

DARWIN'S NOTEBOOKS ON
TRANSMUTATION OF SPECIES
ADDENDA AND CORRIGENDA

Edited with Notes

BY

SIR GAVIN DE BEER and M. J. ROWLANDS

Pp. 185-200

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ADDENDA

Of the pages excised by Darwin from his *Notebooks on Transmutation of Species*, 28 have been recovered. In the British Museum (Natural History) 10 pages were found among the Darwin papers and letters deposited by Mr. Robin Darwin; these are indicated by an asterisk* following the Roman number in the margin indicating the number of the Notebook concerned. The remaining 18 were found among the Darwin MSS. in the Cambridge University Library by Miss M. Skramovsky with the kind assistance of Mr. P. Gaultrey; these are indicated by a dagger†. The particular Notebook from which the pages were excised was determined by comparison of the scissor-cuts with those of the stumps in the Notebooks.

The reasons which led Darwin to adopt the method of cutting pages out of his Notebooks are obscure. His entries of "All useful pages cut out", made in December 1856, show that he wanted to use them for his large work on *Species* on which he was then engaged. Two of the pages printed below were found attached to the manuscript of his larger work. Attention to this fact was first kindly drawn by Professor Robert C. Stauffer of the University of Wisconsin. What the fate of the many other comparable pages can have been, it is, unfortunately, not hard to conjecture. It may not be legitimate to draw conclusions from the relatively small number of excised pages that have been found, but it is difficult to avoid asking the question why these particular pages should have been considered by Darwin to be more "useful" than many of those which he did not excise.

One of the pages, (105 from Notebook II) contains material about the similarity of nest-building instincts in different species of thrushes in the Old and New Worlds, which can be traced right through to the *Origin of Species* (World Classics edition, 1956, page 304). Another page (160 from Notebook II) on woodcocks in Madeira having lost their migratory instinct, appears in the *Essay of 1844* (Cambridge University Press edition, 1958, p. 142).

These pages are printed below in order to make the transcription of Darwin's *Notebooks on Transmutation of Species* as complete as the available material allows. We should like to express our thanks to Miss M. Skramovsky for her invaluable help in this work.

The page references are to the *Manuscript* pages of the Notebooks.

FIRST NOTEBOOK

- [*
151 Marcel Serres² p. 331. l'Institut considers that³ Geo. Journ.³ p. 325. Vol. IV. Ducks on rivers in Guiana. build top of trees carry duckling to the water in their beak, & the young one directly by instinct can dive & conceal themselves in the grass. —
Beatson⁴ St. Helena says no trees succeed so well at St Helena as Pineaster & Mimosa called Botany Bay Willow
V. Dr Royle⁵ introductory remarks to Himalaya Mountains — |
- 152 Bory St Vincent⁶ Vol. III, p. 164. "L'île de la Réunion présente elle seule plus d'espèces polymorphes que toute la terre ferme de l'ancien monde". —
Considers forms in recent volcanic islets not well fixed. —
Peron⁷ thinks Van Diemen's land long separated from Hobart Town — (from difference of races of men and animals) |
- [*
165 Mr. Martens⁸ of Zoolog Soc told me an Australian dog he had, used to burrow like fox. — a sort of internal bark. would remain for long time together in tub of water with only nose projecting. — would pull the garden bell, then run into the kennel to watch who would come to the door — would constantly do this, so was obliged to be removed. — In l'Institut⁹ 1837. p. 404 account of instinct of dogs. — agreement & reason |
- 166 Some animals common to Mauritius & Madagascar.
Proceedings of Zoolog. Soc.¹⁰ June 1837 p. 53. An Irish rat different from English. — Waterhouse¹¹ has information respecting the Water Rat. — |

¹ Marcel de Serres. *L'Institut*, tome 3, Paris 1837, p. 331. "De la présence de la salivart subimé dans les calcaires tertiaires des environs de Montpellier".

² This line is crossed out in the MS.

