. 3ft 4	Horse V A 15.3 B. 3ft 3¼ C 1ft 9 D. 3ft 7¼

Date. December 16th 1895

Name of Student. Arthur H Berry

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	Horse I A. 16.3 3/4 B. 3ft 7 1/2 C. 1ft 10 D. 3ft 10
Horse II A. 15.3 B. 3ft 4 1/2 C. 1ft 10 D. 3ft 5	Horse III A 15.2 1/2 B. 3ft 3 3/4 C. 1ft 9 D. 3ft 5 1/2
Horse IV A. 15.1 B. 3ft 1 1/2 C. 1ft 7 3/4 D. 3ft 2	Horse V A 15.3 B. 3ft 4 C ~~1ft 10 1/4~~ 1ft 10 1/2 D. 3ft 8 3/4

f.20 18

Date. Dec 17th 1895

Name of Student. Clifton H Berry

A. Height at Withers
B. Olecranon to the Ground
C. Pisiform to the Ground
D. Spine of Scapula to Ext. angle of Ilium

Horse I

A. 15 hands 3 3/4 in.
B. 3 ft. 7 1/2 in.
C. 1 ft. 11 1/4 inch.
D. 3 ft. 11 in.

Horse II

A. 15 hands 2 1/2 inches.
B. 3 ft 4 in
C. 1 ft 10 1/2 in.
D. 3 ft 4 1/4 in.

Horse III

A. 15 hands 2 in.
B. 3 ft 4 1/2 in.
C. 1 ft 10 1/4 in.
D. 3 ft 4 in.

Horse IV

A. 15 hands 1/2 inch.
B. 3 ft 2 1/2 in.
C. 1 ft 8 1/2 in.
D. 3 ft 4 in.

Horse V

A. 15 hands 3 in.
B. 3 ft 2 1/2 in.
C. 1 ft 9 in.
D. 3 ft 6 in.

Date. Dec: 17th 1895

Name of Student. Arthur H Berry

A. Height at Withers
B. Olecranon to the Ground
C. Pisiform to the Ground
D. Spine of Scapula to Ext angle of Ilium

Horse I

A. 16 hands 3 3/4 in
B. 3 ft 7 in
C. 1 ft 10 1/2 in
D. 3 feet 10 3/4 in.

Horse II

A. 15 hands 2 1/2 inches
B. 3 ft 4 1/2 in
C. 1 ft 9 3/4 in
D. 3 feet 5 inches

Horse III

A 15 hands 2 inches
B. 3 ft 4 1/2
C. 1 ft 10 1/2
D. 3 ft 6 1/2 in

Horse IV

A. 15 hands 1/2 inch
B. 3 ft 3 in
C. 1 ft 9 1/2 in
D. 3 ft 4 1/2 in

Horse V

A 15 hand 3 inches
B. 3 ft 3 in
C 1 ft 9 in
D. 3 ft 7 in.

Date. Dec 16th 1895

Name of Student. Arthur H Burrage.

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	Horse I A. 16.3 3/4 B. 3ft 6 3/4 C. 2ft D. 3ft 11 1/2
Horse II A. 15.3 B. 3ft 1 1/2 C. 1ft 8 D. 3ft 5 3/4	Horse III A 15.2 B. 3ft 4 1/2 C. 1ft 10 D. 3ft 5 1/2
Horse IV A. 15.1/2 B. 3ft 2 C. 1ft 7 3/4 D. 3ft 5 1/2	Horse V A 15.3 B. 3ft 3 1/2 C 1ft 10 D. 3ft 6 1/2

I

Date. Dec 16th. 95.

Name of Student. F. Arno.

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext angle of Ilium	**Horse I** A. 14 hands ½ inch. B. 3 ft. 5½ inches C. 1 ft. 10 inches. D. 2 ft. 9½ inches.
Horse II A. 15 hands 1 inch B. 3 ft. 3 inches C. 1 ft. 9½ inches D. 3 ft. 3 inches	**Horse III** A 15 hands 2 inches B. 3 ft. 2 inches C. 1 ft 8½ inches D. 3 ft. 5 3/4 inches
Horse IV A. 15 hands ½ inch B. 3 ft. 2 inches C. 1 ft. 8 inches D. 3 ft. 3 inches	**Horse V** A 15 hands 3½ inches B. 3 ft. 3 inches. C 1 ft. 9 3/4 inches D. 3 ft. 4 inches

II

Date. Decbr. 16th 95

Name of Student. S Amos.

