

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

CAMBRIDGE LIBRARY COLLECTION

Books of enduring scholarly value

Darwin

Two hundred years after his birth and 150 years after the publication of 'On the Origin of Species', Charles Darwin and his theories are still the focus of worldwide attention. This series offers not only works by Darwin, but also the writings of his mentors in Cambridge and elsewhere, and a survey of the impassioned scientific, philosophical and theological debates sparked by his 'dangerous idea'.

The Variation of Animals and Plants under Domestication

Charles Darwin (1809–82) first published this work in 1868 in two volumes. The book began as an expansion of the first two chapters of *On the Origin of Species*: 'Variation under Domestication' and 'Variation under Nature', and it developed into one of his largest works; Darwin referred to it as his 'big book'. Volume 1 deals with the variations introduced into species as a result of domestication, through changes in climate, diet, breeding and an absence of predators. He began with an examination of dogs and cats, comparing them with their wild counterparts, and moved on to investigate horses and asses; pigs, cattle, sheep, and goats; domestic rabbits; domestic pigeons; fowl; and finally cultivated plants. The work is a masterpiece of nineteenth-century scientific investigation; it is a key text in the development of Darwin's own thought and of the wider discipline of evolutionary biology.

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

Cambridge University Press has long been a pioneer in the reissuing of out-of-print titles from its own backlist, producing digital reprints of books that are still sought after by scholars and students but could not be reprinted economically using traditional technology. The Cambridge Library Collection extends this activity to a wider range of books which are still of importance to researchers and professionals, either for the source material they contain, or as landmarks in the history of their academic discipline.

Drawing from the world-renowned collections in the Cambridge University Library, and guided by the advice of experts in each subject area, Cambridge University Press is using state-of-the-art scanning machines in its own Printing House to capture the content of each book selected for inclusion. The files are processed to give a consistently clear, crisp image, and the books finished to the high quality standard for which the Press is recognised around the world. The latest print-on-demand technology ensures that the books will remain available indefinitely, and that orders for single or multiple copies can quickly be supplied.

The Cambridge Library Collection will bring back to life books of enduring scholarly value (including out-of-copyright works originally issued by other publishers) across a wide range of disciplines in the humanities and social sciences and in science and technology.

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

The Variation of Animals and Plants under Domestication

VOLUME 1

CHARLES DARWIN



CAMBRIDGE
UNIVERSITY PRESS

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

CAMBRIDGE UNIVERSITY PRESS

Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore,
São Paulo, Delhi, Dubai, Tokyo

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org

Information on this title: www.cambridge.org/9781108014229

© in this compilation Cambridge University Press 2010

This edition first published 1868

This digitally printed version 2010

ISBN 978-1-108-01422-9 Paperback

This book reproduces the text of the original edition. The content and language reflect the beliefs, practices and terminology of their time, and have not been updated.

Cambridge University Press wishes to make clear that the book, unless originally published by Cambridge, is not being republished by, in association or collaboration with, or with the endorsement or approval of, the original publisher or its successors in title.

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

THE VARIATION
OF
ANIMALS AND PLANTS
UNDER DOMESTICATION.

By CHARLES DARWIN, M.A., F.R.S., &c.

IN TWO VOLUMES.—VOL. I.

WITH ILLUSTRATIONS.

LONDON:
JOHN MURRAY, ALBEMARLE STREET.

1868.

The right of Translation is reserved.

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

BY THE SAME AUTHOR.

ON THE ORIGIN OF SPECIES BY MEANS OF NATURAL
SELECTION; or The PRESERVATION of FAVOURED RACES in the STRUGGLE
for LIFE. Fourth Edition (*Eighth Thousand*), with Additions and Corrections.
1866. MURRAY.

A NATURALIST'S VOYAGE ROUND THE WORLD; or, A
JOURNAL OF RESEARCHES into the NATURAL HISTORY and GEOLOGY of the
COUNTRIES visited during the Voyage of H.M.S. Beagle, under the Command of
Capt. FITZ-ROY, R.N. *Tenth Thousand*. MURRAY.

