

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.

STUDIES IN MINERAL METABOLISM

Being a Thesis

submitted by

COLIN McIVOR CAMPBELL

Towards the Degree of
Master of Agricultural Science
at Massey Agricultural College
University of New Zealand

1960

ACKNOWLEDGEMENT

The writer wishes to express his sincere thanks and appreciation to Dr. J.C.Hawk, Dr.W.A.McGillivray and Dr.C.R.Barnicoat for their invaluable advice and guidance in the preparation of this Thesis.

In addition the writer is particularly indebted to Professor A.L.Rae and other members of the staff of the College and the D.S.I.R., and to fellow students, who made the animals available and helped in the collection of data; to the Librarian, Miss Mary G.Campbell, and her staff, for the use of Library facilities and for making available references on interloan; to the Dairy Research Institute for photographic work.

Thanks are due to Mr.A.C.Glenday, Statistician, D.S.I.R., Palmerston North, on his unfailing courtesy at all times in the preparation of the statistical data.

Finally, special gratitude is proffered to Mrs.H.Neita of Jamaica for her patience in typing this manuscript.

C O N T E N T S.

	<u>Page</u>
GENERAL INTRODUCTION	1
A REVIEW OF LITERATURE	4

PART I

THE AVAILABILITY OF Ca, P and Mg from High-yielding Pastures, as indicated by Blood Studies on Grazing Sheep.

<u>SECTION 1.</u>	EXPERIMENTAL	
	(a) Introduction of experimental work	30
	(b) Notes on Plan of Experiment	31
	(c) Animal Management ..	32
	(d) Methods	32
<u>SECTION 2.</u>	RESULTS	38
<u>SECTION 3.</u>	DISCUSSION	
	(a) Blood inorganic Phosphorus	43
	(b) Serum Calcium ..	49
	(c) Serum Magnesium ..	60
	(d) Gains in Body Weights	62

PART II

Blood studies based on Feeding Trials with Rats.

<u>SECTION 1.</u>	EXPERIMENTAL	
	(a) Introduction of experimental work ..	65
	(b) Notes on Plan of Experiments	66

	(c) Animal Management ..	70
	(d) Diets	71
	(e) Methods	72
<u>SECTION 2.</u>	RESULTS	75
<u>SECTION 3.</u>	DISCUSSION	
	(a) Phosphorus metabolism	76
	(b) Calcium metabolism ..	78
	(c) Magnesium metabolism	79
CONCLUSION:	
REFERENCES	
APPENDIX	