A. Height at Withers
B. Olecranon to the Ground
C. Pisiform to the Ground
D. Spine of Scapula to Ext. angle of Ilium

Horse I

A. 14 hands
B. 3 ft. 5½ inches
C. 2 ft.
D. 3 ft 10 inches

Horse II

A. 15 hands ¼ inch
B. 3 ft. 3 inches
C. 1 ft 9¼ inches
D. 3 ft 3½ inches

Horse III

A 15 hands 2¼ inches
B. 3 ft 3 inches
C. 1 ft 9½ inches
D. 3 ft. 7 inches

Horse IV

A. 15 hands 1¼ inches
B. 3 ft - 1½ inches
C. 1 ft 7 inches
D. 3 ft 3½ inches

Horse V

A 15 hands 3 inches
B. 3 ft. 3 inches
C 1 ft. 8½ inches
D. 3 ft. 4 inches

N° 3

Date. December 17th 1895

Name of Student. S Amos.

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	Horse I A. 17 hands — B. 3 ft 4½ C. 1 " 9½ D. 3 " 11
Horse II A. 15 Hands 3 in B. 3 ft 3 in C. 1 " 9 " D. 3 " 3 "	Horse III A 15 Hands 2¾ B. 3 ft - 3 in C. 1 " 8 " D. 3 " 6¼ in
Horse IV A. 15 hands ¼ in B. 3 ft 1 in C. 1 ft 7½ D. 3 " 2½	Horse V A 15 hands 2½ B. 3 ft 3 in C 1 " 8¼ in D. 3 ft 7 in

No 2

Date. Decemb 17th 95

Name of Student. S Amos

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	Horse I. A. 17 hands ¼ inch B. 3 ft 5½ in C. 1 " 9¼ " D. 3 " 11
Horse II A. 15 hands 3 in B. 3 ft 2¼ in C. 1 " 7¼ " D. 3 " 3 "	Horse III A 15 Hands 2 inches B. 3 ft 2¼ in C. 1 " 8 " D. 3 " 4½ "
Horse IV A. 15 hands ½ inch B. 3 ft 1 in C. 1 ft 7 in D. 3 ft 3 in	Horse V A 15 Hs 2½ in B. 3 ft 3½ " C 1 " 8 in D. 3 " 7