ON THE STRUCTURE AND DISTRIBUTION OF CORAL
REEFS. SMITH, ELDER, & Co.

GEOLOGICAL OBSERVATIONS ON VOLCANIC ISLANDS.
SMITH, ELDER, & Co.

GEOLOGICAL OBSERVATIONS ON SOUTH AMERICA.
SMITH, ELDER, & Co.

A MONOGRAPH OF THE CIRRIPEDIA. With numerous
Illustrations. 2 vols. 8vo. HARDWICKE.

ON THE VARIOUS CONTRIVANCES BY WHICH BRITISH
AND FOREIGN ORCHIDS ARE FERTILISED BY INSECTS; and on
the GOOD EFFECTS of CROSSING. With numerous Woodcuts. MURRAY.

ON THE MOVEMENTS and HABITS of CLIMBING PLANTS.
With Woodcuts. WILLIAMS & NORGATE.

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

CONTENTS OF VOLUME I.

INTRODUCTION Page 1

CHAPTER I.

DOMESTIC DOGS AND CATS.

ANCIENT VARIETIES OF THE DOG — RESEMBLANCE OF DOMESTIC DOGS IN VARIOUS COUNTRIES TO NATIVE CANINE SPECIES — ANIMALS NOT ACQUAINTED WITH MAN AT FIRST FEARLESS — DOGS RESEMBLING WOLVES AND JACKALS — HABIT OF BARKING ACQUIRED AND LOST — FERAL DOGS — TAN-COLOURED EYE-SPOTS — PERIOD OF GESTATION — OFFENSIVE ODOUR — FERTILITY OF THE RACES WHEN CROSSED — DIFFERENCES IN THE SEVERAL RACES IN PART DUE TO DESCENT FROM DISTINCT SPECIES — DIFFERENCES IN THE SKULL AND TEETH — DIFFERENCES IN THE BODY, IN CONSTITUTION — FEW IMPORTANT DIFFERENCES HAVE BEEN FIXED BY SELECTION — DIRECT ACTION OF CLIMATE — WATER-DOGS WITH PALMATED FEET — HISTORY OF THE CHANGES WHICH CERTAIN ENGLISH RACES OF THE DOG HAVE GRADUALLY UNDERGONE THROUGH SELECTION — EXTINCTION OF THE LESS IMPROVED SUB-BREEDS.

CATS, CROSSED WITH SEVERAL SPECIES — DIFFERENT BREEDS FOUND ONLY IN SEPARATED COUNTRIES — DIRECT EFFECTS OF THE CONDITIONS OF LIFE — FERAL CATS — INDIVIDUAL VARIABILITY 15

CHAPTER II.

HORSES AND ASSES.

HORSE. — DIFFERENCES IN THE BREEDS — INDIVIDUAL VARIABILITY OF — DIRECT EFFECTS OF THE CONDITIONS OF LIFE — CAN WITHSTAND MUCH COLD — BREEDS MUCH MODIFIED BY SELECTION — COLOURS OF THE HORSE — DAPPLING — DARK STRIPES ON THE SPINE, LEGS, SHOULDERS, AND FOREHEAD — DUN-COLOURED HORSES MOST FREQUENTLY STRIPED — STRIPES PROBABLY DUE TO REVERSION TO THE PRIMITIVE STATE OF THE HORSE.

ASSES. — BREEDS OF — COLOUR OF — LEG- AND SHOULDER- STRIPES — SHOULDER-STRIPES SOMETIMES ABSENT, SOMETIMES FORKED 49

CHAPTER III.

PIGS — CATTLE — SHEEP — GOATS.

