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P A R T I I

A P P E N D I C E S



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APPENDIX I.EGG COUNTING TECHNIQUE.

(54)
The procedure adopted followed closely the method outlined by Stoll (54).

Dung samples were removed from the rectum of lambs with the finger and placed in either numbered bottles or small paper bags. In the laboratory, a sample of 5 gms. was taken and placed in specially prepared glass jars marked to 75 cc. level. Water was poured in up to this mark. The faeces from these lambs was almost invariably in the form of firm, hard pellets, as would be expected from the nature of their diet. It was necessary to squeeze the pellets of dung between the fingers before placing them in the jar. This broke the outer layer of mucus and thus allowed the water to penetrate into the pellet. With this treatment, and after soaking for one hour, the pellets usually disintegrated readily. Very refractory pellets had to be shaken with small rubber corks.

9c → The centrifugal had 4 tubes. Four of the numbered jars were placed on the table with the lowest number on the left and highest on the right. The contents of the left hand jar were assigned to the tube marked 1 and so on up to the tube marked 4.

On the table in front of the numbered bottles were placed 8 slides, 2 to each bottle. These slides bore the bottle number. This procedure is standard in the laboratory and was rigidly adhered to in order that there be no confusion between samples.

After shaking the glass bottles to ensure uniform distribution of faecal debris, 12 cc. of the solution of faeces was poured into the corresponding centrifuge tube, which was marked to carry that volume.

The centrifuge handle was then turned at approximately 60 revolutions per minute. After the centrifuge had ceased to run, each tube was removed singly and the supernatant

fluid poured off by simply inverting the tube. The debris, amounting to 1 - 3 cc. of faecal material, was invariably lightly jammed in the bottom of the tube.

Saturated salt solution of S.G.1,200 was used for the final centrifuge. It was the custom to add to this enough Lugol's iodine stain (4 gms. I residues, 6 gms. KI 200 cc. H₂O) to tint the salt solution a light brown. This stained the nematode eggs, rendering them a little more conspicuous. Addition of Lugol's stain altered the S.G. of the solution slightly; more salt had to be added to bring the S.G. back to the correct figure. S.G. measurements were taken with a Twaddels No. 2 Hydrometer.

The tubes were half filled with salt solution and the debris at the bottom loosened by shaking, care being taken not to make too many bubbles in the process. The tubes were then filled with salt solution, the final drops being added with a pipette held just above, but not touching, the liquid in the tubes. If the pipette is allowed to come in contact with the fluid, it is likely that some faecal material together with eggs may be lost.

Enough salt solution was added by this method, to make the surface slightly concave. A square No. 2 cover slip was placed gently on top, and tapped slightly to make sure it was resting firmly on the top of the tube. If the filling had been performed correctly, a small bubble was left under the cover-slip. The aim was to have a bubble about 3 or 4 mm. in diameter. Any change in size of this bubble in centrifuging meant that a loss of fluid had occurred and a start with a fresh sample had to be made.

The centrifuge was then turned at the same rate as before, particular care being taken to ensure that the handle was turned evenly and smoothly. The centrifuge was allowed to run down and the cover slips removed immediately. Two points had to be observed in doing this. First, to grasp the cover slip at adjacent and not at opposite corners, since this latter method often meant that the cover was not removed evenly and consequently some fluid was lost; secondly,

the cover slip must be removed with a quick snap to ensure that the solution containing the eggs just underneath the cover was removed as well.

The cover was placed on the slide allotted it. A drop or two of salt solution was again added to the tube and another cover placed on top. The whole operation was then repeated.

The slides were examined under low power (60 diameters) with the aid of a mechanical stage. The ocular had two pieces of adhesive tape placed on the outer side of the lower lens in such a fashion that the field of view had parallel upper and lower sides. Examination was customarily made by commencing at the top left hand corner and working across to the right and back again. By working from the top (or outer) side of the cover, it was possible to overcome any error due to the slide being "pulled" rather than "pushed" by the mechanical stage.

salt
The eggs float to the top of the salt solution and consequently lie in the same plane as the air bubbles. The bubbles were therefore used to focus the microscope. Counting was done with the aid of a small hand counter. The sum of the eggs on both slides was multiplied by a factor to bring the figure to a per gramme basis.

The factor for this work was calculated as follows:-

$$\begin{aligned} & 5 \text{ gms. dung in } 75 \text{ cc. H}_2\text{O.} \\ & 12 \text{ cc. sample of this taken.} \\ & \text{Therefore, factor will be } \frac{5}{1} \times \frac{1}{75} \times \frac{12}{1} = \frac{4}{5} \end{aligned}$$

Total number of eggs $\times \frac{5}{4}$ = Number of eggs per gramme of faeces.

A P P E N D I X II

FAECAL EGG COUNTS OF LAMBS USED IN MAIN
AND SUBSIDURARY EXPERIMENTS

(Samples collected 13th April, 1949)

Eggs Given as the Number per Gram. of Faeces

<u>No. of Lamb</u>	<u>Nemato- dirus Species</u>	<u>Strongy- loides papillo- sus</u>	<u>Trichuris ovis</u>	<u>Others</u>	<u>Total</u>
2	nil	2.5	nil	nil	2.5
4	5.0	1.25	nil	nil	6.25
6	7.5	nil	nil	nil	7.5
7	7.5	nil	nil	nil	7.5
8	3.75	nil	nil	nil	3.75
9	2.5	2.5	nil	nil	5.0
10	6.25	5.0	1.25	nil	12.5
14	5.0	nil	nil	nil	5.0
16	1.25	1.25	nil	nil	2.5
18	1.25	nil	nil	nil	1.25
19	1.25	1.25	nil	nil	2.5
23	nil	11.25	nil	nil	11.25
24	15.00	5.00	nil	nil	20.00
25	nil	nil	nil	nil	nil
26	1.25	5.00	nil	nil	6.25
27	1.25	2.50	nil	nil	3.75
28	5.00	2.50	nil	nil	7.50
29	3.75	17.50	nil	nil ^{1.00} _{4.8 x 100}	21.00
30	7.50	13.75	nil	nil	21.35
32	nil	2.50	nil	nil	2.50
33	1.25	nil	nil	nil	1.25
34	8.75	nil	nil	nil	8.75
35	11.25	1.25	nil	nil	12.50
36	3.75	13.75	nil	nil	17.50
37	nil	nil	nil	nil	nil
38	nil	nil	nil	nil	nil
39	5.00	12.50	nil	nil	17.50
40	1.25	nil	nil	nil	1.25
41	2.50	nil	nil	nil	2.50
42	2.50	8.75	nil	nil	11.25
43	nil	6.25	nil	nil	6.25
44	nil	nil	nil	nil	nil
46	2.50	3.75	nil	nil	6.25
47	3.75	10.00	nil	nil	13.75
49	1.25	nil	nil	nil	1.25
51	7.50	3.75	1.25	nil	12.50
52	nil	1.25	nil	nil	1.25

A P P E N D I X III.

FAECAL EGG COUNTS - SUBSIDIARY EXPERIMENT

(Samples collected 16th June, 1949)

Eggs Given as the Number per Gramme
of Faeces

<u>No. of Lamb</u>	<u>Strongy- loides papillo- sus</u>	<u>Nemato- dirus Species</u>	<u>O T H E R S</u> (Dimensions) (microns)	<u>TOTAL</u>	
10	12.5	2.50	3.75	48-88) Ostertagia 48-92) Tricho- 46-87) strongylus	18.75
23	30.00	nil	6.25	85-46) Ostertagia 88-46) Tricho- 85-48) strongylus 83-46)	36.25
25	nil	nil	nil		nil
28	nil	5.00	nil		5.00
34	3.75	1.25	1.25	90-42 Ostertagia Tricho- strongylus	6.25
40	nil	3.75	10	85x48) Ostertagia 94x46) Tricho- 85x46) strongylus 74-39 Cooperia curticei 74-44 ?	13.75
42	17.50	7.50	1.25	83-48 Ostertagia Tricho- strongylus	26.25
49	3.75	nil	2.5	85-44 Ostertagia 87-46 Tricho- strongylus	6.25

A P P E N D I X IV.

WEIGHTS OF LAMBS USED IN THE MAIN EXPERIMENT
(Taken on 11th April, two days prior to infestation)

<u>No. of Lamb</u>	...	...	<u>Weight in Pounds</u>
2	...	...	92
4	...	...	76
6	...	...	90
7	...	...	102
8	...	...	92
9	...	...	79
14	...	...	88
16	...	...	84
18	...	...	88
19	...	...	101
24	...	...	90
26	...	...	88
27	...	...	104
29	...	...	88
30	...	...	84
32	...	...	89
33	...	...	94
35	...	...	86
36	...	...	101
37	...	...	90
38	...	...	112
39	...	...	96
41	...	...	94
43	...	...	82
44	...	...	85
46	...	...	91
47	...	...	98
48	...	...	85
51	...	...	86
52	...	...	88
<u>MEAN</u>			<u>91 lbs.</u>

WEIGHTS OF LAMBS USED IN THE SUBSIDIARY EXPERIMENT
(Weighed on 21st June, five days after infestation)

<u>No. of Lamb</u>	...	...	<u>Weight in Pounds</u>
10	...	...	96
23	...	...	114
25	...	...	89
28	...	...	114
34	...	...	111
40	...	...	95
42	...	...	113
49	...	...	94
<u>MEAN</u>			<u>103 lbs.</u>

A P P E N D I X V.

BAERMANN'S APPARATUS.

Devised by G. Baermann in 1917, it has been modified by Cort (149- page 11), who used it in studies on hockworm larvae in the soil. The apparatus has also been used by Scott (149- page 433), in separating out small helminths from the body organs of hosts.

It consists of a glass funnel almost filled with water with the outlet closed by a piece of rubber tubing with a clamp. The dung is placed in a sieve which is in turn, placed in the funnel with the water just covering the faeces. The water used is tepid; (approximately 90°- 100°F.) making the larvae more active. They move slowly downward to the bottom of the funnel.

To remove the larvae, the clamp is released gently and the first few drops of water run into a small dish. This water will contain the greater number of the larvae.

In the laboratory, the funnels are supported in a frame work. A small glass dish is placed beneath each funnel to catch any drops which accidentally leak through.

APPENDIX VI.

SPECIAL CONTAINER FOR STUDYING LARGE NUMBERS
OF WORMS UNDER LOW POWER BINOCULARS.

This container was designed by J.H. Tetley, Agricultural Zoology Department, Massey Agricultural College. It consisted of a rectangular dish of "perspex" 15 cms long by 3.3 cms wide. The bottom was filed out with a round file across the width of the dish into a series of hollows, close together so that the ridges between each hollow were sharp. The depth of the dish to the bottom of each hollow was 1.1 cms; to the top of each ridge 0.8 cms.

"Perspex" was cut and filed to the above specifications and glued together with glacial acetic acid to which a little acetone had been added.

When water containing worms and ingesta was spread along the dish, the solid matter lay in the hollows, and was not displaced by movement of the dish in examination for worms. Therefore the danger of missing out any worms was substantially reduced.

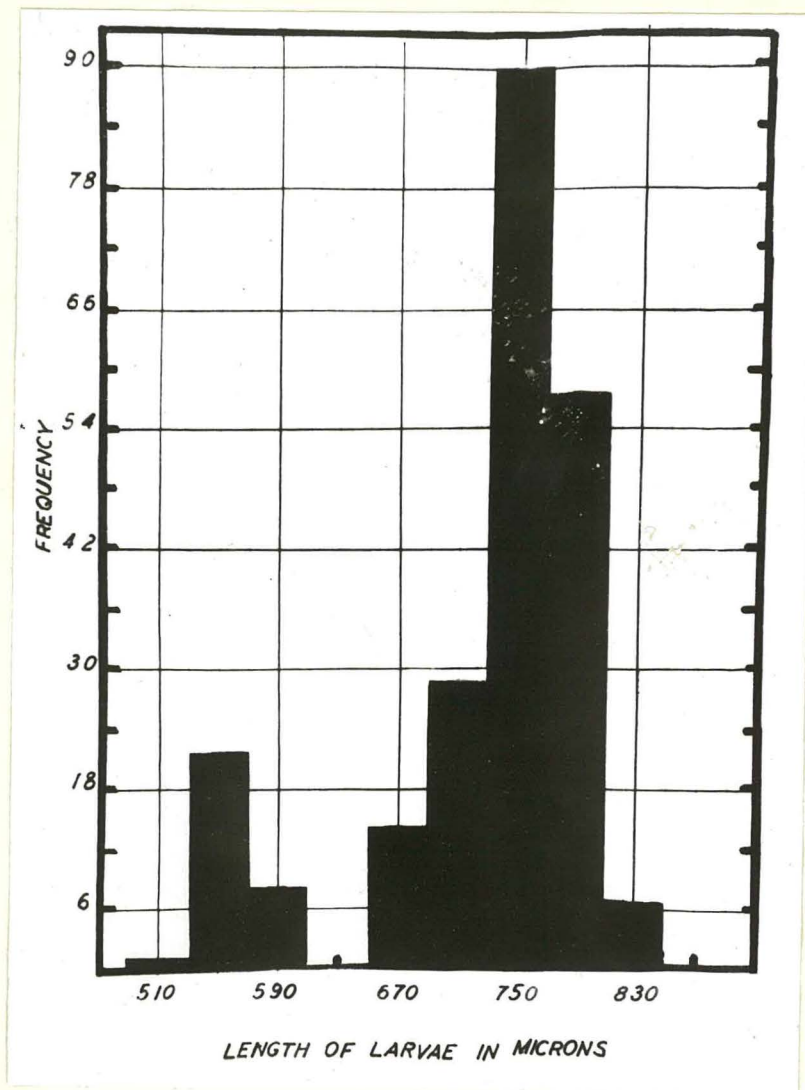
APPENDIX VII.

The graphs in this Appendix (numbered from 1 to 75) illustrate the distributions of the length of C. curticei at different ages.

Means and standard deviations, unless otherwise stated, are expressed in millimetres.

The following table provides a key for the location of the graphs.

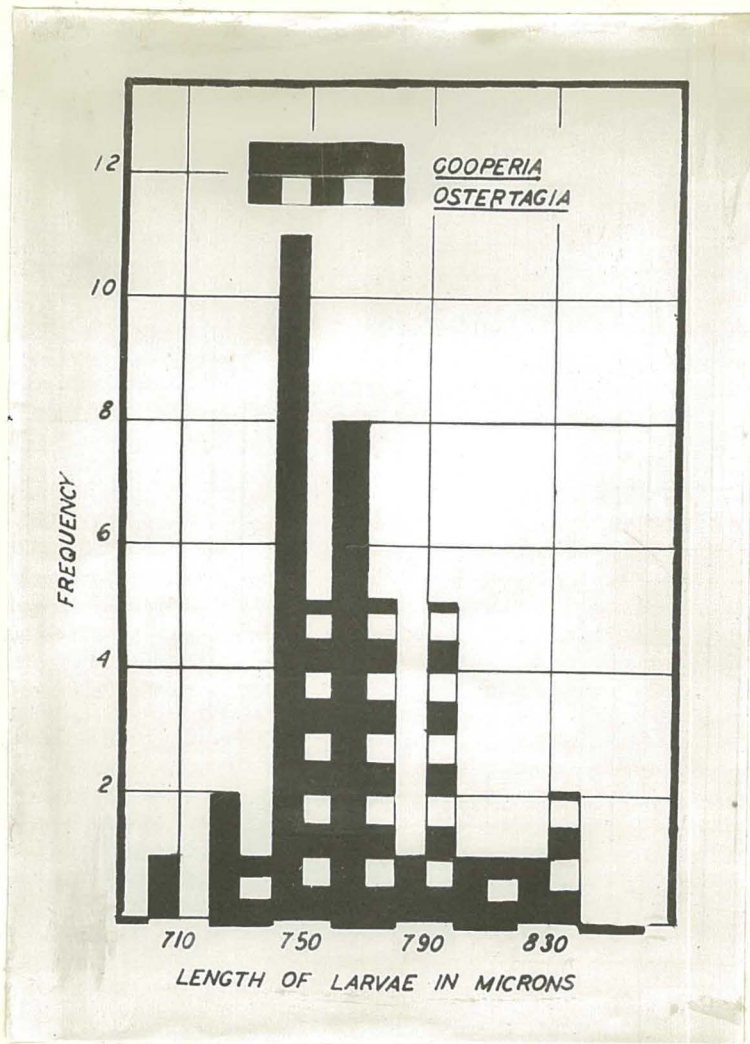
<u>No. of lamb.</u>	<u>Age of population.</u> (Days.)	<u>No. of Graph.</u>
2	9	41, 42
4	5	13, 14
6	20	70, 71
7	9	43, 44
8	8	33, 34
9	18	66, 67
10	7	25, 26
14	4	9, 10
16	4	11, 12
18	22	72, 73
19	8	35, 36
23	7	27, 28
24	6	17, 18
25	9	45, 46, 47, 48
26	12	56, 57
27	22	74, 75
28	6	19, 20
29	18	68, 69
30	16	62, 63
32	2	4
33	16	64, 65
34	8	37, 38
35	5	15, 16
36	11	52, 53
37	6	21, 22
38	11	54, 55
39	3	6, 7
40	6	23, 24
41	7	29, 30
42	8	39, 40
43	7	31, 32
44	3	8
46	1	3
47	2	5
48	10	50, 51
49	9	49
51	14	58, 59
52	14	60, 61
Infective larvae	0	1, 2



AGE: 1 DAY

Graph 1. DISTRIBUTION OF INFECTIVE LARVAE USED
13/4/49 - MEASURED WITH MICRO-PROJECTOR.

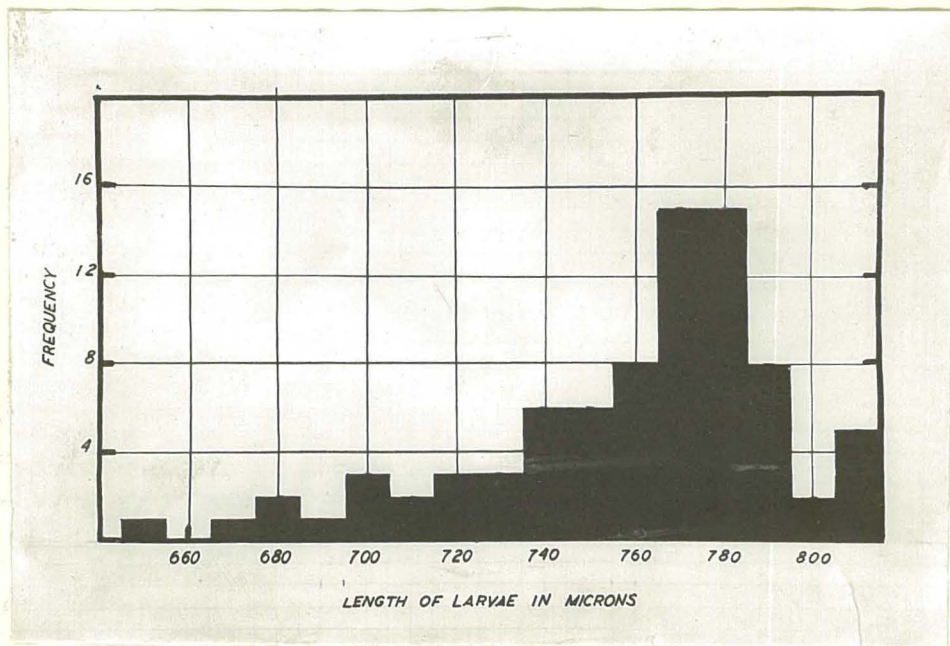
MEAN: $746 \pm 39\mu$.



AGE: 1 DAY

Graph 2. DISTRIBUTION OF INFECTIVE LARVAE USED
13/4/49 - MEASURED BY CAMERA-LUCIDA.

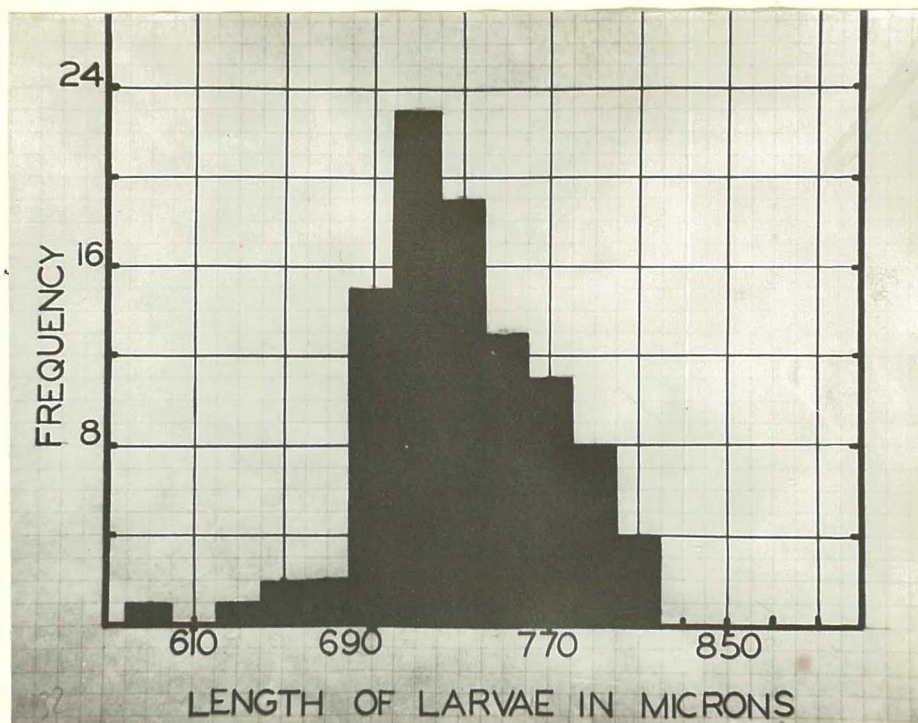
MEAN (COOPERIA): 761 ± 26 μ
 MEAN (OSTERTAGIA): 781 ± 31 μ



AGE: 1 DAY

Graph 3. DISTRIBUTION OF INFECTIVE LARVAE FROM SHEEP 46 KILLED 14/4/49.

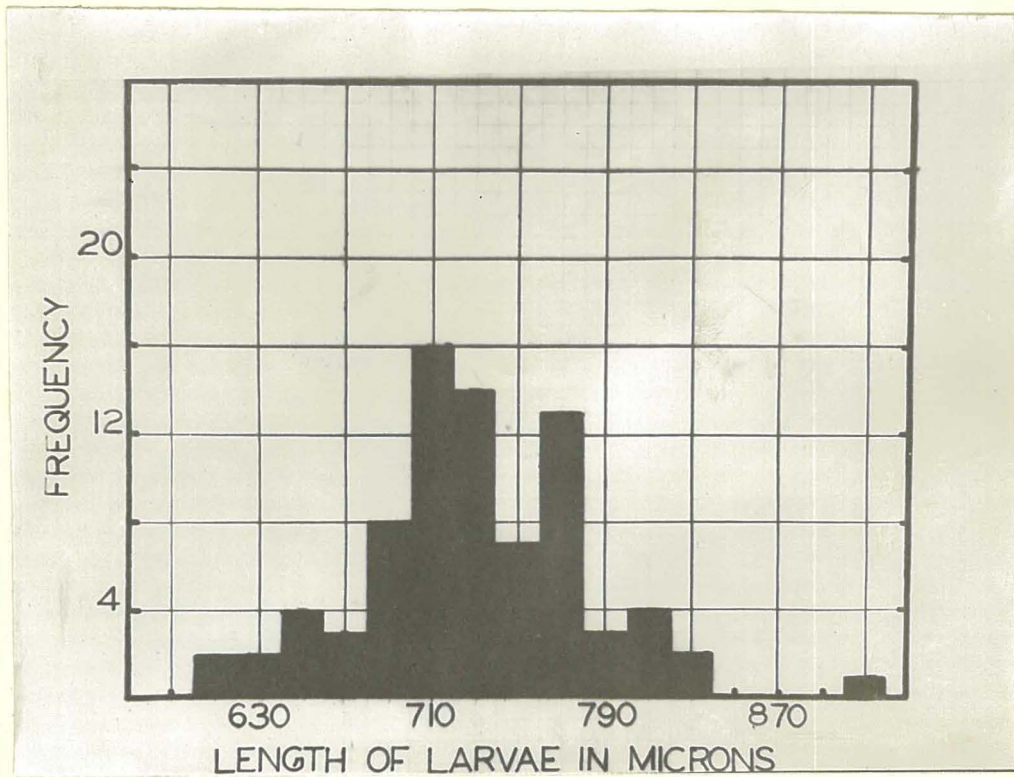
MEAN: $759 \pm 41 \mu$



AGE: 2 DAYS

Graph 4. DISTRIBUTION OF THIRD STAGE PARASITIC LARVAE FROM SHEEP 32 KILLED 14/4/49.

MEAN: $727 \pm 41 \mu$



AGE: 2 DAYS

Graph 5. DISTRIBUTION OF THIRD STAGE PARASITIC

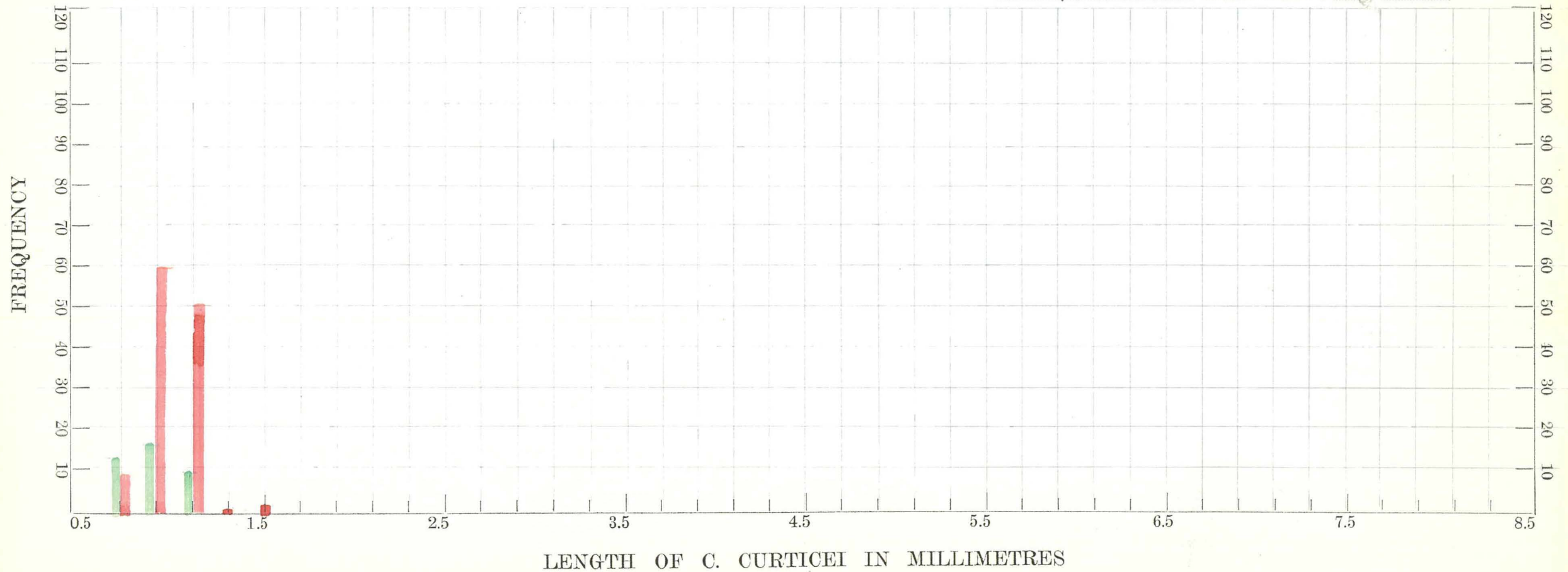
MEAN: 725 ± 61 μ

Sheep No. 39

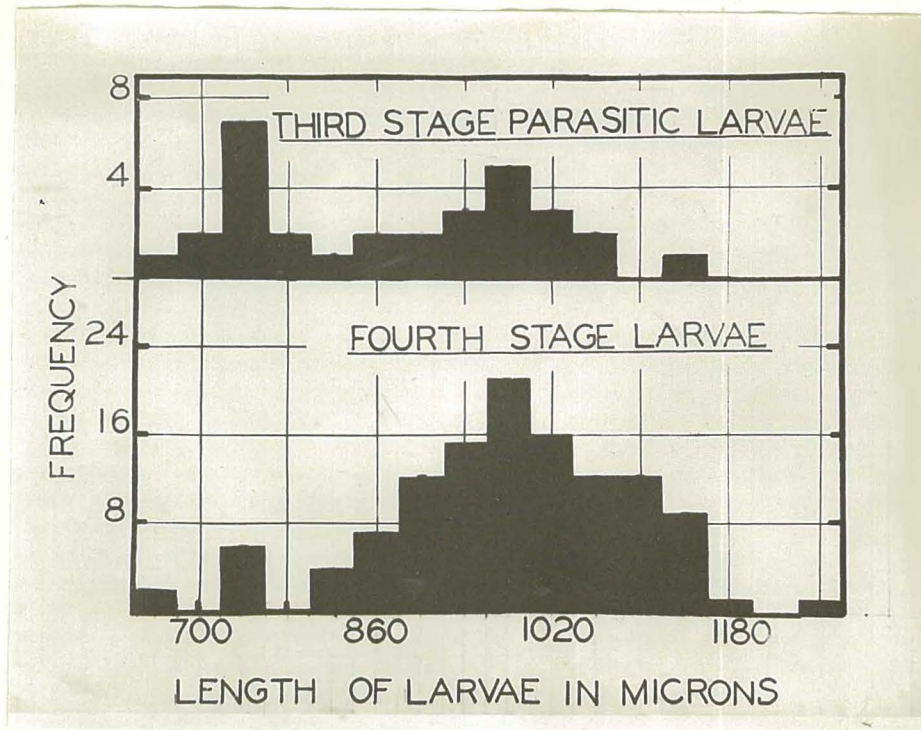
Age of Population 3 Days. Sex undifferentiated

Instar 3 Mean 0.9 s 0.1

4 Mean 1.0 s 0.09



Graph 6



AGE: 3 DAYS

Graph 7. DISTRIBUTION OF LARVAE FROM SHEEP 39 KILLED 15/4/49.

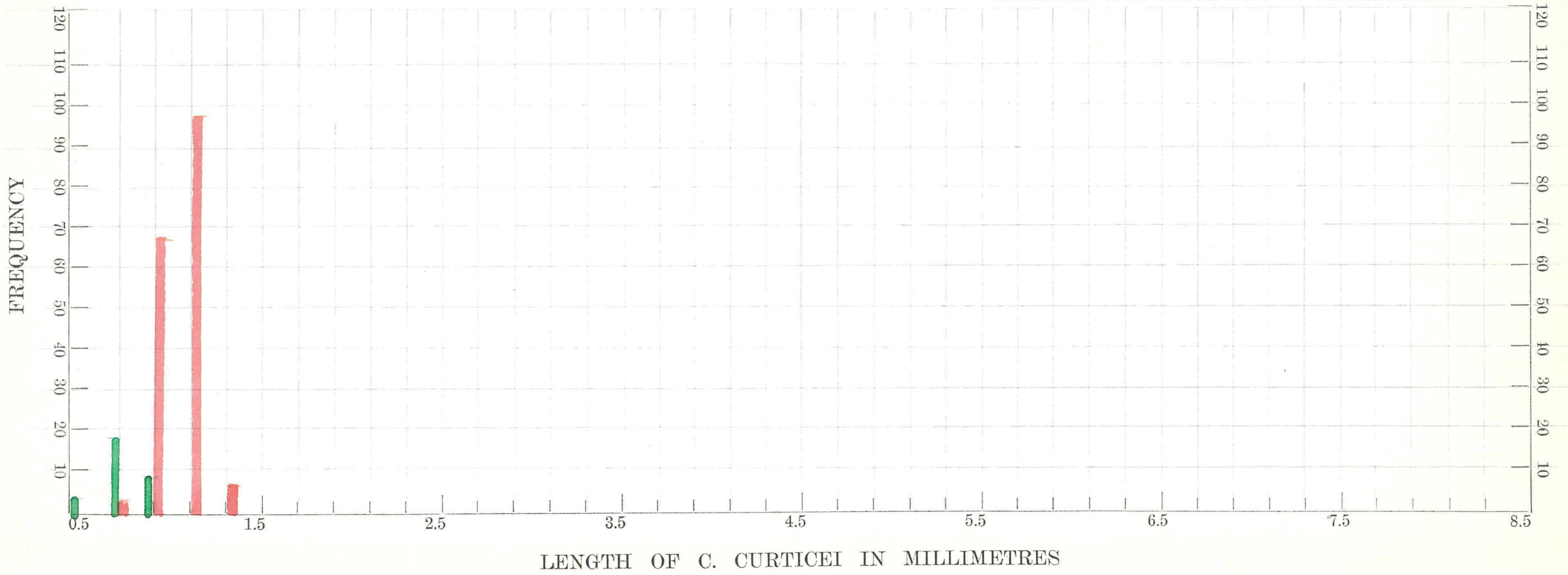
MEAN: See Graph 6

Sheep No. 44

Age of Population 3 Days. Sex Sexes undifferentiated

Instar 3 Mean 0.75 s

4 Mean 1.05 s 0.18

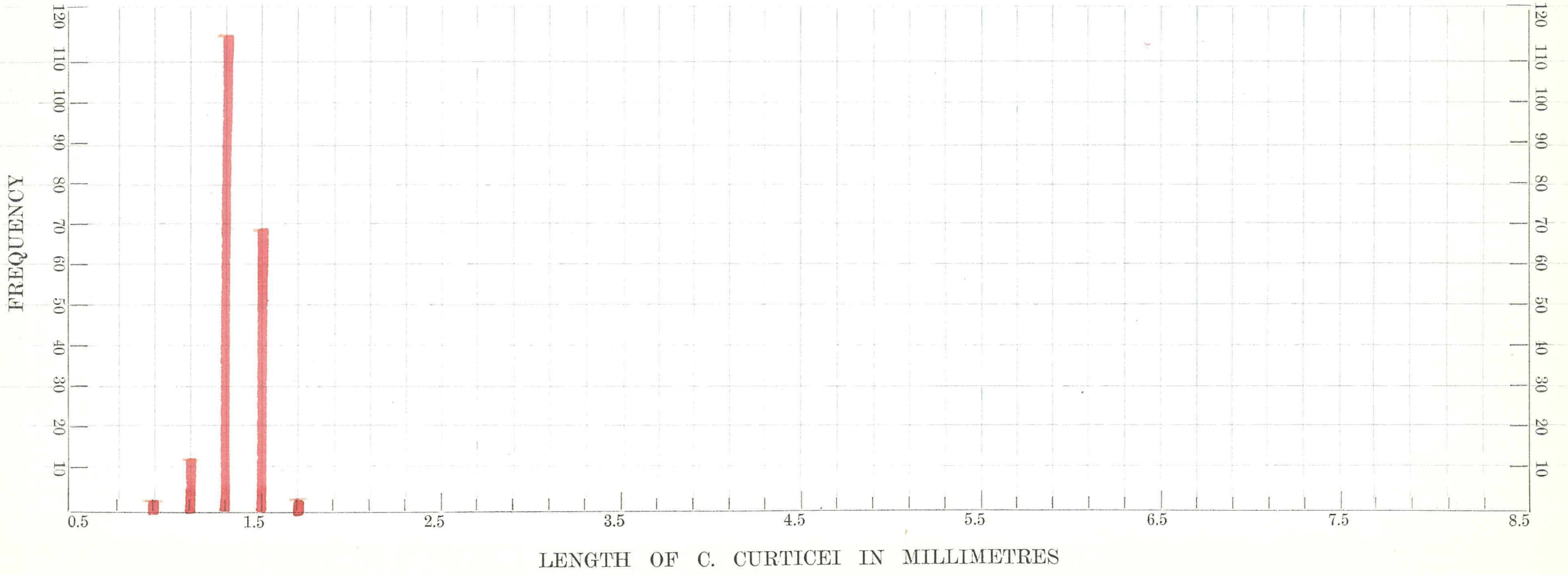


Sheep No. 14

Age of Population 4 Days. Sex Male

Instar 4 Mean 1.40 s 0.11

Mean s



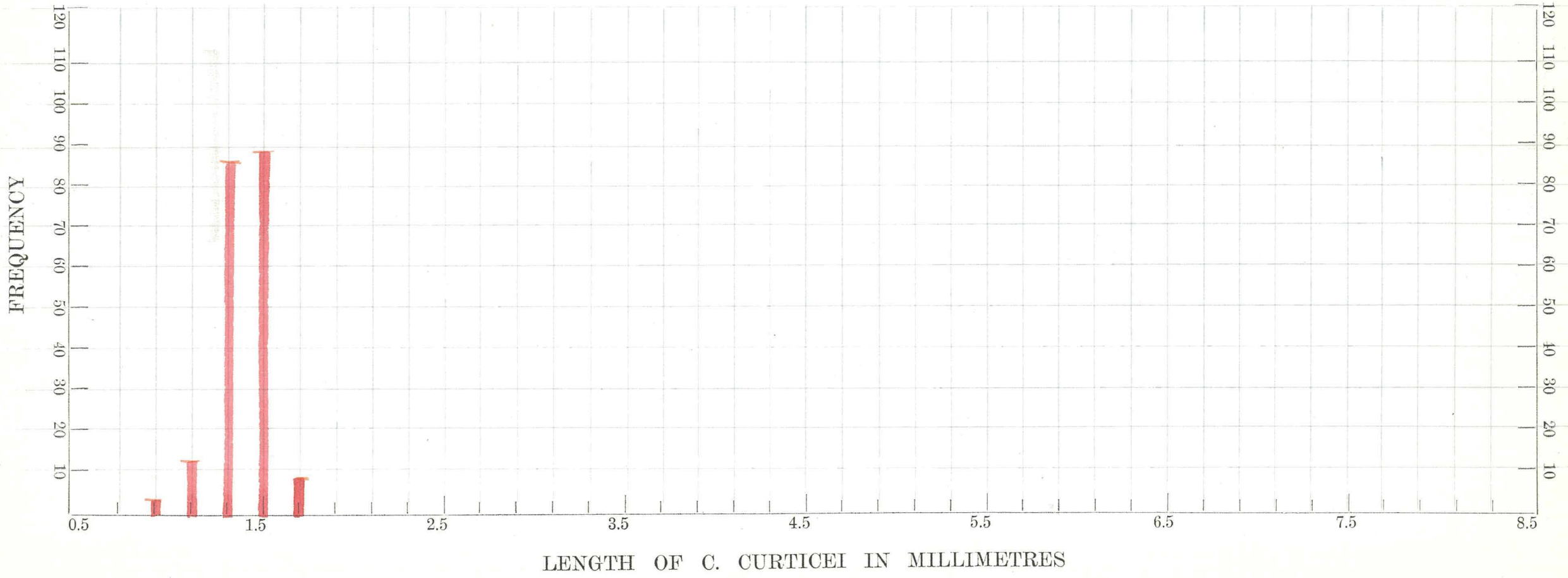
Graph 9

Sheep No. 14

Age of Population 44 Days. Sex Female

Instar 4 Mean 1.40 s 0.16

Mean s



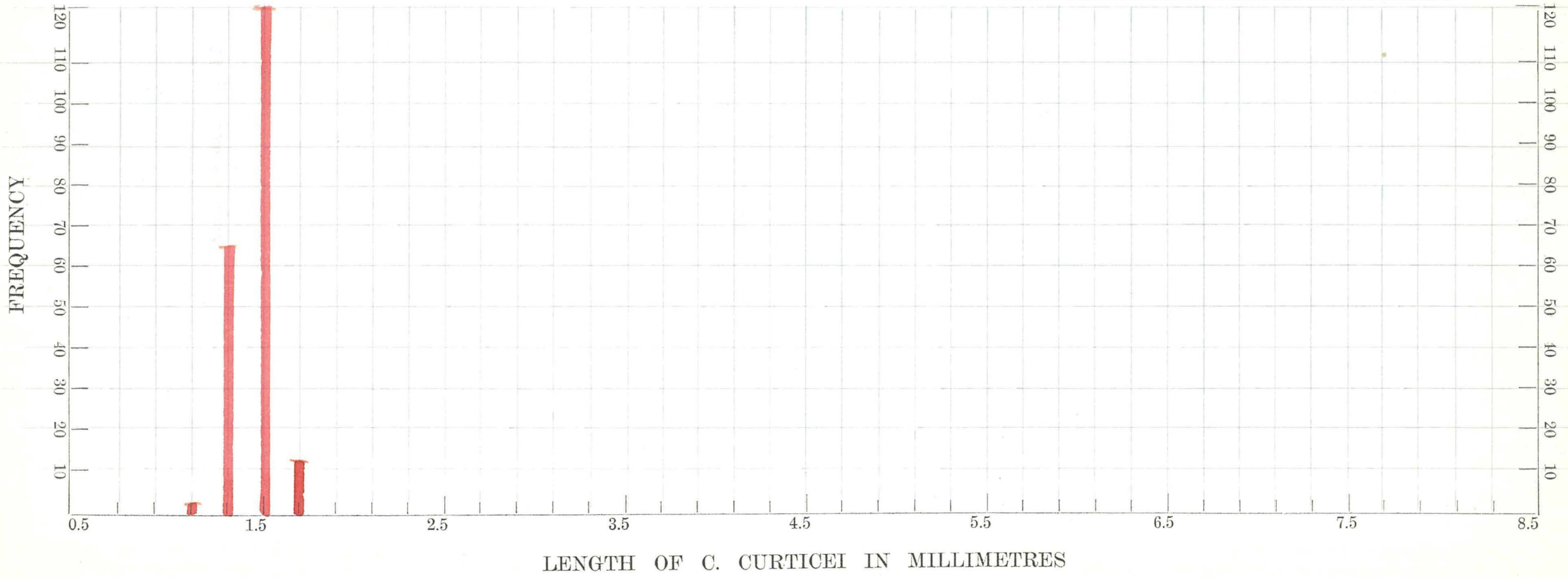
Graph 10

Sheep No. 16

Age of Population 4 Days. Sex Male

Instar 4 Mean 1.40 s 0.16

Mean s



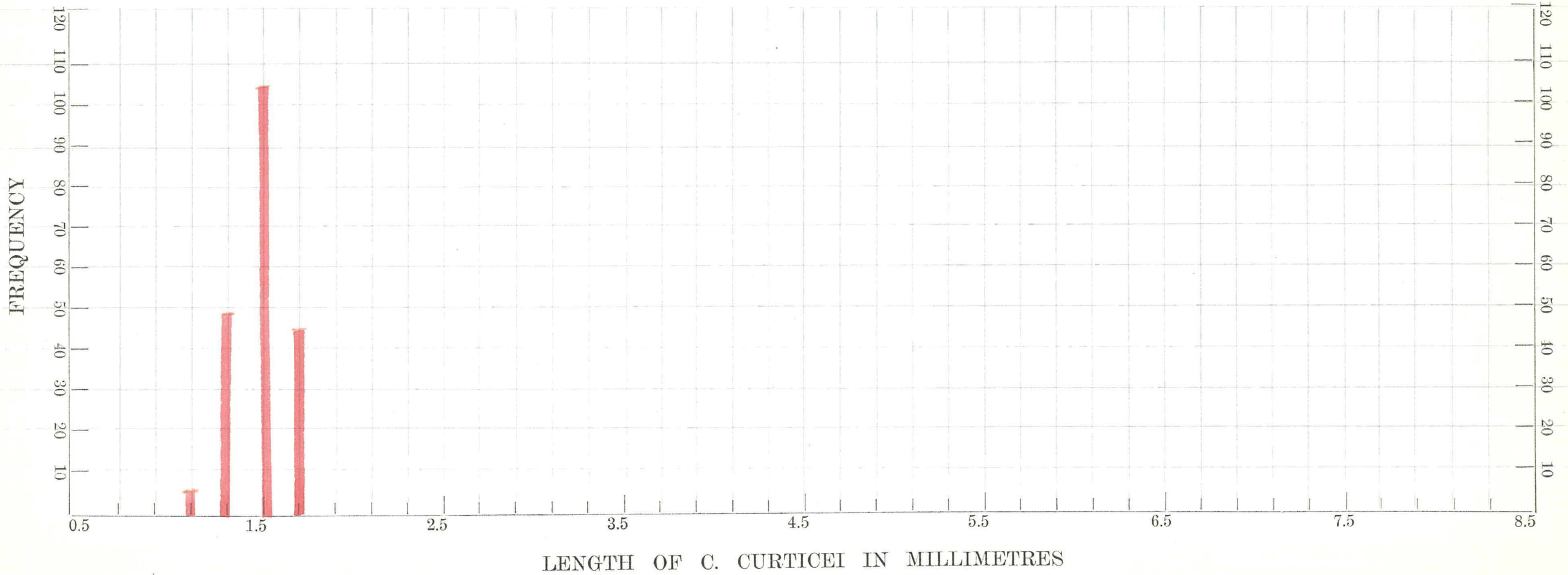
Graph 11

Sheep No. 16

Age of Population 4 Days. Sex Female

Instar 4 Mean 1.50 s 0.13

Mean s



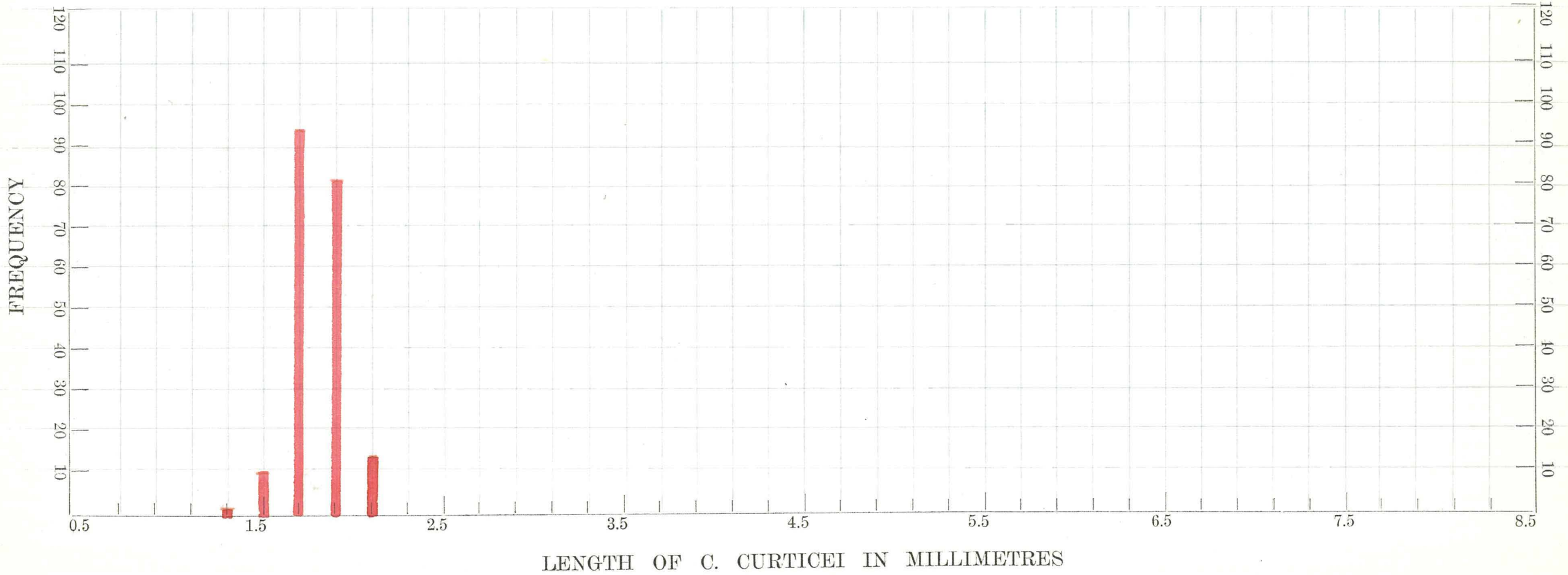
Graph 12

Sheep No. 4.....