I

f.27 25

Date. Dec. 14th 90

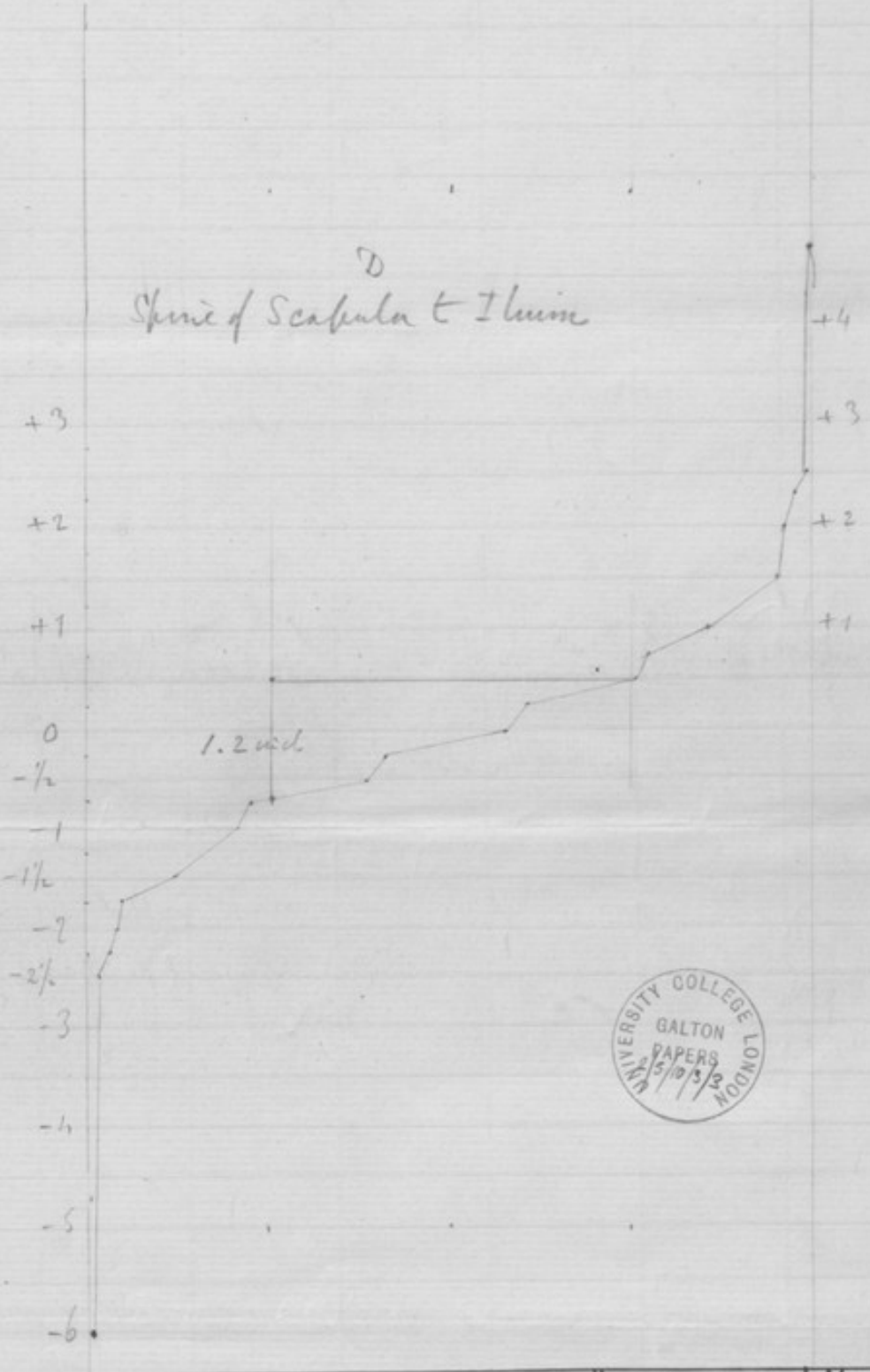
Name of Student. S Amos

A. Height at Withers B. Olecranon to the Ground C. Pisiform to the Ground D. Spine of Scapula to Ext. angle of Ilium	**Horse I** A. 14 hands. B. 3 ft 5½ inches. C. 1 ft 10 " D. 3 " 5 "
Horse II A. 15 hands 3 inches B. 3 ft 3 " C. 1 " 8¼ " D. 3 ft 5 "	**Horse III** A 15 hands 2 inches B. 3 ft 3 " C. 1 " 8 D. 3 " 7 "
Horse IV A. 15 hands ½ inch B. 3 ft —— C. 1 " 7 " D. 3 " 5 "	**Horse V** A 15 hands 3 inches. B. 3 ft 3 " C 1 " 9½ " D. 3 " 7