³ William Millicross. *Geogr. J.*, vol. 4, London 1834, p. 325. "Here I have seen, at the top of a decayed etc" [tree] the nest of the tropical musk duck, which we improperly call Muscovy, with the parents hatching singly, from a height of seventy or eighty feet, their newly hatched progeny to their natural element beneath: they appear to lay hold of the duckling with the bill by the neck, . . . the young though for the first time, diving fifty feet at a stretch, and hiding in the grass so as to defy pursuit — such is instinct."

⁴ Alexander Beatson. *Papers relating to the Denudation committed by Goats on the Island of St. Helena*, St. Helena 1810.

⁵ J. Forbes Royle. *Illustrations of the Botany and other Branches of the Natural History of the Himalayan Mountains, and of the Flora of Cashmere*, London, [1825] 1826 [1840].

⁶ J. B. G. Bory St. Vincent. *Voyage dans les quatre principautés des îles de l'Afrique*, . . . Paris 1804, tome 3, p. 164: "L'île de la Réunion présente elle seule plus d'espèces polymorphes que toute la terre ferme de l'ancien monde."

⁷ François Peron. *Leçons de géographie sur Terre Australe*, . . . Paris 1816, tome 2, p. 1.

⁸ William Charles Linnaeus Martin (1798-1824), superintendent of the Zoological Society's Museum from 1820 to 1824.

⁹ Anonymous. *L'Institut*, tome 3, Paris 1837, p. 404: "Chronique". "Un chien, assés on voulait apprendre à monter une échelle, fatigué ou ennuyé de cet exercice, s'en alla; mais le lendemain, on le vit retourner seul à l'échelle, et s'appliquer à grimper, comme si un mouvement d'amour-propre le poussait à tenter ce nouvel essai."

¹⁰ William Thompson. *Proc. Zool. Soc. Lond.*, vol. 2, 1837 [June 21]. "Mammalia", p. 32. On p. 33: "Mus Hibernicus, Irish Rat. A black rat which has been seen in the north of Ireland. . . that it had a white breast . . . This individual differs from the *M. Norw.* as described by other authors, and also from specimens preserved in the British Museum, and in the collection of the Society: in the relative proportion of the tail to that of the head and the body: in having shorter ears, and in being better clothed with hair . . ."

¹¹ George Robert Waterhouse. *Proc. Zool. Soc. Lond.*, vol. 2, 1837 (February 14), p. 13: describes "numerous species of the genus *Mus*, forming part of the collection presented to the Society by Charles Darwin, Esq." [*Mus musoides*].

- 17
187 Mr. Don¹ gave me instances of one species of Australian genus being found in Sumatra; again another of other genus in Sandwich islands — A genus with species in Van Diemen's land and Tierra del Fuego. — *Araucaria* species. Brazil, Chile, Norfolk Isl. — Isle of Pines. — Australia. — A South American form of *Lathyrus* has one species in Europe; Madagascar has several American forms — The above
188 facts evidently show that Mr. D[on] wonders | at these species being wanderers. —

Iceland no species to itself, a remark common to all northern isls². — This is interesting, because Iceland must have been all ice in time of ice transported. — This gives room to fine speculation. — Are there many *Northern* genera peculiar to itself. — |

- 19
197 & Europe as to produce same one. —

Although in plants you cannot say that instincts perverted yet organization especially connected with generation certainly is. —

The dislike of two species to each other is evidently an instinct; & this prevents breeding. now domestication depends on perversion of instincts (in plants domestication or perversion of structure especially reproductive organs) & therefore the one distinction of species would fail. But this applies only to coition & not production. But who can say whether offspring does not depend on mind or instinct of parent

- 198 Mem. Lord Moreton's³ Mare. — the fact of plants going back | hybrid plants; analogous to Men & dogs. Now if we take structure as criterion of species Hogs different species, dogs not, but if we take character of offspring, Hogs not different. some dogs different. —

Henslow⁴ says (Feb 1838) that few months since in *Annales des Sciences*⁵ paper on Botany of Tahiti.