Age of Population 5..... Days. Sex Male.....

Instar 4..... Mean 1.80 s 0.15.....

Mean..... s.....



Graph 2.13.....

Sheep No. 4

Age of Population 5 Days. Sex Female

Instar 4 Mean 1.90 s 0.25

Mean s



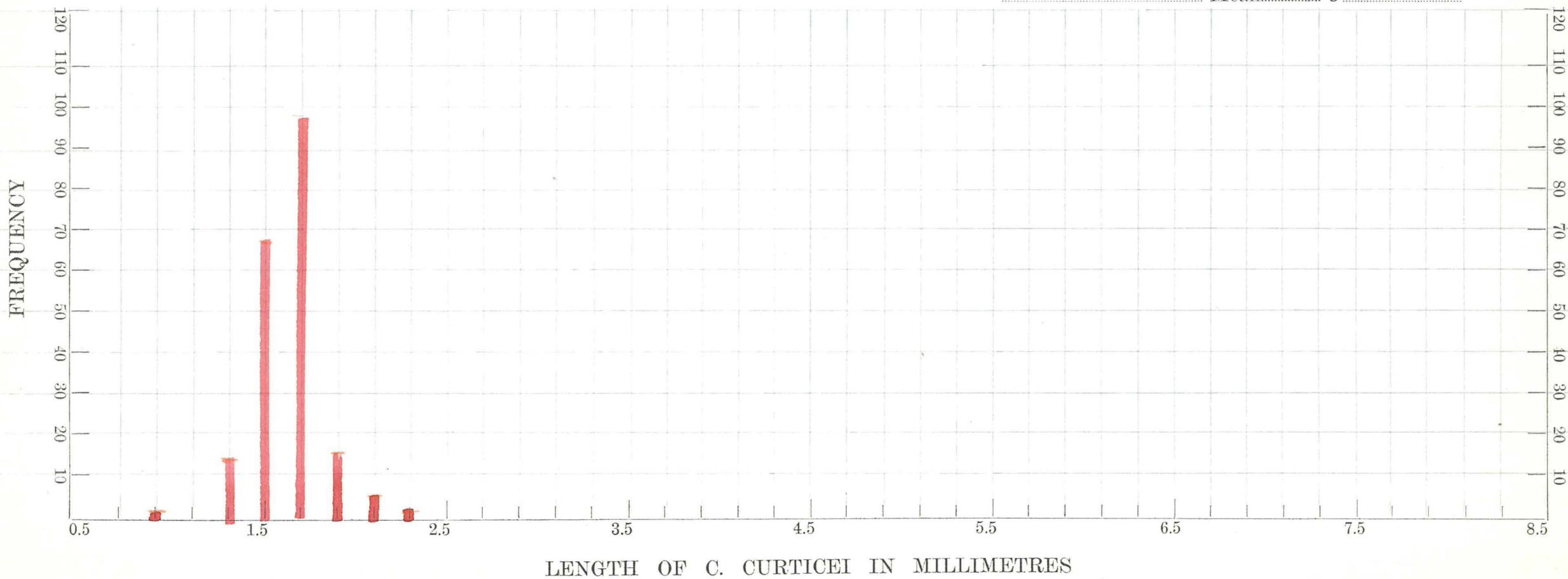
Graph 14

Sheep No. 35

Age of Population 5 Days. Sex Male

Instar 4 Mean 1.60 s 0.17

Mean s



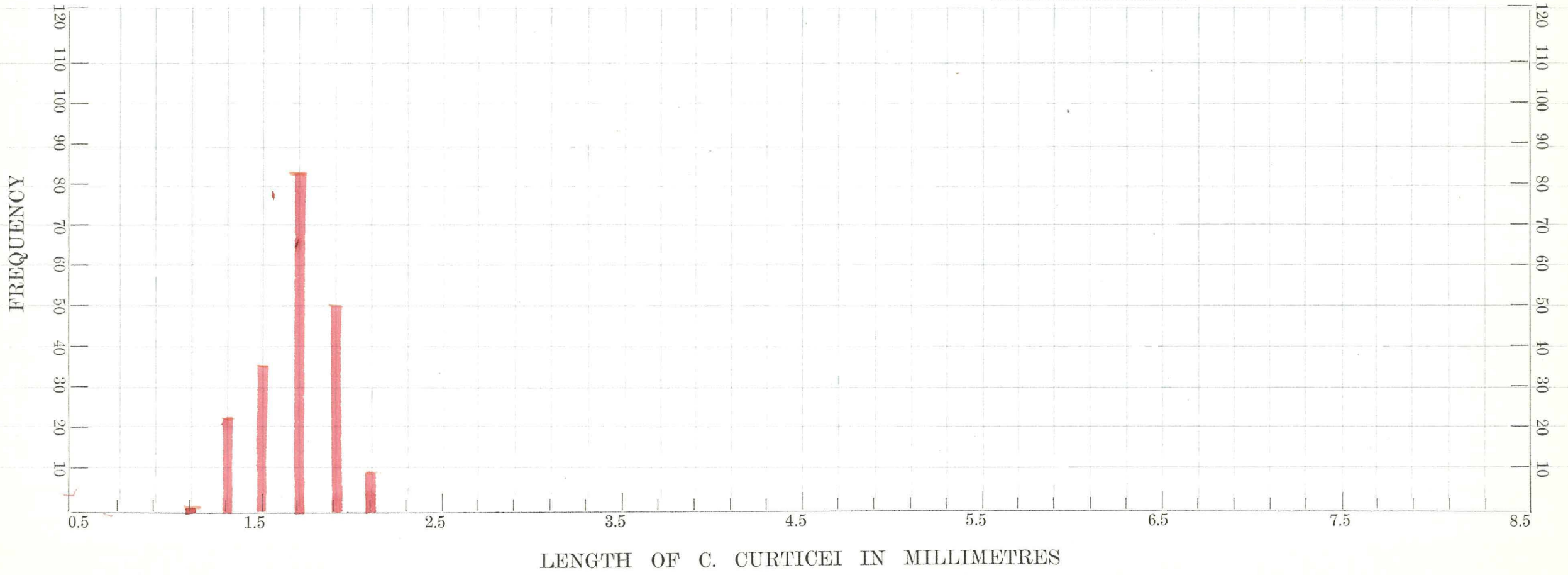
Graph 15

Sheep No. 35

Age of Population 5 Days. Sex Female

Instar 4 Mean 1.70 s 0.22

Mean s



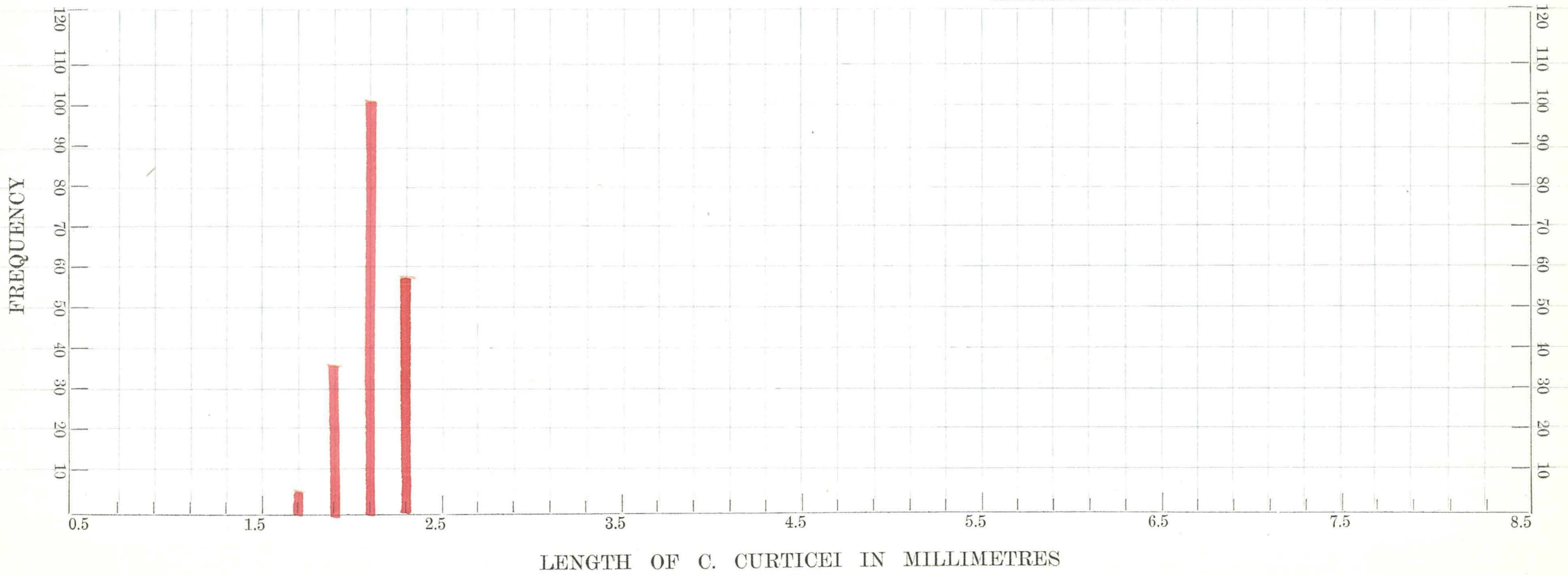
Graph 46

Sheep No. 24.....

Age of Population 6 Days. Sex Male.....

Instar 4 Mean 2.10 s 0.14.....

Mean..... s.....



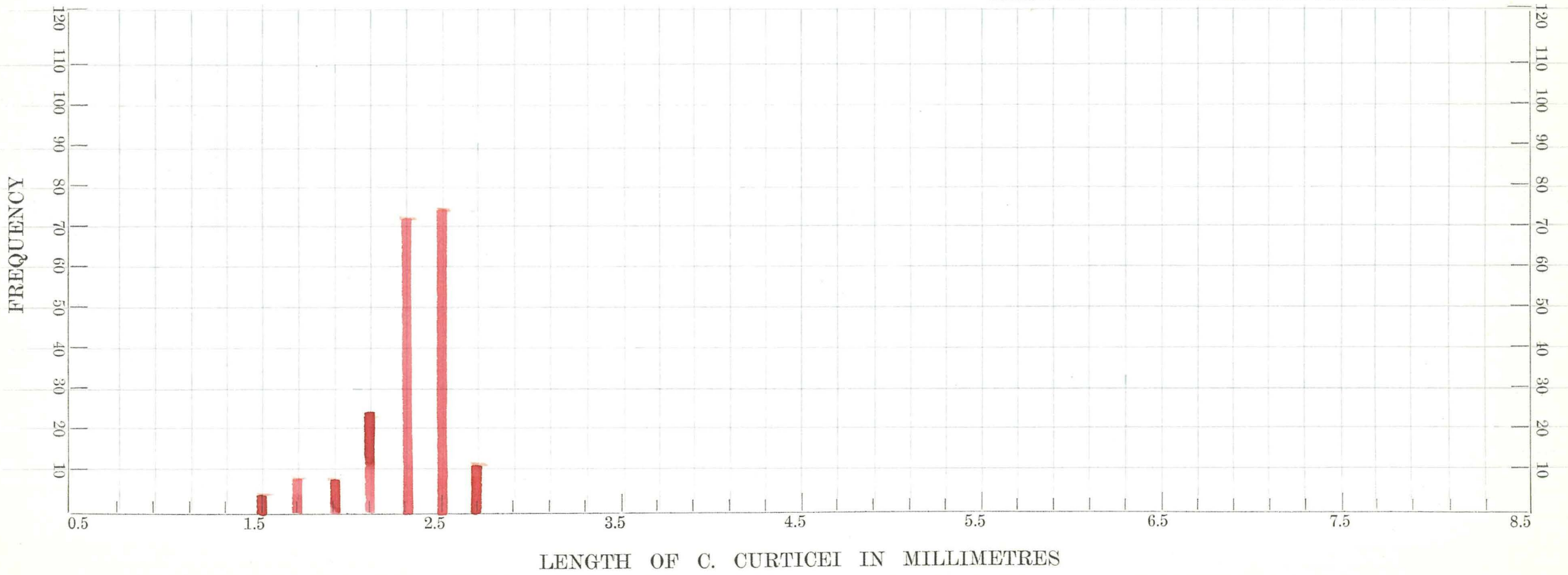
Graph 47.....

Sheep No. 24.....

Age of Population 6 Days. Sex Female.....

Instar 4 Mean 2.30 s 0.25.....

..... Mean..... s.....



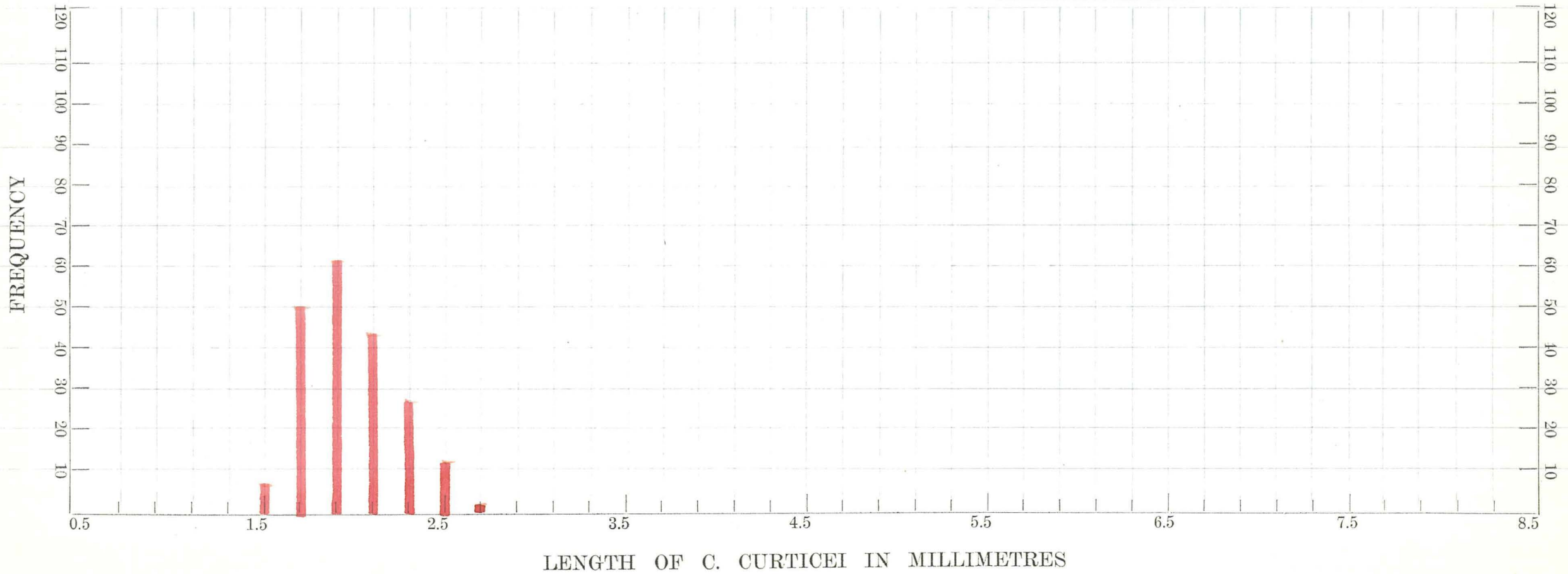
Graph.....1.8.....

Sheep No. 28

Age of Population 6 Days. Sex Male

Instar 4 Mean 2.00 s 0.25

Mean s



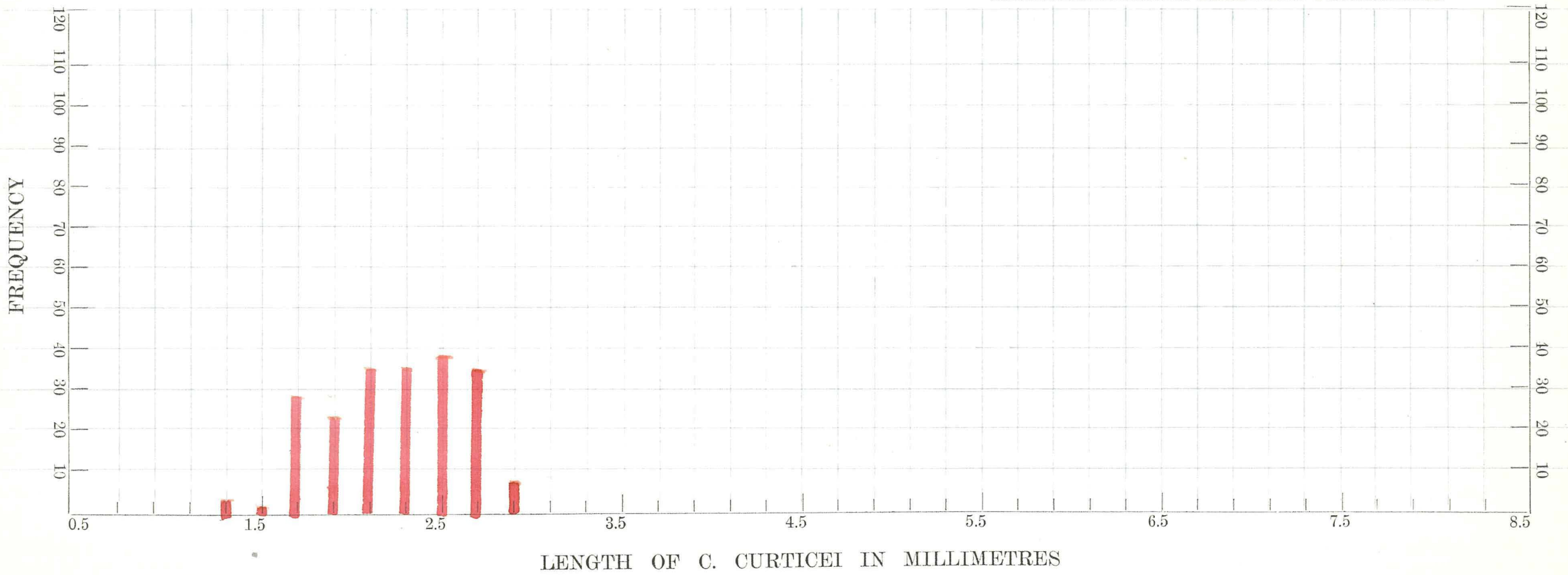
Graph 49

Sheep No. 28

Age of Population 6 Days. Sex Female

Instar 4 Mean 2.30 s 0.37

Mean s



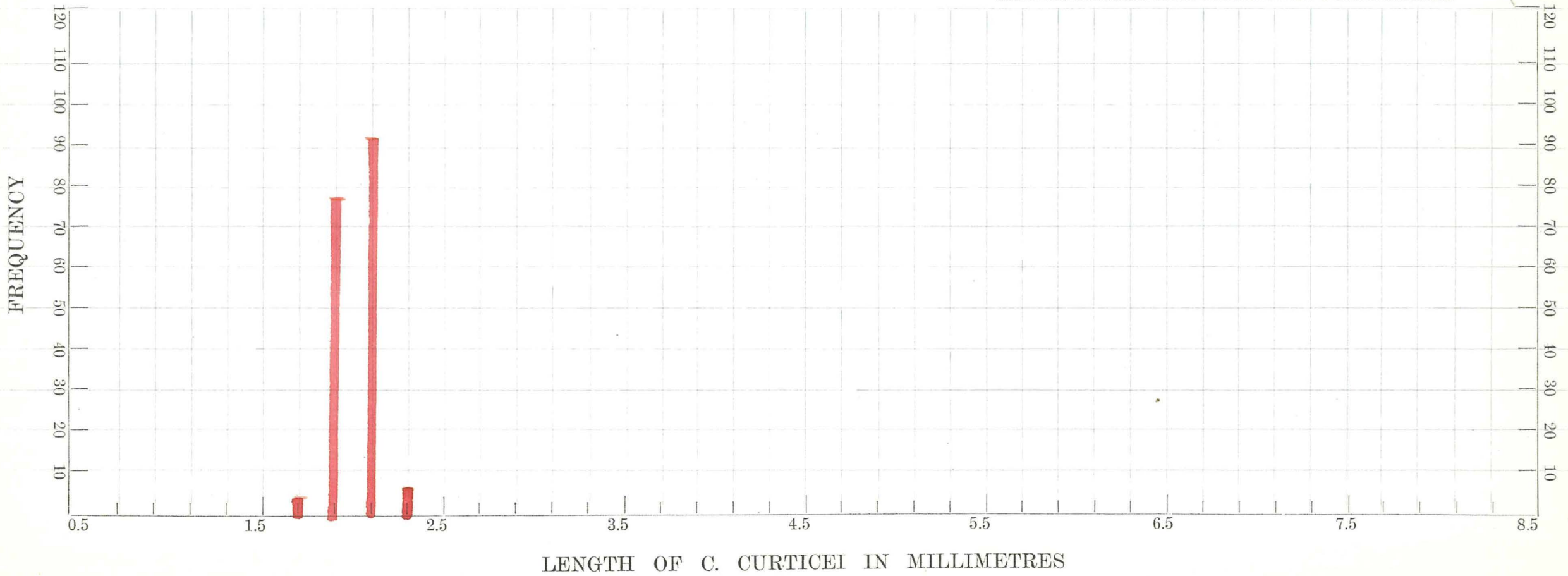
Graph 20

Sheep No. 37.....

Age of Population 6 Days. Sex Male.....

Instar 4 Mean 1.99 s 0.13.....

..... Mean..... s.....



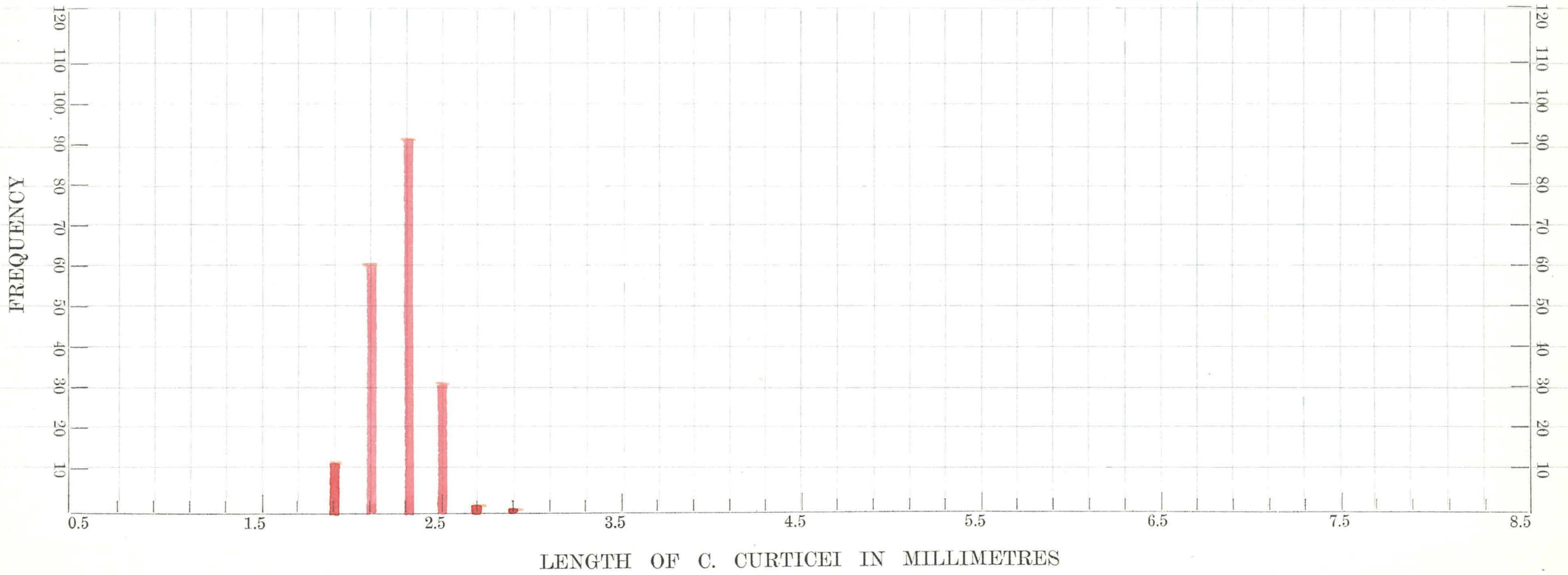
Graph 24.....

Sheep No. 37

Age of Population 6 Days. Sex Female

Instar 4 Mean 2.30 s 0.21

Mean s



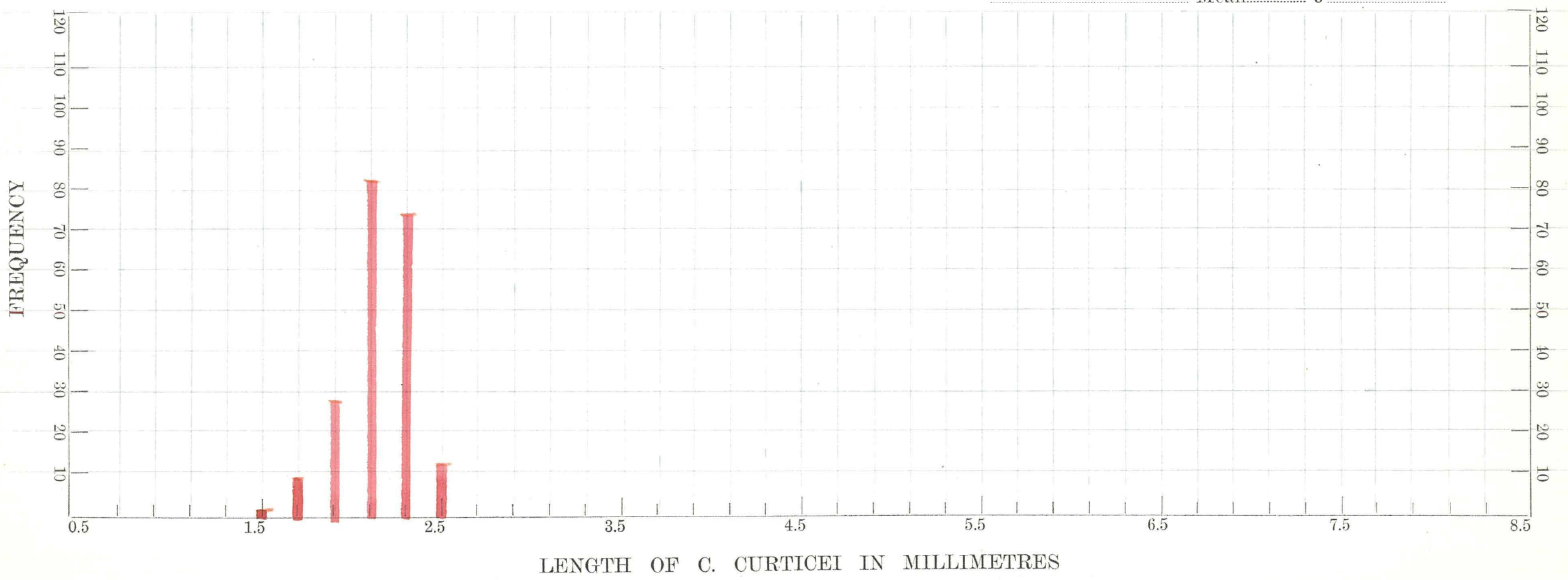
Graph 22

Sheep No. 40

Age of Population 6 Days. Sex Male

Instar 4 Mean 2.10 s 0.17

Mean s



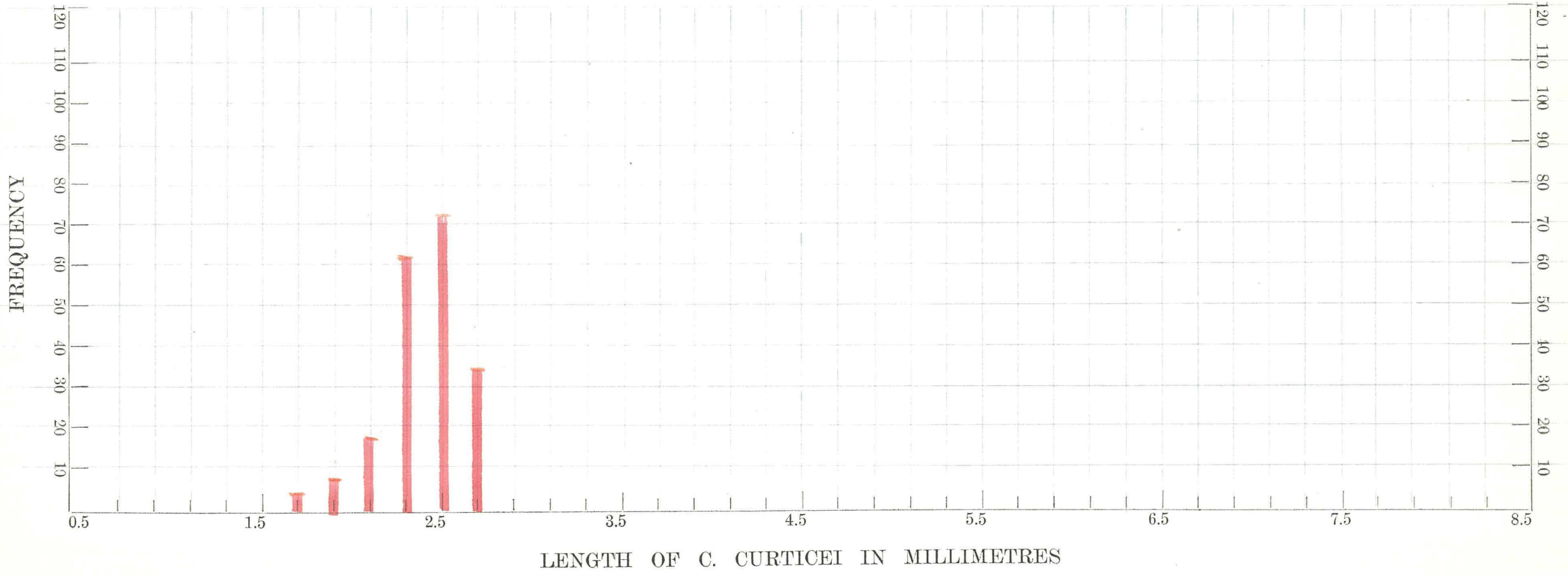
Graph 23

Sheep No. 40.....

Age of Population 6..... Days. Sex Female.....

Instar: 4..... Mean 2.40. s 0.22.....

Mean..... s.....



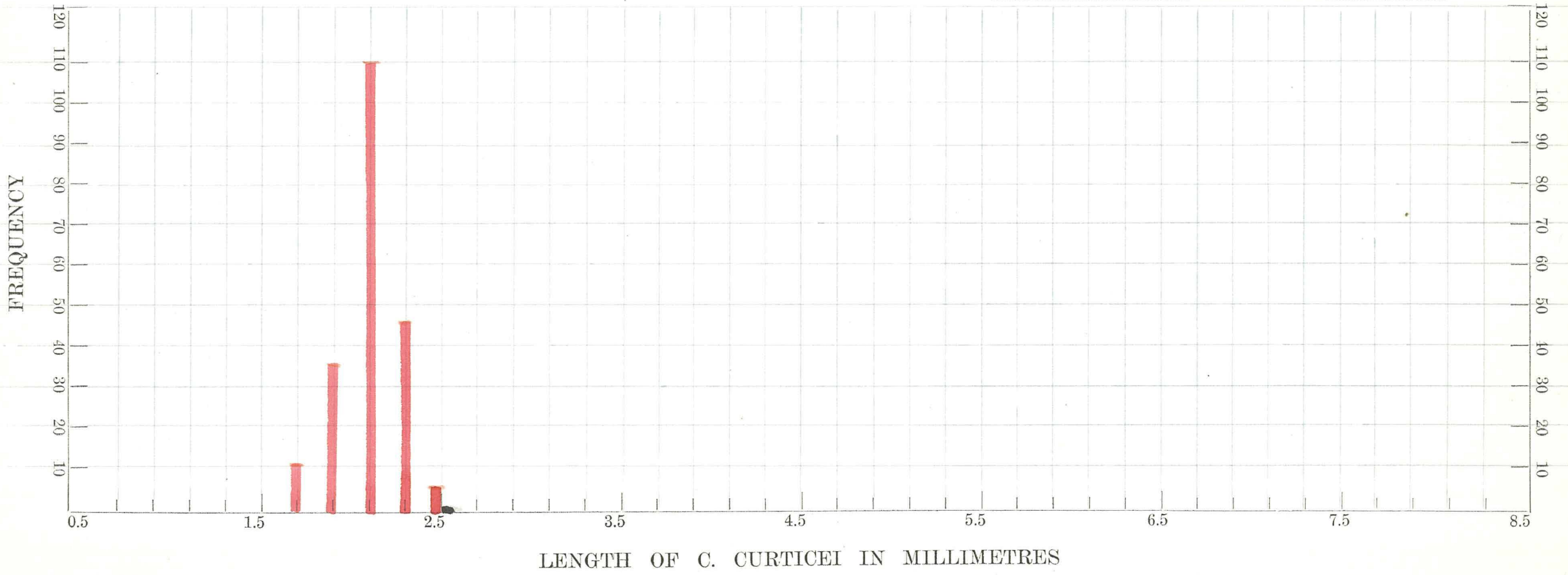
Graph 24.....

Sheep No. 10

Age of Population 7 Days. Sex Male

Instar 4 Mean 2.10 s 0.18

Mean s



Sheep No. 10

Age of Population 7 Days. Sex Female

Instar 4 Mean 2.50 s 0.27

Mean s



Graph 26

Sheep No. 23.....

Age of Population 7 Days. Sex Male.....

Instar 4 Mean 1.77 s 0.21.....

Mean..... s.....



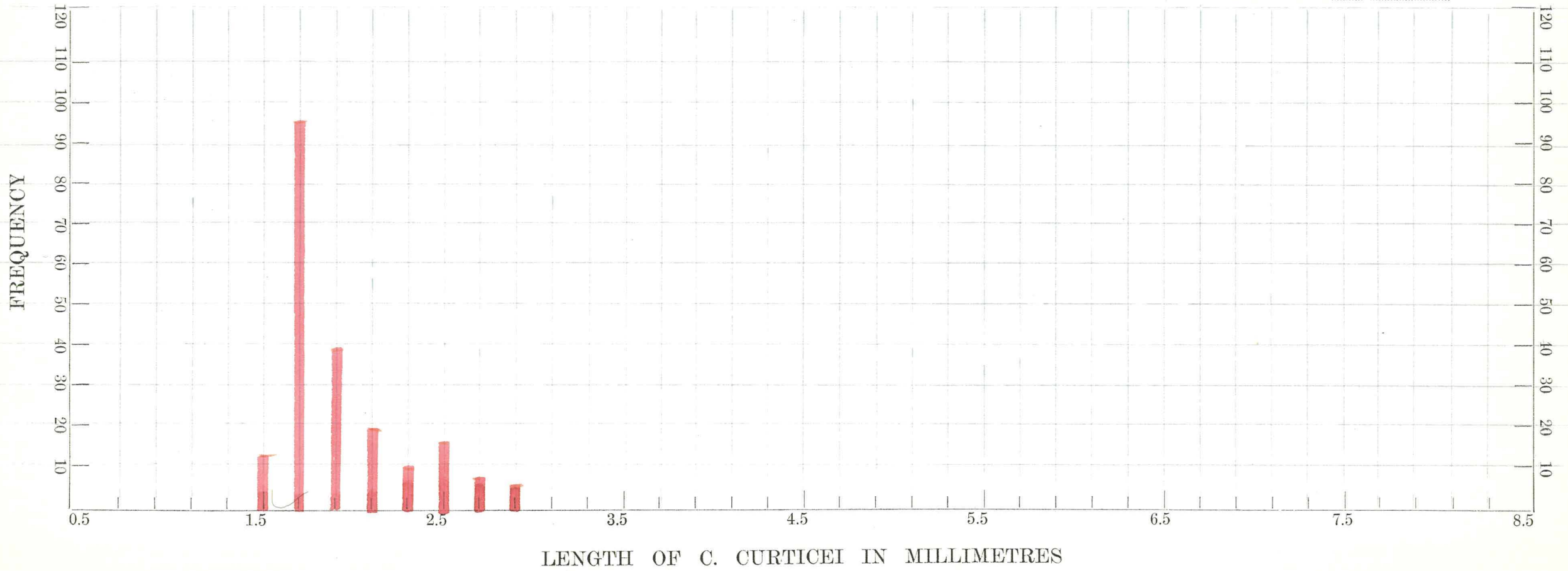
Graph 27.....