f. 28

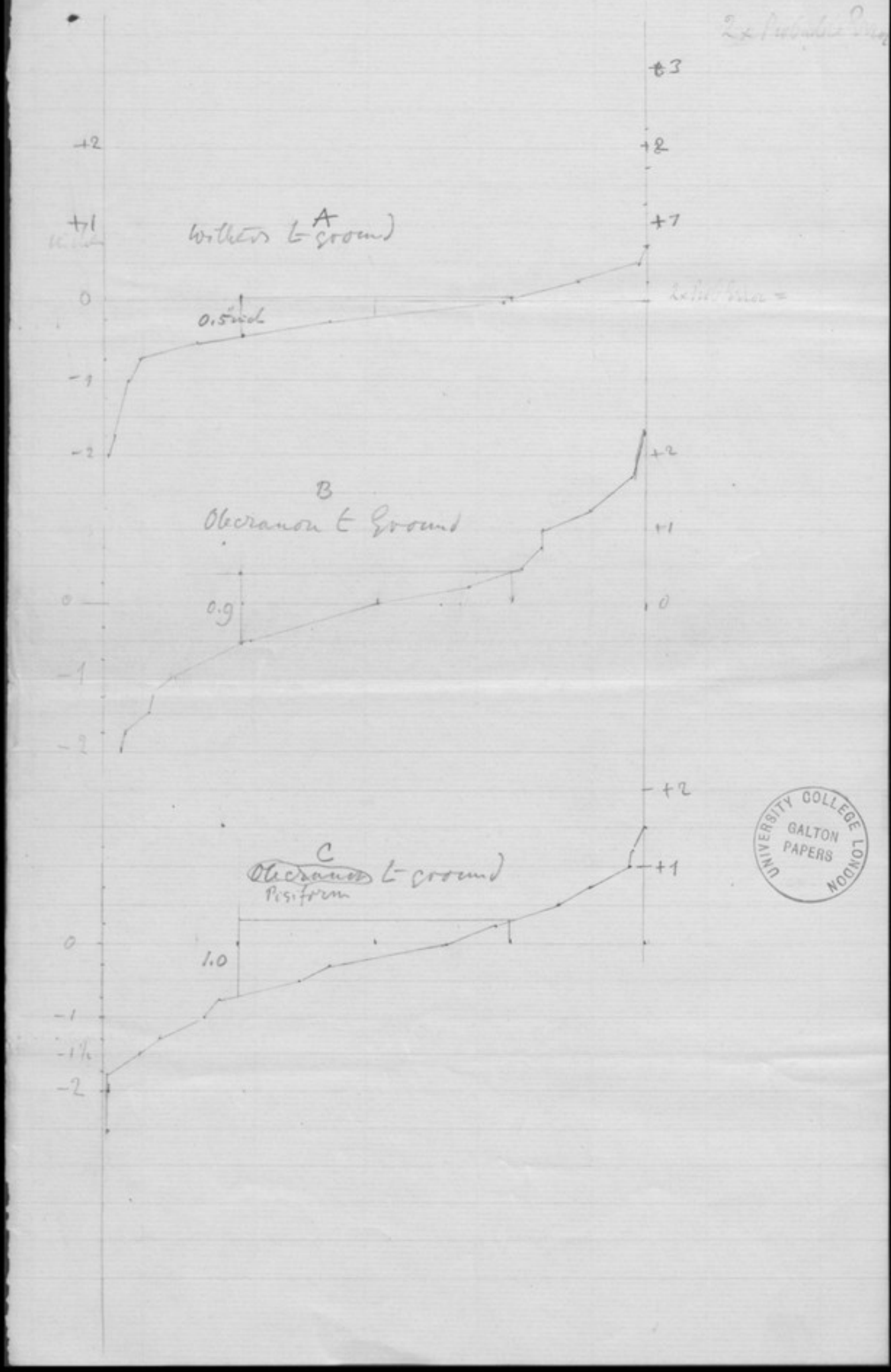
D

Spine of Scapula & Ilium

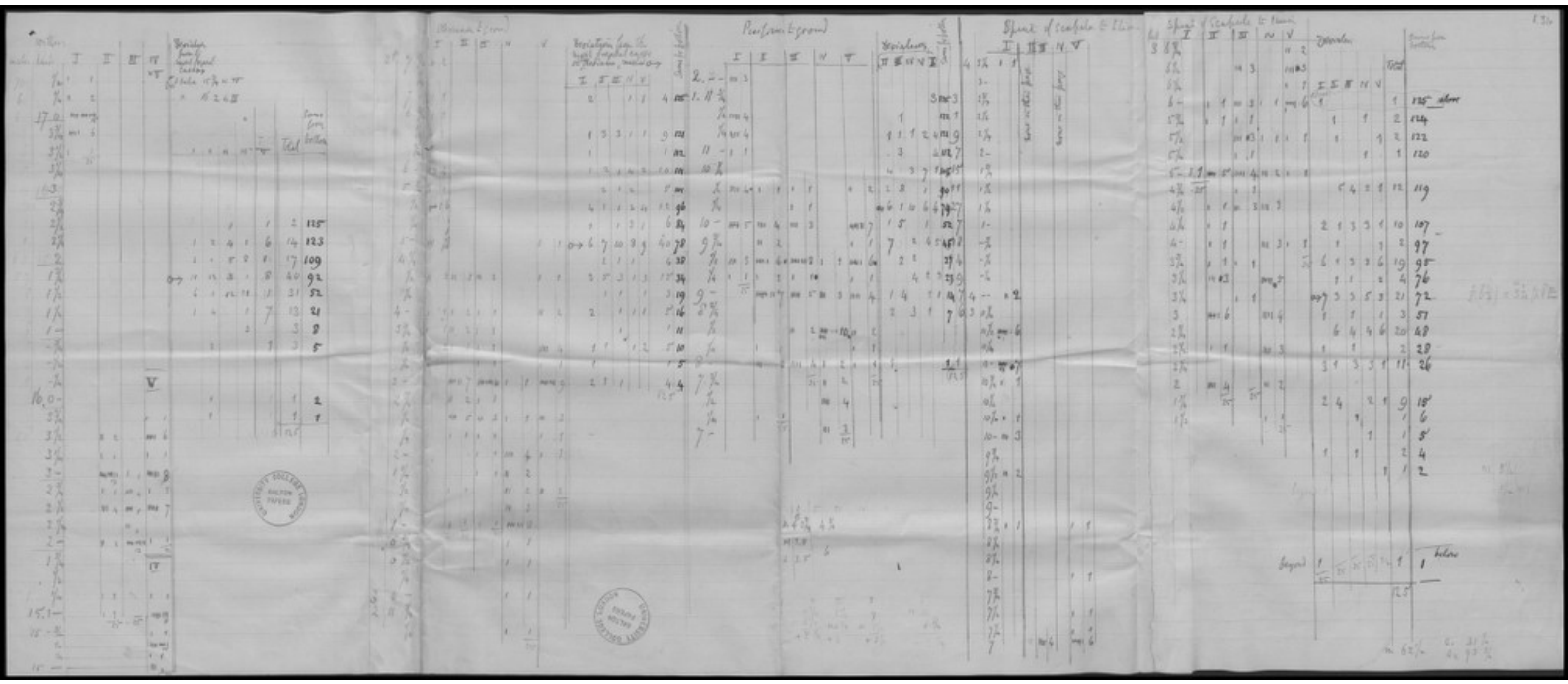


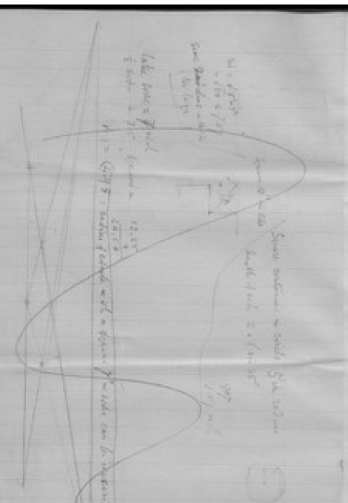
Measures	double Prob: Error	Probable Error
A	0.5 inch	0.25 inch
B	0.9 "	0.45 "
C	1.0 "	0.50 "
D	1.2 "	0.60 "

Name	Marks
R.W. Woods	31
C.E. Wells	22½
W.A. Bell	27½
A.H. Berry	34¼
S. Amos	36¼


+3
+2
+1
0
-1
-2
A
Withers ⊥ ground
0.5 inch
B
Olecranon ⊥ ground
0.9
C
Olecranon
Pisiform
⊥ ground
1.0
UNIVERSITY COLLEGE LONDON
GALTON
PAPERS

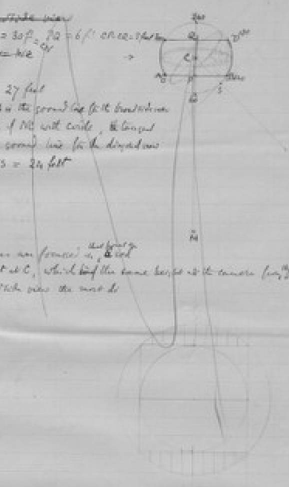
Deviation	written & groups	Observation & groups	Rec'd form & groups	Special Scale & Idiots
+ 3				125 above (4 2/4)
+ 2½				124
				122
+ 2		125		120
				-
+ 1½		121	125	119
		112	122	-
+ 1		111	121	107
	125	101	112	97
+ ½	123	96	105	95
+ 1	109	84	90	76
0	92	78	79	72
	52	38	52	51
− ½	21	34	45	48
	8	19	27	28
− 1	5	16	23	26
	-	11	14	-
− 1½	.	10	7	15
	2	5	-	6
− 2	1	4	.	5
			1	4
− 2½				2
− 3				
− 4				1 below 6 - (4 - 6)
5.				
6				1