In *Charlesworth Magazine*⁶ Jan 1830 most curious paper on hereditary fear (like rooks with gun) of two |

SECOND NOTEBOOK

- 11
105 How remarkable that *Turdus Magellanicus* in the S. Hemisphere (replaced to the North by other species) should build a nest lined with mud, in forest where not a tree in which it build, a berry on which it feeds or insects it devours is same species, yet that it should so strictly agree in habits with the *Turdus Musicus* not found in N. America whose southern range is?

¹ David Don. "On the *Coniferae* at present growing in Australia". *Edinburgh New Philosophical Journal*, vol. 14, 1813, pp. 128-130.

² George, Earl of Morfion. *Phil. Trans. Roy. Soc.*, vol. 111, London 1810, p. 20. "A singular fact of natural history. Peculiarities of the progeny of an Arab horse from a mare that had previously bred with a Guegue".

³ John Stevens Henslow. Personal communication.

⁴ Jean-Baptiste-Antoine Guerin. *Essai de Sciences Naturelles*, tome 7, Paris 1827, pp. 177, 242, 340. "Épiphytisme Tahitien — Énumération des plantes découvertes par les voyageurs dans les Îles de la Société, principalement dans celle de Tahiti".

⁵ *Philosophical Mag. Nat. Hist.*, vol. 3, London 1830, p. 35. On p. 37:—"It has been somewhere observed, I think, by White, that 'they are hardly to be scared by a gun' . . ."

The black & white thrush of Azara¹ builds its nest in something same manner, much mud. — These facts show, habits hereditary whilst species have changed. |

106 *Argumentum ad absurdum*. The creative American halo has extended to Juan Fernandez in birds but ? whether to same island in plants ? — What is this halo. — continents are not stationary, unerring proofs not always continents. — it is a plastic virtue. — it is expression for ignorance

Two grand classes of varieties ; one where offspring picked, one where not. — the latter made by man & nature, but cannot be counteracted by man. — effect of external contingencies & long bred in — Mem. a statement in Mr. Wynne's book², about not altering breed of animals in certain countries. — |

11†

119 Major Mitchell³ does not know whether the breeds of oxen have deteriorated or altered, but it is certain that rams & bulls from England fetch very large price as is evident to be worth introducing, instead of breeding from original Durham breed. — Native dogs & English cross readily. — thinks about half way in appearance. — bark about half way in tone — the native dogs howl most dismally, very rarely bark — are almost useless not the least notion of hunting, or keeping watch, how completely nature & instincts modified —

The partial migration of birds in same country may explain greater migrations. if America intersected wider & wider if Rio Plata birds which have originally crossed would continue to cross, means of knowing direction, mysterious

160 Were the woodcocks which came Madeira & ceased their migrations lost ?? I conceive a bird migrating from Falkland Is⁴ regularly to main land proof of land having been formerly nearer. —

Selby⁵, Magazine of Zoology & Botany No. XI p. 330 a slight change in enclosing a common seems in part of [Blank] to have almost banished the Grasshopper Warbler. — yellow wagtail never seen in one district, though common on another. (golden crested wren so rare in some counties, nightingale ditto — all show how nicely adapted species to localities.

p. 330⁶ young ring ouzel dive instant touch the water. — capital instance of typical land bird, having habits of a grebe, structure might follow.⁷ — |

¹ Félix de Azara. *Voyage dans l'Amérique Méridionale*. Paris 1809 tome 3, p. 210. " La Grive blanche et noire ". On p. 211 :— " Les habitudes naturelles de cette grive sont les mêmes que dans l'espèce précédente : mais elle est une peu plus rare. "

² Wynne, possibly H. S. Wynne author of the Preface to *The Brewer's and Farmer's Poetical Book : A Book of verses with a preface by M. S. Wynne*, London [1872]. He was at one time the Secretary of the Nassau Club. cf. I 139, 140, II 100.

³ Thomas Livingstone Mitchell. *Three expeditions into the Interior of Eastern Australia*, etc. London 1838.