Sheep No. 23

Age of Population 7 Days. Sex Female

Instar 4 Mean 1.90 s 0.33

Mean s



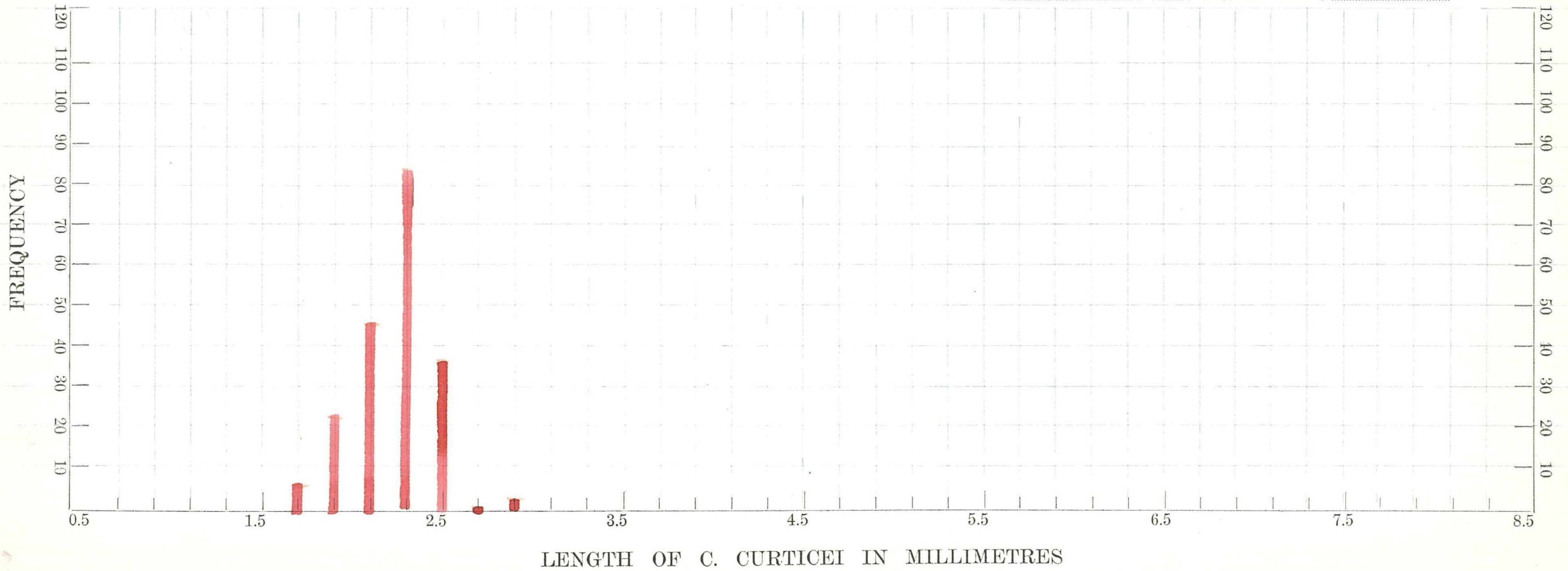
Graph 28

Sheep No. 41

Age of Population 7 Days. Sex Male

Instar 4 Mean 2.20 s 0.21

Mean s

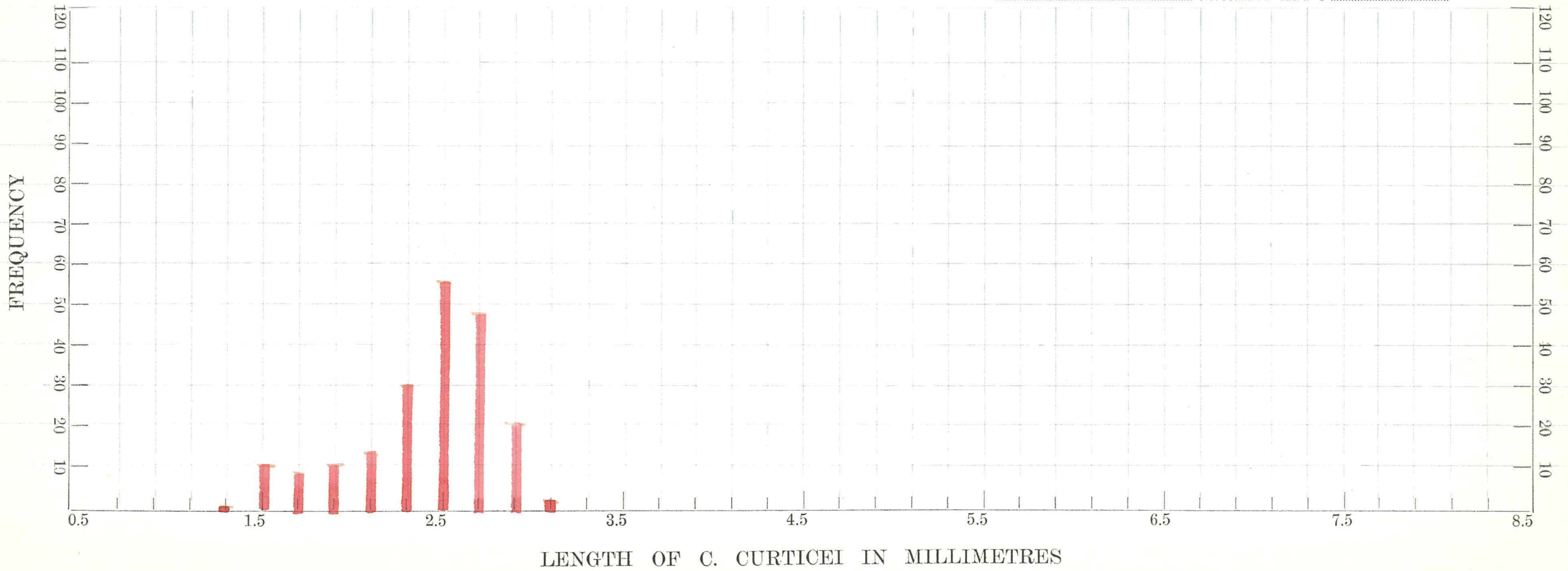


Sheep No. 41.....

Age of Population 7 Days. Sex Female.....

Instar 4..... Mean 2.40 s 0.40.....

Mean..... s.....

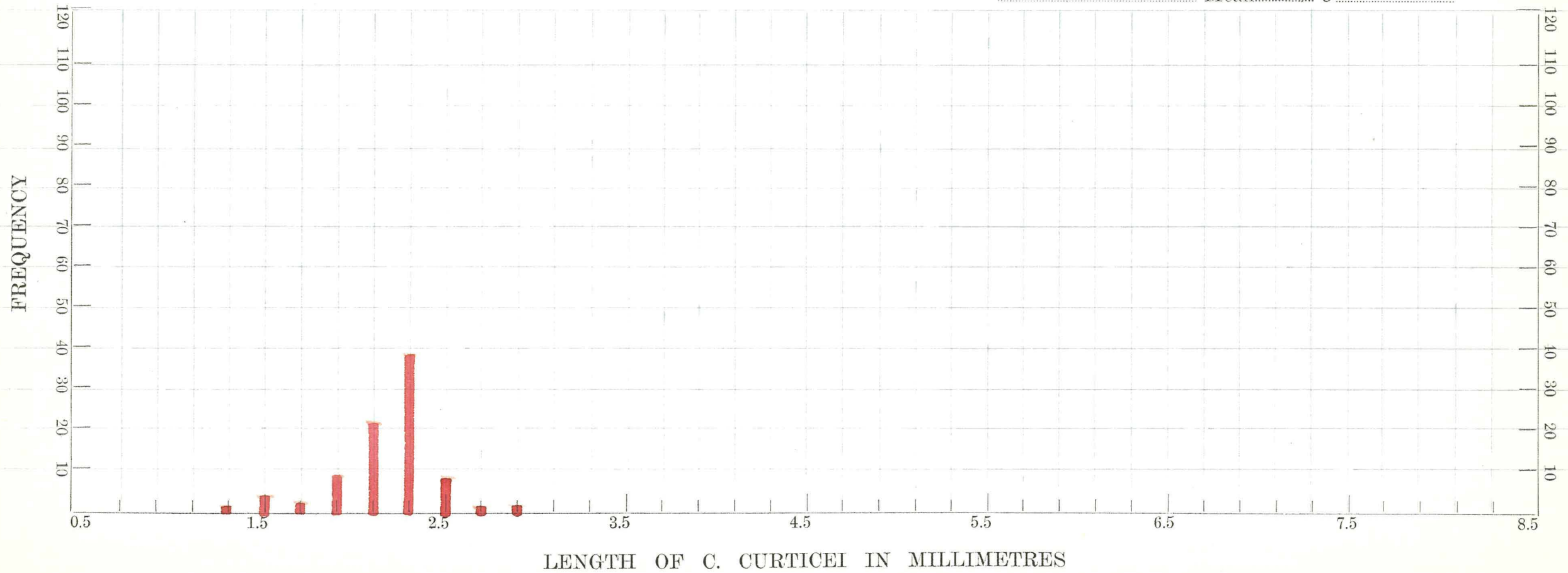


Sheep No. 43

Age of Population 7 Days. Sex Male

Instar 4 Mean 2.20 s 0.27

Mean s



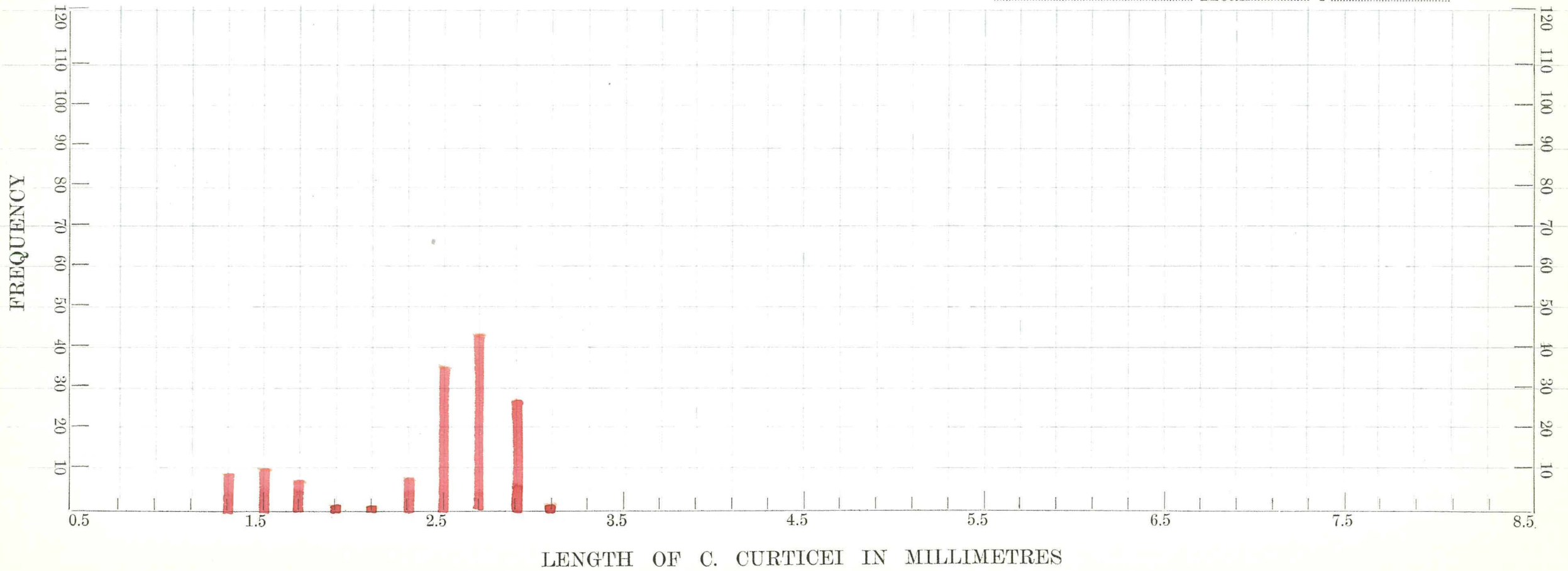
Graph 31

Sheep No. 43

Age of Population 7 Days. Sex Female

Instar 4 Mean 2.40 s 0.51

Mean s



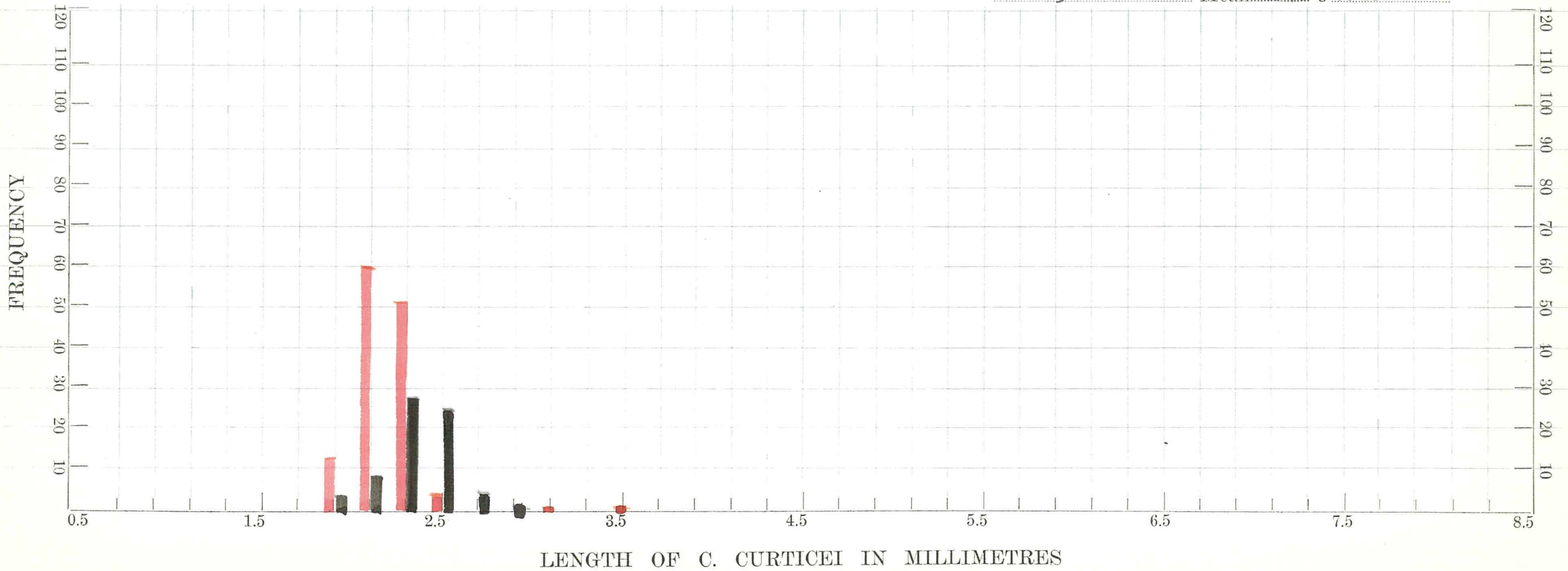
Graph 32

Sheep No. 8

Age of Population 8 Days. Sex Male

Instar 4 Mean 2.20 s 0.19

5 Mean 2.40 s 0.26



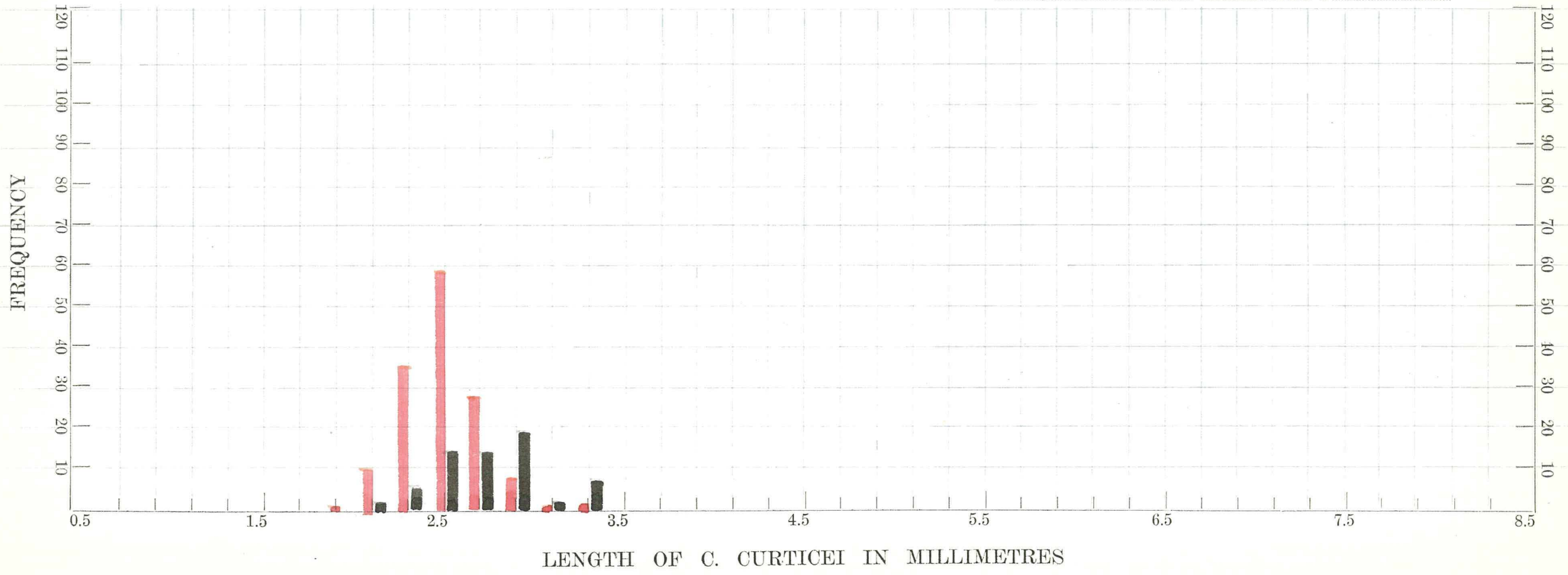
Graph 33

Sheep No. 8.....

Age of Population 8 Days. Sex Female.....

Instar 4 Mean 2.50 s 0.25.....