~~Perspective view~~

Take CM = 30 ft, PQ = 6 ft CP = CQ = 7 feet
~~M..~~ = 24
~~..~~
MP = a = 27 feet
~~..~~ AB is the ground line for the broadside view
S intersection of MC with circle, the tangent at S is the ground line for the diagonal view
~~AB is the~~ NS = 24 feet



Both cameras are focussed on the point of a rod standing upright at C, which being the same height as the camera (in ? broadside view) in the broadside view the rest do

	Head of withers to ground					Olecranon to the ground					Pisiform to the ground					Spine of Scapula to ext angle of Ilium				
	Horse					Horse					Horse									
	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V
	Hands	hands & ins				feet in					feet in					feet in				
L.W. Wood	17 -	• 15 3¼	15.2¾	15-0¾	• 15.3¾	3.5	3.2½	3.2½	• 2.11½	3.2¼	1 10½	1.9	1.9½	1.8	1.9½	3.11½	3.3½	• 3.3¼	3.2½	3.6¾
2	17 -	15.3	15.2½	15-.1	15-3½	3.6	3.2½	3.3½	3.1¾	3.3	1.10	1.9	1.10	1.8½	1.8½	3.11½	3.3½	3.4½	3.4	3.5½
3	17 -	15.2	• 15.3	15-.½	15-3¼	3.3½	• 3.1	3.2½	3.½	3.3	1.9½	1.8	1.8½	1.8½	1.9½	3.11	3.2½	3.5	3.2	3.6
4	17 -	15.3	15-2½	15-½	15-2½	3.3½	3.2½	• 3.1	3.1	• 3.1½	1.9½	1.9	1.8	1.7½	1.9	3.11	3.3	3.4½	3.2½	3.7½
5	17 -	15.3	15-2¾	15-½	15-2½	3.4½	• 3.4½	3.3	3.1½	• 3.5	1.10	1.9	1.9	1.7½	1.9½	3.11	3.3	3.6	3.-	3.6½
	10	1½	½	¼	1¼	2½	3-	2½	2½	3¼	½	1-	1½	1-	1-	3½	1-	2¾	2-	2-
C.E. Wells	• 16.3¾	15.3	15.2	15-	15-2½	3.5½	3.3¾	3.2¾	3.1¼	3.3	1.11½	1.10	1.9½	1.8½	1.10	4-	3.2	3.6½	3.3½	3.5-
7	17 -	15.3	15.2	• 15- ½	15-3½	3.6½	3.3¾	3.4	3.- ¾	3.3½	1.11½	1.9½	1.9½	1.9	1.9½	3.9½	• 3.2	3.3¾	3.3	3.6
8	17 -	15-2¾	15.2	15-.1	15-3½	3.5½	3.2¾	3.1¾	3.1	3.4	2.-	1.9½	1.9½	1.8½	• 1.10½	3.10	3.2	3.5	3.3½	3.6
9	17	15.2½	15.2½	15-½	15-3½	3.6	3.3	3.2½	3.2	3.3	1.11¼	1.9½	1.9¼	1.9	1.10	3.10¾	3.4	3.5¼	• 3.1½	3.6½
10	17	15.3	15.2½	15-.1	15-3½	3 5¾	3.3	3.3	3.2	3.3½	1.11¼	1.9½	1.9	1.9	1.9¼	3.11½	3.3¾	3.5	3.3½	3.6¾