PIGS BELONG TO TWO DISTINCT TYPES, *SUS SCROFA* AND *INDICA* — *TORF-SCHWEIN* — JAPAN PIG — FERTILITY OF CROSSED PIGS — CHANGES IN THE SKULL OF THE HIGHLY CULTIVATED RACES — CONVERGENCE OF CHARACTER — GESTATION — SOLID-HOOFED SWINE — CURIOUS APPENDAGES TO THE JAWS — DECREASE IN SIZE OF THE TUSKS — YOUNG PIGS LONGITUDINALLY STRIPED — FERAL PIGS — CROSSED BREEDS.

CATTLE. — ZEBU A DISTINCT SPECIES — EUROPEAN CATTLE PROBABLY DESCENDED FROM THREE WILD FORMS — ALL THE RACES NOW FERTILE TOGETHER — BRITISH

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1Charles Darwin
Frontmatter[More information](#)

iv

CONTENTS OF VOL. I.

PARK CATTLE — ON THE COLOUR OF THE ABORIGINAL SPECIES — CONSTITUTIONAL DIFFERENCES — SOUTH AFRICAN RACES — SOUTH AMERICAN RACES — NIATA CATTLE — ORIGIN OF THE VARIOUS RACES OF CATTLE.	
SHEEP. — REMARKABLE RACES OF — VARIATIONS ATTACHED TO THE MALE SEX — ADAPTATIONS TO VARIOUS CONDITIONS — GESTATION OF — CHANGES IN THE WOOL — SEMI-MONSTROUS BREEDS.	
GOATS. — REMARKABLE VARIATIONS OF	Page 65

CHAPTER IV.

DOMESTIC RABBITS.

DOMESTIC RABBITS DESCENDED FROM THE COMMON WILD RABBIT — ANCIENT DOMESTICATION — ANCIENT SELECTION — LARGE LOP-EARED RABBITS — VARIOUS BREEDS — FLUCTUATING CHARACTERS — ORIGIN OF THE HIMALAYAN BREED — CURIOUS CASE OF INHERITANCE — FERAL RABBITS IN JAMAICA AND THE FALKLAND ISLANDS — PORTO SANTO FERAL RABBITS — OSTEOLOGICAL CHARACTERS — SKULL — SKULL OF HALF-LOP RABBITS — VARIATIONS IN THE SKULL ANALOGOUS TO DIFFERENCES IN DIFFERENT SPECIES OF HARES — VERTEBRÆ — STERNUM — SCAPULA — EFFECTS OF USE AND DISUSE ON THE PROPORTIONS OF THE LIMBS AND BODY — CAPACITY OF THE SKULL AND REDUCED SIZE OF THE BRAIN — SUMMARY ON THE MODIFICATIONS OF DOMESTICATED RABBITS	103
--	-----

CHAPTER V.

DOMESTIC PIGEONS.

ENUMERATION AND DESCRIPTION OF THE SEVERAL BREEDS — INDIVIDUAL VARIABILITY — VARIATIONS OF A REMARKABLE NATURE — OSTEOLOGICAL CHARACTERS: SKULL, LOWER JAW, NUMBER OF VERTEBRÆ — CORRELATION OF GROWTH: TONGUE WITH BEAK; EYELIDS AND NOSTRILS WITH WATTLED SKIN — NUMBER OF WING-FEATHERS, AND LENGTH OF WING — COLOUR AND DOWN — WEBBED AND FEATHERED FEET — ON THE EFFECTS OF DISUSE — LENGTH OF FEET IN CORRELATION WITH LENGTH OF BEAK — LENGTH OF STERNUM, SCAPULA, AND FURCULA — LENGTH OF WINGS — SUMMARY ON THE POINTS OF DIFFERENCE IN THE SEVERAL BREEDS	131
---	-----

CHAPTER VI.