5 Mean 2.81 s 0.41.....

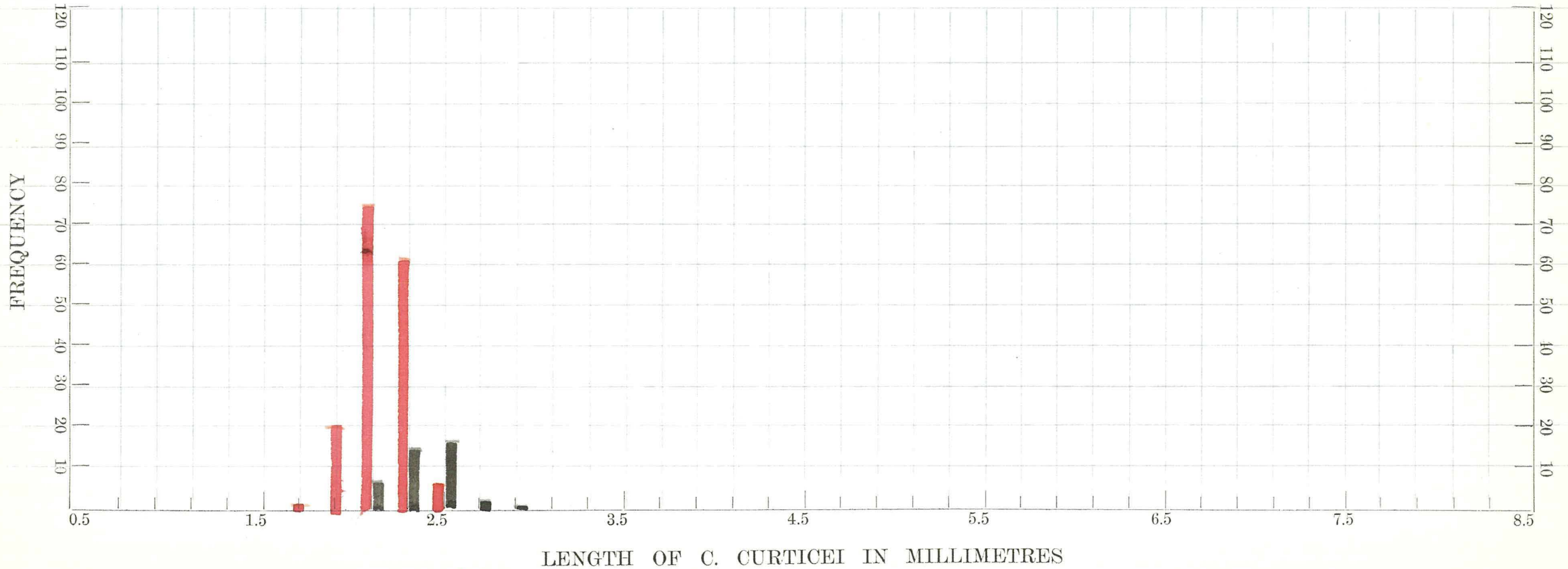


Sheep No. 19

Age of Population 8 Days. Sex Male

Instar 4 ██████████ Mean 2.16 s 0.13

5 ██████████ Mean 2.38 s 0.18

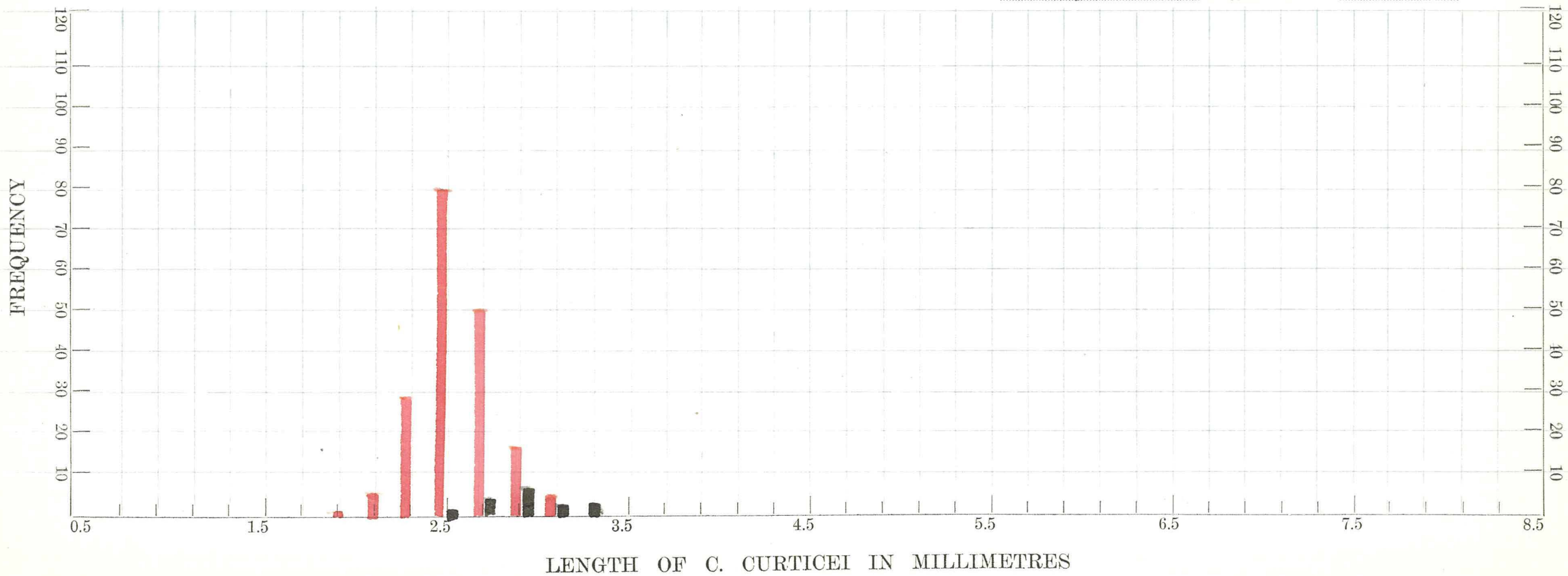


Sheep No. 19

Age of Population 8 Days. Sex Female

Instar 4 ████████ Mean 2.52 s 0.25

5 ████████ Mean 2.91 s 0.23

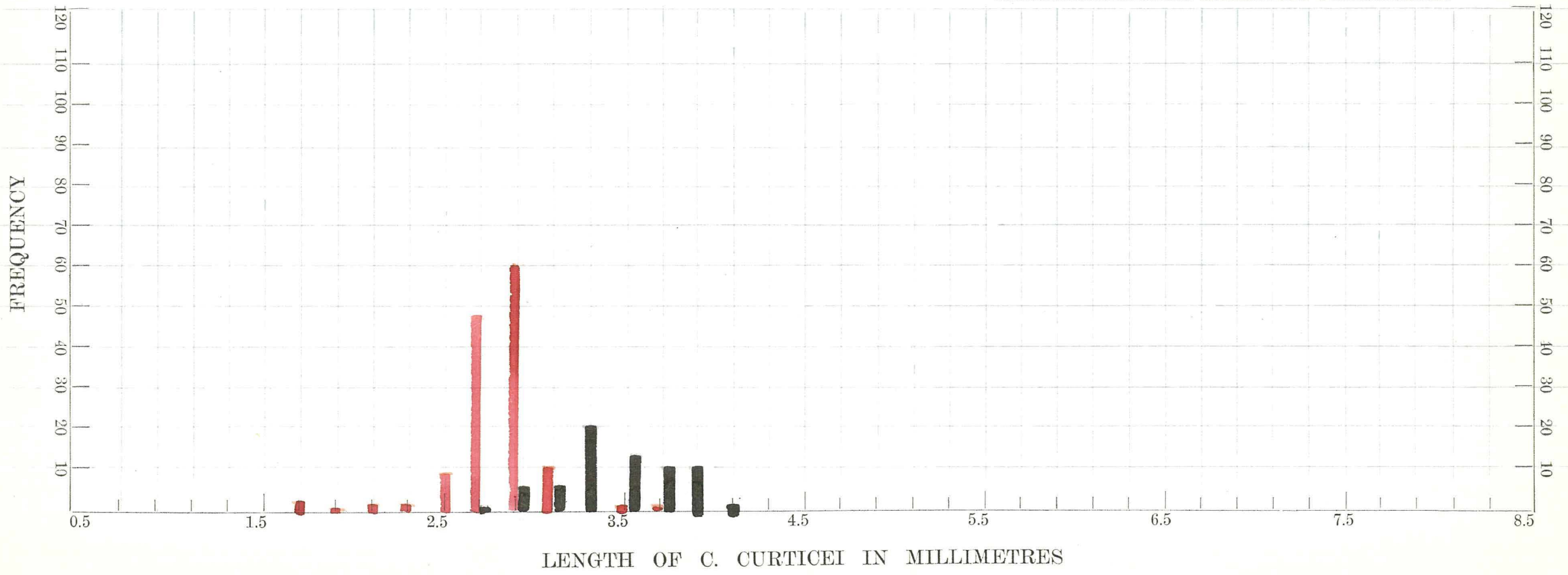


Sheep No. 34

Age of Population 8 Days. Sex Male

Instar 4 Mean 2.77s 0.25

5 Mean 3.46s 0.29



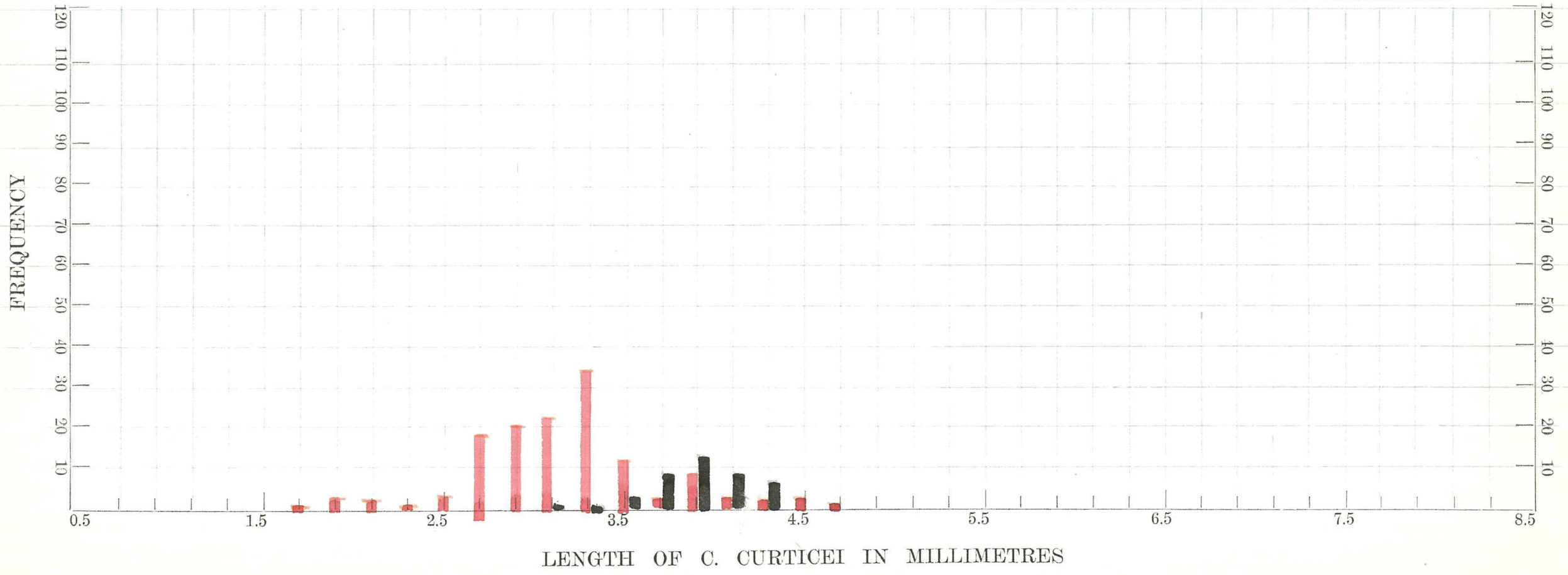
Graph 37

Sheep No. 34

Age of Population 8 Days. Sex Female

Instar 4 Mean 3.26 s 0.60

Instar 5 Mean 4.03 s 0.43



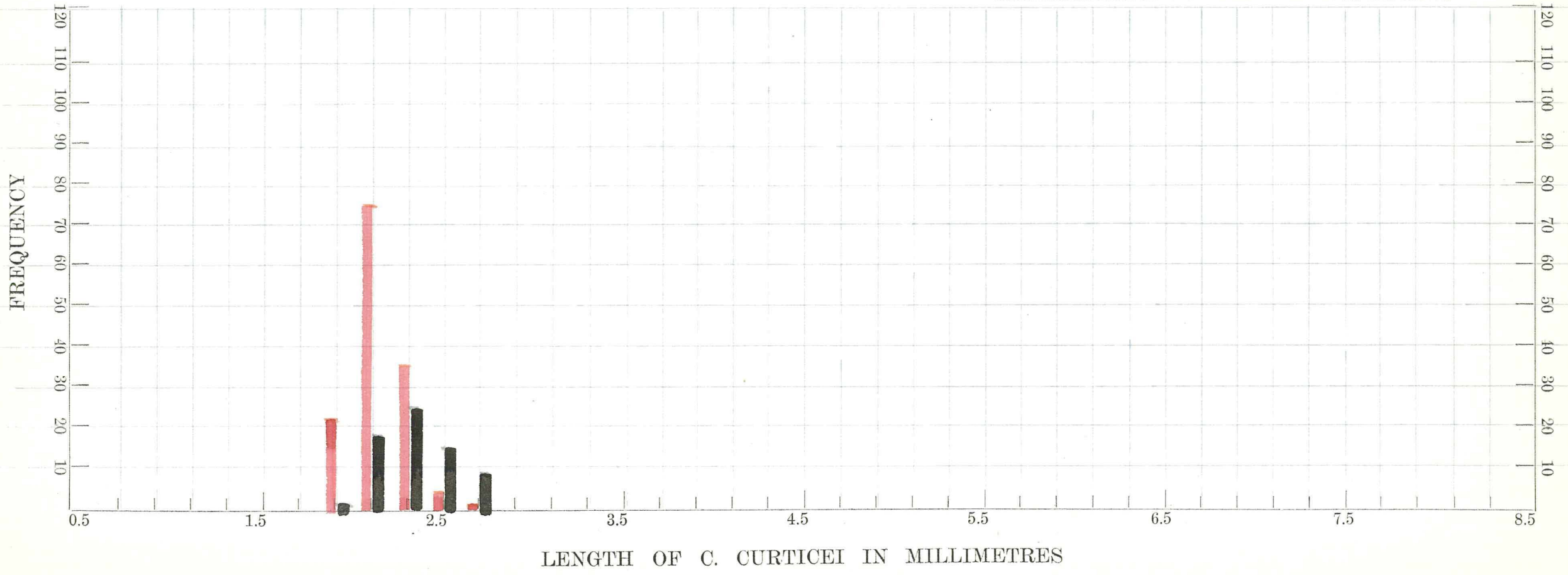
Graph 38

Sheep No. 42

Age of Population 8 Days. Sex Male

Instar 4 Mean 2.14 s 0.15

5 Mean 2.30 s 0.18

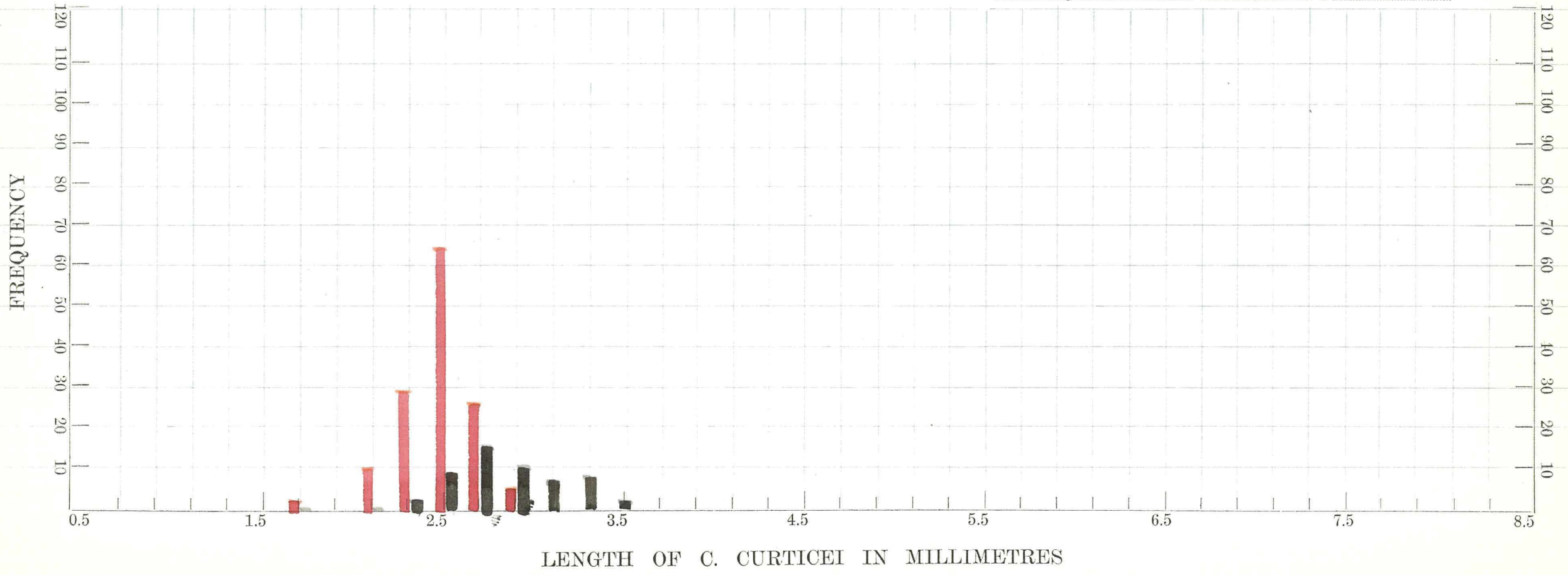


Sheep No. 42

Age of Population 8 Days. Sex Female

Instar 4 Mean 2.43 s 0.23

5 Mean 2.79 s 0.36



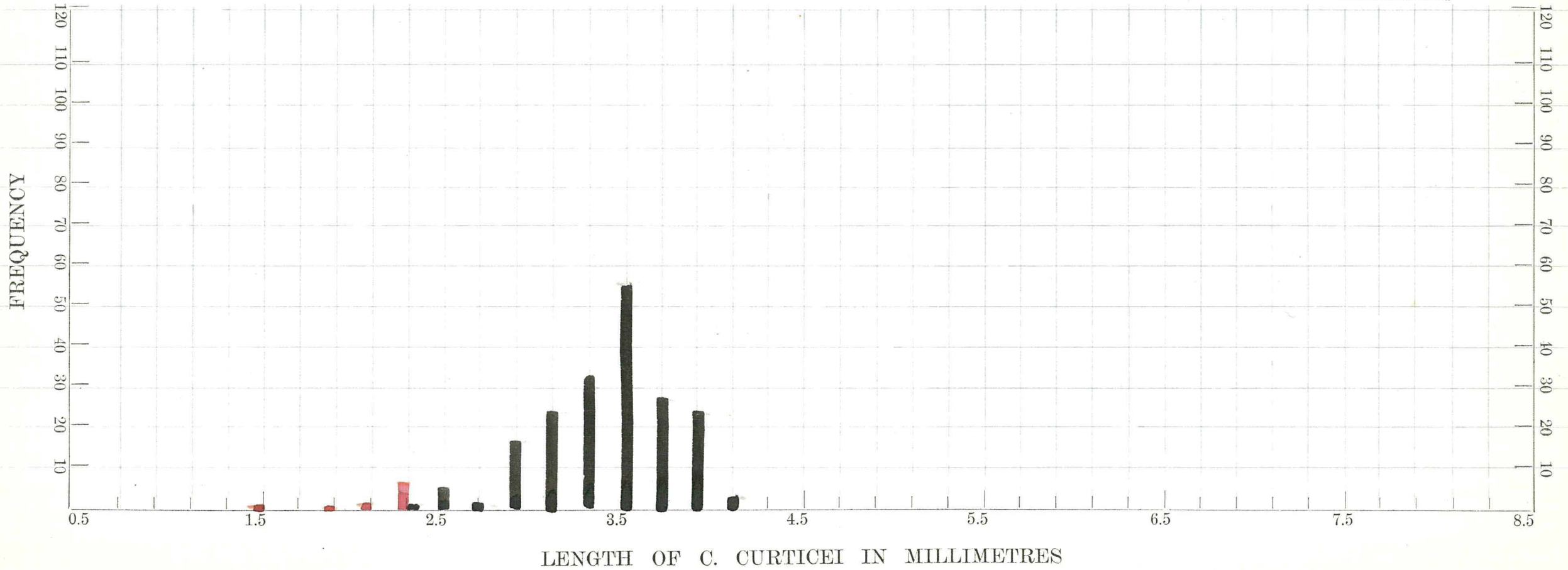
Graph 400

Sheep No. 2

Age of Population 9 Days. Sex Male

Instar 4 Mean 2.12s 0.26

5 Mean 3.40s 0.38

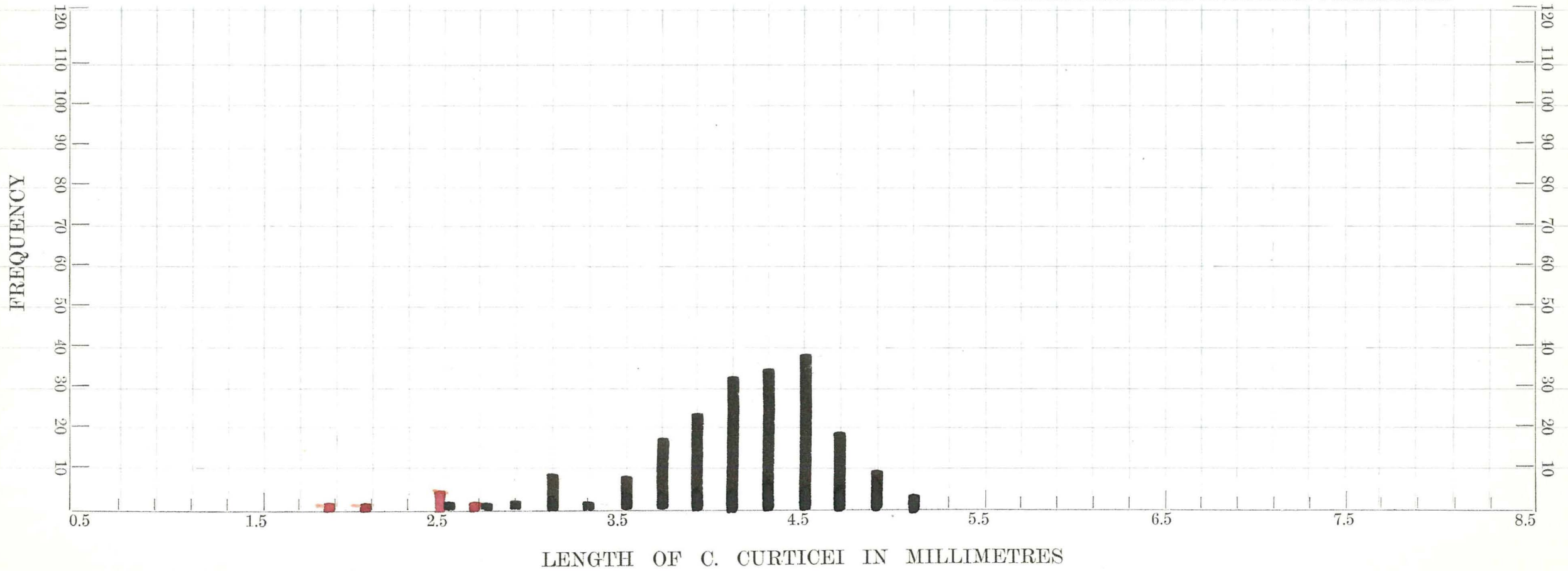


Sheep No. 2

Age of Population 9 Days. Sex Female

Instar 4 ████████ Mean 2.40 s 0.28

5 ████████ Mean 4.19 s 0.46



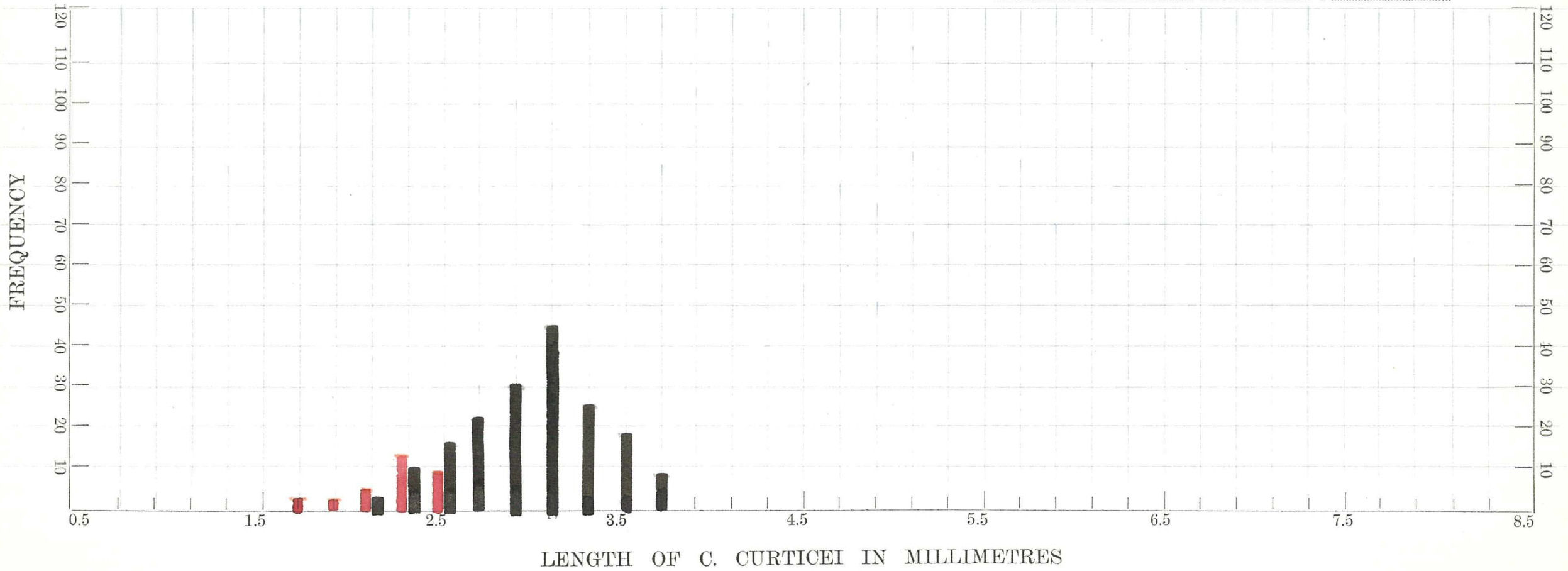
Graph 42

Sheep No. 7

Age of Population 9 Days. Sex Male

Instar 4 Mean 2.23 s 0.23

5 Mean 3.00 s 0.36



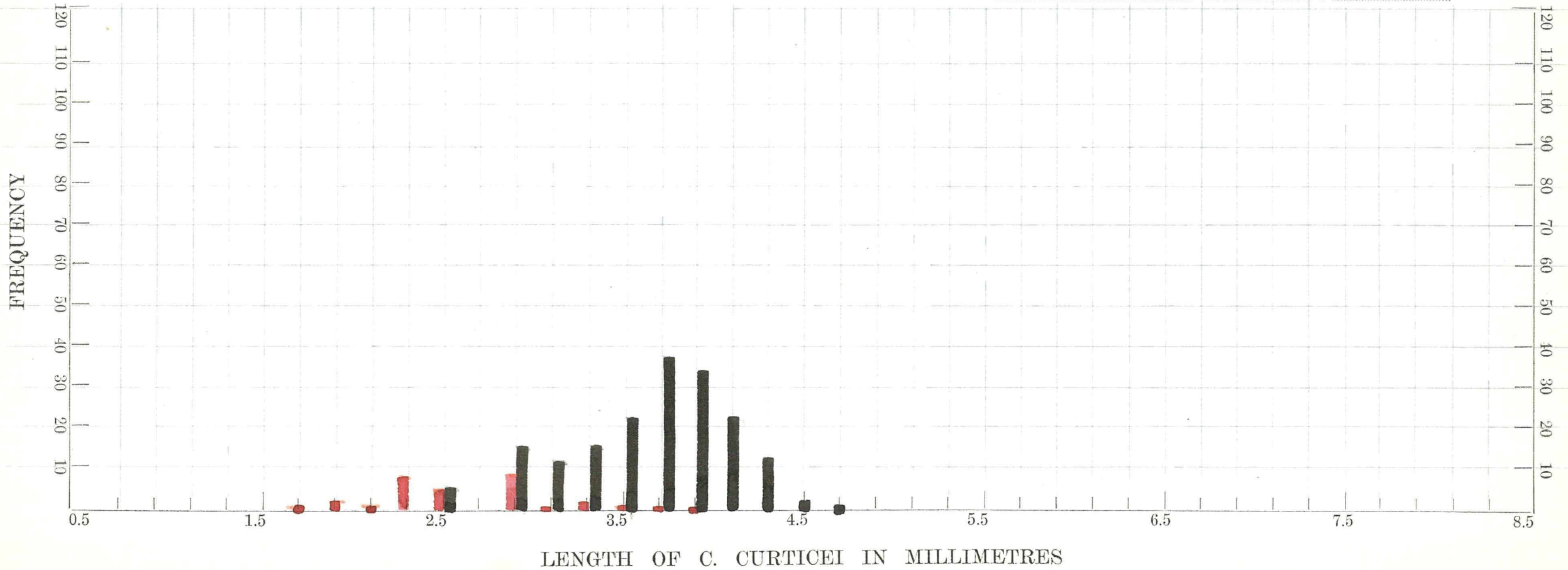
Graph 43

Sheep No. 7

Age of Population 9 Days. Sex Female

Instar 4 ████████ Mean 2.74 s 0.52

5 ████████ Mean 3.70 s 0.43



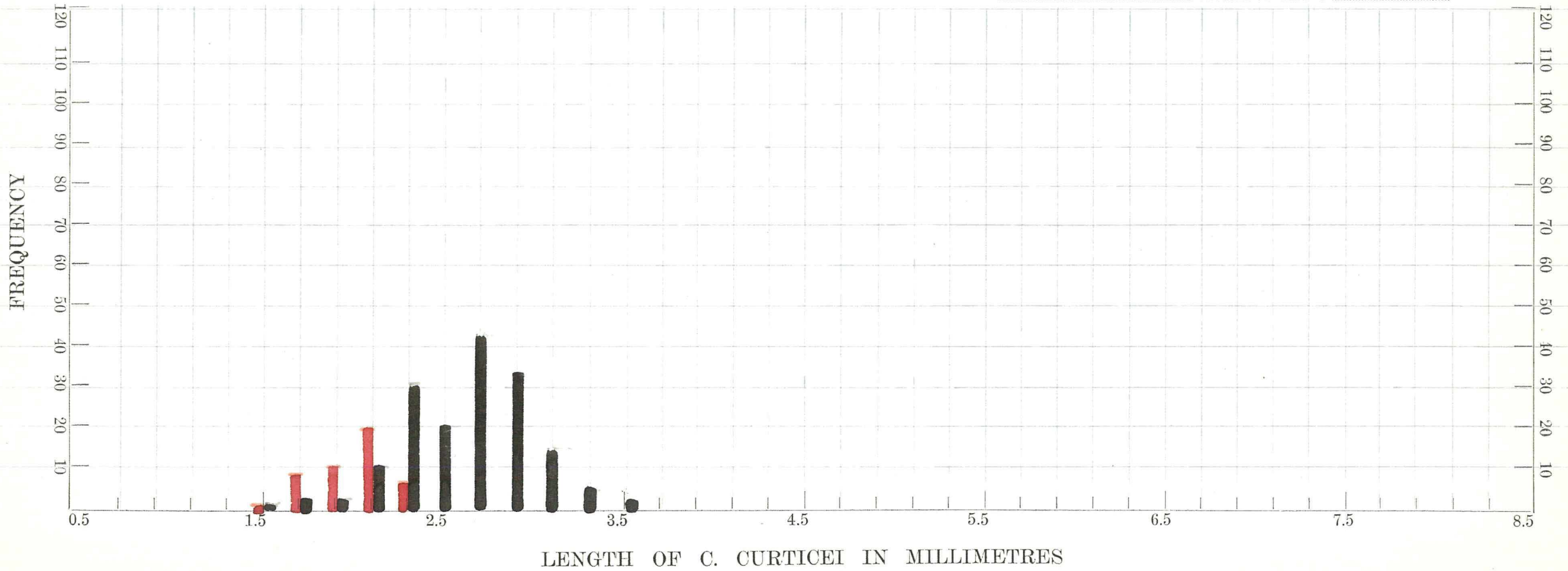
Graph 44

Sheep No. 25

Age of Population 9 Days. Sex Male

Instar 4 ████████ Mean 2.00 s 0.18

5 ████████ Mean 2.64 s 0.34



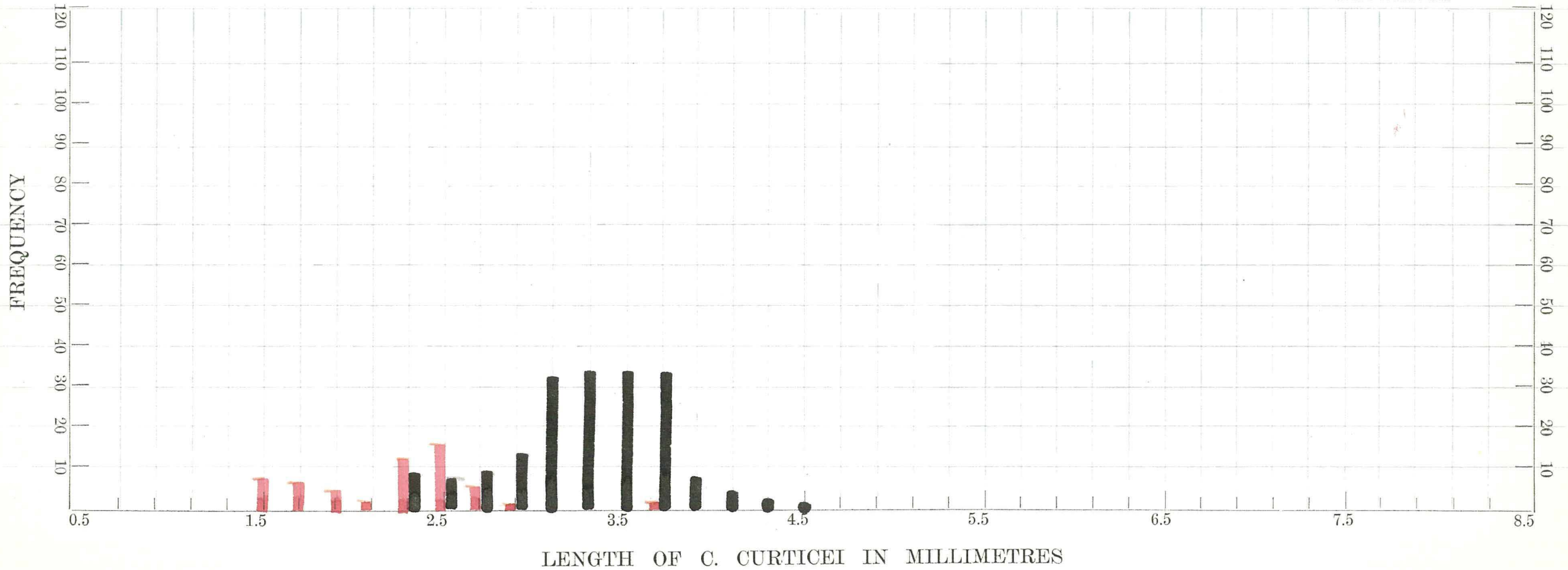
Graph 45

Sheep No. 25

Age of Population 9 Days. Sex Female

Instar 5 Mean 3.17 s 0.38

4 Mean 1.93 s 0.37



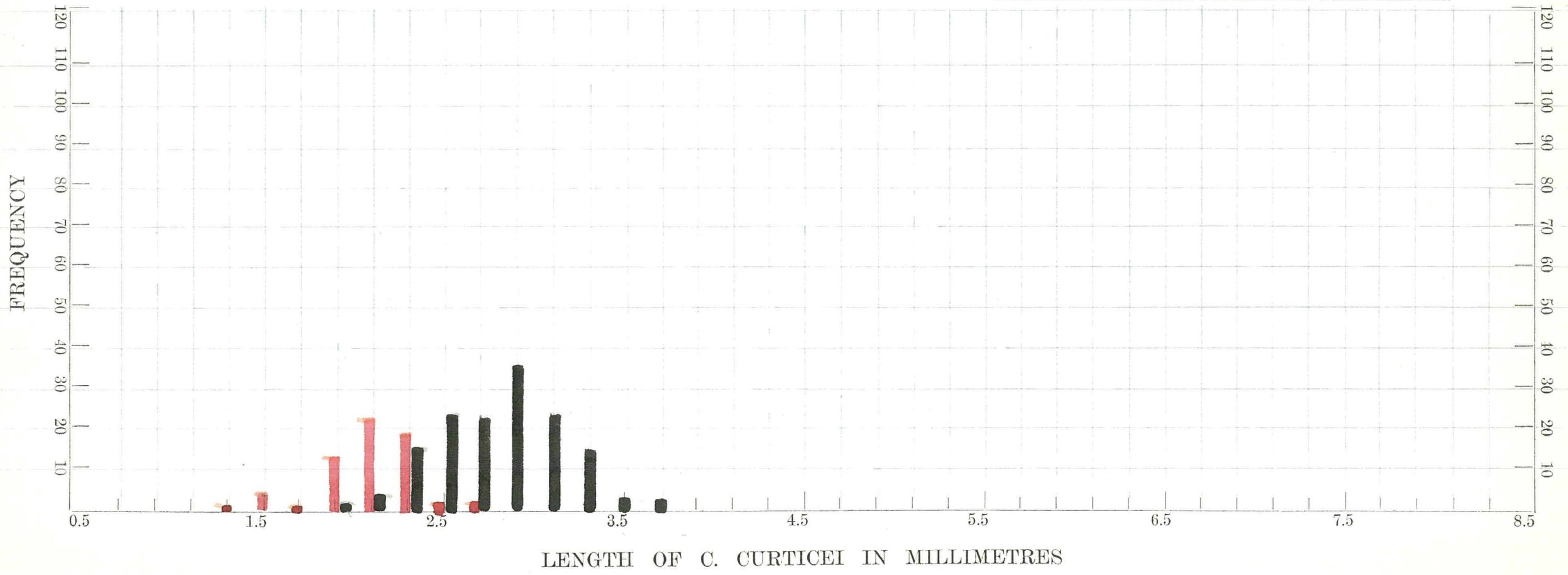
Graph 46

Sheep No. 25 ("Washings")

Age of Population 9 Days. Sex Female

Instar 4 ██████████ Mean 2.05 s 0.32

5 ██████████ Mean 2.78 s 0.44



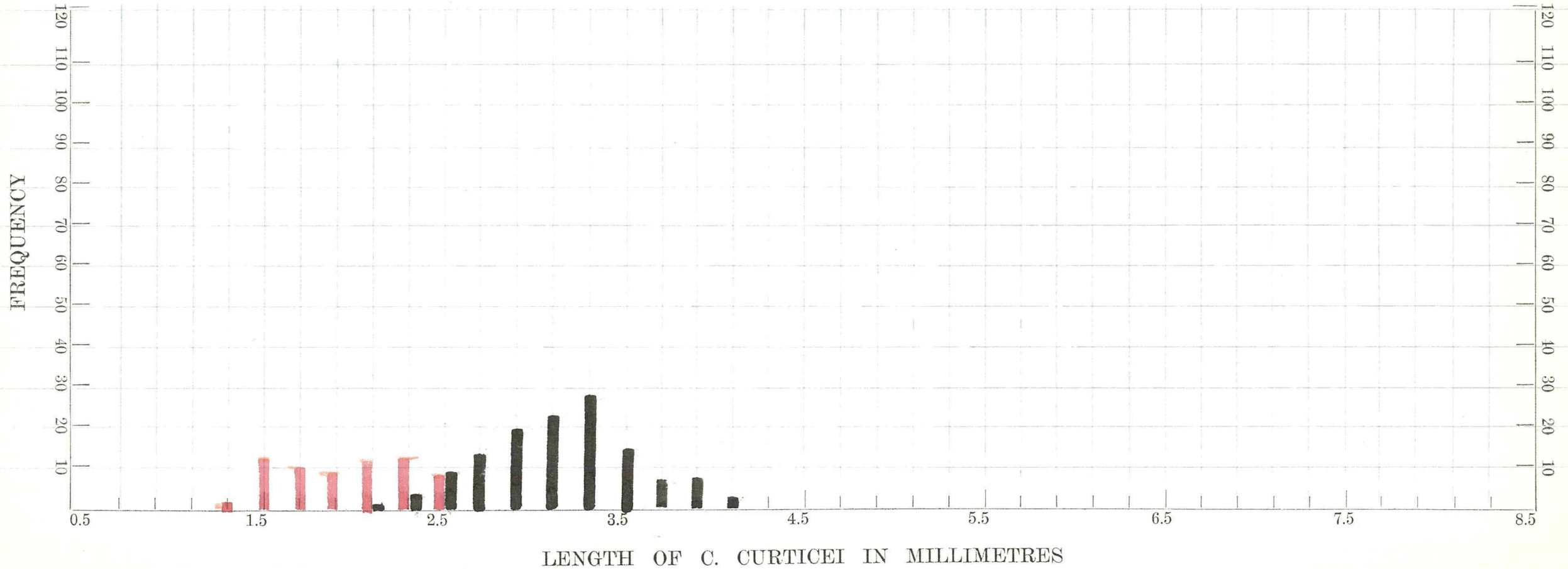
Graph 47

Sheep No. 25 ("Washings")

Age of Population 9 Days. Sex Female

Instar 4 █ Mean 2.23s 0.47

5 █ Mean 3.30s 0.44

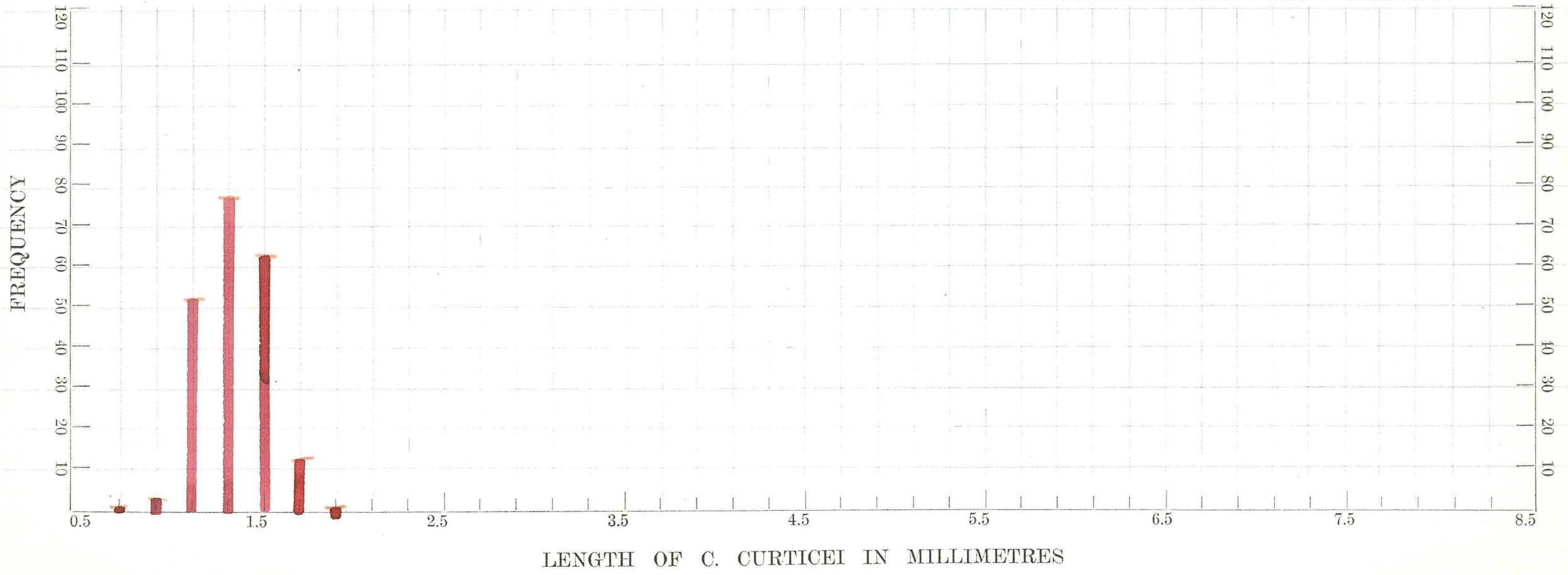


Sheep No. 49

Age of Population 9 Days. Sex Male and Female

Instar 4 Mean 1.31 s 0.24

Mean s



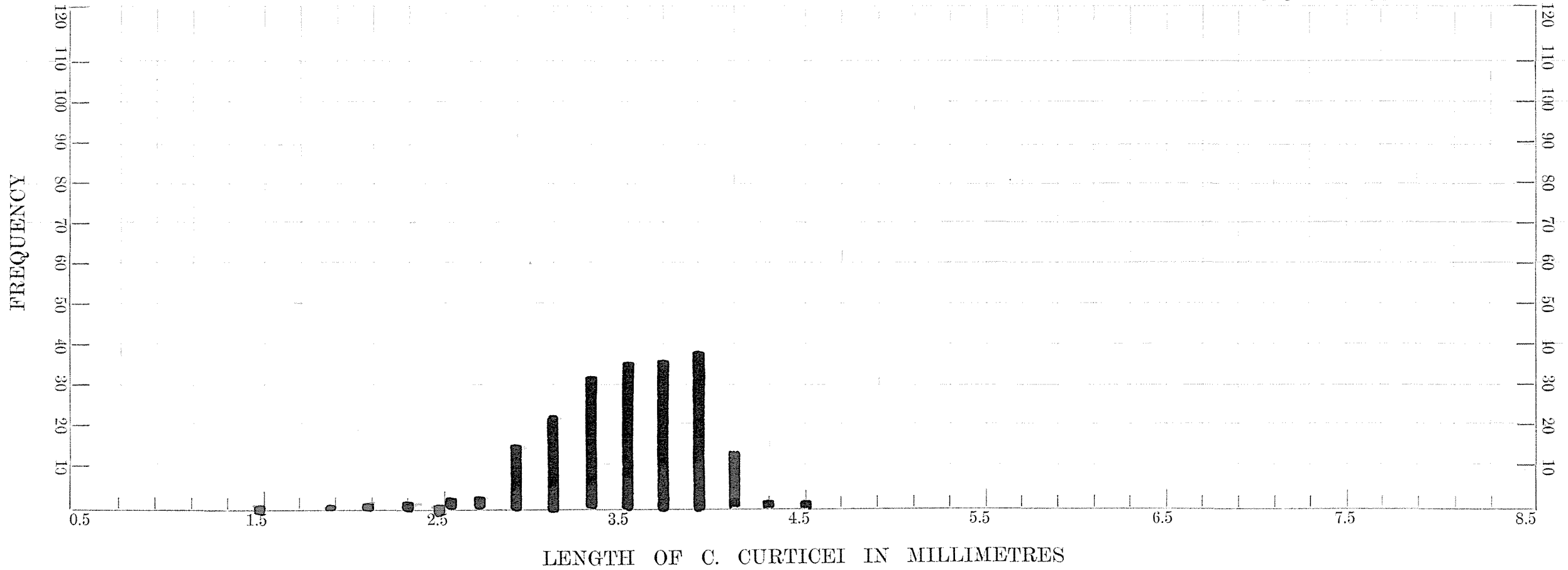
Graph 49

Sheep No. 48

Age of Population 10 Days. Sex Male

Instar 4 Mean - s -

5 Mean 3.52 s 0.39



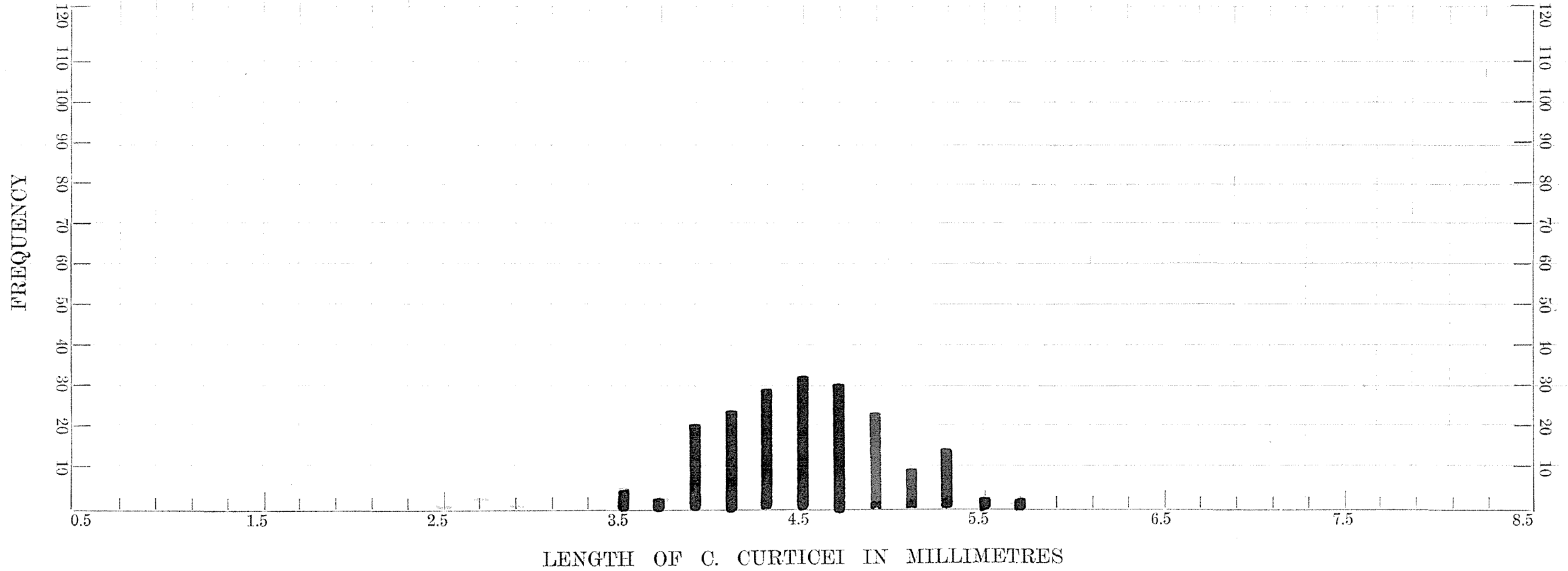
Graph 50

Sheep No. 48

Age of Population 10 Days. Sex Female

Instar 5 Mean 4.40s 0.51

Mean s

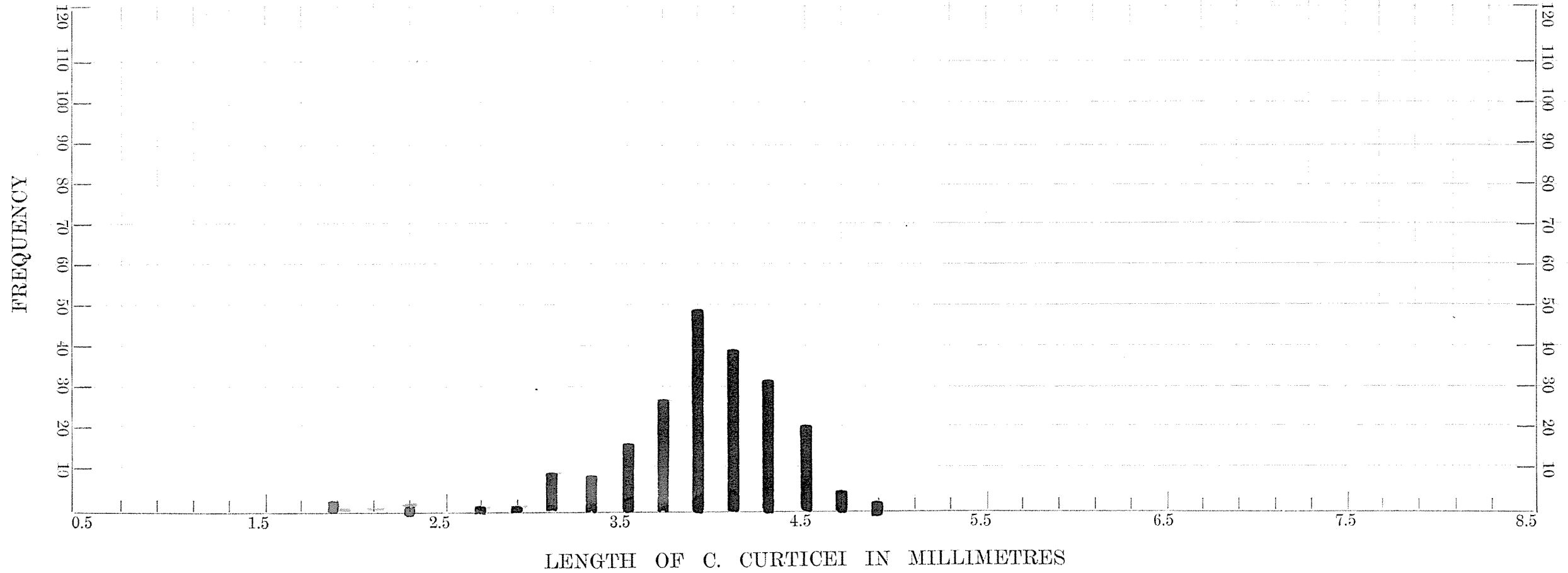


Sheep No. 36

Age of Population 11 Days. Sex Male

Instar 4 Mean 2.0 s 0.20

5 Mean 3.90 s 0.51

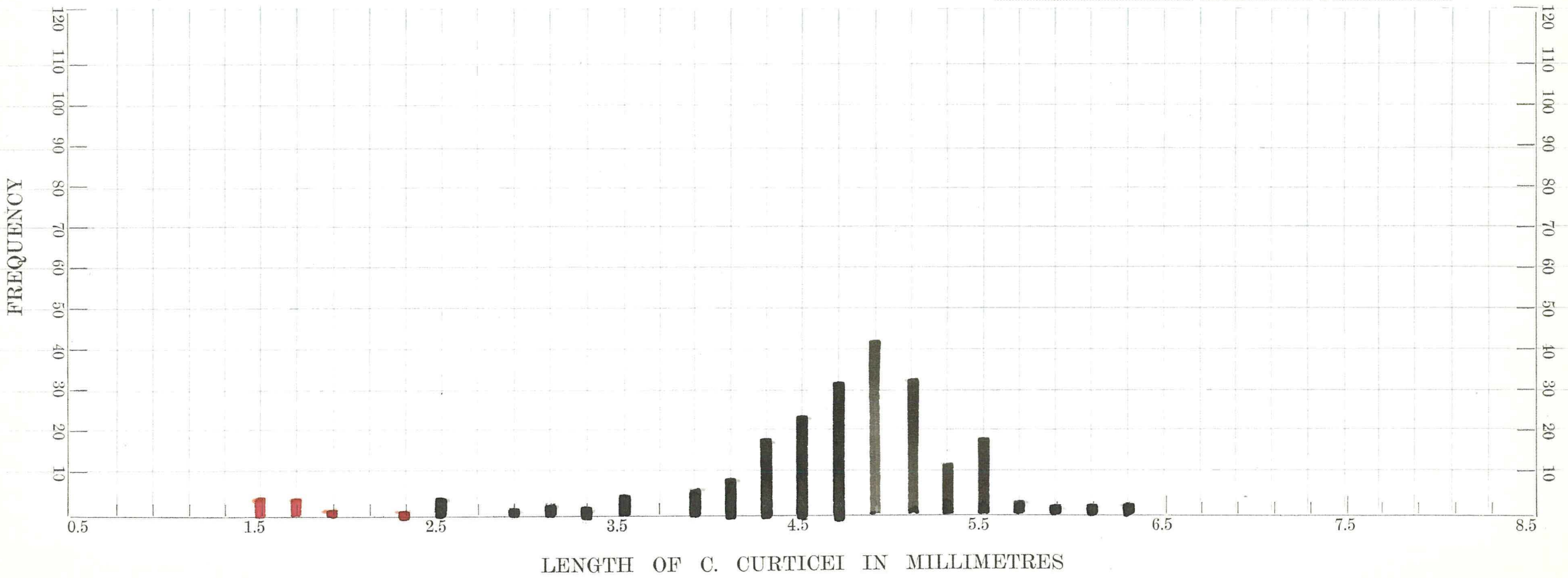


Sheep No. 36

Age of Population 11 Days. Sex Female

Instar 4 █ Mean 1.72 s 0.30

5 █ Mean 4.75 s 0.63



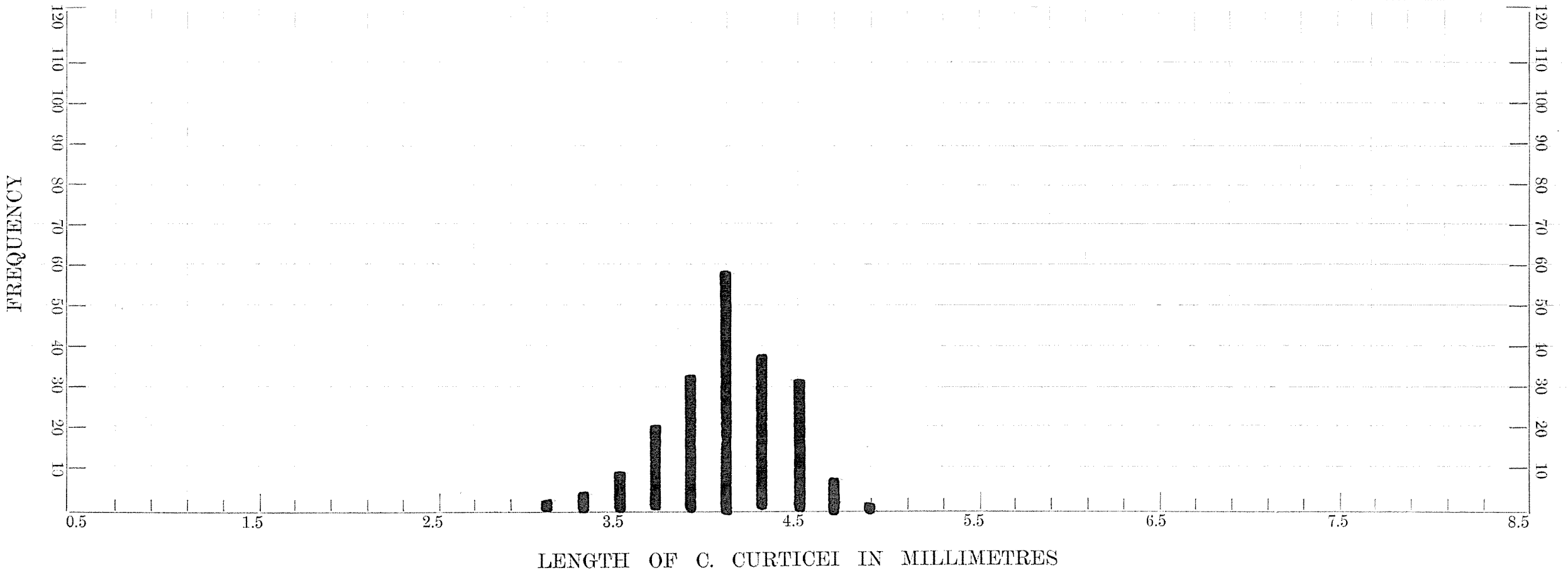
Graph 53

Sheep No. 38

Age of Population 11 Days. Sex Male

Instar 5 Mean 4.09 s 0.35

Mean s



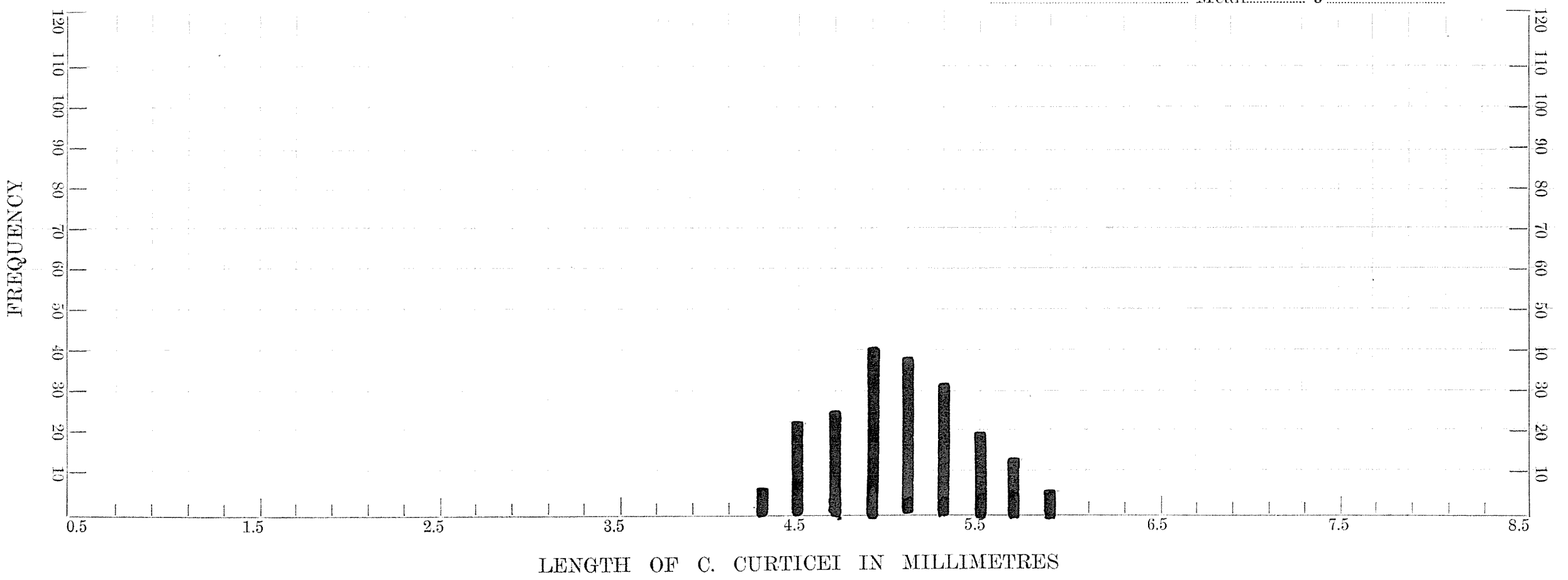
Graph 54

Sheep No. 38

Age of Population 14 Days. Sex Female

Instar 5 Mean 5.02 s 0.46

Mean s



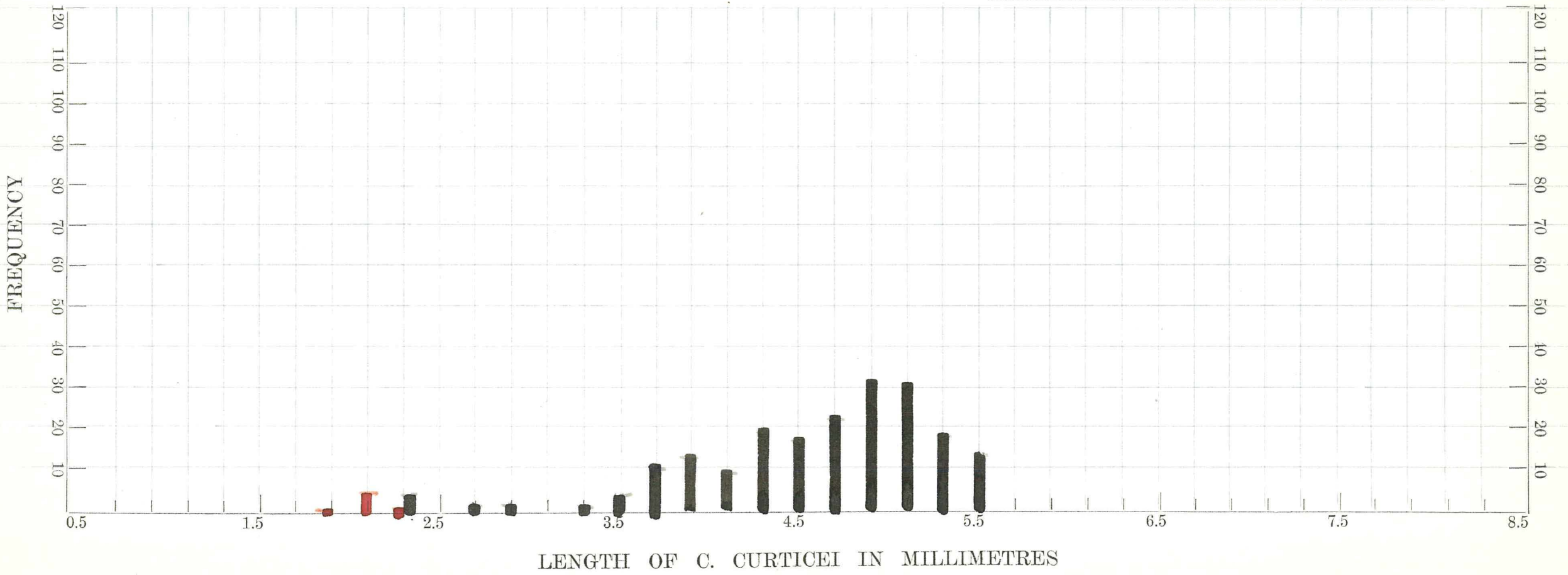
Graph 55

Sheep No. 26

Age of Population 12 Days. Sex Male

Instar 4 Mean 1.07 s 0.40

Instar 5 Mean 4.59 s 0.67



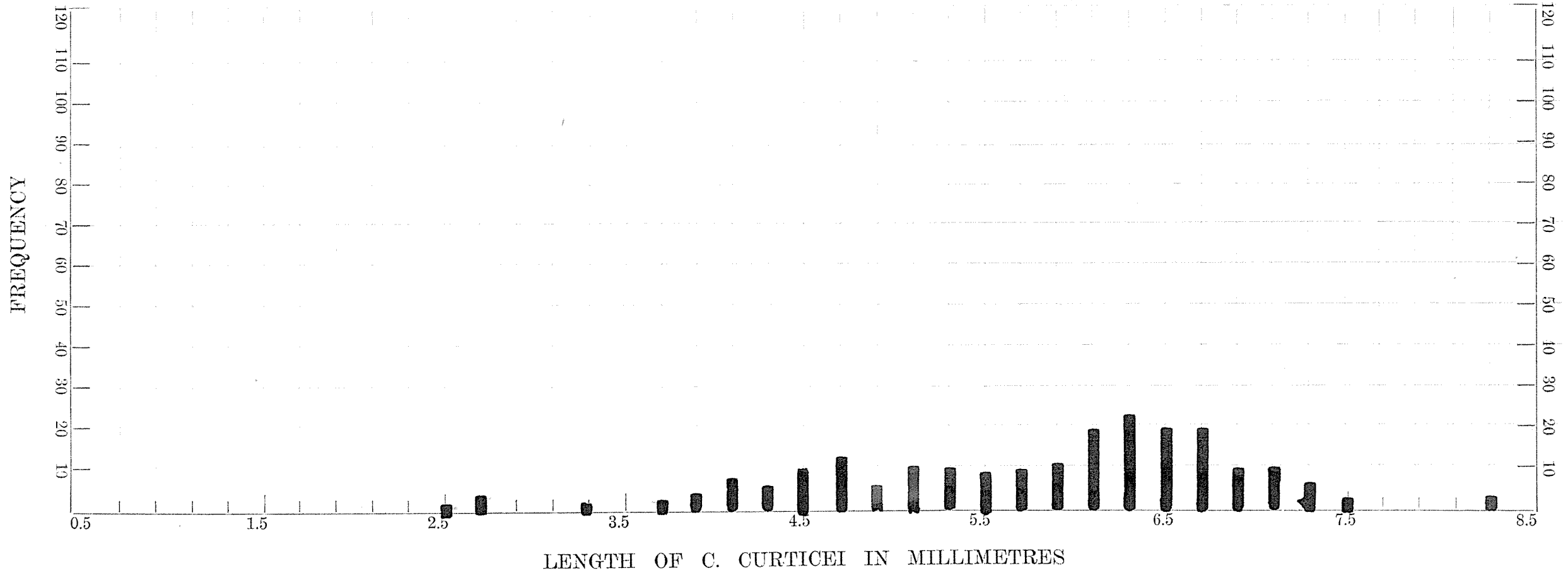
Graph 56

Sheep No. 26

Age of Population 12 Days. Sex Female

Instar: 4 Mean 2.01 s 0.44

5 Mean 5.83 s 1.02



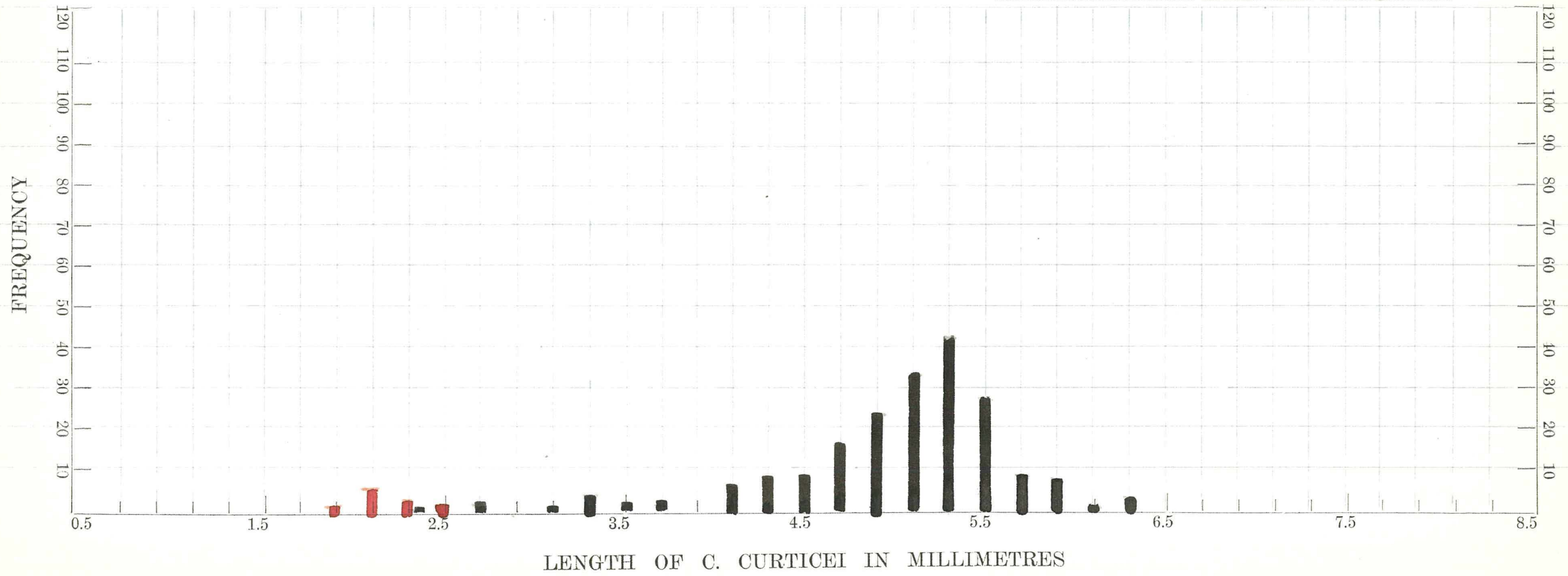
Graph 57

Sheep No. 51.....