	3¼	½	½	1-	1-	6¼	1-	2¼	1-	1-	3¼	½	½	½	¾	2-	2-	1½	2-	1¾
W.A. Wall	17 ¼	15.3	15.2¼	15.1	15.3	• 3.4	3.2¾	3.3	3.1	3.1½	1.11	1.10	1.9½	1.7½	1.10	3.11½	3.5-	3.6	3.4½	3.6
						3.5	3.3	3.3	3.1¾	3.4½	1.10½	1.9	1.9½	1.8½	1.9½	3.11	3.3	3.4¾	3.6	3.6
12	16.3¾	15.3½	15.2	15.1	15-2½	3.3¾	3.3½	3.3	3.1	3.2½	1.10½	1.9	1.9	1.8½	1.10	3.11½	3.2	3.6	3.4½	3.6¼
13	17	15.3	15.2	15-.1	15-2½	3.6	3.2½	3.3	3.1	3.2½	1.11¼	1.9¾	1.9½	1.8½	1.10	4.-	3.4½	• 3.7	3.3½	3.7
14	17	15-2½	15.2	15.-	15-2¾	3.5	3.2½	3.3	3.1¼	3.2	1.11½	1.9½	1.9	1.8½	1.10	• 3.8¾	3.5-	3.7	3.5	3.8
15	17	+ 15.2	15-2¼	15--	• 15.2															
	1-	1-	¾	1	½	2¼	½	1-	2-	2-	¾	1-	½	1-	½	3¼	3	2¼	2½	2-
E.W. Henry	16.3½	15.3¾	15-2¾	15.1	• 15.3	3.6	3.4	3.3¾	3.1	3.3¾	1.11½	1.10	1.10	1.8½	1.9	• 4.3¼	• 3.6	3.5½	3.4	3.7¼
17	16.3¾	15.3	15-2½	15.1	15.3	• 3.7½	3.4½	• 3.3¾	3.1½	3.4	1.10	1.10	1.9	1.7¾	1.10½	3.10	3.5-	3.5½	3.2	3.8¾
18	16.3¾	15-2½	15.2	15-½	15.3	3.7½	3.4	3.4½	3.2½	3.2½	1.11¼	• 1.10½	1.10½	1.8½	1.9	3.11	3.4¼	3.5	3.4	3.6
19	16.3¾	15-2½	15.2	15-½	15.3	3.7	3.4½	3.4½	• 3.3	3.3	1.10½	1.9¾	• 1.10½	• 1.9½	1.9	3 10¼	3.5-	3.6½	3.4½	3.7
20	16.3¾	15.3	• 15.2	15-½	15.3	3.6¾	3.1½	3.4½	3.2	3.3½	2.-	1.8	1.10	1.7¾	1.10	3.11½	3.5¾	3.5½	• 3.5½	3.6½
	0	¾	¾	½	0	1½	3-	1¾	1-	1-	2	2	1½	1¾	1½	5¼	1¾	1½	3½	2¾
S. Amos	• 17 ½	15.1	15.2	15-½	15.3½	3.5½	3.3	3.2	3.2	3.3	1.10	1.9½	1.8½	1.8	1.9¾	3.9½	3.3	3.5¾	3.3	3.7
22	17 -	• 15- ¼	15.2¼	• 15.1¼	15.3	3.5½	3.3	3.3	3.1½	3.3	• 2.-	1.9¼	1.9½	1.7	1.8½	3.10	3.3½	3.7	3.3½	• 3.4
23	17	15.3	15.2¾	15-.¼	15-2¼	3.4½	3.3	3.3	3.1	3.3	1.9½	1.9	1.8	1.7½	1.8¼	3.11	3.3	3.6½	3.2½	3.7
24	17 ¼	15.3	15.2	15-½	15-2½	3.5½	3.2¼	3.2¼	3.1	3.3½	• 1.9¼	• 1.7¼	• 1.8	1.7	• 1.8	3.11	3.3	3.4½	3.3	3.7
25	17	15.3	15.2	15-½	15.3	3.5½	3.3	3.3	3.-	3 3	1.10	1.8¼	1.8	• 1.7	1.9½	3.5-	3.5-	3.7	3.5-	3.7
	4½	2¾	¾	1-	1-	1-	¾	1-	2-	1-	2¾	2¼	1½	1-	1½	6-	2-	2½	2½	3-
	¾	2¼ Long Arm 1½	1-	¾	1¾	3½	3½	2¾	3¼	3½	2¾	3¼	2½	2½	2½	4½	4	3¾	4-	4¾