PIGEONS—*continued.*

ON THE ABORIGINAL PARENT-STOCK OF THE SEVERAL DOMESTIC RACES — HABITS OF LIFE — WILD RACES OF THE ROCK-PIGEON — DOVECOT-PIGEONS — PROOFS OF THE DESCENT OF THE SEVERAL RACES FROM COLUMBA LIVIA — FERTILITY OF THE RACES WHEN CROSSED — REVERSION TO THE PLUMAGE OF THE WILD ROCK-PIGEON — CIRCUMSTANCES FAVOURABLE TO THE FORMATION OF THE RACES — ANTIQUITY AND HISTORY OF THE PRINCIPAL RACES — MANNER OF THEIR FORMATION — SELECTION — UNCONSCIOUS SELECTION — CARE TAKEN BY FANCIERS IN SELECTING THEIR BIRDS — SLIGHTLY DIFFERENT STRAINS GRADUALLY CHANGE INTO WELL-MARKED BREEDS — EXTINCTION OF INTERMEDIATE FORMS — CERTAIN BREEDS REMAIN PERMANENT, WHILST OTHERS CHANGE — SUMMARY	180
---	-----

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

CONTENTS OF VOL. I.

v

CHAPTER VII.

FOWLS.

BRIEF DESCRIPTIONS OF THE CHIEF BREEDS — ARGUMENTS IN FAVOUR OF THEIR DESCENT FROM SEVERAL SPECIES — ARGUMENTS IN FAVOUR OF ALL THE BREEDS HAVING DESCENDED FROM GALLUS BANKIVA — REVERSION TO THE PARENT-STOCK IN COLOUR — ANALOGOUS VARIATIONS — ANCIENT HISTORY OF THE FOWL — EXTERNAL DIFFERENCES BETWEEN THE SEVERAL BREEDS — EGGS — CHICKENS — SECONDARY SEXUAL CHARACTERS — WING- AND TAIL- FEATHERS, VOICE, DISPOSITION, ETC. — OSTEOLOGICAL DIFFERENCES IN THE SKULL, VERTEBRÆ, ETC. — EFFECTS OF USE AND DISUSE ON CERTAIN PARTS — CORRELATION OF GROWTH

Page 225

CHAPTER VIII.

DUCKS — GOOSE — PEACOCK — TURKEY — GUINEA-FOWL —
CANARY-BIRD — GOLD-FISH — HIVE-BEES — SILK-MOTHS.

DUCKS, SEVERAL BREEDS OF — PROGRESS OF DOMESTICATION — ORIGIN OF, FROM THE COMMON WILD-DUCK — DIFFERENCES IN THE DIFFERENT BREEDS — OSTEOLOGICAL DIFFERENCES — EFFECTS OF USE AND DISUSE ON THE LIMB-BONES.

GOOSE, ANCIENTLY DOMESTICATED — LITTLE VARIATION OF — SEBASTOPOL BREED.

PEACOCK, ORIGIN OF BLACK-SHOULDERED BREED.

TURKEY, BREEDS OF — CROSSED WITH THE UNITED STATES SPECIES — EFFECTS OF CLIMATE ON.

GUINEA-FOWL, CANARY-BIRD, GOLD-FISH, HIVE-BEES.

SILK-MOTHS, SPECIES AND BREEDS OF — ANCIENTLY DOMESTICATED — CARE IN THEIR SELECTION—DIFFERENCES IN THE DIFFERENT RACES—IN THE EGG, CATERPILLAR, AND COCOON STATES — INHERITANCE OF CHARACTERS — IMPERFECT WINGS — LOST INSTINCTS — CORRELATED CHARACTERS 276

CHAPTER IX.

CULTIVATED PLANTS: CEREAL AND CULINARY PLANTS.

PRELIMINARY REMARKS ON THE NUMBER AND PARENTAGE OF CULTIVATED PLANTS — FIRST STEPS IN CULTIVATION — GEOGRAPHICAL DISTRIBUTION OF CULTIVATED PLANTS.

CEREALIA. — DOUBTS ON THE NUMBER OF SPECIES. — WHEAT: VARIETIES OF — INDIVIDUAL VARIABILITY — CHANGED HABITS — SELECTION — ANCIENT HISTORY OF THE VARIETIES. — MAIZE: GREAT VARIATION OF — DIRECT ACTION OF CLIMATE ON.

