

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

SOME QUANTITATIVE CHANGES IN THE BEHAVIOUR OF THE DOMESTIC  
CHICKEN IN THE FIRST SEVEN WEEKS AFTER HATCHING.

---

A Thesis Presented in Partial Fulfilment  
of the Requirements for the Degree of  
Master of Science at Massey University.

by

Donald James Laing

Massey University

October, 1968.

---

## ACKNOWLEDGEMENTS

My thanks are due to my supervisors Mr L.Gurr and Mr M.R.Patchell, who not only did their best to initiate a rather reluctant pupil into the rigours of disciplined investigation, but also provided the guidelines for the study to develop within.

Secondly, I wish to thank the staff of the Poultry Research Centre for their assistance in the practical aspects of the study, and finally my grateful thanks to Mrs S.F.Rabone for typing this thesis.

## CONTENTS

	<u>Page</u>
CHAPTER I : INTRODUCTION	1
II : REVIEW OF LITERATURE	6
III : THE TAXONOMY AND GENERAL CHARACTERISTICS OF THE DOMESTIC FOWL	10
IV : THE CATEGORIES OF BEHAVIOUR USED IN THE STUDY	14
V : METHODS AND MATERIALS	29
VI : TECHNIQUES OF MEASUREMENT AND ANALYSIS	33
VII : EXPERIMENT 1. QUANTITATIVE CHANGES IN THE MAINTENANCE BEHAVIOURS OF TWO BREEDS OF FOWL IN THE FIRST SEVEN WEEKS AFTER HATCHING	38
VIII : EXPERIMENT 2. THE EFFECTS OF TWO DIFFERENT FORMS OF FOOD ON QUANTITATIVE CHANGES IN THE MAINTENANCE BEHAVIOURS OF WHITE LEGHORN CHICKENS	61
IX : EXPERIMENT 3. AN INVESTIGATION OF FEATHER-PULLING IN CHICKENS	78
CONCLUSIONS	86
BIBLIOGRAPHY	88

## ILLUSTRATIONS

<u>Plates</u>		<u>Between Pages</u>
1	: An Experimental Pen	18-19
2	: Activity	18-19
3	: Resting	24-25
4	: Resting	24-25
5	: Feather-pulling	78-79
6	: Feather-pulling	78-79

<u>Figures</u>		
1	: Weekly changes in running and three other actions.	22-23
2	: Diagram of the experimental room	30-31
3	: A sample observation sheet	P.34
4	: Distribution of time over six categories of behaviour.	P.35
5	: Growth rates	41-42
6	: Food consumption rates	41-42
7	: Time spent feeding	41-42
8	: Time spent scratching	45-46
9	: Time spent walking, pecking and running	45-46
10	: Time spent standing	45-46
11	: Time spent sitting	48-49
12	: Time spent preening	48-49
13	: Percent time spent feeding, resting and active	56-57
14	: Percent time spent feeding, resting and active	56-57
15	: Regression of activity on body weight	59-60
16	: Regression of resting and feeding on body weight	59-60

FiguresBetween Pages

17	:	Growth rates	66-67
18	:	Time spent feeding	66-67
19	:	Time spent scratching	68-69
20	:	Time spent walking, pecking and running	68-69
21	:	Time spent standing	68-69
22	:	Time spent sitting	71-72
23	:	Time spent preening	71-72
24	:	Time spent in total activity	71-72
25	:	Regression of scratching on feeding	75-76
26	:	Regression of scratching on feeding	75-76

## TABLES

	<u>Page</u>
1. Changes in time spent feeding and in intervals between bouts.	18
2. Duration of scratching sessions	20
3. Percentages of preening time directed at three body regions.	26
4. Percentages of time given to the three phases of behaviour.	28
5. Analysis of variance tables for feeding data.	36
6. Degrees of freedom for analysis of variance for Experiment 2.	37
7. Summary of results of analysis of variance from Experiment 1.	40
8. Breed means for growth	40
9. Period means for time spent feeding	41
10. Breed by sex interaction means for time spent feeding.	42
11. Period means for scratching	43
12. Breed by period interaction for scratching	43
13. Breed means for walking, pecking and running.	44
14. Period means for walking, pecking and running.	44
15. Breed by period means for walking, pecking and running.	45
16. Period means for standing	46
17. Breed by period means for time spent sitting	47
18. Breed by sex interaction means for time spent sitting	48
19. Period by breed and period interaction means for preening	49
20. Results of correlation analysis of three variables	57
21. Results of analysis of variance for Experiment 2.	66
22. Growth means	66
23. Group means for feeding	67
24. Period means for scratching	68

25. Group means for standing	69
26. Period means for standing	69
27. Period means for sitting	70
28. Group means for preening	70
29. Food by sex interaction for preening	71
30. Food by period interaction for preening	71
31. Group means for total activity	72
32. Period means for total activity	72
33. Percentages of time spent active and inactive.	73
34. Distribution of time over six categories of behaviour	74
35. Accumulated feather-pulling scores	83