Age of Population 14 Days. Sex Male.....

Instar. 4 ████████ Mean 2.14 s 0.17.....

5 ████████ Mean 5.00 s 0.65.....



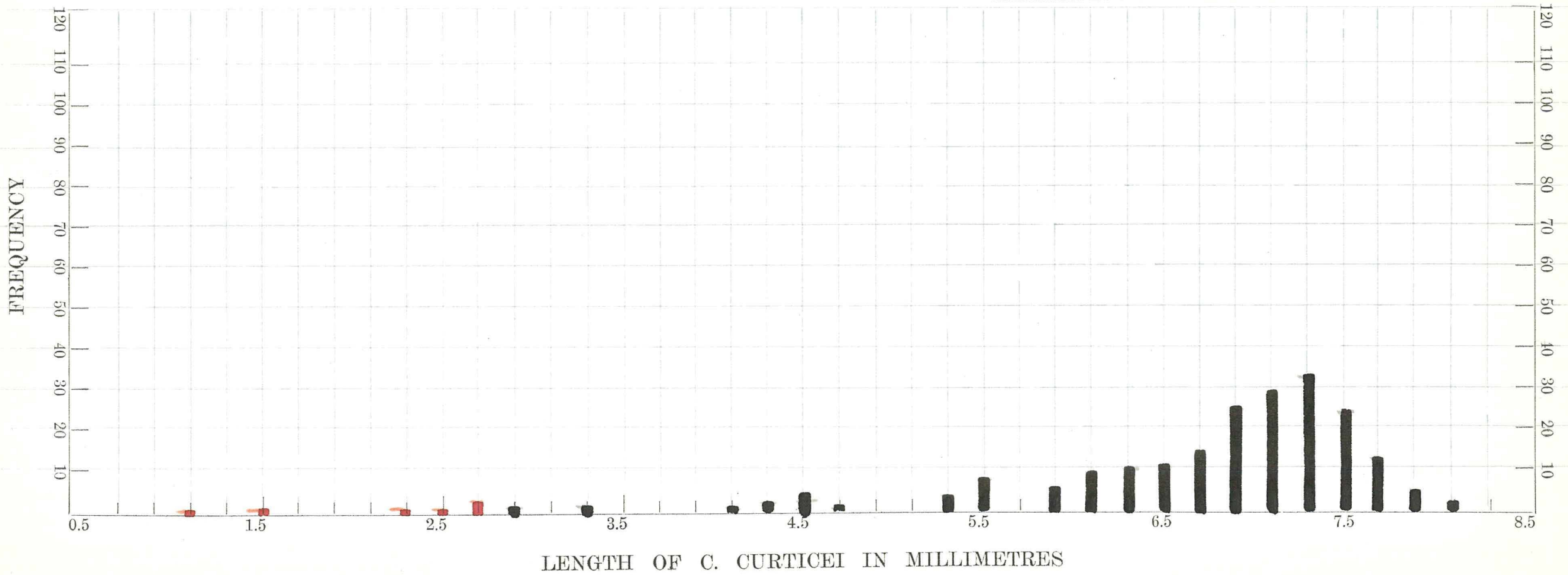
Graph 58.....

Sheep No. 51.....

Age of Population 14 Days. Sex Female.....

Instar 4 ██████████ Mean 2.10s 0.65.....

5 ██████████ Mean 6.80s 0.85.....

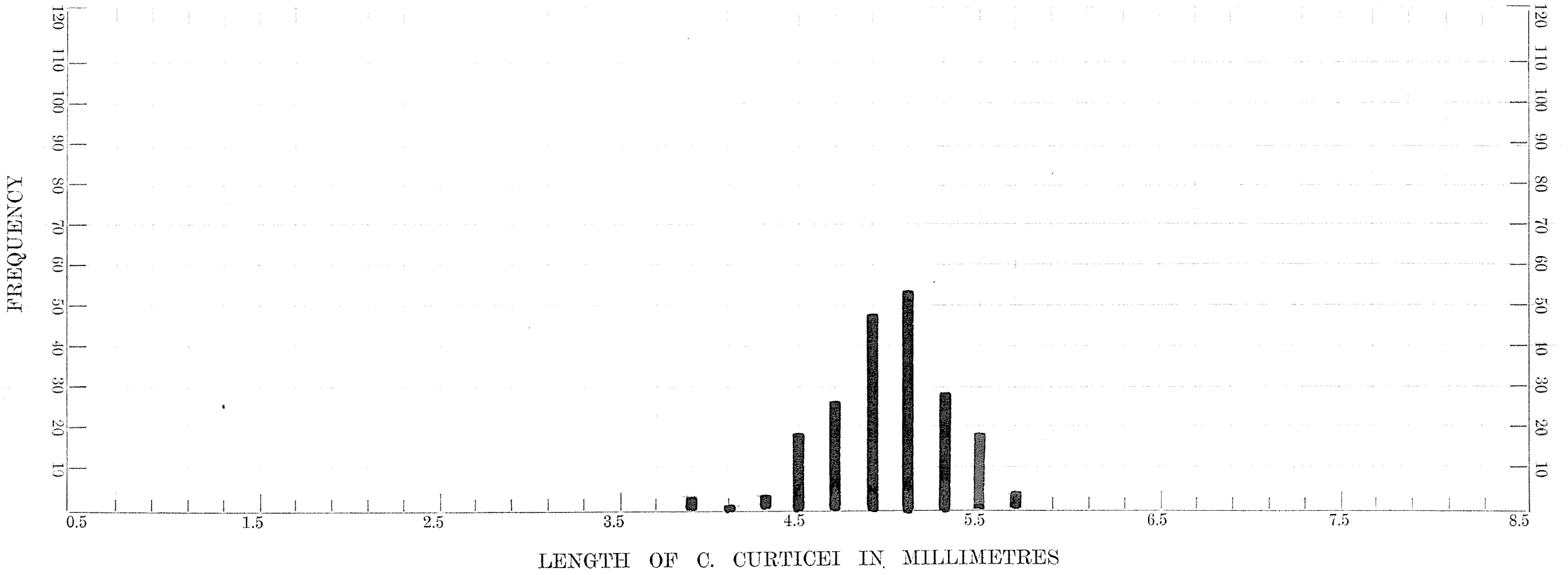


Sheep No. 52

Age of Population 14 Days. Sex Male

Instar 5 Mean 4.95 s 0.39

Mean s

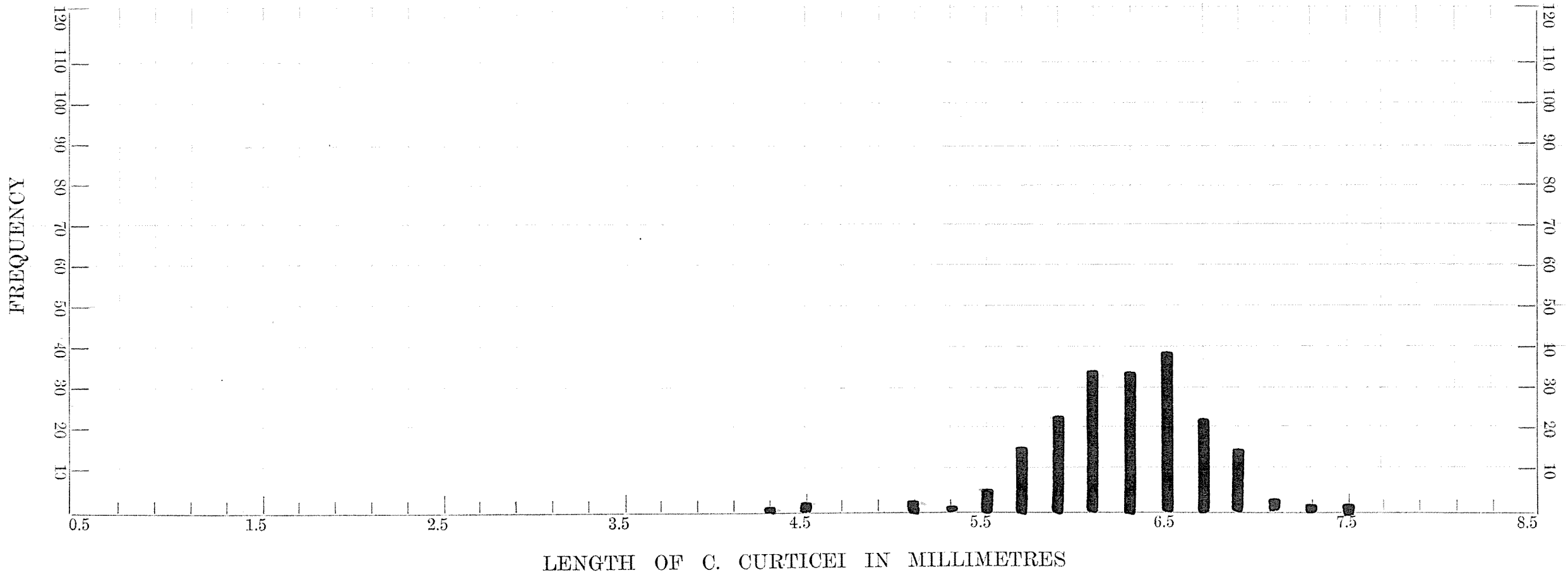


Sheep No. 52

Age of Population 14 Days. Sex Female

Instar 5 Mean 6.26 s 0.47

Mean s

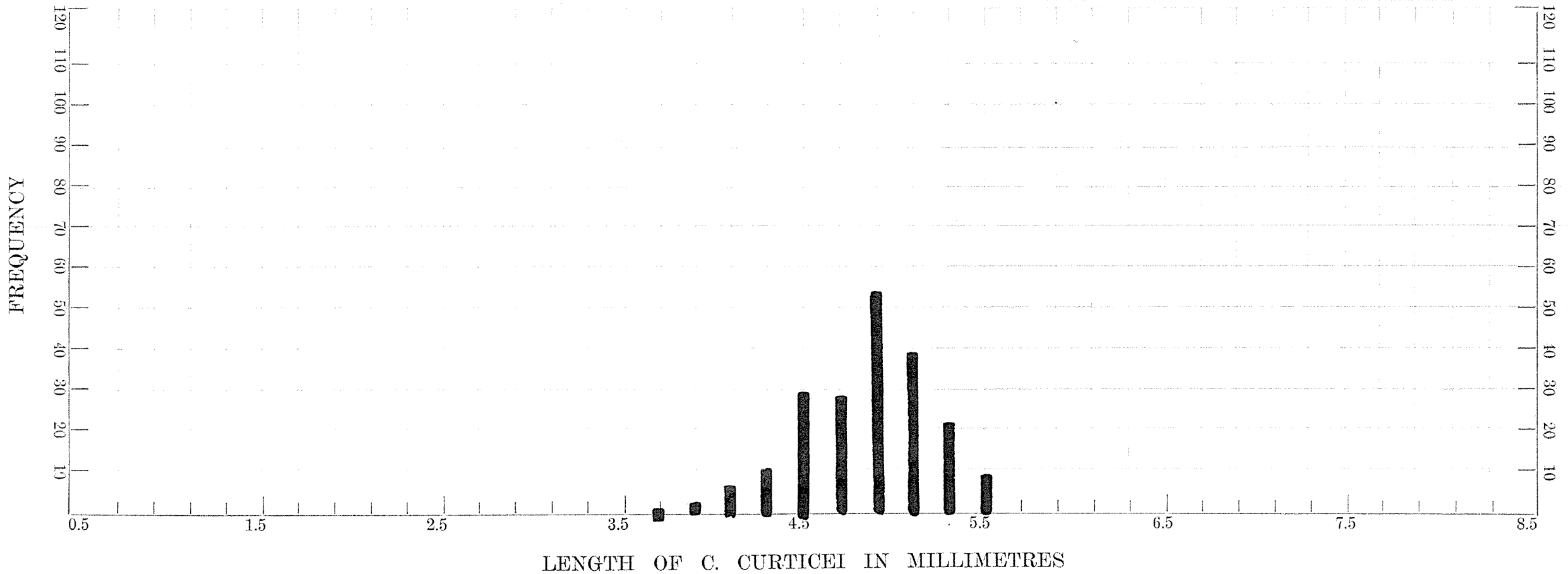


Sheep No. 30

Age of Population 16 Days. Sex Male

Instar 5 Mean 4.85 s 0.39

Mean s



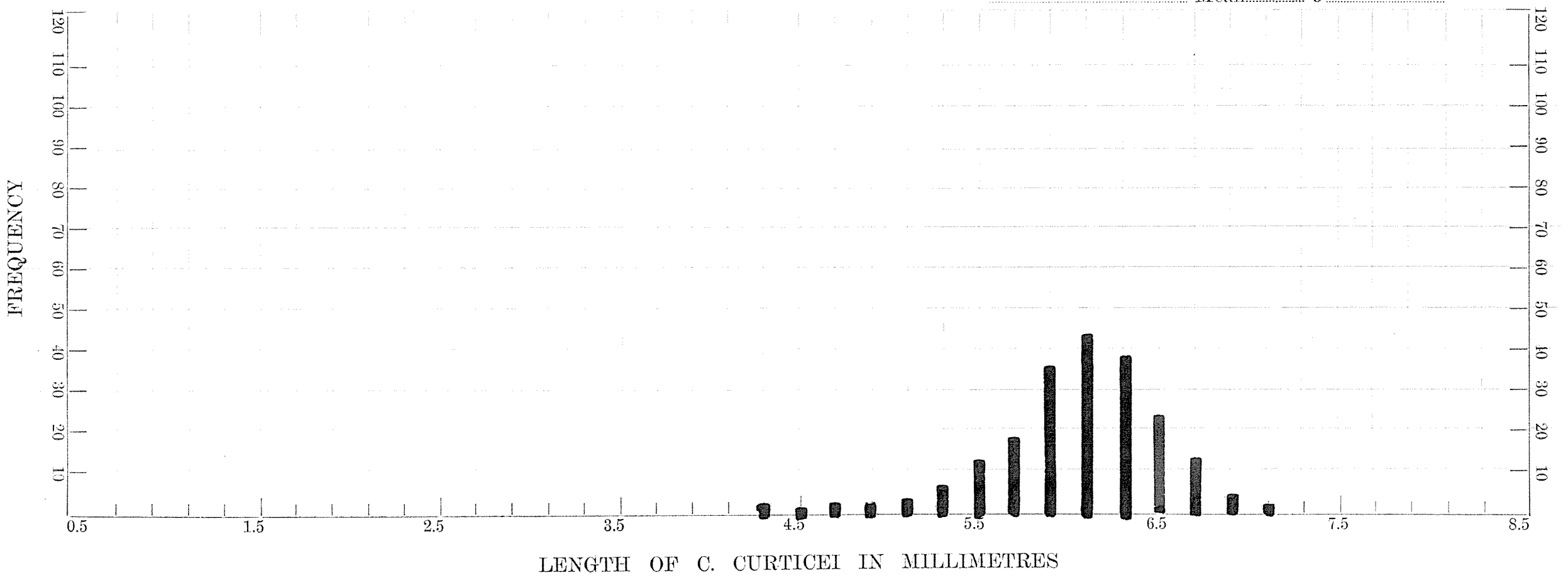
Graph 67

Sheep No. 30

Age of Population 16 Days. Sex Female

Instar 5 Mean 6.02s 0.51

Mean s



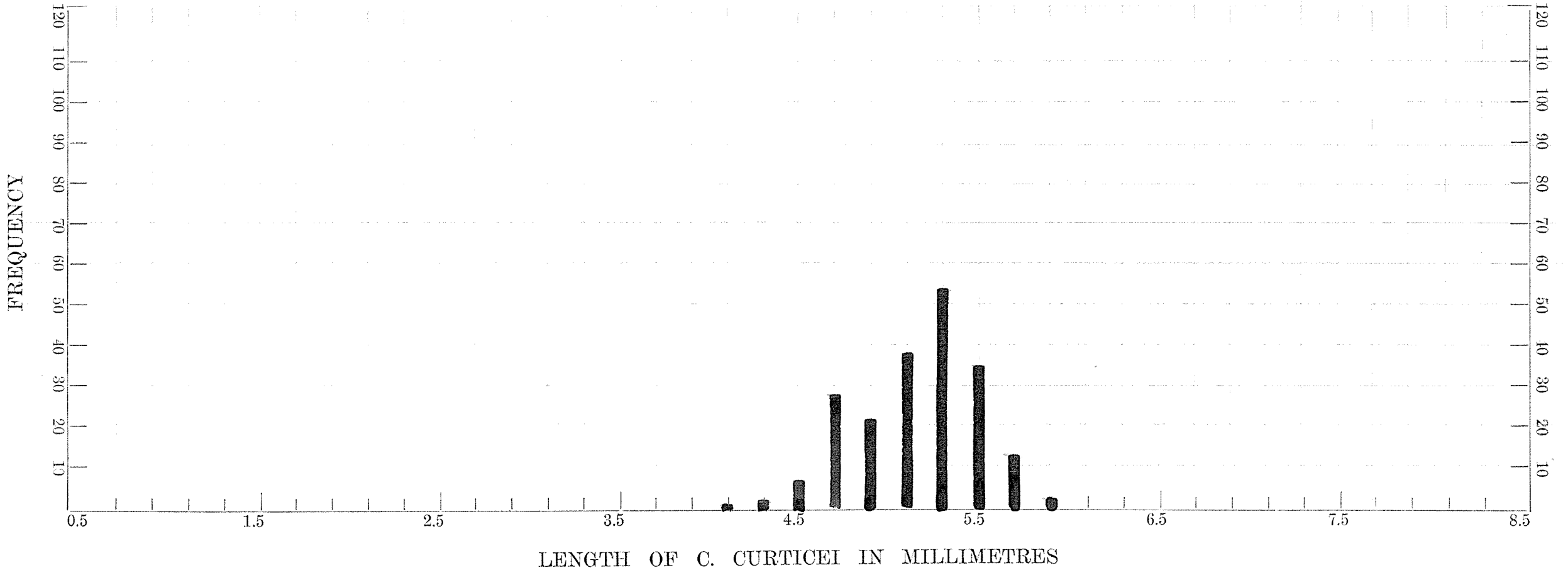
Graph 63

Sheep No. 33

Age of Population 16 Days. Sex Male

Instar 5 Mean 5.16 s 0.37

Mean s



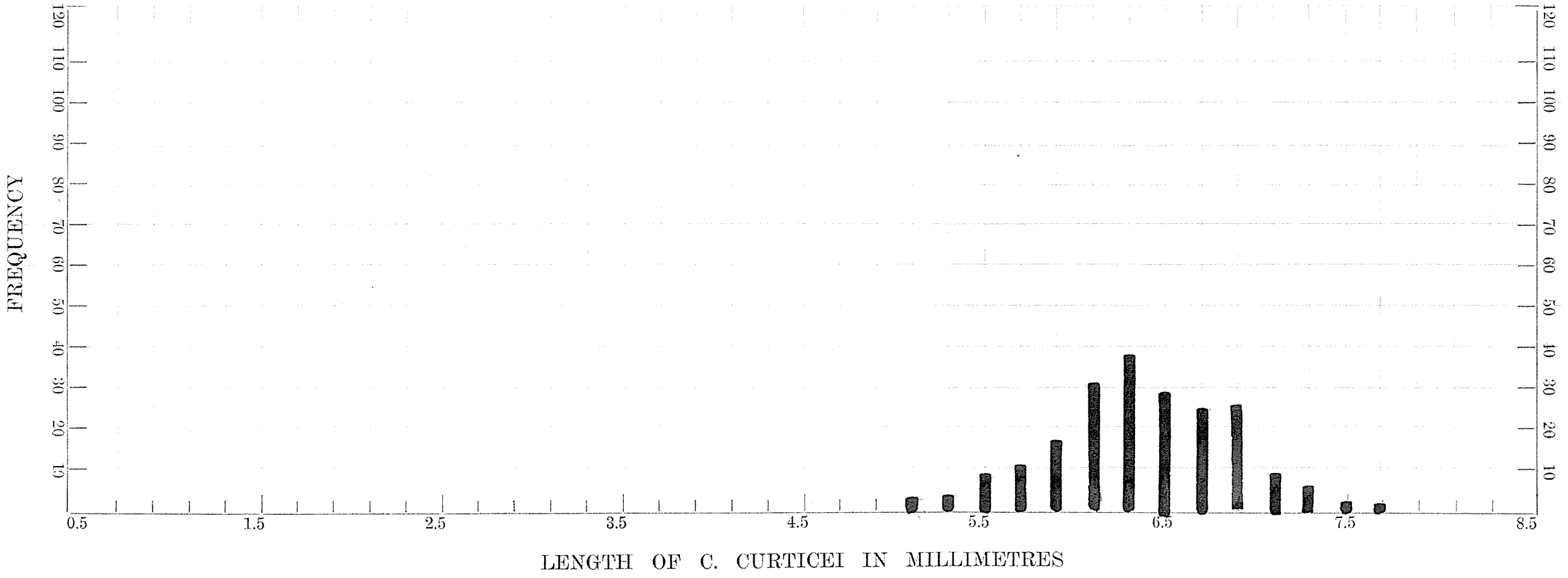
Graph 64

Sheep No. 33

Age of Population 16 Days. Sex Female

Instar 5 Mean 6.35 s 0.47

Mean s



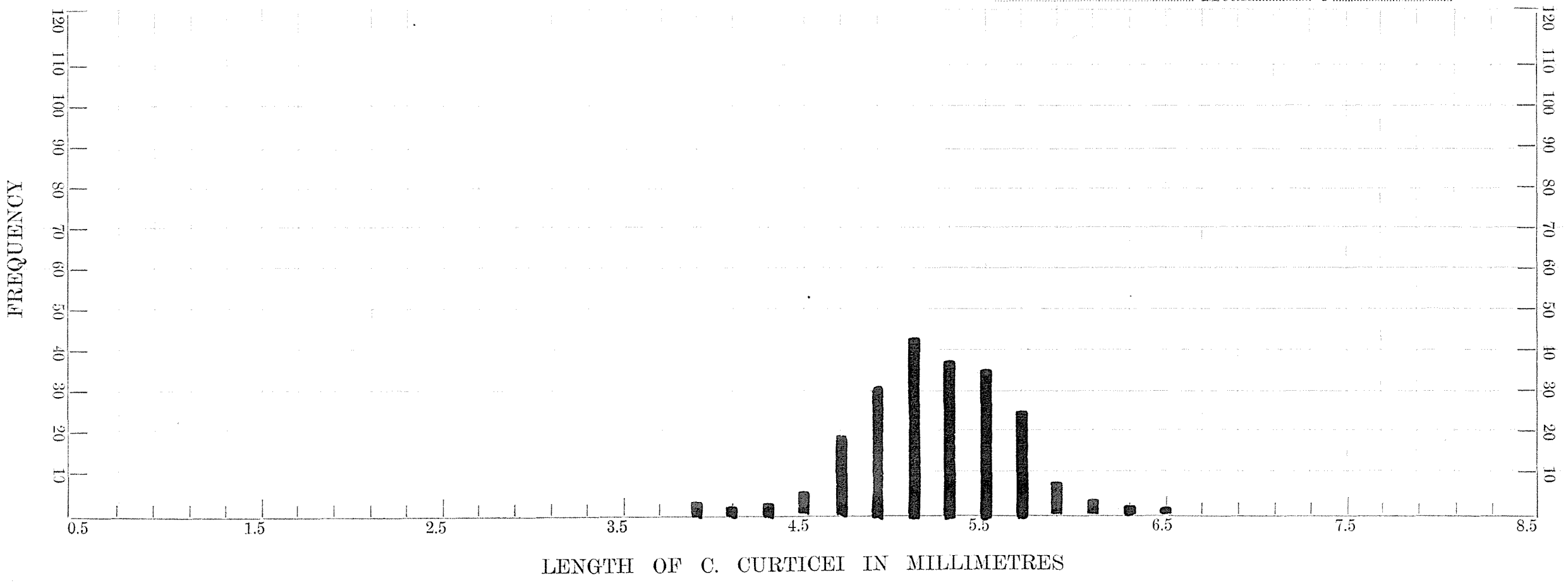
Graph 65

Sheep No. 9

Age of Population 18 Days. Sex Male

Instar 5 Mean 5.20 s 0.51

Mean s



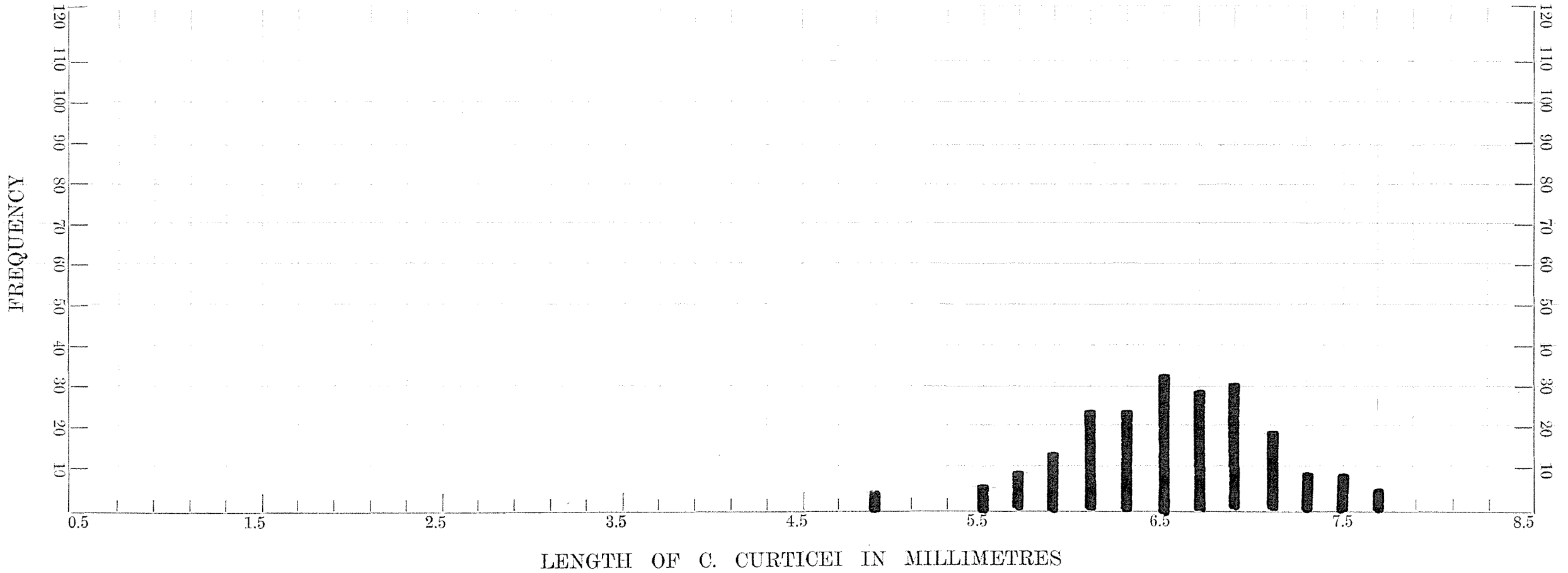
Graph 66

Sheep No. 9

Age of Population 18 Days. Sex Female

Instar 5 Mean 6.50 s 0.63

Mean s



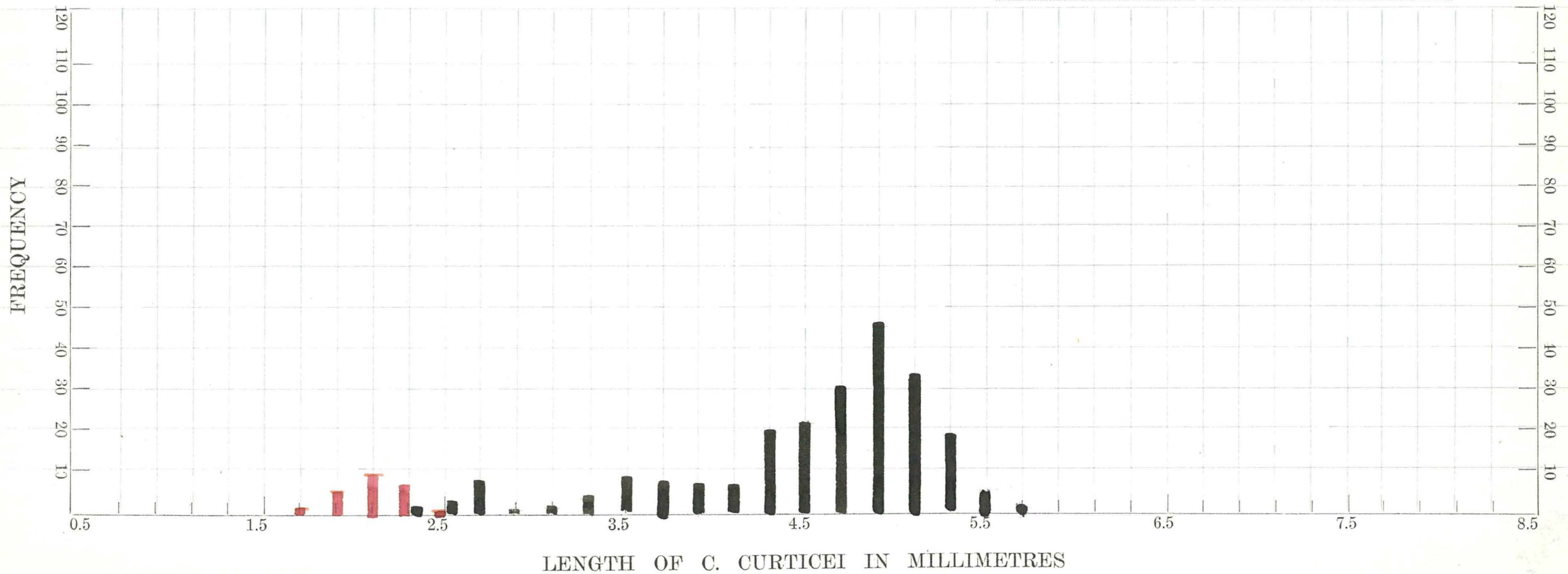
Graph 67

Sheep No. 29

Age of Population 18 Days. Sex Male

Instar 4 █ Mean 1.93 s 0.19

5 █ Mean 4.61 s 0.66



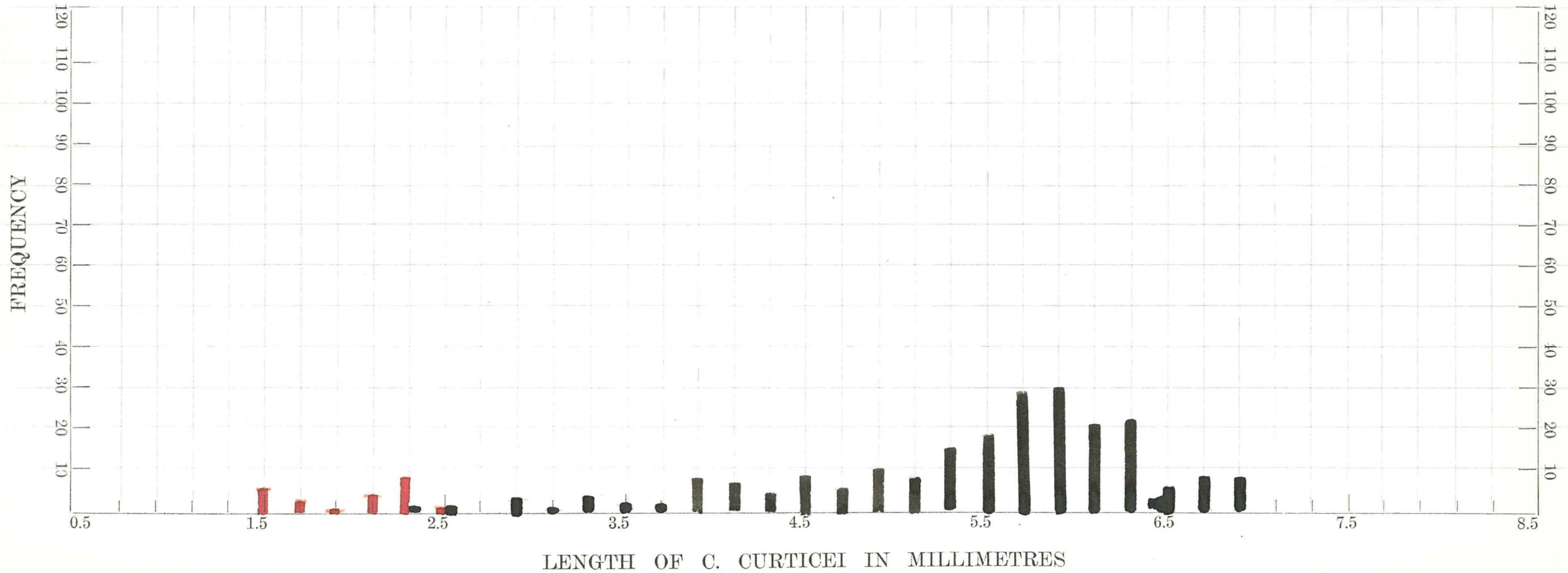
Graph 68 68

Sheep No. 29.....

Age of Population 18 Days. Sex Female.....

Instar 4 Mean 1.63 s 0.75.....

5 Mean 5.43 s 0.93.....



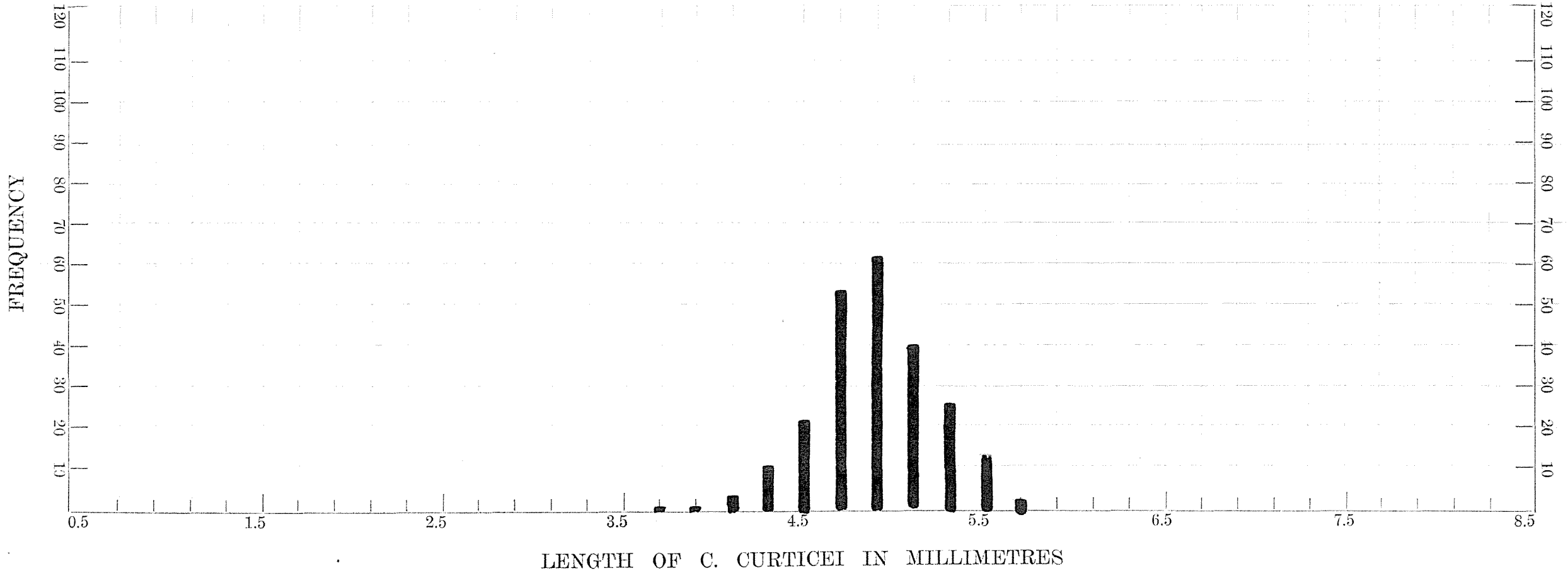
Graph 69.....