⁴ Prideman John Selby. *Mag. Zool. Bot.*, vol. 2, London 1837-38, p. 387. " The Fauna of Trinidad ". On p. 392 :— " ... the grasshopper warbler (...) which, during the early growth of many of the plantations ... might be heard in various directions, pouring forth its stifling note, ... is rarely heard, and then only in the brushwood adjoining the moor and other open ground ... "

⁵ Prideman John Selby. *ibid.* p. 392 :— " ... The young ... dive instinctively the moment they touch the water ... "

⁶ In the middle of the page, in pencil, are the figures 7 and 23.

III†

253

Acclimatization¹

Bachman² tells me in Audubon³ there is most curious history of first appearance of the S. American *Pipra* Flycatcher which is now becoming common — likewise of the *Hirundo fulva*⁴ (added by Audubon in appendix) showing what changes are taking place & how birds are extending their ranges — even migratory birds like swallows.

254

Of migrations of birds he mentioned many most curious cases. The birds seem to follow narrow bands, certain kinds as gallinules taking the low country near coast & other the mountains, & then⁵ | appearing to remain about a fortnight. See Silliman's Journal 1837. Paper by Bachman,⁶ that is succession of birds. — in some species as *Tanagra* males come first & then females in flocks as in English nightingales — other birds (& this seems common kind migration of America) migrate singly flying few miles every day & generally by night — other birds which is strictly diurnal, migrates singly by night. — others in flocks. These birds seem clearly directed by kind of country; kind of migration quite different in species of same genus. The *Muscicapa solitaria* stay about a fortnight in one particular part of country, like White⁷ of Selborne Rock Ouzels. If the line of bands or country (These facts show the normal condition of migration)⁸ |

THIRD NOTEBOOK

III†

47 half breed liable to vary. I asked this in many ways, but received same answer. — Thought lambs were more like father than mother. — The cross not so hardy as Black faced, but more tendency to fatten — This man confirmed my account of the Shepherd dogs. —

Aug. 24th Was struck with pink shade on plumage of the Pelican. — Mem. pink spots on Albatross, on some Gulls Flamingo — (Spoonbill waders Ibis) a law of plumage might possibly be made out. — |

48 August 25th Athenæum⁹ (1838) p. 611 L^d Tankerville¹⁰ account of wild cattil of Chillingham, — habits peculiar, — yewag one 2-3 days old butted violently & fell. —

¹ This heading is inserted in pencil.

² Rev. John Bachman. Personal communication.

³ John James Audubon. *Ornithological Biography*, etc. Edinburgh 1826, vol. 5, p. 420. "Tyrant Flycatcher". On p. 421:—"... Pipit (Pipit) Flycatcher ... How wonderful it is that this bird should be found breeding over so vast an extent of country, and yet retire southwards of the Texas, to spend a very short part of the winter! ..."

⁴ John James Audubon. *ibid.* Appendix, p. 415.

⁵ In pencil the figure 9 is written in the middle of the page.

⁶ Rev. John Bachman. *Silliman's Journal*, vol. 20, 1837, p. 81. "On the Migration of the Birds of North America".

⁷ Gilbert White. *The Natural History of Selborne*, etc. London 1822, vol. 1, p. 214, Letter XXIV (to Thomas Pennant). On p. 115:—"It is remarkable that they make but a few days stay in their Spring visit, but rear near a fortnight at *Middleton*, ..." (ring circled).

⁸ In pencil the figure 23 is written in the middle of the page.

⁹ J. Hindmarsh. *Athenæum*, 1838, p. 611. "On the wild Cattle of Chillingham Park". This includes letters from Lord Tankerville and Mr. Cole, a keeper, and was followed by a discussion in which Mr. Webb Hall also took part.