CULINARY PLANTS. — CABBAGES: VARIETIES OF, IN FOLIAGE AND STEMS, BUT NOT IN OTHER PARTS — PARENTAGE OF — OTHER SPECIES OF BRASSICA. — PEAS: AMOUNT OF DIFFERENCE IN THE SEVERAL KINDS, CHIEFLY IN THE PODS AND SEED — SOME VARIETIES CONSTANT, SOME HIGHLY VARIABLE — DO NOT INTERCROSS. — BEANS. — POTATOES: NUMEROUS VARIETIES OF — DIFFERING LITTLE, EXCEPT IN THE TUBERS — CHARACTERS INHERITED 305

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

vi

CONTENTS OF VOL. I.

CHAPTER X.

PLANTS *continued* — FRUITS — ORNAMENTAL TREES — FLOWERS.

FRUITS. — GRAPES — VARY IN ODD AND TRIFLING PARTICULARS. — MULBERRY. — THE ORANGE GROUP — SINGULAR RESULTS FROM CROSSING. — PEACH AND NECTARINE — BUD-VARIATION — ANALOGOUS VARIATION — RELATION TO THE ALMOND. — APRICOT. — PLUMS — VARIATION IN THEIR STONES. — CHERRIES — SINGULAR VARIETIES OF. — APPLE. — PEAR. — STRAWBERRY — INTERBLENDING OF THE ORIGINAL FORMS. — GOOSEBERRY — STEADY INCREASE IN SIZE OF THE FRUIT — VARIETIES OF. — WALNUT. — NUT. — CUCURBITACEOUS PLANTS — WONDERFUL VARIATION OF.

ORNAMENTAL TREES — THEIR VARIATION IN DEGREE AND KIND — ASH-TREE — SCOTCH-FIR — HAWTHORN.

FLOWERS — MULTIPLE ORIGIN OF MANY KINDS — VARIATION IN CONSTITUTIONAL PECULIARITIES — KIND OF VARIATION. — ROSES — SEVERAL SPECIES CULTIVATED. — PANSY. — DAHLIA. — HYACINTH, HISTORY AND VARIATION OF

Page 332

CHAPTER XI.

ON BUD-VARIATION, AND ON CERTAIN ANOMALOUS MODES OF REPRODUCTION AND VARIATION.

BUD-VARIATIONS IN THE PEACH, PLUM, CHERRY, VINE, GOOSEBERRY, CURRANT, AND BANANA, AS SHOWN BY THE MODIFIED FRUIT — IN FLOWERS: CAMELLIAS, AZALEAS, CHRYSANTHEMUMS, ROSES, ETC. — ON THE RUNNING OF THE COLOUR IN CARNATIONS — BUD-VARIATIONS IN LEAVES — VARIATIONS BY SUCKERS, TUBERS, AND BULBS — ON THE BREAKING OF TULIPS — BUD-VARIATIONS GRADUATE INTO CHANGES CONSEQUENT ON CHANGED CONDITIONS OF LIFE — CYTISUS ADAMI, ITS ORIGIN AND TRANSFORMATION — ON THE UNION OF TWO DIFFERENT EMBRYOS IN ONE SEED — THE TRIPACIAL ORANGE — ON REVERSION BY BUDS IN HYBRIDS AND MONGRELS — ON THE PRODUCTION OF MODIFIED BUDS BY THE GRAFTING OF ONE VARIETY OR SPECIES ON ANOTHER — ON THE DIRECT OR IMMEDIATE ACTION OF FOREIGN POLLEN ON THE MOTHER-PLANT — ON THE EFFECTS IN FEMALE ANIMALS OF A FIRST IMPREGNATION ON THE SUBSEQUENT OFFSPRING — CONCLUSION AND SUMMARY 373

ERRATA.