Sheep No. 6

Age of Population 20 Days. Sex Male

Instar 5 Mean 4.88 s 0.40

Mean s



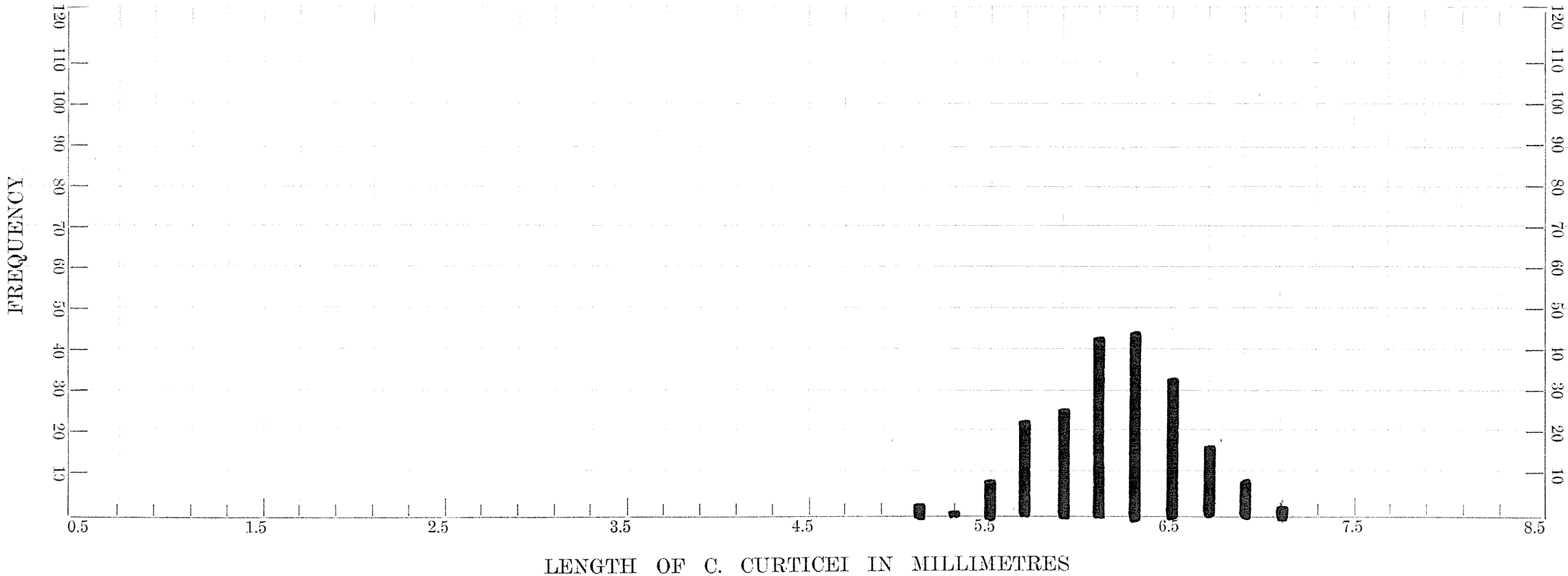
Graph 70

Sheep No. 6.....

Age of Population 20..... Days. Sex Female.....

Instar..... 5..... Mean 6.13 s 0.43

Mean..... s.....



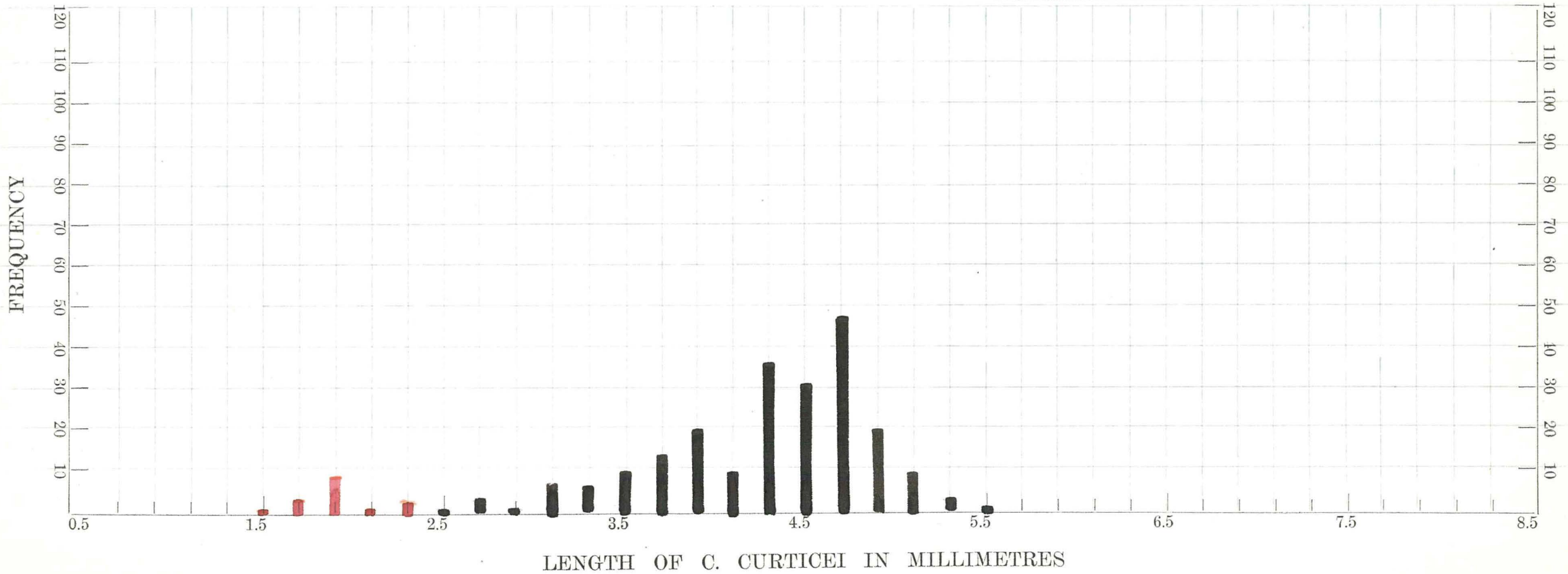
Graph 71.....

Sheep No. 18

Age of Population 22 Days. Sex Male

Instar 4 Mean 1.92 s 0.22

Instar 5 Mean 4.31 s 0.61

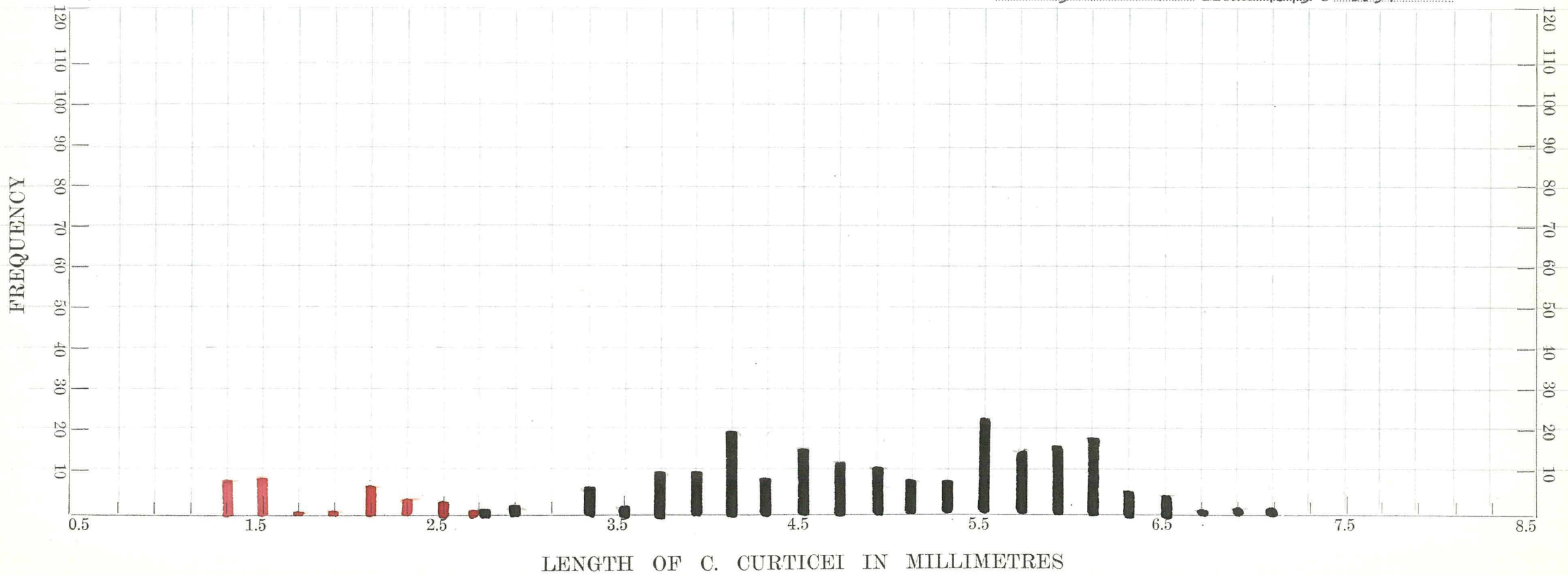


Sheep No. 18

Age of Population 22 Days. Sex Female

Instar 4 Mean 1.80 s 0.31

5 Mean 4.75 s 0.91



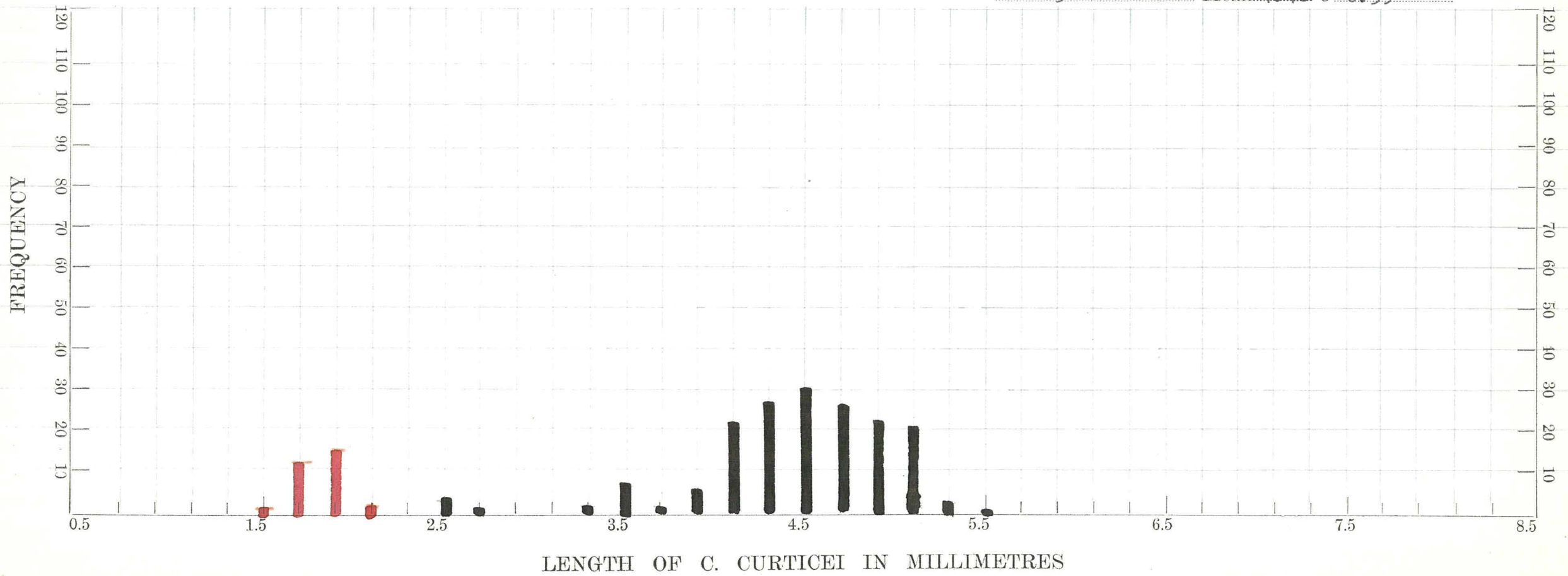
Graph 73

Sheep No. 27.....

Age of Population 22 Days. Sex Male.....

Instar 4 Mean 1.81 s 0.13.....

5 Mean 4.48 s 0.59.....



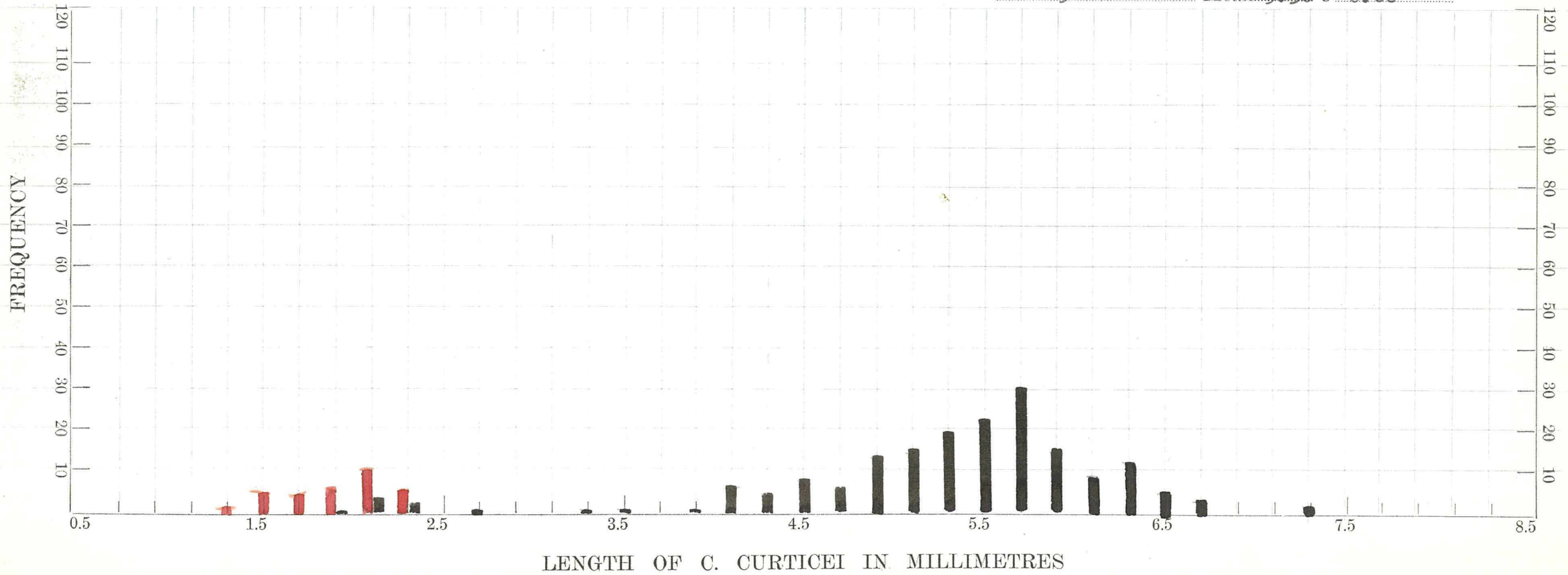
Graph 74.....

Sheep No. 27

Age of Population 22 Days. Sex Female

Instar 4 Mean 1.93 s 0.18

5 Mean 5.30 s 0.86



Graph 75

APPENDIX VIII

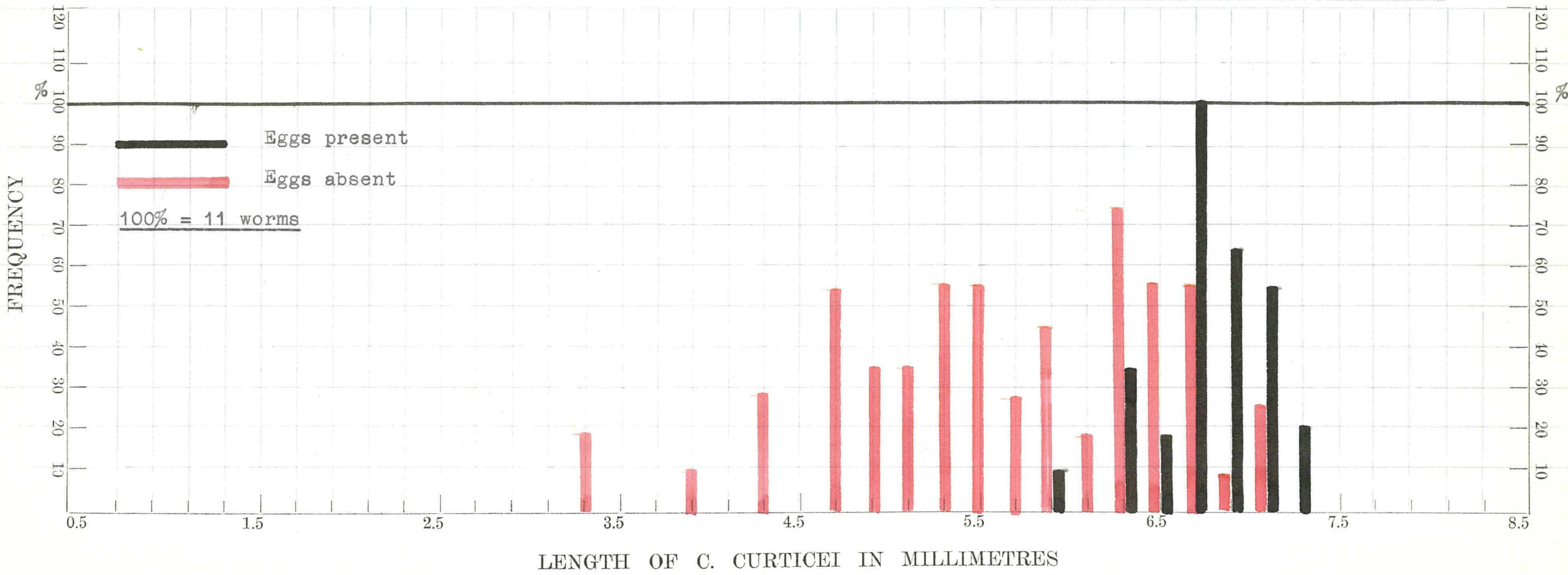
() In the following graphs numbered 76 to 83, are distributions of the length of C. curticei females, expressed in terms of the number of ova per female.

Sheep No. 26

Age of Population 12 Days. Sex

Instar: Mean s

Mean s



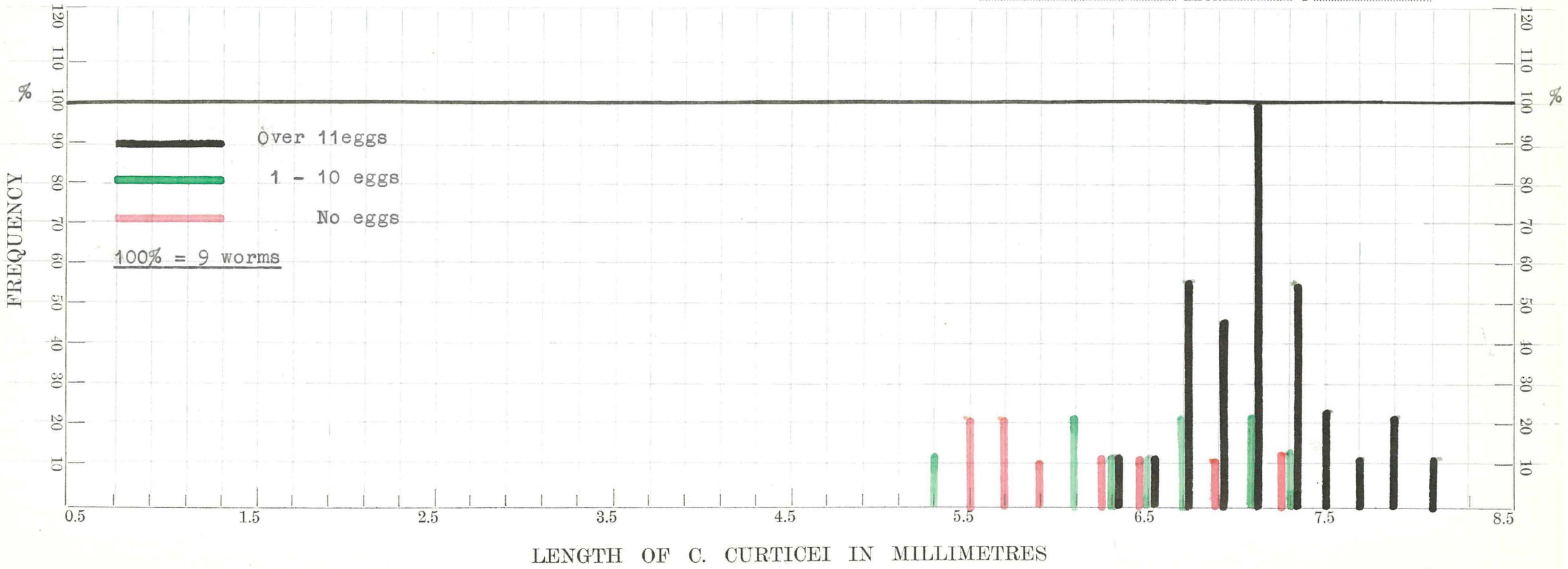
Graph 76

Sheep No. 51

Age of Population 14 Days. Sex

Instar. Mean s

Mean s



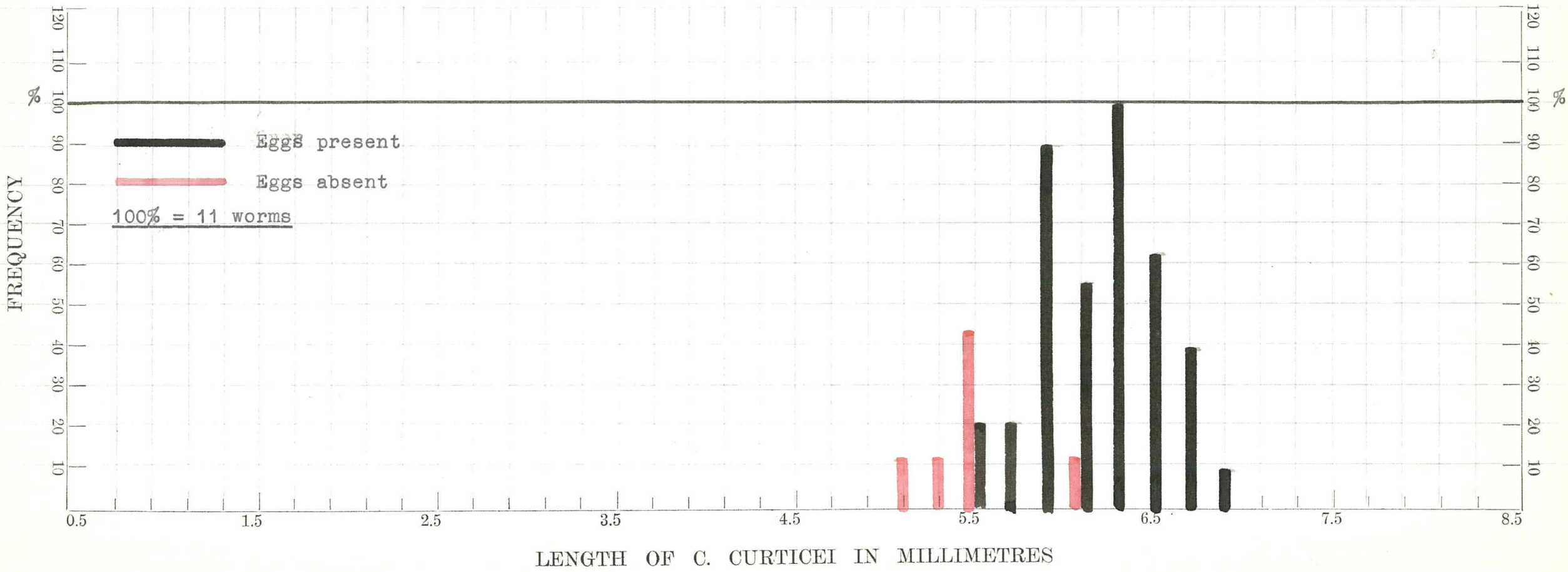
Graph 77

Sheep No. 52

Age of Population 14 Days. Sex

Instar. Mean s

Mean s



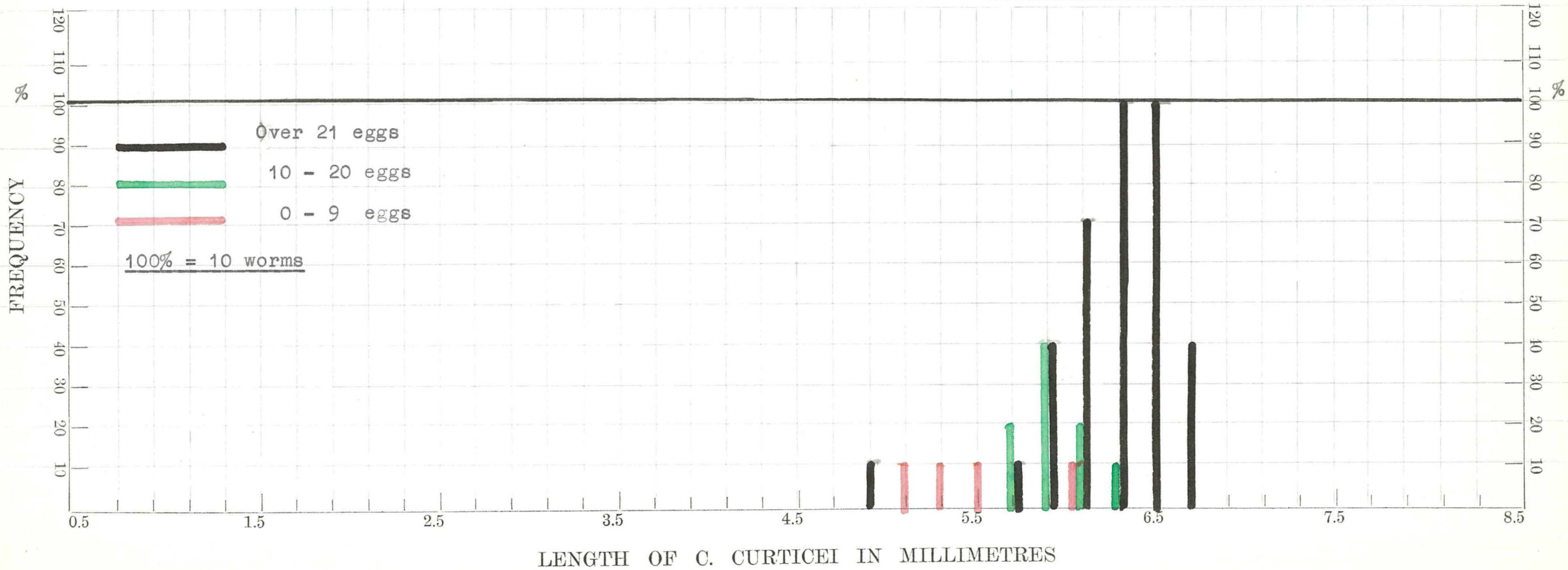
Graph 78

Sheep No. 33

Age of Population 16 Days. Sex

Instar Mean s

Mean s



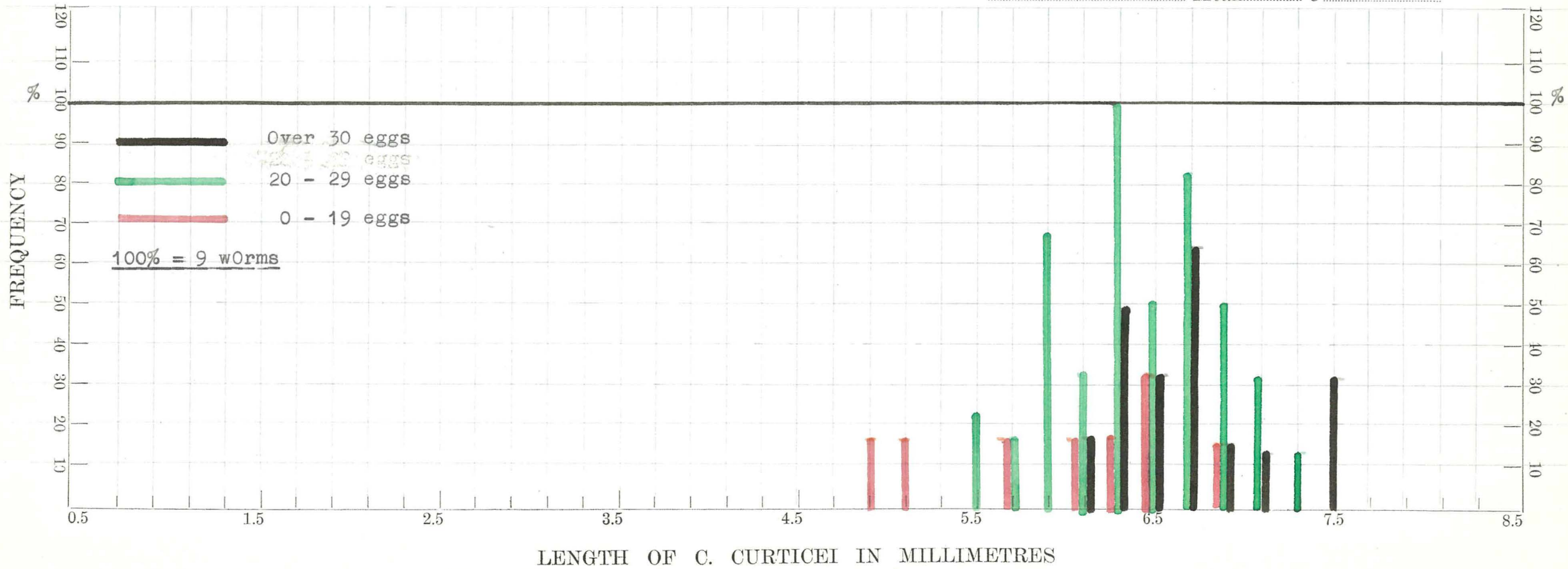
Graph 79

Sheep No. 9.....

Age of Population 18 Days. Sex.....

Instar..... Mean..... s.....

..... Mean..... s.....

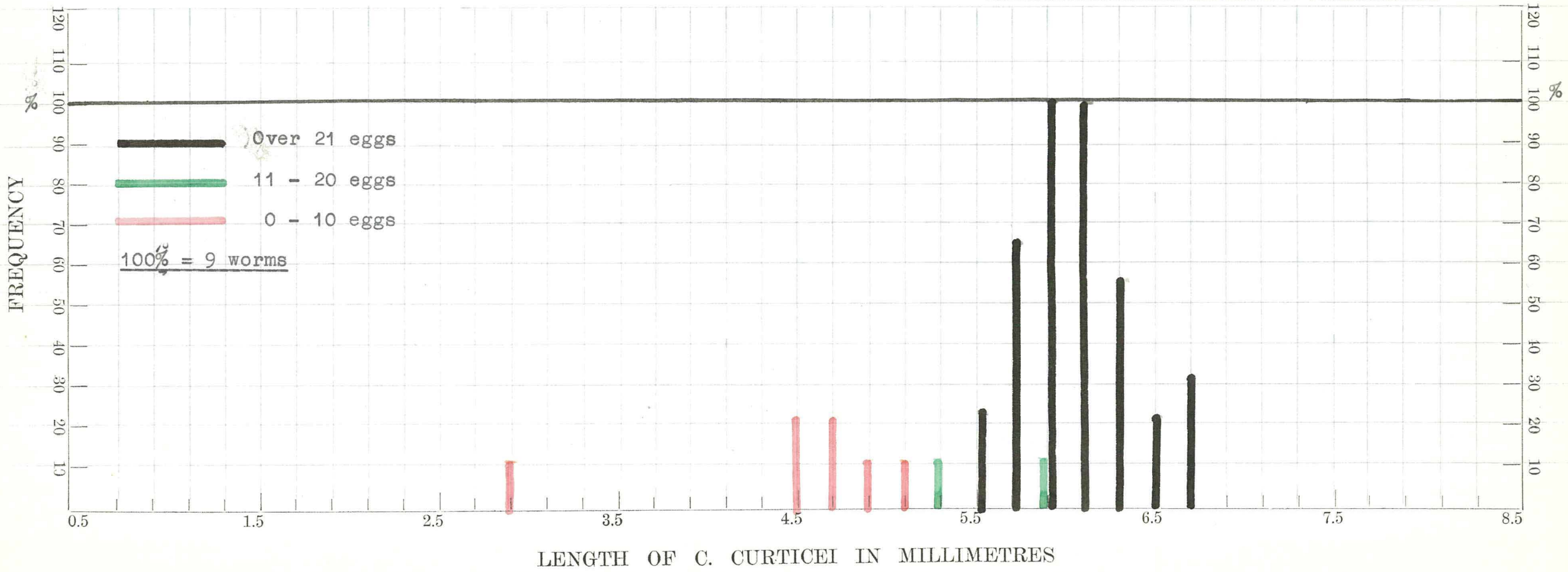


Sheep No. 29.....

Age of Population 18 Days. Sex.....

Instar:..... Mean..... s.....

Mean..... s.....

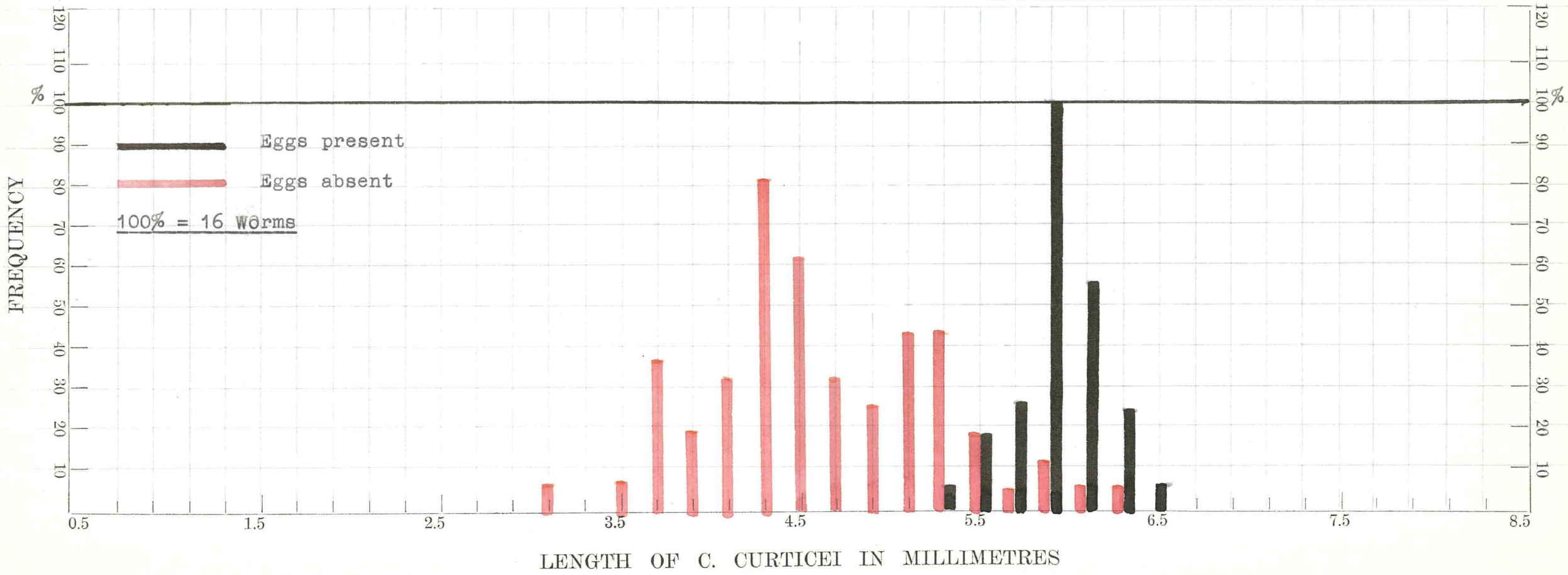


Sheep No. 18

Age of Population 22 Days. Sex

Instar: Mean s

Mean s

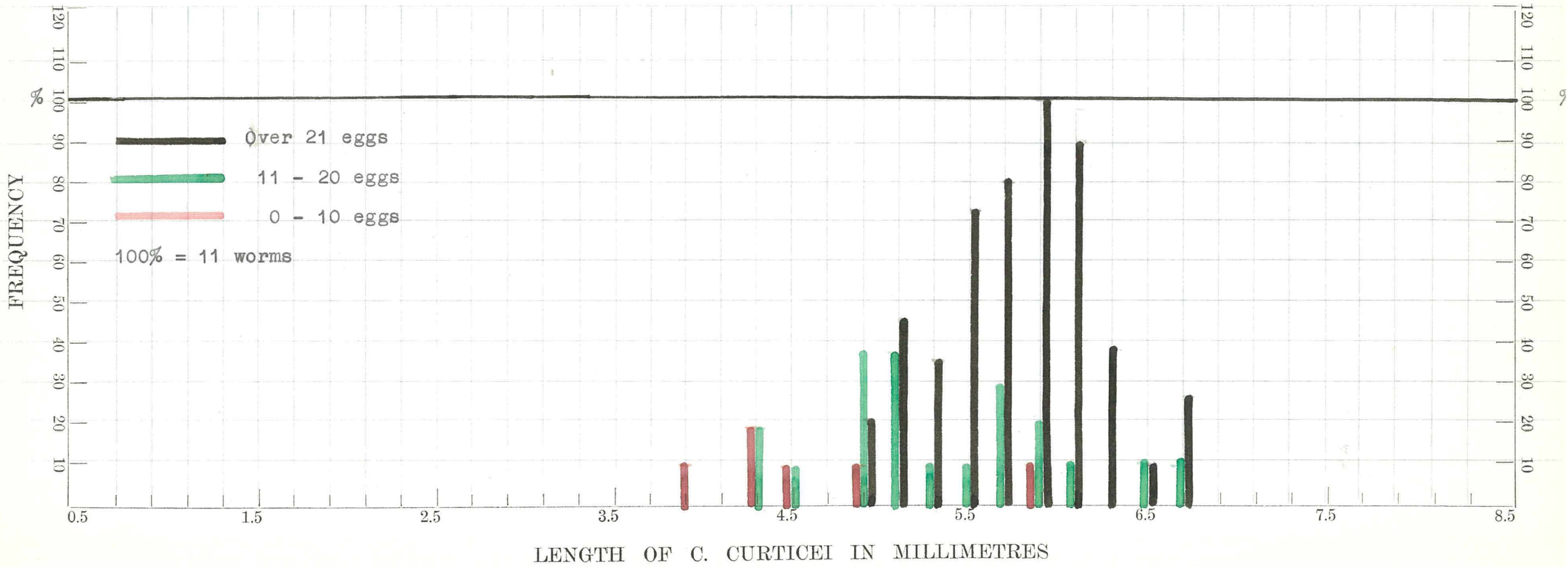


Sheep No. 27

Age of Population 22 Days. Sex

Instar. Mean s

Mean s



APPENDIX IX.

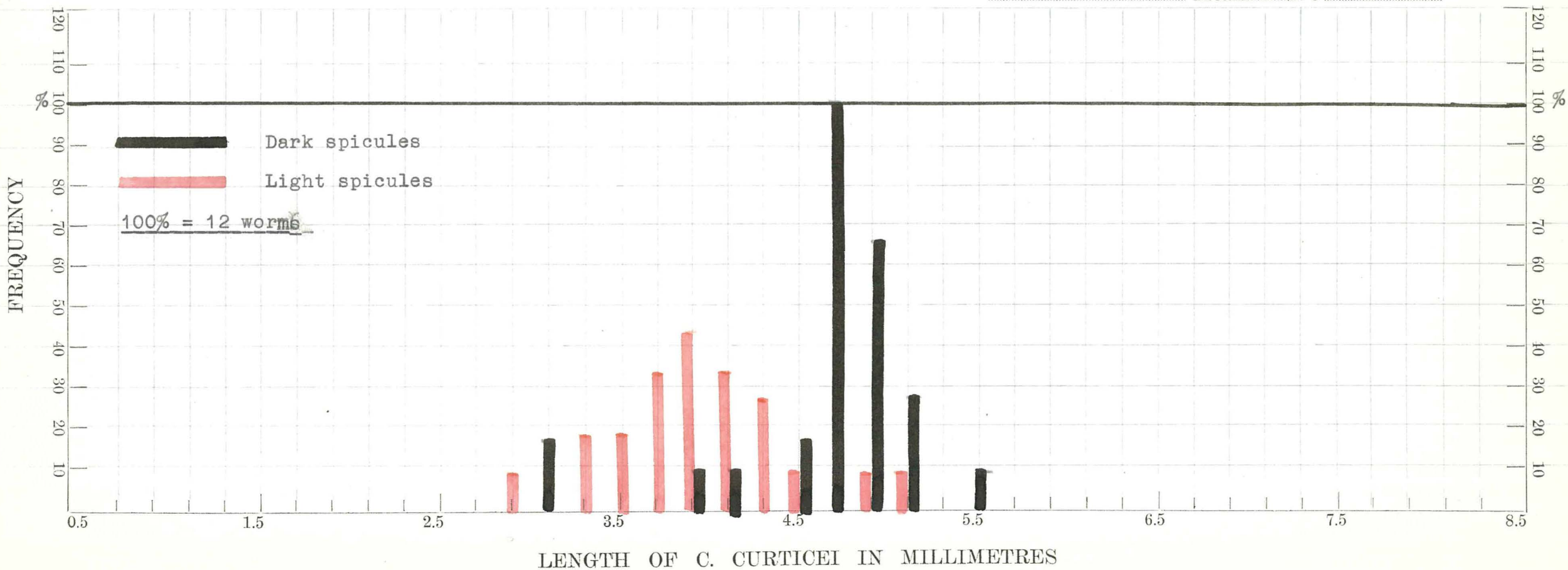
Distribution of length of male
C. curticei from Lamb 18, expressed
in terms of spicule colour.

Sheep No. 18.....

Age of Population ..22... Days. Sex.....

Instar..... Mean..... s.....

..... Mean..... s.....



Graph 84.....