¹⁰ Charles August Bennet, 5th Earl of Tankerville 1776-1839.

gone to death the old & wounded¹ — are bad breeders & subject to the rash as all animals which breed in & in are — see *Annals*² vol. 2 1839. — colour white uniform crafty, go in file, hide their young, bold —

a Mr. W. Hall³ remarked that it was against all rules their preserving character & breeding in & in⁴ — nonsense a flock of more than 100 — Agree nearly with account given by Boethius⁵ of ancient caledonian Cattle. Instinct⁶ |

II†

- 85 here freely. — Here we have beautiful proof of the breeding in & in (like EFFEMINATE men courage in dogs⁷). — if carried much further, if by the process this were possible, the organs doubtless would shrivel up. — This character of not having sexual plumage⁸ is very common by hybrids, that are infertile. — thus the common pheasant & fowl when crossed never even lay eggs. & the men cannot hardly tell any sex by appearance. — The silver & common pheasant⁹ crossed, has a cock (infertile) the breast of¹⁰ |
- 86 which is like common pheasant & back like silver. — But the hen hybrid of this bird, has long tail figure, & some degree of whiteness like a male. — Thus castration, hybridity & breeding in & in tend to produce same effects. — ¹¹May it be said that breeding in & in tends to produce unhealthiness — or to perpetuate some organic differences. — it may be so, but this assumption as long as animals are healthy |

II†

95. Sept. 11. Mr. Blyth¹², at Zoolog. Meeting stated, that Green finch, all linnets, red pole, gold finch, hawfinch, in nursing plumage resembled that of Cross Beak. — In lark if I understand right, all species have same character which is mottle & not like¹³ any existing species. — In two herons¹⁴ plumage of both (nursling) quite similar. — One

¹ These seven words subsequently underlined in soft pencil, and "Ch. 2" added between lines, referring to the 3rd chapter of Darwin's unfinished work on Natural Selection. This chapter was entitled "On the Possibility of all Organic Beings Occasionally Crossing and on the Remarkable Susceptibility of the Reproductive System to External Agencies" (*Manuscript of Darwin's Papers at the University Library Cambridge, 1906*). The parallel between the behaviour of the Chillingham cattle and William Cowper's hares is drawn in Darwin's Fourth Notebook MS. p. 107.

² 1. Hindmarsh. *Ann. Nat. Hist.* vol. 2, London 1838-1839, p. 126.

³ Webb Hall.

⁴ This sentence slightly scored out.

⁵ Hector Boece (Boethius). G. Kenneth Whitehead, *The Ancient White Cattle of Britain and their Descendants*, London [1922], On p. 24:—"These animals, states Hector Boece (Variously spelt Boethius) in his *Scotoway Mysticis* (circa 1597), 'thought they smelt meik and tane in the remnant figure of their bodyis, they wer mair wild than any uther beistis, and had sic hatred [hatred] agains the sociatis and company of men, that they come out in the woddis as learis quhair they lard cry felt or heard thairof; and; many dayis after they eat meik of the herbis that wer twicht or handillit to men.'"

⁶ This word added subsequently in pencil.

⁷ The words "courage in dogs" added subsequently.

⁸ The words "sexual plumage" subsequently underlined.

⁹ The words "silver and common pheasant" subsequently underlined.

¹⁰ Across the page, in pencil, were subsequently added the following:—"Yet odd they sh^d have so much sexual character as they have". The figure 17 is added in pencil.

¹¹ A square bracket is opened here.

¹² Edward Blyth. *Proc. Zool. Soc. Lond.*, vol. 2, 1838 [September 11] p. 113:—"Mr. Blyth made some remarks on the plumage and progressive changes of the crossbill . . ."

¹³ The figure 12 is inserted here in pencil.