- Vol. I., p. 76, 13 lines from top, for *Phasocoercus read* *Placochoerus*.
 „ „ 104, transpose footnotes 4 and 5.
 „ „ 275, 7 lines from bottom, for *Amherstii read* *Amherstiae*.
 „ „ 282, 14 lines from top, for *Tadorna Ægyptiaca read* *Anser Ægyptiacus*.
 „ „ 286, in bottom line in the Table, for 713 read 717.

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

(vii)

LIST OF ILLUSTRATIONS.

	PAGE
1. DUN DEVONSHIRE PONY, WITH SHOULDER, SPINAL, AND LEG STRIPES ..	56
2. HEAD OF JAPAN OR MASKED PIG	69
3. HEAD OF WILD BOAR, AND OF "GOLDEN DAYS," A PIG OF THE YORK- SHIRE LARGE BREED	72
4. OLD IRISH PIG, WITH JAW-APPENDAGES	75
5. HALF-LOP RABBIT	108
6. SKULL OF WILD RABBIT	117
7. SKULL OF LARGE LOP-EARED RABBIT	117
8. PART OF ZYGOMATIC ARCH, SHOWING THE PROJECTING END OF THE MALAR- BONE, AND THE AUDITORY MEATUS, OF RABBITS	118
9. POSTERIOR END OF SKULL, SHOWING THE INTER-PARIETAL BONE, OF RABBITS	118
10. OCCIPITAL FORAMEN OF RABBITS	118
11. SKULL OF HALF-LOP RABBIT	119
12. ATLAS VERTEBRÆ OF RABBITS	121
13. THIRD CERVICAL VERTEBRÆ OF RABBITS	121
14. DORSAL VERTEBRÆ, FROM SIXTH TO TENTH INCLUSIVE, OF RABBITS ..	122
15. TERMINAL BONE OF STERNUM OF RABBITS	123
16. ACROMION OF SCAPULA OF RABBITS	123
17. THE ROCK-PIGEON, OR COLUMBIA LIVIA	135
18. ENGLISH POUTER	137
19. ENGLISH CARRIER	140
20. ENGLISH BARB	145
21. ENGLISH FANTAIL	147
22. AFRICAN OWL	149
23. SHORT-FACED ENGLISH TUMBLER	152
24. SKULLS OF PIGEONS, VIEWED Laterally	163
25. LOWER JAWS OF PIGEONS, SEEN FROM ABOVE	164
26. SKULL OF RUNT, SEEN FROM ABOVE	165
27. LATERAL VIEW OF JAWS OF PIGEONS	165
28. SCAPULÆ OF PIGEONS	167
29. FURCULÆ OF PIGEONS	167
30. SPANISH FOWL	226
31. HAMBURGH FOWL	228
32. POLISH FOWL	229
33. OCCIPITAL FORAMEN OF THE SKULLS OF FOWLS	261

Cambridge University Press

978-1-108-01422-9 - The Variation of Animals and Plants under Domestication,
Volume 1

Charles Darwin

Frontmatter

[More information](#)

viii

LIST OF ILLUSTRATIONS.

	PAGE
34. SKULLS OF FOWLS, VIEWED FROM ABOVE, A LITTLE OBLIQUELY	262
35. LONGITUDINAL SECTIONS OF SKULLS OF FOWLS, VIEWED Laterally ..	263
36. SKULL OF HORNED FOWL, VIEWED FROM ABOVE, A LITTLE OBLIQUELY ..	265
37. SIXTH CERVICAL VERTEBRÆ OF FOWLS, VIEWED Laterally	267
38. EXTREMITY OF THE FURCULA OF FOWLS, VIEWED Laterally	268
39. SKULLS OF DUCKS, VIEWED Laterally, REDUCED TO TWO-THIRDS OF THE NATURAL SIZE	282
40. CERVICAL VERTEBRÆ OF DUCKS, OF NATURAL SIZE	283
41. PODS OF THE COMMON PEA	328
42. PEACH AND ALMOND STONES, OF NATURAL SIZE, VIEWED EDGEWAYS ..	337
43. PLUM STONES, OF NATURAL SIZE, VIEWED Laterally	345