A P P E N D I X X.

SECTION A.

The following data consists of the lengths of C. curticei of different age groups.

Unless otherwise stated measurements are in millimetres, and were made with the micro-projector. The decimal point has been left out in all millimetre measurements to make for easier typing. Thus "098" and "740" are 0.98mms and 7.40mms respectively.

All measurements have been ranged in order from lowest to highest.

ERRATUM.

The terms "lamb" and "sheep" should be read as being synonymous, as all animals were between six and twelve months old. (See Text p. 30)

I N F E C T I V E L A R V A E

Administered 13/4/49.

(Camera - Lucida Measurements)

Measurements in Microns

Round Tailed Larvae (Cooperia)		Pointed Tailed Larvae (Ostertagia)	
Total Length	Length of Oesophagus	Total Length	Length of Oesophagus
714	163	729	-
726	151	740	157
773 ← 7	149	746	157
740	150	749	-
740	-	754	146
743	146	754	-
746	143	763	151
749	126	766	157
751	157	774	151
751	157	774	-
754	134	777	146
754	154	780	194
751	151	783	149
757	-	786	151
763	143	789	146
763	140	792	149
763	143	800	151
769	-	800	-
772	143	805	166
774	154	811	146
777	151	814	151
777	-	840	172
792	140	846	154
800	129		
823	166		
829	143		

INFECTIVE LARVAE USED 13/4/49

(Micro-Projector Measurements)

Measurements in Microns.

660	660	660	680	680	680	680	680	680	680
680	680	680	680	700	700	700	700	700	700
700	700	700	700	700	700	700	700	700	700
700	700	700	700	700	730	730	730	730	730
730	730	730	730	730	730	730	730	730	730
730	730	730	730	730	730	730	730	730	730
730	730	730	730	730	730	730	730	730	730
730	730	730	730	730	730	730	730	730	750
750	750	750	750	750	750	750	750	750	750
750	750	750	750	750	750	750	750	750	750
750	750	750	750	750	750	750	750	750	750
750	750	750	750	750	750	750	750	750	750
750	750	750	750	750	750	750	750	770	770
770	770	770	770	770	770	770	770	770	770
770	770	770	770	770	770	770	770	770	770
770	770	770	770	770	770	770	770	770	770
770	770	770	770	770	770	770	770	770	770
770	770	790	790	790	790	790	790	790	790
790	790	790	790	790	790	790	790	790	790
790	790	810	810	810	810	810	840	840	860

LIVE INFECTIVE LARVAE RECOVERED FROM
FAECES OF LAMBS 14, 16, 19, 26, 30, 39, 44.
(Ocular-Micrometer measurements)

Measured in Microns

600	680	720	750	750	760	760	760	760	760
770	770	770	770	770	680	780	780	780	780
780	780	790	790	790	790	790	790	800	800
800	800	800	800	800	800	810	810	810	820
820	820	820	820	820	820	820	820	820	820
830	830	830	830	830	830	840	840	850	850
850	850	860	870	880	880				

Lamb 46

1 Day

Sexes Undifferentiated.

(Micro-Projector Measurements)

Measured in Microns

3rd Stage Infective Larvae.

500	510	520	570 *	620	630	650	670	680	680
690	700	700	700	710	710	720	720	730	730
730	740	740	740	740	740	750	750	750	750
750	750	750	760	760	760	760	760	760	760
760	760	760	770	770	770	770	770	770	770
770	770	770	770	770	770	770	770	770	780
780	780	780	780	780	780	780	780	780	780
780	780	780	780	780	790	790	790	790	790
800	800	810	810	810	810	810	830	830	830
830									

* The first four measurements not included in the statistical analysis.

(*Camisia-lucida*)

Lamb 32 2 Days Sexes Undifferentiated.

3rd. Stage Parasitic Larvae. (*Micro*)

580	623	651	657	663	666	666	680	686	686
686	686	686	686	686	689	689	689	689	689
692	694	700	700	703	703	705	709	709	709
711	714	714	714	714	714	714	714	714	714
717	717	717	720	720	723	723	723	723	726
726	729	729	729	729	729	731	731	734	734
734	737	743	749	749	749	749	749	749	751
752	754	754	754	757	760	760	763	763	766
766	772	772	772	772	774	783	783	786	786
786	789	792	792	800	800	820	823	1243	1537

(Camera-lucida)

Lamb 47

2 Days

Sexes Undifferentiated.

3rd Stage Parasitic Larvae. (*microns*)

514	547	611	614	626	634	640	643	644	646
660	674	677	683	683	686	686	689	692	694
697	700	700	700	705	705	709	709	709	709
711	711	711	714	714	714	717	720	720	720
726	729	729	729	731	731	734	734	737	737
737	743	743	747	749	751	751	751	760	763
763	766	766	772	772	772	772	774	774	774
786	792	794	794	801	803	803	805	811	817
823	829	900							

Lamb 39

3 Days

Sexes Undifferentiated.

3rd Stage.

(microns)

627	711	717	720	729	731	743	743	751	751
757	780	805	860	877	886	886	926	930	931
943	966	986	992	1000	1020	1049	1126	1129	1137

4th Stage.

(microns)

644	672	723	734	746	749	800	800	810	834
843	846	849	857	857	860	869	880	894	900
900	900	900	905	905	905	909	914	914	920
926	926	929	931	933	937	937	943	943	943
949	951	957	957	957	963	963	963	963	963
966	966	966	969	972	977	983	986	986	986
989	989	994	997	1000	1003	1005	1009	1009	1009
1014	1014	1023	1029	1040	1043	1046	1047	1047	1072
1072	1077	1080	1086	1092	1100	1100	1100	1100	1103
1109	1111	1114	1120	1126	1126	1126	1129	1134	1137
1137	1143	1149	1154	1157	1157	1157	1160	1163	1186

<u>Lamb 14</u>				<u>4 Days</u>		<u>Males</u>			
<u>4th Stage.</u>									
099	099	110	110	110	114	114	114	117	117
117	117	119	121	121	121	121	121	121	121
123	123	123	123	123	123	123	123	125	125
125	125	125	125	125	125	125	128	128	128
128	128	128	128	128	128	128	128	128	128
128	128	128	130	130	130	130	130	130	130
130	130	130	130	130	130	130	130	130	132
132	132	132	132	132	132	132	132	132	132
132	132	132	132	134	134	134	134	134	134
134	134	134	134	134	134	134	134	134	134
134	134	134	134	134	136	136	136	136	136
136	136	136	136	136	136	136	136	136	136
136	136	139	139	139	139	139	139	139	141
141	141	141	141	141	141	141	141	141	141
141	141	141	143	143	143	143	143	143	143
143	143	143	143	143	143	143	143	143	143
143	143	145	145	145	145	145	145	145	145
145	147	147	147	147	147	147	150	150	150
150	150	150	152	152	153	153	153	153	153
153	155	155	155	155	162	162	164	179	

<u>Sheep 14</u>				<u>4 Days</u>		<u>Females</u>			
<u>4th Stage.</u>									
095	097	197	101	106	112	112	112	114	114
114	117	117	119	119	121	121	121	121	121
121	123	123	123	123	123	123	123	123	125
125	125	125	125	125	125	125	125	125	125
125	125	125	125	128	128	128	128	128	130
130	130	130	130	132	132	132	132	132	132
132	132	132	132	132	132	132	132	132	132
132	132	134	134	134	134	134	134	136	136
136	136	136	136	136	139	139	139	139	139
139	139	139	139	139	139	139	139	139	139
139	139	141	141	141	141	141	141	141	141
141	141	141	141	141	141	141	141	143	143
143	143	143	143	143	143	143	143	143	143
143	145	145	145	145	145	145	145	145	145
145	145	147	147	147	147	147	147	147	147
147	147	147	147	150	150	150	150	150	150
150	152	152	152	142	152	152	152	153	153
153	153	153	153	153	153	153	153	155	155
155	155	155	155	155	155	157	157	157	157
160	160	162	162	164	164	164	168		

<u>Sheep 4</u>				<u>5 Days</u>			<u>Male</u>		
<u>4th Stage.</u>									
117	132	139	145	147	147	152	153	155	155
157	157	160	160	162	162	162	162	162	162
162	163	164	164	164	164	164	164	164	164
164	164	166	166	166	166	166	166	166	166
166	168	168	168	168	168	168	168	168	171
171	171	171	171	171	171	171	171	171	171
171	171	171	171	171	173	173	173	173	173
173	173	175	175	175	175	175	175	175	175
175	175	175	177	177	177	177	177	177	177
177	177	177	177	178	179	179	179	179	179
179	179	179	182	182	182	182	182	182	184
184	184	184	184	184	184	184	184	184	184
184	184	186	186	186	186	186	186	186	186
186	186	186	186	188	188	188	188	188	188
188	188	188	188	188	188	190	190	190	190
190	190	190	192	193	193	193	193	193	193
193	193	193	193	194	195	195	195	195	195
195	195	195	195	195	195	195	195	195	195
197	197	197	197	198	199	199	201	201	201
201	201	204	206	208	208	210	212	212	217

<u>Sheep 4</u>				<u>5 Days</u>			<u>Female</u>		
<u>4th Stage.</u>									
105	136	136	141	143	143	143	147	147	152
153	157	168	168	169	171	171	171	171	171
171	173	173	173	175	177	177	177	179	179
179	179	179	182	182	182	184	184	184	184
184	184	184	184	184	186	186	186	186	186
186	186	186	186	186	188	188	188	188	188
188	188	190	190	190	190	190	190	190	190
190	190	193	193	193	193	193	193	193	195
195	195	195	195	195	197	197	197	197	197
197	197	197	197	197	197	197	197	197	199
199	199	199	199	199	201	201	201	201	201
201	201	201	201	201	201	204	204	204	204
204	204	204	206	206	206	208	208	208	208
208	208	208	208	208	210	210	210	210	212
212	213	215	215	215	215	215	215	217	217
217	217	219	219	219	219	219	219	219	219
219	219	219	219	219	219	221	221	226	226
226	228	228	228	229	229	229	229	229	229
229	229	229	229	229	231	231	236	236	238
238	239	240	240	240	244	247	253	269	279

		<u>Sheep 35</u>			<u>5 Days</u>		<u>Male</u>		
<u>4th Stage.</u>									
092	095	121	121	121	123	130	130	132	134
134	136	139	139	141	143	143	143	143	145
145	145	145	147	147	147	147	147	147	147
150	150	150	150	150	150	150	150	150	150
150	152	152	152	152	152	152	152	152	153
153	153	153	153	153	153	153	153	153	153
153	153	153	153	153	155	155	155	155	155
155	155	155	155	155	157	157	157	157	157
157	160	160	160	160	160	160	160	160	160
160	160	160	162	162	162	162	162	162	163
164	164	164	164	164	164	164	164	164	164
164	164	164	164	164	164	166	166	166	166
166	166	166	166	166	166	166	166	166	166
166	168	168	168	168	168	168	168	168	168
168	168	168	168	168	168	171	171	171	171
171	171	171	171	171	171	171	172	173	173
173	173	173	173	174	175	175	175	175	175
175	175	175	175	177	177	177	178	179	179
182	182	182	184	184	184	184	186	186	186
188	188	188	188	193	210	217	219	219	221

		<u>Sheep 35</u>			<u>5 Days</u>		<u>Female</u>		
<u>4th Stage.</u>									
117	121	121	121	121	123	125	130	130	130
132	132	132	132	134	134	136	136	136	139
139	141	141	141	143	143	143	143	143	145
145	145	145	145	147	147	147	147	147	147
150	150	150	150	150	150	152	152	153	153
153	153	155	155	157	157	157	157	160	160
160	160	162	162	162	162	164	164	164	164
164	164	164	164	166	166	166	166	166	166
166	166	168	168	168	168	168	168	168	168
168	168	168	168	168	168	170	171	171	171
171	171	172	173	173	173	173	173	173	173
174	175	175	175	175	175	175	175	175	175
175	175	175	177	177	177	177	177	177	177
177	177	177	177	179	179	179	179	179	179
182	182	182	182	184	184	184	184	184	184
184	186	186	186	186	186	186	188	188	188
188	188	188	188	188	188	190	190	190	193
193	193	193	194	195	195	195	195	197	197
197	197	197	197	197	199	199	199	199	199
201	201	206	208	210	210	217	219	219	249

<u>Sheep 24</u>				<u>6 Days</u>			<u>Males</u>		
<u>4th Stage.</u>									
158	174	176	176	178	180	181	183	185	186
187	187	189	189	189	191	191	191	191	194
194	194	194	194	196	196	196	196	196	196
196	196	197	198	198	198	198	198	198	198
200	200	200	200	200	200	200	202	202	202
202	202	202	202	202	202	202	202	204	205
205	205	205	205	205	205	205	205	205	205
205	206	207	207	207	207	207	207	207	207
207	207	209	209	209	209	209	209	209	209
209	209	209	209	211	211	211	211	211	211
211	211	211	211	211	211	211	211	211	213
213	213	213	213	213	213	213	213	213	216
216	216	216	216	216	216	216	216	218	218
218	218	218	218	218	218	218	218	218	218
219	220	220	220	220	220	220	220	220	220
220	220	220	220	222	222	222	222	222	222
222	224	224	224	224	224	224	224	227	227
227	227	227	227	227	227	227	227	227	229
229	229	229	229	231	231	231	231	231	231
233	233	233	233	233	235	235	235	238	240

<u>Sheep 24</u>				<u>6 Days</u>			<u>Females</u>		
<u>4th Stage.</u>									
141	150	152	156	167	172	172	174	174	176
178	178	180	187	187	189	189	196	196	198
200	202	207	207	209	209	209	209	211	211
211	211	211	211	213	213	216	216	216	217
218	218	218	220	220	220	220	220	222	222
222	222	222	224	224	224	224	224	224	224
224	224	224	224	227	227	227	227	227	227
227	227	227	228	228	229	229	229	229	229
231	231	231	231	231	231	231	231	233	233
233	233	233	233	233	233	235	235	235	235
235	235	235	235	235	235	235	238	238	238
238	238	238	238	240	240	240	240	240	240
240	240	240	240	240	240	240	242	242	242
242	242	242	242	242	242	242	244	244	244
244	244	244	244	244	244	244	244	244	244
244	246	246	246	246	246	246	246	248	249
249	249	249	249	249	251	251	251	251	251
251	251	251	253	253	253	253	253	253	253
253	253	255	255	255	255	255	257	259	260
262	264	264	266	266	266	266	268	275	279

<u>Sheep 28</u>				<u>6 Days</u>			<u>Males</u>		
<u>4th Stage</u>									
143	145	147	152	153	155	159	160	160	160
160	160	162	162	162	162	162	164	164	164
164	164	164	166	166	166	168	168	168	168
171	171	171	171	171	171	171	171	173	173
173	173	175	175	175	175	175	175	175	177
177	179	179	179	179	182	182	182	184	184
186	186	186	188	188	188	188	188	188	190
190	190	190	190	190	193	193	193	193	193
193	193	193	193	195	195	195	195	195	197
197	197	197	197	197	199	199	199	199	199
199	199	199	199	201	201	201	201	201	201
201	204	204	206	208	208	208	208	208	208
208	208	208	210	210	210	210	212	212	212
212	215	215	215	215	217	217	219	219	219
219	219	219	219	219	219	219	221	221	223
223	223	223	223	223	223	226	228	228	229
229	231	231	231	231	233	233	233	233	238
238	238	238	238	238	240	240	240	240	240
242	242	244	251	251	258	260			

<u>Sheep 28</u>				<u>6 Days</u>			<u>Females</u>		
<u>4th Stage</u>									
122	128	155	160	160	162	164	164	166	166
166	168	168	171	171	173	173	175	175	175
175	175	177	177	177	177	179	179	179	179
182	182	183	184	186	186	186	186	186	186
186	188	188	188	188	190	193	193	195	195
195	195	197	199	201	201	201	204	204	204
206	206	208	208	208	208	210	210	210	212
212	215	215	217	217	217	219	219	219	219
219	219	219	221	221	221	221	223	223	223
226	226	228	228	228	229	229	229	229	229
231	231	231	233	233	233	233	233	236	236
236	236	238	238	238	238	238	238	238	240
240	240	240	242	242	242	242	242	244	244
244	247	247	249	249	249	249	251	251	251
251	251	251	251	253	253	253	255	255	255
255	255	255	255	257	258	260	260	260	260
262	262	262	262	264	264	264	264	264	264
264	264	264	266	269	269	271	271	271	271
271	273	273	273	275	277	282	282	282	288
288	288	288	293	297	304	348			

Sheep 37

6 Days

Male

4th Stage.

136	146	166	168	173	175	175	177	177	177
177	179	179	179	179	179	182	182	182	182
184	184	186	186	186	186	186	186	186	186
186	186	188	188	188	188	188	188	188	188
190	190	190	190	190	190	190	190	190	193
193	193	193	193	193	193	193	193	195	195
195	195	195	195	195	195	195	195	195	195
197	197	197	197	197	197	197	197	197	199
199	199	199	199	199	199	199	199	199	199
199	199	199	201	201	201	201	201	201	201
201	201	201	201	201	201	201	201	201	201
201	201	201	201	201	201	201	201	204	204
204	204	204	204	204	204	204	204	204	204
204	204	204	204	204	206	206	206	206	206
206	206	206	206	206	206	206	206	206	206
208	208	208	208	208	208	208	208	208	208
208	208	208	210	210	210	210	210	210	210
210	210	212	212	212	212	212	212	215	215
215	215	215	216	217	217	217	217	217	217
217	217	217	217	221	221	221	223	228	228

Sheep 37

6 Days.

Female

4th Stage.

136	141	151	186	188	193	193	197	197	197
199	199	199	201	201	204	204	204	204	206
206	208	208	208	208	210	212	212	212	212
212	212	212	215	215	215	215	215	215	215
215	215	215	215	215	215	215	217	217	217
217	217	217	217	217	219	219	219	219	219
219	219	219	219	219	219	219	219	219	219
221	221	221	221	221	223	223	223	223	226
226	226	226	226	226	226	226	228	228	228
229	229	229	229	229	229	229	229	229	229
229	229	229	229	229	229	229	229	229	229
231	231	231	231	231	231	231	231	231	231
231	233	233	233	233	233	233	233	233	233
233	233	233	233	233	233	236	236	236	236
236	236	236	236	238	238	238	238	238	238
238	238	238	238	238	238	238	239	239	239
240	240	240	240	240	240	240	241	242	242
244	244	245	246	247	247	247	247	247	247
247	249	249	249	249	249	251	251	251	253
255	260	260	260	271	299	344			

<u>Lamb 40</u>				<u>6 Days</u>			<u>Males</u>		
<u>4th Stage.</u>									
143	162	168	171	171	173	179	179	179	179
182	186	186	186	186	188	188	190	190	190
190	193	195	195	195	197	197	197	197	197
197	197	197	199	199	199	199	199	201	201
201	201	201	204	204	204	204	204	206	206
206	206	206	206	206	208	208	208	208	208
208	208	210	210	210	210	210	210	210	210
210	210	212	212	212	212	212	212	212	212
212	212	212	212	215	215	215	215	215	215
215	215	217	217	217	217	217	217	217	217
217	217	217	219	219	219	219	219	219	219
219	219	219	219	219	219	219	219	221	221
221	221	221	221	221	221	221	221	221	221
221	221	223	223	223	223	223	223	223	223
223	223	223	226	226	226	226	226	226	226
226	226	226	226	228	228	228	228	228	229
229	229	229	229	229	229	229	229	229	229
229	229	229	229	231	231	231	233	233	233
233	236	236	238	238	238	240	240	240	242
244	244	244	247	249	249	251			

<u>Lamb 40</u>				<u>6 Days</u>			<u>Females</u>		
<u>4th Stage.</u>									
150	162	168	168	177	184	190	190	195	197
197	199	199	199	201	206	206	208	208	210
210	212	212	212	217	217	219	219	219	221
221	221	221	221	223	223	226	226	226	226
226	226	226	228	228	228	228	228	228	228
228	228	228	228	228	228	228	228	228	231
231	231	231	231	231	231	231	233	233	233
233	233	233	233	233	236	236	236	236	236
236	236	236	238	238	238	238	238	238	238
240	240	240	240	240	240	240	240	240	240
240	242	242	242	242	242	242	242	242	242
244	244	244	244	244	244	244	247	247	247
247	247	247	247	249	249	249	249	249	249
249	249	249	249	251	251	251	251	251	251
251	251	253	253	253	253	253	255	255	255
255	255	258	258	258	258	258	258	258	258
258	258	260	260	260	262	262	262	262	262
262	262	262	262	264	264	264	264	264	264
264	266	266	266	266	266	271	271	271	271
273	273	273	275	275	277				

				<u>Lamb 10</u>	<u>7 Days</u>	<u>Males</u>			
<u>4th Stage.</u>									
132	160	166	168	173	175	175	177	177	177
177	182	184	184	186	186	186	186	190	190
190	190	193	193	193	195	195	195	195	195
195	195	195	197	197	197	197	197	197	197
197	197	197	199	199	199	199	201	201	201
201	201	201	201	201	201	201	201	204	204
204	204	204	204	204	204	205	206	206	206
206	206	206	206	206	206	206	208	208	208
208	208	208	208	208	208	208	208	208	208
208	208	208	208	208	208	210	210	210	210
210	210	210	210	210	210	210	212	212	212
212	212	212	212	212	215	215	215	215	215
215	215	215	215	215	217	217	217	217	217
217	217	217	219	219	219	219	219	219	219
219	219	219	219	219	219	219	221	221	221
221	221	221	221	221	223	223	223	223	223
223	223	223	223	223	223	223	223	226	226
226	226	226	228	228	228	228	229	229	229
229	229	229	229	231	231	233	233	233	233
236	236	238	240	240	249	249	255	273	273
286									

				<u>Lamb 10</u>	<u>7 Days</u>	<u>Females</u>			
<u>4th Stage.</u>									
147	150	157	160	165	183	187	201	212	212
212	217	219	221	221	223	223	223	226	226
226	226	228	228	229	229	229	229	229	231
231	231	231	231	233	233	233	233	233	233
236	236	236	236	236	238	238	238	238	238
238	238	238	238	240	240	240	240	240	240
240	240	240	240	240	240	240	240	240	242
242	242	242	242	242	242	242	242	242	244
244	244	244	244	244	244	244	244	244	244
247	247	247	247	247	247	247	247	247	247
247	247	247	249	249	249	249	249	249	249
249	249	251	241	251	251	251	251	251	251
253	253	253	253	253	253	253	253	253	253
253	255	255	255	255	255	255	255	258	258
258	258	258	260	260	260	260	260	260	260
260	260	260	260	262	262	262	262	262	264
264	264	266	266	266	266	266	266	269	269
269	269	269	269	269	271	273	273	273	273
280	280	282	284	286	286	288	291	299	306

<u>Lamb 23</u>				<u>7 Days</u>			<u>Males.</u>		
<u>4th Stage.</u>									
139	143	143	143	147	150	150	152	152	152
152	153	153	153	155	155	157	157	157	157
157	157	157	157	157	157	157	157	159	160
160	160	160	160	160	160	160	160	160	160
160	160	160	162	162	162	162	162	162	162
162	162	162	162	162	162	162	164	164	164
164	164	164	164	164	164	164	164	166	166
166	166	166	166	166	166	166	168	168	168
168	168	168	171	171	171	171	171	171	171
171	171	173	173	173	173	173	173	173	173
173	173	173	173	173	173	175	175	175	175
175	175	175	175	175	175	175	175	175	175
175	177	177	177	177	177	177	177	177	179
179	179	179	179	179	179	179	182	182	182
184	184	184	184	184	186	186	186	186	188
188	188	188	190	190	190	190	190	190	190
190	193	193	195	195	197	197	197	197	197
197	199	199	199	199	201	201	204	206	208
208	212	212	215	217	219	221	226	228	228
236	238	240	242	242	249	273			

<u>Lamb 23</u>				<u>7 Days</u>			<u>Females</u>		
<u>4th Stage.</u>									
143	150	150	152	152	152	155	155	155	157
157	157	160	160	160	160	162	162	162	162
162	162	162	162	164	164	164	164	164	164
164	164	164	164	164	164	164	164	164	166
166	166	166	166	166	166	166	166	166	168
168	168	168	168	168	168	168	171	171	171
171	171	171	171	171	171	173	173	173	173
173	173	173	173	173	173	175	175	175	175
175	175	175	175	175	175	175	175	175	177
177	177	177	177	177	177	179	179	179	179
179	179	179	179	179	179	179	182	182	128
182	182	182	182	184	184	184	184	186	186
186	186	186	186	186	186	186	188	188	188
188	190	190	190	195	195	195	195	197	197
197	197	199	199	199	199	201	204	204	206
206	210	210	210	210	212	215	215	217	217
219	219	219	219	221	221	226	226	226	229
229	231	236	240	240	240	244	244	244	247
249	251	251	251	253	255	258	258	262	262
264	266	273	273	277	280	284	286	291	

<u>Sheep 41</u>				<u>7 Days</u>			<u>Males</u>		
<u>4th Stage.</u>									
125	152	171	171	173	175	177	177	186	186
188	188	188	190	190	190	190	190	193	195
201	201	201	201	201	204	206	206	206	206
208	208	208	208	208	210	210	210	210	210
210	212	212	212	212	212	215	215	215	215
215	215	215	217	217	217	217	217	219	219
219	219	219	219	219	221	221	221	221	221
221	221	221	221	221	223	223	223	223	223
223	223	223	223	226	226	226	226	226	226
226	226	226	226	226	226	228	228	228	228
228	229	229	229	229	229	229	229	229	231
231	231	231	231	231	231	231	231	231	231
233	233	233	233	233	233	233	233	236	236
236	236	236	236	236	236	236	236	236	238
238	238	238	238	238	238	238	238	240	240
240	240	240	240	240	240	240	240	240	240
242	242	242	242	242	242	244	244	244	244
247	247	247	249	249	249	249	249	249	249
249	251	253	255	258	260	262	282	287	

<u>Sheep 41</u>				<u>7 Days</u>			<u>Females</u>		
<u>4th Stage.</u>									
125	132	132	141	143	145	145	147	150	153
153	155	157	160	162	164	164	166	166	171
175	177	184	188	190	193	195	197	197	197
197	201	201	201	201	204	210	210	212	215
215	217	219	219	221	223	223	223	226	226
226	226	228	228	228	229	229	229	231	231
233	233	233	233	236	236	236	236	236	236 236
238	238	238	240	240	240	240	240	240	240
240	242	242	242	242	242	242	244	244	244
246	247	247	248	249	249	249	249	251	251
251	251	251	251	251	251	253	253	253	253
253	253	253	253	253	253	255	255	255	255
255	255	255	255	255	258	258	258	258	258
260	261	262	262	262	262	262	262	263	264 264
264	264	264	264	266	266	266	266	266	266 266
268	269	269	269	271	271	271	271	273	273
273	273	273	273	273	273	273	273	273	273 274
277	277	277	277	280	280	280	280	282	282
283	284	284	284	284	284	286	288	288	291
291	291	299	302	306	319				

	<u>Lamb 8</u>			<u>8 Days</u>			<u>Males</u>		
<u>Adults.</u>									
186	186	199	199	204	204	208	210	210	212
215	217	219	221	223	223	223	226	226	226
229	229	229	231	231	231	231	231	231	233
233	236	236	236	236	236	236	238	238	240
240	240	240	242	244	244	244	244	247	247
247	249	249	251	251	251	251	253	253	253
253	253	258	260	260	261	266	269	297	383

<u>4th Stage.</u>										
188	190	190	195	195	195	197	197	197	197	197
199	199	201	201	201	201	204	204	204	204	206
206	206	208	208	208	208	208	208	208	208	208
210	210	210	210	210	212	212	212	212	212	212
215	215	215	215	215	215	215	217	2217	217	217
217	217	217	217	217	219	219	219	219	219	219
219	219	219	219	219	219	219	219	221	221	221
221	221	221	221	221	223	223	223	223	223	226
226	226	226	226	226	226	228	228	228	228	228
228	228	228	228	228	228	228	229	229	229	229
229	229	229	229	231	231	231	231	233	233	233
236	236	238	239	240	242	242	253	304	354	

	<u>Lamb 8</u>			<u>8 Days</u>			<u>Females</u>		
<u>Adults.</u>									
219	228	236	238	238	240	242	242	249	249
249	249	251	253	255	255	258	260	260	260
260	262	262	262	266	269	273	277	277	277
280	282	282	284	284	286	286	291	291	295
295	295	295	295	299	299	302	217	217	324
328	330	330	330	332	354	414	453		

<u>4th Stage.</u>										
175	190									
201	210	215	215	217	217	217	217	217	218	
221	221	221	221	223	223	226	228	228	228	
229	229	229	229	229	231	231	231	231	233	
233	233	233	233	233	236	236	238	238	238	
238	238	238	240	240	240	240	240	240	240	
240	242	242	242	242	244	244	244	244	247	
247	247	247	247	247	247	249	249	249	251	
251	251	251	251	251	251	251	253	253	253	
253	253	253	253	253	255	255	255	255	255	
255	255	255	255	255	258	258	258	258	258	
260	260	260	262	262	262	262	264	264	264	
266	266	269	269	269	269	269	271	271	271	
271	273	273	273	273	273	277	280	282	282	
282	284	288	291	317	321	339				

	<u>Sheep 19</u>			<u>8 Days</u>			<u>Males</u>		
<u>Adults.</u>									
204	208	208	212	212	212	219	221	223	223
231	231	233	233	236	236	238	238	238	240
240	242	242	242	244	244	244	244	244	244
247	249	251	253	255	262	262	275	280	282

<u>4th Stage.</u>									
179	186	186	190	190	190	195	195	195	196
197	197	197	197	199	199	199	199	201	201
201	201	201	204	204	204	204	206	206	206
206	206	206	208	208	208	208	208	208	208
208	208	210	210	210	210	210	210	210	210
210	210	212	212	212	212	212	212	212	212
212	212	215	215	215	215	215	215	215	217
217	217	217	217	217	217	217	217	217	219
219	219	219	219	219	219	219	219	219	219
219	219	219	221	221	221	221	221	221	221
221	221	221	221	223	223	223	223	223	223
223	223	223	223	223	223	226	226	226	226
226	226	226	226	228	228	228	229	229	229
229	229	229	229	229	229	229	229	229	229
229	231	231	231	231	233	233	233	233	236
238	238	238	240	242	242	242	247		

	<u>Sheep 19</u>			<u>8 Days</u>			<u>Females</u>		
<u>Adults.</u>									
251	266	269	277	277	280	272	291	293	293
299	306	310	330	339					

<u>4th Stage.</u>									
210	210	212	217	221	223	226	226	226	228
229	229	229	231	231	231	231	233	233	233
233	233	235	236	236	236	236	236	238	238
238	238	238	240	240	240	240	240	242	242
242	242	242	242	242	244	244	244	244	244
244	244	244	244	244	244	247	247	247	247
247	247	247	247	247	247	247	247	249	249
249	249	249	249	249	249	249	249	251	251
251	251	251	251	251	251	253	253	253	253
253	253	253	253	253	255	255	255	255	255
255	255	255	255	255	257	258	258	258	258
260	260	260	260	260	261	262	262	262	262
262	263	263	264	264	264	264	264	264	266
266	269	269	269	269	271	271	271	271	272
273	273	273	273	273	273	273	275	275	275
275	275	275	276	277	277	277	277	277	275
280	282	282	284	284	284	284	286	286	280
291	294	297	308	313					288

	<u>Sheep 34</u>			<u>8 Days</u>			<u>Males</u>		
<u>Adults.</u>									
275	288	295	295	299	310	310	317	317	319
321	321	321	324	324	326	328	328	328	330
330	330	330	332	335	335	337	337	339	339
341	341	341	346	348	348	350	350	352	354
357	357	359	361	361	361	363	363	365	368
370	372	376	381	383	383	383	384	390	392
392	296	298	402						

<u>4th Stage.</u>									
175	177	188	204	215	223	229	240	247	251
251	251	251	253	255	258	260	260	262	262
262	262	262	262	262	262	264	264	264	264
264	264	266	266	266	266	269	271	271	271
271	271	271	271	273	273	273	273	273	275
275	275	275	277	277	277	277	277	277	277
277	277	277	280	280	280	280	280	280	280
280	282	282	282	282	282	282	284	284	284
284	284	284	284	284	284	284	286	286	286
286	286	286	288	288	288	288	288	288	291
291	291	291	291	293	293	293	293	293	293
293	295	295	295	295	296	296	297	299	299
299	299	299	302	302	304	304	306	306	308
310	313	313	341	361					

	<u>Sheep 34</u>			<u>8 Days</u>			<u>Females</u>		
<u>Adults.</u>									
315	326	335	343	354	357	359	363	363	370
370	374	376	379	379	383	383	383	385	387
392	392	394	396	398	398	398	405	405	407
408	412	412	414	414	416	416	416	416	418
420	425	425	425	425	427	436	438	438	440
440	442	445	447	449	503	595			

<u>4th Stage.</u>									
177	184	188	197	212	219	231	242	251	255
260	260	262	264	266	269	269	271	271	273
273	273	275	277	277	2777	280	280	282	282
282	282	284	286	286	288	293	293	293	293
293	295	295	297	299	299	302	304	306	306
308	308	308	310	313	313	315	315	315	315
315	317	317	319	319	319	319	319	319	321
321	321	324	324	326	328	328	328	328	328
328	330	330	332	335	335	335	335	335	335
335	337	337	337	339	339	339	339	343	343
346	346	348	350	350	350	350	352	357	357
363	365	374	376	379	379	383	383	383	385
385	387	394	394	396	401	409	412	412	423
427	427	440	449	453	459	468	470	479	545

	<u>Sheep 42</u>				<u>8 Days</u>			<u>Males</u>		
<u>Adults.</u>										
193	206	208	208	208	210	212	212	212	215	
215	217	217	217	219	219	219	219	221	221	
223	223	223	223	223	226	226	226	226	229	
229	229	229	229	229	231	233	236	238	238	
238	240	240	240	240	247	247	249	249	251	
251	251	251	251	253	255	262	262	264	264	
266	271	271	275							

<u>4th Inster.</u>										
182	184	186	186	186	186	188	190	193	193	
195	195	195	197	197	197	197	197	197	197	
199	199	201	201	201	201	201	201	201	204	
204	204	204	206	206	206	206	206	208	208	
208	208	208	208	208	208	208	208	208	208	
208	208	208	210	210	210	210	210	210	210	
210	210	212	212	212	212	212	212	212	212	
212	212	212	212	215	215	215	217	217	217	
217	217	217	217	219	219	219	219	219	219	
219	219	219	219	221	221	221	221	221	221	
221	221	221	223	223	223	223	223	223	226	
226	226	226	228	228	229	229	229	229	231	
231	231	233	233	236	238	238	238	238	238	
242	244	247	253	262						

	<u>Sheep 42</u>				<u>8 Days</u>			<u>Females</u>		
<u>Adults.</u>										
173	212	228	229	231	240	240	244	247	249	
253	253	253	259	260	260	260	264	266	271	
271	271	271	273	273	273	273	277	284	284	
284	284	284	286	288	288	293	295	297	302	
308	310	310	315	324	326	328	328	332	332	
337	350	354								

<u>4th Stage.</u>										
134	136	175	201	204	206	208	210	212	212	
217	219	219	221	221	221	223	223	223	226	
229	229	229	229	229	229	229	231	231	231	
231	233	233	233	236	236	238	238	238	238	
238	240	240	240	240	240	240	242	242	242	
242	242	242	242	242	244	244	244	244	244	
244	244	244	244	244	244	247	247	247	247	
247	249	249	249	249	249	249	251	251	251	
251	251	251	251	251	251	251	251	251	251	
251	251	253	253	253	253	253	253	255	255	
255	255	255	258	260	260	262	262	262	262	
262	262	262	262	262	264	266	266	266	266	
269	269	269	271	271	271	271	273	273	273	
284	284	291	299							

	<u>Sheep 2</u>			<u>9 Days</u>			<u>Male</u>		
<u>Adults.</u>									
210	219	230	233	239	249	251	251	255	277
280	284	284	286	286	286	288	288	291	295
297	297	299	299	299	299	302	304	304	304
306	306	306	308	310	310	310	313	315	315
315	317	317	317	319	319	319	319	321	321
326	327	327	327	327	328	328	330	330	330
330	330	332	335	335	335	335	335	335	337
337	337	337	337	337	337	337	339	339	339
341	341	341	341	341	343	343	343	343	343
343	346	346	346	346	346	346	346	346	346
348	348	348	348	350	350	350	350	350	350
350	352	352	352	352	352	352	352	354	354
354	354	354	354	357	357	357	357	357	359
359	359	359	359	359	361	361	361	363	363
318	368	370	370	370	370	370	370	372	374
374	374	374	376	376	376	376	379	379	379
379	379	379	381	381	381	381	381	383	383
383	383	385	385	387	387	387	390	390	390
392	392	392	392	392	392	394	394	403	403
409									

4th Stage.

153	182	208	210	223	223	226	228	229	236
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	<u>Sheep 2</u>			<u>9 Days</u>			<u>Female</u>		
<u>Adults.</u>									
270	260	286	288	306	310	313	315	317	317
339	343	348	348	350	352	357	357	361	361
363	363	365	365	368	370	370	372	372	376
376	376	376	383	383	383	383	383	383	385
385	385	387	387	390	392	392	394	394	394
394	398	398	398	401	401	403	405	405	407
407	407	407	407	407	409	409	409	409	412
412	412	412	412	412	414	414	414	416	416
416	416	416	418	418	418	418	418	420	420
420	420	423	423	423	427	427	427	427	427
427	427	429	429	429	431	431	431	431	431
434	434	436	436	436	436	438	438	438	438
438	438	438	440	442	442	442	442	442	445
445	445	445	445	447	447	449	449	449	449
449	449	449	449	449	449	449	451	451	451
451	451	453	456	456	459	459	459	459	459
459	459	461	461	461	463	463	463	468	468
468	470	470	470	470	472	474	474	477	477
479	481	481	481	481	483	485	485	490	494
503	507	507							

4th Stage.

199	208	208	242	251	253	253	273	273
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	<u>Sheep 7</u>			<u>9 Days</u>		<u>Males</u>			
<u>Adults.</u>									
217	223	223	223	228	228	231	231	238	238
240	240	240	244	244	251	251	251	252	253
253	253	255	258	258	258	258	260	260	262
262	262	262	264	264	264	266	266	269	271
273	273	275	275	275	275	277	280	280	282
282	282	284	288	291	291	291	293	293	293
293	293	293	295	295	295	295	295	295	295
295	295	295	297	299	299	299	299	302	302
302	302	302	304	306	306	306	306	306	306
306	308	308	308	308	308	308	310	310	310
310	310	310	313	313	313	313	313	313	315
315	315	317	317	317	317	317	317	319	319
319	319	319	321	321	321	321	321	324	324
326	326	326	326	326	328	328	328	328	330
333	333	333	337	337	337	339	341	341	341
343	343	346	348	348	350	350	354	354	354
357	359	359	361	361	361	361	368	368	368

4th Stage.

171	173	179	188	193	201	206	217	219	221
221	229	229	229	229	229	231	233	233	233
233	238	240	242	244	247	249	249	251	253

	<u>Sheep 7</u>			<u>9 Days</u>		<u>Females</u>			
<u>Adults.</u>									
217	223	223	223	228	228	231			
231	238	238	240	240	240	243	244	251	251
251	253	253	255	258	258	258	258	258	260
260	262	262	262	262	262	264	264	264	266
266	269	271	273	273	275	275	275	275	277
280	280	282	282	282	284	288	291	291	291
293	293	293	293	295	295	295	295	295	295
295	295	295	295	295	297	299	299	299	299
302	302	302	302	302	304	306	306	306	306
306	306	306	308	308	308	308	308	308	310
310	310	310	310	310	313	313	313	313	313
315	315	315	317	317	317	317	317	317	319
319	319	319	321	321	321	321	321	324	324
326	326	326	326	326	328	328	328	328	329
332	332	332	337	337	337	337	339	341	341
341	343	343	346	348	348	350	350	352	354
354	354	357	359	359	361	361	361	361	368
368	368								

4th Stage.

171	173	179	188	193	201	206	217	219	221
221	229	229							

9 days

Sheep 25

Male

Adult.

141	177	182	201	201	208	210	210	212	215
215	219	221	221	221	223	223	223	223	223
223	226	226	229	229	229	229	229	231	233
233	233	233	236	236	236	238	238	238	238
238	240	240	240	242	242	244	244	244	244
247	247	247	249	249	251	251	255	255	255
258	258	260	260	260	260	262	262	262	262
262	264	264	264	264	266	266	266	266	266
266	266	266	266	266	266	269	271	271	271
273	273	273	273	273	273	273	273	273	275
275	275	275	277	277	280	280	282	282	282
282	282	284	284	284	284	284	286	286	286
286	288	291	291	291	293	293	293	295	295
295	295	295	297	297	299	299	299	302	302
302	302	302	302	306	306	310	313	313	315
317	326	326	328	332	339	354	379		

4th Stage.

155	162	164	175	179	179	179	179	184	190
190	195	195	195	195	197	199	199	201	204
204	204	204	206	206	206	206	206	208	210
210	212	212	217	217	219	219	231	233	236
236	239								

Sheep 25

Females

Adults.

207	223	229	229	233	242	242	249	250	255
255	255	258	259	262	262	262	264	267	269
269	273	275	275	277	277	280	280	284	284
284	284	286	286	288	289	291	291	293	293
295	295	297	297	299	302	302	304	306	306
307	308	308	310	310	313	313	313	313	315
315	317	317	317	317	317	319	319	321	321
321	321	321	324	326	326	326	326	326	328
328	330	330	330	332	332	332	335	337	337
337	339	339	339	339	342	343	343	343	343
346	346	346	348	348	348	350	350	352	354
361	361	363	363	368	374	379	381	381	387
387	390	392	394	403	407	416	442		

4th Stage.

121	132	143	143	143	143	145	145	145	145
147	147	150	153	155	157	162	162	164	164
166	168	168	173	175	177	184	186	186	188
190	195	197	197	199	201	206	206	208	210
210	210	212	217	219	221	223	226	226	228
228	228	231	231	231	231	233	233	240	240
242	249	249	249	253	253				

Lamb 25 Washings*9 DaysMales4th Stage.