¹⁴ William Yarrell. *Proc. Zool. Soc. Lond.*, vol. 2, 1831 [January 25] p. 27:—" . . . In a young bird which united in its plumage the brown spotted wing of the *Carolinian Mew* with the black head and sub-coloured back of the *Night Mew*; thus exhibiting the change from the young to the adult bird, and proving that the two supposed species are really but one . . ."

species retained this character in adult stage, other alters entirely. In common sparrow young & female similar plumage in tree sparrow (if I understood rightly) 96 young cock & | hen all nearly similar. — in Blackbird group young like some of the species — (? do these facts indicate that the change is effected through the male ??) — Yarrell¹ observed that female of some water birds (as Phalarope) assume for breeding a more brilliant plumage than the male. — My case of Caracara N. Zelandiae.² —

Mr. Blyth³ stated that there are two ducks which have pretty close representative species in England & N. America. — the teal which some authors⁴ |

III†

103 *Cervus campestris* spotted white when a fawn compare with fallow ? deer & Morschus &c. &c. — like young blackbirds

Dr Bachman⁵ told me that † Muscovy & common duck were often caught wild off coast of America. — showing that hybrids can fare for themselves.

first year the bird fanciers match their birds to see which will sing longest & they in evident rivalry sing against each other, till it has been known one has killed itself.⁶

Sir J. Sebright⁷ has almost lost his Owl-Pidgeons from infertility. — Yarrell⁸ says in such case they exchange birds with some other fancier. thus getting fresh blood without fresh feather & consequent trouble in obliterating the fresh feather by crossing.⁹ — |

104 It seems from Lib. of Useful Knowledge that sheep originally black & Yarrell¹⁰ thinks the occasional production of black lambs is owing to old return. — The Rev. R. Jones¹¹ told me precisely the same story about southern, see p. 43 supra, breed of cattle with white heads, which years afterwards occasionally went back — (Effect of imagination on mother. white pealed rods mentioned in old Testament placed before sheep¹² — it has been thought that silver pheasants about a house made other pheasants have white feathers.) —

It certainly appears in domesticated animals that the amount of variation is soon reached — as in pidgeons no new races. — |

¹ William Yarrell. *A History of British Birds*, London 1843, vol. 3, p. 150. "The Grey Phalarope". On p. 133 :—" . . . The females of this species appear to assume more perfect colours, in the breeding season, and to retain them longer than the males . . ."

² Charles Darwin. *Journal of Researches*, etc. London 1845, p. 66.—*Polysternus Novae Zelandiae*.

³ Edward Blyth. Presumably unrecorded remark at a meeting of the Zoological Society.

⁴ The lower half of this page lightly scored through.

⁵ Rev. John Bachman. Personal communication.

⁶ Edward Stanley. *A Familiar History of Birds*, London 1814, vol. 2, p. 74 :—" Goldfinches . . . are put in small cages, with wooden backs, and placed near to, but so that they cannot see, each other; they will then raise their shrill voices, and continue their vocal contest till one frequently drops off its perch, perfectly exhausted . . ."

⁷ Sir John Sebright.

⁸ William Yarrell. Personal communication.

⁹ A line is drawn across the page with the figure 1 in a circle, to the right of which is the figure 2 in pencil.

¹⁰ William Yarrell. Personal communication.

¹¹ cf. Third Notebook MS. page 41.

¹² cf. Introduction to First Notebook, page 25.

III†

113 Sept. 17th. Saw mule apparently fathered by a donkey with all four legs ringed with lines. — animal like large heavily made cream coloured ass. — stripe on back also. — legs reminded me strongly of Zebra. — Mem. Quagga & L^d Morton's mare ringed.²

Owen³ says that Bell⁴ in *Encyclop. of Anat. & Phys.* describes a high-flying bat, which has the power of inflating its body like balloon. — by air cells connected with cheek pouches. —

Hunter's *Animal Oeconomy*⁵ p. 45 " One of the most general marks is, the superior strength of make in the males; and another circumstance, perhaps equally so is this strength being directed to one part more than another, which part is that most immediately employed in fighting " instances thighs of cock & neck of Bull. — is most common in vegetable feeders because males always armed in carnivora⁶ where females are peaceable — (Mem. Lucanus⁷ & Copris &c) In birds singing⁸ | of cocks settle point. (— do the females then fight for male & are merely most attracted). — singing best sign of most vigorous males (N.B. most strange cocks & hens being either alike or very different in recently allied genera. Guinea Fowl & Peacock) other birds display beauty of plumage. (The female (as Owen observes) in Raptorial birds largest.) —

p. 47⁹ is evidently the male which recedes from the species, all females being most like offspring. (how is this with those females which put on (like some waders) the bright plumage. — thinks Hence specific characters most perfect in hermaphrodites.

Fishes¹⁰ have no secondary characters. — p. 47¹¹ (wonderful case of Peahen taking feathers of Peacock & spurs — no *feast cause here* & therefore different from Hunter. I should say females recede in organisation from specific character. — ¹² |

¹ George, Earl of Morton. *Phil. Trans. Roy. Soc.*, vol. 111, London 1811, p. 20. " A singular fact of natural history. Peculiarities of the progeny of an Arab horse from a mare that had previously bred with a Quagga."

² These words inserted in pencil.

³ Richard Owen. Personal conversation.

⁴ Thomas Bell. *The Cyclopaedia of Anatomy and Physiology*, London 1836, p. 594. " Chiroptera ". On p. 599 :— " ... In the genus *Nyctalus* a curious faculty is observed, namely, the power of inflating the subcutaneous tissue with air ... These large spaces are filled with air at the will of the animal, by means of large cheek pouches. ... "

⁵ John Hunter. *Observations on certain parts of the Animal Oeconomy*, London 1835, p. 45.

⁶ The words " because " to " carnivora " inserted in pencil.

⁷ Lucanus *ovatus*, the stagbeetle in which species the male has enormous mandibles; in *Copris* the dung-beetle, males have large horns.

⁸ The page is slightly scored through: the figure 12 inserted in pencil.

⁹ John Hunter. *op. cit.*, p. 44 " An Account of an extraordinary Pheasant ". On p. 47 :— " ... It is evidently the male which at this time at such respects recedes from the female, every female being at the age of maturity more like the young of the same species than the male is observed to be. ... " On p. 49 :— " ... the male at this time receding from the female, and assuming the secondary properties of his sex "

¹⁰ Richard Owen. (In John Hunter, *ibid.*) footnote on page 47 :— " This is not common to all animals of distinct sexes, for in fishes there is no great difference: nor in many insects: nor in dogs, as has already been observed: however, it is considerable in many quadrupeds, but appears to be most so in birds. "

¹¹ John Hunter. *ibid.* p. 49 :— " ... had a favourite pied pea-hen which had produced chickens ... were astonished by her displaying the feathers peculiar to the other sex, and appeared like a pied peacock "

¹² In the centre of the page in pencil is the figure 11: at the foot the words " 11 & Chapt. I. also Letter Character "

III†

147 : Hence,¹ also structure not really fitted for water, only habits & instincts — The young of the Kingfisher (p. 169) has the colour on its back bright blue. — thus young of many of the pies assume the metallic tints, such as Magpie, Jay, & perhaps all the rollers² — He says wherever metallic brilliancy is present in young birds, one may be sure cock & hen will be alike — I presume converse is not true for he says Hen & cock Starling alike, yet young ones brown. —

Is it male that assumes change, & is the offspring brought back to early type by mother? — do these differences indicate, species changing forms; if so domestic animals ought to show them. — anyhow not connected with habits |

148 According as child is like parent, so is species old : Hence young Kingfisher & pies, have long had their present plumage. How is it in Pidgeons & fowls???

Waterton³ p. 197 put 12 wild ducks eggs under common duck, the young crossed among themselves & I presume with common duck so often that it was impossible to say what was origin of any identical bird., for they were all colours " half wild, half tame, they came to the window to be fed, but still they had a wariness about them quite remarkable ", instance of old species transmitting so much longer its mental peculiarity.⁴ |

FOURTH NOTEBOOK

IV*

55 specify types & limits of variation, & hence indicate gaps. — by this means the laws probably would be generalized, & afterwards by the examination of the special cases, under which the individual stages in the series have been fixed, to study the physical causes. All Cuviers⁵ generalization of teeth to kind of extremities come under this head.