136	145	150	150	160	182	184	184	184	186
188	193	195	197	199	199	201	201	204	204
206	208	208	208	208	210	210	210	212	212
212	212	215	217	219	219	219	221	221	223
223	226	226	229	229	229	229	231	233	236
236	236	238	238	240	244	266	273		

Adults.

197	210	212	215	221	221	221	223	223	223
223	226	229	229	233	233	236	236	238	240
240	240	240	240	242	244	247	247	247	247
249	251	251	251	251	253	253	253	253	255
258	258	258	258	260	260	262	262	264	264
266	266	266	269	269	269	269	271	271	273
273	273	275	275	277	277	280	280	280	282
282	282	282	282	282	284	284	284	284	286
286	286	286	286	286	288	288	291	291	293
295	295	295	295	295	295	297	297	299	299
299	302	302	302	302	302	304	304	306	308
310	310	313	315	317	317	317	317	317	319
319	319	319	319	321	324	324	326	326	326
326	326	328	328	332	337	339	339	341	348
365	370	405							

Sheep 25 Washings*9 DaysFemalesAdults.

223	229	231	233	236	238	249	251	253	253
255	262	262	266	266	269	271	273	277	280
282	282	284	284	286	286	288	291	291	295
297	299	299	302	302	304	306	306	306	306
306	306	306	306	308	308	310	313	315	315
315	315	317	317	317	319	319	319	319	319
321	321	324	324	326	326	326	328	328	328
328	328	33L	33L	332	335	337	337	337	337
339	339	339	339	343	343	343	348	348	348
348	350	350	350	350	350	352	352	354	354
354	354	354	357	357	359	359	359	361	361
361	361	361	361	361	363	365	368	368	368
368	372	372	372	372	374	374	374	376	376
376	379	380	380	380	383	385	387	387	392
396	405	407	414	416	420	427	453		

4th Stage.

136	143	143	145	150	153	153	153	166	166
168	177	179	188	193	193	199	206	210	219
223	223	223	231	231	231	233	233	233	238
238	238	238	240	240	240	242	242	244	244
244	244	247	251	251	251	251	253	260	262
264	262	262	284	363					

* This material was washed from the intestine of Lamb 25 after the ingesta and other parasites had been removed in the usual way. See Text page 98 .

Sheep 49

9 Days

Sexes Undifferentiated.

4th Stage.

066	099	099	099	101	101	103	103	103	103
106	106	106	106	108	108	110	110	110	110
110	110	110	110	112	112	112	114	114	114
114	114	114	114	114	114	117	117	117	117
117	117	119	119	119	119	119	119	119	119
119	119	119	119	119	121	121	121	121	121
121	121	121	121	121	121	121	121	121	121
123	123	123	123	123	123	123	123	123	125
125	125	125	125	125	125	125	125	125	125
128	128	128	128	128	128	128	128	130	130
130	130	132	132	132	132	132	132	132	132
132	132	132	134	134	134	134	134	134	134
136	136	136	136	136	139	139	139	139	139
139	140	141	141	141	141	141	141	143	143
143	143	143	143	143	143	143	143	143	143
143	143	143	145	145	145	145	145	147	147
147	147	147	147	150	150	150	150	150	150
150	150	150	150	150	152	152	152	152	153
153	153	153	153	153	153	153	155	155	155
157	157	157	157	157	160	162	168	168	169
169	190	199							

	<u>Sheep 48</u>			<u>10 Days</u>			<u>Males</u>		
<u>Adults.</u>									
233	238	249	251	262	266	280	286	286	286
286	288	293	295	295	295	297	297	297	299
304	304	306	306	306	306	306	308	310	310
315	315	315	315	317	317	317	319	319	319
321	321	321	324	324	326	326	326	328	328
328	328	328	328	330	330	330	330	332	332
332	332	335	337	337	337	337	337	337	337
339	339	341	341	341	341	341	341	343	343
343	346	346	346	346	346	348	348	348	350
350	350	350	352	352	352	352	352	354	354
357	359	359	359	359	359	359	361	361	361
361	361	363	365	365	368	368	368	370	370
370	372	372	372	372	372	372	372	372	372
374	374	374	374	376	376	376	376	379	379
379	379	381	381	381	381	383	383	383	383
383	385	385	385	385	387	387	387	387	387
387	387	390	390	390	392	392	392	392	392
392	394	394	394	394	396	398	398	398	398
401	401	401	401	403	405	407	409	414	416
416	419	425	427	447					

<u>4th Stage.</u>				
145	193	204	208	244

<u>Adults</u>	<u>Sheep 48</u>			<u>10 Days</u>			<u>Females</u>		
255	262	269	291	343	343	343	346	352	370
379	379	381	383	383	385	387	390	390	390
390	390	392	392	394	394	394	394	396	396
398	398	401	403	403	403	403	405	405	409
409	412	412	414	414	414	416	416	316	316
416	416	416	418	418	420	420	420	420	423
423	423	427	427	427	427	427	429	429	429
429	429	431	431	431	431	434	434	436	438
438	438	438	438	440	440	440	442	442	442
445	445	445	447	449	449	449	449	449	451
451	451	451	453	453	453	453	453	453	456
456	456	458	458	458	458	459	459	459	459
461	461	463	463	463	463	463	466	466	468
468	470	470	470	470	470	470	470	470	470
472	472	472	474	474	474	474	477	477	477
481	481	481	481	483	488	488	490	490	492
492	492	492	494	494	496	496	496	496	496
499	499	499	503	503	507	510	510	510	514
516	516	521	521	525	525	525	527	532	532
532	532	532	534	545	573				

<u>4th Stage.</u>		
150	179	212

	<u>Sheep 36</u>				<u>11 Days</u>			<u>Males</u>	
<u>Adults.</u>									
187	209	275	288	288	306	308	308	312	312
317	317	319	323	323	330	330	332	332	343
345	345	345	350	350	352	352	354	354	354
356	356	356	356	361	361	363	363	363	365
365	365	367	367	367	367	370	370	370	372
372	372	374	374	378	378	378	378	381	381
381	383	383	383	383	383	385	385	385	385
385	385	386	389	389	389	389	389	392	392
392	392	394	394	394	394	394	396	396	396
396	396	396	396	396	396	396	396	396	398
398	398	398	398	398	398	398	400	403	403
403	403	405	405	405	407	407	407	407	407
407	407	409	409	409	409	409	409	409	410
410	410	411	411	411	414	414	414	415	416
418	418	418	418	418	420	420	420	422	422
422	422	422	422	422	427	427	427	427	429
429	429	429	429	429	431	431	431	431	433
433	436	436	436	438	440	440	440	442	442
442	442	442	442	442	444	444	447	449	451
451	453	453	455	455	458	460	462	462	463
480	480								

4th Stage.

189	233	183	187	196	220
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	<u>Sheep 36</u>				<u>11 Days</u>			<u>Females</u>	
<u>Adults.</u>									
196	242	253	255	286	317	319	326	341	345
350	381	381	382	387	389	392	407	407	411
414	416	418	418	422	427	429	429	429	433
433	433	433	433	433	436	436	436	436	438
440	440	440	440	440	444	444	444	447	447
447	447	447	447	447	449	449	451	453	455
458	458	460	462	462	462	462	462	462	462
463	464	464	466	466	466	469	469	469	469
471	471	471	471	473	473	473	475	475	475
475	475	477	477	480	480	482	482	482	482
483	484	484	484	484	484	484	484	484	484
486	486	486	488	488	488	491	491	493	493
495	495	495	495	496	497	497	497	497	497
497	497	497	497	499	499	504	504	504	506
506	506	506	506	506	506	506	506	508	508
508	508	510	510	510	510	510	513	513	513
513	513	515	515	517	517	517	517	517	519
519	519	521	524	524	524	526	528	532	539
539	539	541	541	543	543	546	548	548	550
552	552	554	554	557	557	557	557	557	570
574	576	581	581	612	628	623			

4th Stage.

147	156	178	154	165	229
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Sheep 3811 DaysMalesAdults.

200	302	306	310	317	328	332	337	339	343
343	343	346	350	350	352	354	361	361	361
361	363	365	368	370	370	372	372	372	372
372	376	376	376	379	379	381	383	383	383
383	385	385	385	385	385	387	387	390	390
390	392	392	392	392	394	394	394	394	394
394	394	394	396	398	398	398	398	398	401
401	401	401	403	403	403	403	403	403	405
405	405	405	405	405	405	405	405	407	407
409	409	409	409	412	412	412	412	412	412
412	412	412	414	414	414	414	414	414	414
414	414	416	416	416	416	416	416	416	416
416	416	416	418	418	418	420	420	420	420
420	423	423	423	427	427	427	427	427	427
427	427	427	427	429	429	429	431	431	431
431	431	431	434	434	434	436	436	436	436
436	438	438	440	442	442	442	442	445	445
445	447	447	447	447	449	449	449	449	449
449	451	451	453	453	453	453	456	456	456
459	459	459	459	461	463	468	472	472	474
479	494								

Sheep 3811 DaysFemalesAdults.

251	319	332	392	418	423	427	427	436	440
440	440	445	445	447	447	447	447	447	447
449	449	449	451	453	456	456	459	459	459
461	463	463	466	468	468	470	470	470	470
472	472	472	474	474	474	474	474	477	477
479	479	479	481	481	481	481	481	481	481
483	483	485	485	485	485	485	485	488	490
490	490	490	490	492	492	492	492	492	492
492	492	492	492	494	494	494	499	499	499
499	501	501	501	501	501	503	503	503	505
505	507	507	507	507	510	510	510	510	510
512	512	512	514	514	514	514	514	514	514
514	516	516	516	518	518	518	521	521	521
521	523	523	523	523	523	525	525	525	527
527	529	529	529	532	532	532	532	532	532
534	534	534	534	536	536	536	536	536	538
540	540	540	540	543	543	543	543	543	543
547	547	547	547	551	551	554	558	558	560
562	562	565	567	567	569	569	571	572	573
576	578	580	592	593	595	598			

4th Stage.

182	231	355
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	<u>Lamb 26</u>			<u>12 Days</u>			<u>Males</u>		
<u>Adults.</u>									
221	226	226	260	273	288	291	324	328	348
350	352	361	365	370	370	370	372	374	374
376	379	381	381	381	383	385	387	390	392
392	394	394	396	398	401	401	403	405	405
405	414	414	416	416	418	427	427	427	429
429	429	429	429	431	434	434	436	436	436
436	438	440	445	447	447	447	449	449	449
451	456	459	459	459	459	461	461	463	466
470	470	470	470	470	470	470	470	470	472
472	472	472	477	477	479	479	479	482	482
482	482	483	483	483	485	485	485	485	488
488	488	490	490	492	494	494	494	496	496
496	496	496	496	496	499	499	499	499	501
501	501	501	501	503	503	503	503	503	503
505	507	510	512	512	514	514	514	514	514
514	514	514	516	516	516	518	518	518	518
518	518	521	521	525	527	529	532	532	534
536	536	536	536	538	541	541	541	543	545
545	545	547	547	549	554	582	606		

4th Stage.

108 195 210 212 215 217 221

	<u>Lamb 26</u>			<u>12 Days</u>			<u>Females</u>		
<u>Adults.</u>									
251	266	273	339	365	368	394	394	396	407
412	414	418	425	429	434	442	449	449	453
459	459	459	459	463	466	468	470	470	470
472	472	474	477	477	479	481	483	488	490
491	496	501	503	510	510	512	514	514	514
523	525	527	529	532	534	536	536	540	543
547	547	547	554	556	558	560	562	562	565
567	569	569	569	569	580	580	591	591	593
593	593	593	595	598	600	602	602	602	606
609	611	612	612	612	614	614	614	616	616
619	623	623	623	623	623	623	623	625	627
627	630	630	632	632	634	634	634	634	634
636	639	641	643	643	645	645	645	645	647
647	651	654	656	656	656	656	658	658	658
660	660	667	667	667	671	671	671	671	671
678	678	678	678	680	680	682	682	685	685
687	687	689	691	693	693	693	693	698	702
702	702	709	711	711	711	720	720	720	722
737	740	740	744	821					

4th Stage.

136 150 171 214 215 242 242 251

	<u>Sheep 51</u>			<u>14 Days</u>			<u>Males</u>		
<u>Adults.</u>									
208	236	262	264	308	317	337	339	346	350
365	379	403	405	408	416	416	418	420	423
423	427	429	434	438	445	445	447	449	449
456	459	468	468	470	470	470	472	472	477
477	477	477	479	479	479	479	481	481	481
481	483	483	485	485	485	488	492	492	494
494	494	494	496	496	496	499	499	499	499
501	501	503	503	503	505	505	505	505	505
505	505	507	507	507	510	510	510	510	512
512	512	512	514	514	514	514	516	516	516
516	518	521	521	521	521	523	523	525	525
525	525	525	525	525	527	527	527	527	529
529	529	529	532	532	532	532	532	532	534
534	534	534	536	536	536	536	536	536	536
538	538	538	540	540	540	543	543	543	545
545	545	545	545	547	547	547	547	547	549
549	549	549	551	554	554	554	556	558	558
560	560	560	562	567	569	578	580	580	580
584	591	591	595	619	631	638			

4th Instar

188	195	201	208	219	223	223	229	242
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	<u>Sheep 51</u>			<u>14 Days</u>			<u>Females</u>		
<u>Adults.</u>									
282	339	412	427	427	447	452	474	527	536
536	538	547	551	554	554	554	556	558	558
582	587	591	591	595	600	602	604	611	612
612	612	619	619	619	621	623	625	627	632
634	634	634	636	638	641	641	645	645	647
649	654	656	658	658	660	660	663	663	665
667	669	669	674	676	678	678	680	680	682
682	682	682	685	685	685	685	685	685	685
685	685	689	689	689	689	689	689	696	696
698	698	700	700	700	700	700	702	702	702
704	704	704	704	707	707	709	709	709	712
712	712	713	713	713	713	713	715	715	718
720	720	722	722	722	722	722	722	722	722
724	726	726	726	726	726	728	728	728	731
731	731	733	733	733	733	735	735	735	735
737	737	737	742	742	742	744	744	744	746
746	746	746	746	748	748	748	748	751	753
755	757	757	759	759	762	762	764	766	766
766	766	768	770	770	777	779	786	790	795
799	803	810	863						

4th Instar.

112	147	226	240	263	271
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	<u>Lamb 30</u>			<u>Males</u>			<u>16 Days</u>		
<u>Adults.</u>									
328	363	365	372	394	396	398	409	414	416
423	427	427	427	427	431	431	436	436	438
440	445	445	447	449	449	451	453	453	453
453	456	456	456	456	456	458	458	458	458
459	459	459	459	459	459	461	461	461	461
461	463	463	466	466	468	468	468	470	472
474	474	474	474	474	474	477	477	479	479
479	479	479	479	481	481	481	481	483	483
483	483	483	485	485	485	485	485	485	488
488	488	488	488	490	490	490	490	490	490
490	490	492	492	492	492	492	492	492	492
492	494	494	494	494	494	494	494	496	496
496	496	496	496	496	499	499	501	501	501
501	503	503	503	503	503	503	505	505	505
505	507	507	510	510	510	510	510	512	512
512	514	514	514	514	514	514	514	516	516
516	518	518	518	521	521	523	523	523	523
525	525	525	527	527	527	527	529	529	529
532	532	534	534	536	536	540	540	543	545
547	558	616	645						

	<u>Lamb 30</u>			<u>Females</u>			<u>16 Days</u>		
<u>Adults.</u>									
389	420	425	442	470	474	485	492	507	510 514
514	521	521	527	529	532	538	540	543	545
545	545	545	547	549	549	549	556	558	560
560	563	565	565	565	567	567	569	569	569
569	571	573	573	573	576	580	580	582	582
582	582	582	582	582	582	584	584	584	584
584	584	584	589	589	589	589	591	591	591
591	591	593	593	593	593	593	595	595	595
598	600	602	602	602	602	602	604	604	606
606	606	606	606	606	609	609	609	609	609
611	611	611	611	612	612	612	612	612	612
612	612	612	612	612	612	614	614	614	614
616	619	621	621	621	621	623	623	623	623
625	625	625	625	625	627	627	627	630	630
630	630	632	632	632	632	634	634	636	636
636	638	638	638	638	638	638	638	638	641
641	643	643	643	643	643	643	645	645	645
647	649	649	652	652	656	656	656	656	658
659	660	660	660	662	665	665	667	667	667
667	678	678	685	685	689	689	704	707	711

	<u>Lamb 9.</u>			<u>18 Days</u>			<u>Males</u>		
<u>Adults.</u>									
277	318	345	359	385	395	396	407	416	430
433	447	449	449	451	462	464	468	469	469
473	473	473	475	478	482	482	482	482	484
484	484	484	486	486	486	486	486	486	488
488	488	488	491	491	493	493	493	495	495
497	497	499	499	502	502	502	502	502	504
504	504	504	506	506	506	506	506	506	508
508	510	510	510	510	510	513	513	513	513
515	517	517	517	517	519	519	519	519	519
519	519	519	519	521	521	524	524	524	524
524	524	526	526	526	526	528	528	528	528
528	528	530	530	530	532	532	532	532	532
536	537	537	537	539	539	539	539	539	541
541	541	541	541	541	541	543	543	543	543
543	543	543	548	548	548	548	548	550	550
550	550	552	552	554	554	554	554	557	557
557	557	559	559	559	559	561	561	561	563
565	565	565	565	568	572	572	572	572	574
574	574	574	574	576	576	576	576	579	585
592	592	592	594	596	605	609	616	623	631
649									

	<u>Lamb 9</u>			<u>18 Days</u>			<u>Females</u>		
<u>Adults.</u>									
266	387	451	486	497	499	546	548	548	548
559	561	563	565	565	572	574	574	582	582
585	590	590	592	594	594	594	596	596	605
605	607	609	612	612	612	614	616	616	616
616	616	616	616	616	616	616	616	618	621
623	623	623	625	627	627	629	629	629	629
629	629	634	634	634	634	634	636	636	638
638	638	638	638	640	640	640	640	640	642
642	642	642	645	645	647	647	647	647	647
647	649	649	649	649	649	649	649	649	649
651	651	651	651	653	656	568	658	660	660
660	660	660	660	660	662	664	667	667	667
667	669	671	671	671	671	671	671	671	673
675	675	678	678	680	680	682	682	684	684
684	686	686	686	686	686	686	686	689	689
691	691	691	691	691	691	693	693	693	695
695	695	697	697	697	700	700	702	706	708
708	708	713	713	715	715	715	715	715	719
719	722	722	722	724	726	728	737	739	741
744	748	748	748	750	750	761	766	770	779

	<u>Sheep 6</u>			<u>20 Days</u>			<u>Males</u>		
<u>Adults.</u>									
207	323	374	392	407	409	416	425	429	429
431	431	435	438	440	440	442	444	447	447
449	451	451	451	451	453	453	457	457	457
457	457	460	460	462	462	462	464	464	464
464	464	464	464	466	466	466	466	466	466
466	466	469	469	469	471	471	471	471	472
473	473	473	473	473	473	473	475	475	475
475	475	475	475	475	477	477	477	477	477
477	477	477	477	480	480	480	480	480	482
482	482	482	482	482	482	484	484	484	484
484	484	484	484	484	484	484	484	486	486
486	486	486	488	488	491	491	493	493	493
493	493	493	493	493	493	495	495	495	495
495	495	495	497	497	497	499	499	499	499
499	499	499	499	502	502	502	502	504	504
504	506	506	506	506	506	506	506	508	508
508	508	508	510	510	510	510	510	513	513
513	515	515	515	515	515	515	517	517	517
517	518	518	519	519	521	521	524	524	526
526	528	528	528	530	530	530	530	532	
535	535	535	535	535	537	537	539	539	539
541	543	546	546	548	548	550	552	557	559
559	572	601							

	<u>Sheep 6</u>			<u>20 Days</u>			<u>Females</u>		
<u>Adults.</u>									
231	238	274	374	431	510	517	521	548	550
553	554	557	559	561	565	570	570	570	572
572	572	572	572	572	572	574	574	574	574
579	579	579	579	579	581	581	583	586	586
586	588	590	590	590	590	590	592	592	592
592	592	594	594	594	594	596	596	598	598
601	601	603	603	603	603	603	603	605	605
605	605	605	607	607	607	609	609	609	609
609	609	609	609	609	609	612	612	612	612
612	614	614	614	614	616	616	616	618	620
620	620	620	620	623	623	623	623	623	625
625	625	625	625	627	627	627	627	627	629
629	629	629	629	631	631	631	631	631	634
634	634	634	363	636	638	638	638	638	638
638	638	640	640	642	642	642	642	642	645
645	647	647	647	649	649	649	649	649	649
649	651	651	653	653	653	653	653	653	656
656	656	656	658	660	662	662	662	662	664
664	667	667	669	669	671	671	678	680	680
680	682	682	684	686	693	702			

	<u>Lamb 18</u>			<u>22 Days</u>			<u>Males</u>		
<u>Adults.</u>									
187	266	268	275	275	297	306	306	315	315
318	326	328	332	337	339	339	343	343	343
345	348	348	352	359	361	361	363	363	365
365	367	372	372	374	376	381	381	381	383
383	384	385	385	385	389	392	392	392	394
396	396	398	400	405	409	409	409	411	414
414	417	420	420	420	420	420	422	422	422
422	422	425	427	427	427	429	429	429	429
429	429	429	431	431	431	431	431	433	433
433	433	436	436	438	440	440	440	440	440
440	442	444	444	444	444	444	444	447	449
449	449	451	453	453	453	455	455	455	455
455	455	458	458	458	460	462	462	462	462
462	462	462	464	464	464	464	464	464	464
466	466	466	466	466	466	469	469	469	469
469	471	471	471	471	473	473	473	475	475
475	475	475	475	477	477	477	477	477	480
480	480	482	488	488	491	495	495	495	495
497	497	497	499	504	504	506	508	510	513
513	517	521	530	539	543	557	576	610	

<u>4th Instar.</u>									
147	176	176	176	180	183	187	191	194	194
196	202	220	227	235					

	<u>Lamb 18</u>			<u>22 Days</u>			<u>Females</u>		
<u>Adults.</u>									
205	207	231	315	334	337	343	348	352	354
363	372	374	376	378	378	381	383	387	389
398	398	400	400	403	403	409	409	410	414
416	416	416	417	418	420	420	420	425	425
427	429	429	429	431	433	436	436	444	444
447	447	449	449	449	449	449	451	451	451
451	453	458	462	466	466	466	466	469	469
471	473	475	477	480	482	484	484	486	491
491	493	493	497	497	499	504	504	506	508
510	510	517	517	517	525	526	528	532	537
537	537	541	541	543	543	543	543	550	550
550	554	554	557	557	559	559	561	561	563
563	563	565	565	565	568	568	570	571	572
572	572	574	574	574	576	576	576	576	579
581	581	590	590	592	592	594	594	594	594
594	594	595	596	596	596	598	601	603	603
603	605	607	607	609	612	613	614	616	620
620	620	623	631	631	636	660	662	664	684

<u>4th Instar.</u>									
129	131	143	156	161	163	176	183	185	191
198	198	202	209	222	235				

	<u>Lamb 27</u>			<u>22 Days</u>			<u>Males</u>		
<u>Adults.</u>									
242	244	266	326	330	341	350	352	357	359
368	370	372	379	383	385	386	387	389	401
401	403	403	405	407	407	409	412	412	412
412	412	414	416	416	418	420	420	420	423
423	425	425	426	427	427	427	427	427	427
427	429	431	431	433	434	434	434	434	438
438	438	438	439	440	440	442	442	445	447
447	447	449	449	449	449	451	451	451	453
453	456	456	456	458	458	458	458	458	458
459	459	459	459	461	461	463	463	463	463
463	466	466	468	468	468	468	468	470	470
470	470	470	470	470	470	470	472	474	474
477	481	483	483	483	485	485	485	485	488
488	488	490	490	492	492	492	494	494	496
496	496	496	499	499	499	499	501	501	501
503	503	503	503	505	505	505	505	507	507
510	512	518	521	523	525	527	543	543	

<u>4th Instar.</u>									
150	164	166	166	166	171	173	713	173	173
175	177	179	182	182	184	184	184	184	186
186	186	188	188	190	195	197	206	209	215

	<u>Lamb 27</u>			<u>22 Days</u>			<u>Females</u>		
<u>Adults.</u>									
195	219	219	219	226	231	262	328	350	383
403	403	412	414	414	418	420	420	427	427
429	447	453	456	458	458	458	459	459	461
470	477	479	479	483	488	488	490	492	492
494	496	496	496	499	503	503	503	503	505
507	507	507	510	510	510	512	516	516	518
521	523	523	523	523	525	525	525	525	529
529	532	536	536	538	538	538	538	540	540
540	540	543	543	543	545	547	547	547	549
549	551	554	555	556	556	558	558	559	560
560	560	560	562	562	562	562	565	567	567
567	567	567	569	569	569	569	569	569	571
573	573	573	576	578	578	578	582	582	582
584	589	589	589	589	591	592	595	598	598
600	601	601	604	609	609	609	611	612	614
623	623	623	625	627	627	630	630	634	634
643	645	652	654	658	658	667	674	678	722
733									

<u>4th Instar.</u>									
125	128	414	414	413	155	166	168	175	177
184	190	190	197	201	201	204	208	208	212
212	215	215	215	221	221	221	229	238	

A P P E N D I X X

SECTION B.

The following data consists of measurements of Adult female C. curticei. from Lambs 26, 51, 52, 33, 9, 29, 18 and 27.

Worms from each population have been divided into groups according to the total number of eggs each contains.

The other remarks made at the beginning of Section A. of this Appendix apply to this section.

Lamb 52

14 Days

NO EGGS.

503 536 543 549 549 609

EGGS.

541	545	560	567	580	589	589	589	591	591
591	593	595	595	602	606	606	706	709	621
621	621	625	627	630	630	632	632	634	638
641	643	645	647	654	654	656	656	663	665
671	676	689	742						

Lamb 33

16 Days

0 - 10 EGGS.

503 529 540

11 - 20 EGGS.

567 573 587 591 591 593 602 609 625

OVER 21 EGGS.

482	568	582	591	591	591	600	600	602	609
612	614	619	623	623	623	630	632	634	634
634	634	636	638	649	649	652	652	652	654
654	656	656	658	660	682	689	689		

Lamb 9

18 Days

NO EGGS.

492 502

1 - 19 EGGS.

562 567 604 627 643 645 682

20 - 29 EGGS.

547 547 569 587 587 589 561 604 614 623
623 634 634 656 656 658 660 663 665 678
685 587 595 711 735

30 OR MORE EGGS.

600 630 632 638 643 654 660 663 667 674
696 713 744 759

Lamb 29

18 Days

UP TO 10 EGGS.

445 447 468 472 481 510 529

OVER 10 EGGS.

536 536 543 543 545 545 547 551 560 562
578 578 587 587 587 589 589 591 595 595
595 595 600 602 602 609 612 614 614 616
619 623 625 630 630 638 645 652 671 671
671

SHEEP 18

22 DAYS

NO EGGS.

306	346	361	363	365	368	379	379	383	398
398	401	405	414	416	418	420	420	420	423
423	427	427	429	431	434	434	438	438	442
445	445	447	447	449	449	451	456	456	463
463	470	472	476	479	480	482	486	489	503
503	505	512	516	518	518	521	523	527	529
534	538	538	540	549	554	569	584	595	612
632									

EGGS PRESENT.

527	547	549	549	569	573	576	576	582	582
582	584	589	591	591	591	591	591	591	591
591	591	595	595	595	602	602	604	606	609
612	612	612	616	616	623	623	634	645	

Lamb 27

22 Days

FROM 0 - 10 EGGS.

399 420 436 449 485 580

11 - 20 EGGS.

425 459 481 492 492 499 501 514 516 523
547 560 565 565 576 584 491 606 616 658
671

OVER 21 EGGS.

488 492 501 507 514 517 518 525 525 525
538 544 547 549 554 556 558 558 560 562
565 565 569 569 573 573 573 580 580 580
582 584 584 589 591 593 595 598 602 602
602 604 612 612 612 612 612 619 630 632
632 636 654 669 671

A P P E N D I X X

SECTION C.

In this section is presented data from the males of Lamb 18. Measurements of length are divided into two categories, light and dark spicules respectively.

The other remarks made at the beginning of Section A. of this Appendix apply to this section.

Lamb 18

22 Days.

Light Coloured Spicules.

289	326	339	348	348	365	374	374	376	383
387	392	394	396	396	398	409	409	409	416
420	431	438	442	490	501				

Dark Coloured Spicules.

313	317	392	409	449	459	461	468	468	468
470	470	470	470	474	477	477	479	481	485
488	488	490	492	499	499	501	501	505	540

APPENDIX XI.

CONVERSION TABLES

REVOLUTIONS TO MILLIMETRES.

WHOLE

VALUE IN MILLIMETRES OF FRACTIONS OF A REVOLUTION

Revol-

utions. $\frac{35}{35}$ $\frac{1}{35}$ $\frac{2}{35}$ $\frac{3}{35}$ $\frac{4}{35}$ $\frac{5}{35}$ $\frac{6}{35}$ $\frac{7}{35}$ $\frac{8}{35}$ $\frac{9}{35}$ $\frac{10}{35}$ $\frac{11}{35}$ $\frac{11}{35}$ $\frac{12}{35}$ $\frac{13}{35}$ $\frac{15}{35}$ $\frac{16}{35}$ $\frac{17}{35}$ $\frac{18}{35}$ $\frac{19}{35}$ $\frac{20}{35}$ $\frac{21}{35}$ $\frac{22}{35}$ $\frac{23}{35}$ $\frac{24}{35}$ $\frac{25}{35}$ $\frac{26}{35}$ $\frac{27}{35}$ $\frac{28}{35}$ $\frac{29}{35}$ $\frac{30}{35}$ $\frac{31}{35}$ $\frac{32}{35}$ $\frac{33}{35}$ $\frac{34}{35}$

0	-	02	04	07	09	11	13	15	18	20	22	24	26	29	31	33	35	37	40	42	44	46	48	51	53	55	57	59	62	64	66	68	70	73	75
1	77	79	81	84	86	88	90	92	95	97	99	101	103	106	108	110	112	114	117	119	120	122	124	127	129	131	133	135	138	141	143	145	147	150	152
2	154	156	158	161	163	165	167	169	172	174	176	178	180	183	185	187	189	191	194	196	198	200	202	205	207	209	211	213	216	218	220	222	224	227	229
3	231	233	235	238	240	242	244	246	249	251	253	255	257	260	262	264	266	268	271	273	275	277	279	282	284	286	288	290	293	295	297	299	301	304	306
4	308	310	312	315	317	319	321	323	326	328	330	332	334	337	339	341	343	345	348	350	352	354	356	359	361	363	365	367	370	372	374	376	378	381	383
5	385	387	389	392	394	396	398	400	403	405	407	409	411	414	416	418	420	422	425	427	429	431	433	436	438	440	442	444	447	449	451	453	455	458	460
6	462	464	466	469	471	473	475	477	480	482	484	486	488	491	493	495	497	499	502	504	506	508	510	513	515	517	519	521	524	526	528	530	532	535	537
7	539	541	543	546	548	550	552	554	557	559	561	563	565	568	570	572	574	576	579	581	583	585	587	590	592	594	596	598	601	603	605	607	609	612	614
8	616	618	620	623	625	627	629	631	634	636	638	640	642	645	647	649	651	653	656	658	660	662	664	667	669	671	673	675	678	680	682	684	686	689	691
9	693	695	697	700	702	704	706	708	711	713	715	717	719	722	724	726	728	730	733	735	737	739	741	744	746	748	750	752	755	757	759	761	763	766	768

ORIGINAL TRANSPOSING TABLE (REVOLUTIONS TO MILLIMETRES)

(See Text P. 27)

WHOLE

VALUE IN MILLIMETRES OF FRACTIONS OF A REVOLUTION

REVO-

LUTION

$\frac{35}{35}$	$\frac{1}{35}$	$\frac{2}{35}$	$\frac{3}{35}$	$\frac{4}{35}$	$\frac{5}{35}$	$\frac{6}{35}$	$\frac{7}{35}$	$\frac{8}{35}$	$\frac{9}{35}$	$\frac{10}{35}$	$\frac{11}{35}$	$\frac{12}{35}$	$\frac{13}{35}$	$\frac{14}{35}$	$\frac{15}{35}$	$\frac{16}{35}$	$\frac{17}{35}$	$\frac{18}{35}$	$\frac{19}{35}$	$\frac{20}{35}$	$\frac{21}{35}$	$\frac{22}{35}$	$\frac{23}{35}$	$\frac{24}{35}$	$\frac{25}{35}$	$\frac{26}{35}$	$\frac{27}{35}$	$\frac{28}{35}$	$\frac{29}{35}$	$\frac{30}{35}$	$\frac{31}{35}$	$\frac{32}{35}$	$\frac{33}{35}$	$\frac{34}{35}$
-----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------

0	-	02	04	07	09	11	13	15	18	20	22	24	26	29	31	33	35	37	40	42	44	46	48	51	53	55	57	59	62	64	66	68	70	73	75
1	77	79	81	84	86	88	90	92	95	97	99	101	103	106	108	110	112	114	117	119	121	123	125	128	130	132	134	136	139	141	143	145	147	150	152
2	153	155	157	160	162	164	166	168	171	173	175	177	179	182	184	186	188	190	193	195	197	199	201	204	206	208	210	212	215	217	219	221	223	226	228
3	229	231	233	236	238	240	242	244	247	249	251	253	255	258	260	262	274	266	269	271	273	275	277	280	282	284	286	288	291	293	295	297	299	302	304
4	306	308	310	313	315	317	319	321	324	326	328	330	332	335	337	339	341	343	346	348	350	352	354	357	359	361	363	365	368	370	372	374	376	379	381
5	383	385	387	390	392	394	396	398	401	403	405	407	409	412	414	416	418	420	423	425	427	429	431	434	436	438	440	442	445	447	449	451	453	456	458
6	459	461	463	466	468	470	472	474	477	479	481	483	485	488	490	492	494	496	499	501	503	505	507	510	512	514	516	518	521	523	525	527	529	532	534
7	536	538	540	543	545	547	549	551	554	556	558	560	562	565	567	569	571	573	576	578	580	582	584	587	589	591	593	595	598	600	602	604	606	609	611
8	612	614	616	619	621	623	625	627	630	632	634	636	638	641	643	645	647	649	652	654	656	658	660	663	665	667	669	671	674	676	678	680	682	685	687
9	689	691	693	696	698	700	702	704	707	709	711	713	715	718	720	722	724	726	728	731	733	735	737	740	742	744	746	748	751	753	755	757	759	762	764

CORRECTED TRANSPOSING TABLE (REVOLUTIONS TO MILLIMETRES)

(See Text p27)

A P P E N D I X

CAMERA LUCIDA TABLE.

This table was used to transpose fractions of a whole revolution of the measuring wheel into microns.

The circumference of the wheel was divided into thirty-five teeth. One complete revolution was equivalent, at the magnification used, to 100u, and each 35th part of the circumference to 2.86u.

No. of Divisions.	Equivalent in Microns to Nearest Whole Number	No. of Divisions	Equivalent in Microns to Nearest Whole Number
1	3	18	51
2	6	19	54
3	9	20	57
4	11	21	60
5	14	22	63
6	17	23	66
7	20	24	69
8	23	25	71
9	26	26	74
10	29	27	77
11	31	28	80
12	34	29	83
13	37	30	86
14	40	31	89
15	43	32	91
16	46	33	94
17	49	34	97
		35	100

A P P E N D I X X I I I

MEANS AND STANDARD DEVIATIONS

From which the logistic equation
was constructed.

<u>AGE</u>	<u>M A L E</u>			<u>F E M A L E.</u>		
	<u>DATA</u>		<u>FITTED</u>	<u>DATA</u>		<u>FITTED</u>
	Mean	S.D.	Mean	Mean	S.D.	Mean
1	.759	.041	.686	.759	.041	.685
2	.726	.052	.764	.726	.052	.761
3	.993	.157	.975	.993	.157	1.074
4	1.400	.146	1.371	1.435	.156	1.418
5	1.705	.181	1.788	1.845	.282	1.951
6	2.053	.193	2.027	2.303	.274	2.292
7	2.163	.230	2.120	2.427	.402	2.432
8	2.163	.164	2.150	2.483	.246	2.479
8	2.360	.217	2.480	2.840	.345	3.535
9	3.060	.470	3.079	4.727	.574	4.219
10	3.520	.390	3.630	4.450	.510	4.827
11	4.005	.445	4.089	4.890	.570	5.326
12	4.600	.680	4.443	5.830	1.020	5.711
14	4.980	.536	4.872	6.535	.739	6.191
16	5.005	.410	5.066	6.185	.518	6.421

6

In computing these means, sheep numbers 23 (day 7), 34 (day 8) and 49 (day 9) were omitted.

A P P E N D I X X I V

THE DETERMINATION OF ERRORS IN DRAWING AND MEASUREMENT

Tables showing Ten Successive Measurements of Nine Worms
Using the Micro Projector.

All Measurements in Millimetres.

4th STAGE LARVAE

Worm No.	TIMES OF MEASUREMENTS									
	A	B	C	D	E	F	G	H	I	J
1	217	212	215	210	212	219	212	208	219	217
2	160	162	153	164	157	164	164	166	184	164
3	175	168	177	175	175	168	175	171	179	166
4	173	168	168	175	164	166	175	162	168	171
5	162	164	157	164	160	160	164	162	164	166
6	199	206	204	204	201	206	210	208	199	195
7	182	175	175	179	182	186	186	190	184	184
8	201	208	201	217	201	199	190	212	210	208
9	212	221	219	226	223	204	228	223	229	221

ADULT WORMS

Worm No.	TIMES OF MEASUREMENTS									
	A	B	C	D	E	F	G	H	I	J
1	5.58	5.47	5.60	5.67	5.69	5.54	5.67	5.54	5.73	5.73
2	4.94	4.92	5.01	4.90	5.03	5.03	4.92	5.05	5.07	5.01
3	5.93	5.98	6.00	5.98	6.12	6.04	6.00	5.82	6.04	5.91
4	7.53	7.62	7.55	7.55	7.57	7.53	7.55	7.57	7.53	7.53
5	5.18	5.16	5.21	5.27	5.25	5.23	5.29	5.18	5.43	5.21
6	4.68	4.66	4.70	4.63	4.49	4.74	4.72	4.70	4.68	4.63
7	4.29	4.18	4.23	4.38	4.27	4.23	4.31	4.42	4.51	4.27
8	4.74	4.59	4.66	4.58	4.66	4.74	4.66	4.72	4.63	4.77
9	4.42	4.34	4.42	4.38	4.42	4.38	4.42	4.31	4.49	4.45

Table showing Ten Successive Measurement of Seven Worms
Using the Cameralucida.

Measurements in Microns

Worm No.	TIMES OF MEASUREMENT									
	A	B	C	D	E	F	G	H	I	J
1	766	786	774	777	769	769	780	777	780	757
2	791	789	797	786	791	786	794	794	794	783
3	749	766	757	751	763	771	763	763	769	754
4	689	694	691	671	680	686	671	683	686	674
5	686	683	686	680	680	683	680	671	677	683
6	669	669	660	657	671	660	654	669	663	663
7	794	786	780	783	786	786	783	791	780	-

Table showing a Series of Measurements made from the same drawing Using the Miers Projector.

Lengths in Millimetres.

ADULTS

Measurement No.	Measurement made from:	
	End A	End B
1	4.90	
2		4.85
3	4.90	
4		4.92
5	4.90	
6		4.88
7	4.88	
8		4.88
9	4.83	
10		4.90
11	4.90	
12		4.85

4th STAGE LARVAE

Worm No.	TIMES OF MEASUREMENTS									
	A	B	C	D	E	F	G	H	I	J
1	208	208	210	208	208	208	208	210	210	210
2	208	210	210	210	208	208	208	208	208	208

Measurements form same drawing using Camera Lucida.

Lengths in Microns.

INFECTIVE LARVAE

Worm No.	TIMES OF MEASUREMENTS									
	A	B	C	D	E	F	G	H	I	J
1	619	616	621	616	619	614	614	619	616	614
2	612	614	614	614	619	614	621	621	614	616

A P P E N D I X X I V. XV

ANALYSES OF VARIANCE.

TABLE 1

<u>Source</u>	<u>Sum of squares</u>	<u>df</u>	<u>Mean square</u>	<u>F</u>	<u>5%</u>	<u>Sig.</u>
<u>Worms</u>	4.1214	8	.5152		2.07	SSS
<u>Times</u>	.0451	9	.0050	1.6	2.01	
<u>Error</u>	.2155	72	.0030			
<u>TOTAL</u>	4.3820	9				

TABLE 2

<u>Source</u>	<u>Sum of squares</u>	<u>df</u>	<u>Mean square</u>
<u>Between worms</u>	4.1214	8	
<u>Within worms</u>	.2606	81	.0032
<u>TOTAL</u>	4.3820	89	

TABLE 3

<u>Source</u>	<u>Sum of squares</u>	<u>df</u>	<u>Mean square</u>	<u>F</u>	<u>5%</u>	<u>Sig.</u>
<u>Worms</u>	83.2099	8	10.4012	2213.0	2.07	SSS
<u>Times</u>	.0879	9	.0098	2.08	2.01	S
<u>Error</u>	.3386	72	.0047			
<u>TOTAL</u>	83.6364	89				

TABLE 4

<u>Source</u>	<u>Sum of squares</u>	<u>df</u>	<u>Mean square</u>
<u>Between worms</u>	83.2099	8	
<u>Error</u>	.4265	81	
<u>TOTAL</u>	83.6364	89	

TABLE 5

<u>Source</u>	<u>Sum of squares</u>	<u>df</u>	<u>Mean square</u>	<u>F</u>	<u>5%</u>	<u>Sig.</u>
<u>Worms</u>	184824.0	6	30804.0	404.5	2.28	SSS
<u>Times</u>	685.4	9	76.16	2.07	2.06	S
<u>Error</u>	1949.5	53	36.78			
<u>Total</u>	187458.9	68				