7th November When summing up argument against my theory, doubtless the presence of animals in the present orders (not so in S. America, however) is very remarkable & none discovered before them in any part of World. — Wealden to boot. — |

56 When one sees in Coralline powers of multiplication of individuals, & yet another means for individuals (mem : transportation will be answered) one look to analogy for causes in plants where innumerable individuals can be produced & yet sexual apparatus. —

¹ At the top of the page, in pencil, are the words " Sexual Selection " followed by the figure 28 and the words " Good Ch. 6 keep ", referring to the chapter on Natural Selection in Darwin's unpublished MS.

Across the page, written in pencil, are the words " If masculine character added to species, we can see why Young and Female alike "

² Edward Blyth, *Mag. Nat. Hist.*, vol. 2, London 1838, p. 351. " I. Analytic descriptions of the Group of Birds composing the Order Insectores Heterogamæ, No. 1 — Rollers, Bee-Eaters, and Kingfishers; Todies, and Juncos. " On p. 354 :—" ... the young are excluded in a very rudimentary condition : ... slowly elaborates a plumage, adult in appearance and texture, and which, scarcely differing from the brilliancy-tinted garb of the mature bird ... the sexes differ slightly in the rollers and some Malkycoides, wherein the young resemble the adult female ... "

³ Charles Waterton, *Essays on Natural History chiefly Ornithology*, London 1838, p. 197. " Notes on the Habits of the Mallard ".

⁴ In the margin in pencil see the word " Without Reversion ". In the middle of the page are the figures 2 and 23 in pencil.

⁵ Georges Cuvier, *Recherches sur les Ossements Fossiles de Quadrupèdes etc.*, Paris 1816, tome 1, pp. 60-63. (" Principles of Correlation. ")

My account¹ of *Circus cinereus* of the Falkland Isl² is interesting as showing some change in habits before form. —² |

CORRIGENDA

Reference has already been made to the great difficulty experienced in transcribing the text of Darwin's Notebooks owing to indistinct formation of letters, abbreviations and slurred endings to words, telegraphic style without grammatical construction, and intercalation of phrases between lines. It was for this reason that no attempt was made to produce anything approaching a facsimile edition, but to give a text with the minimum of complication. Unfortunately, but as expected and stated, this has not been devoid of errors in transcription. Some of these are inadvertent omission of a word; others are faulty or doubtful readings. They have emerged as a result of re-examination of the text, comparison of the text of the First Notebook with that published³ by Professor Paul H. Barrett of Michigan State University, and a series of corrections kindly supplied by Dr Sydney Smith. The majority of these has been accepted, and a list of corrigenda drawn up, which is printed below in order to make the printed text of Darwin's Notebooks as accurate as possible.

CORRIGENDA TO TEXT

First Notebook on Transmutation of Species (C.U.L. Darwin MSS. 121)

The page-references are to manuscript pages.

2. *for* nor nurses are *read* nor nuns are
8. *for* in that case [it] seems is *read* in that case surely is
15. *for* from immersage *read* from immense ages
19. *for* how on this Ehrenberg *read* how is this Ehrenberg
11. *for* of will of animals *read* of will of animal
15. *for* ? we need think that *read* ? we need not think that
16. the words from "no" to "complicated" inclusive added subsequently
17. *for* bottom of branches deaden, — so that in mammalian tree *read* bottom of branches deader, — so that in mammalia birds
13. *for* less trifling differences *read* lesser trifling differences
17. *for* we can easily see *read* we can easy see
13. *for* such or few *read* just a few
8. *for* from Arabian count(ries) *read* from Arabian coast
1. the base of excised page 51 bears the words "the nearest species often"

¹ *Zoology of the Voyage of H.M.S. Beagle*, London 1845, Part III. Birds. Darwin's account of the habits of *Circus cinereus* in the Falkland Islands is on pp. 30 and 31. In the *Journal of Researches*, 1839 p. 66, it is referred to under the name *Polyborus Novae Zelandiae*.

² At the bottom of the page some undecipherable words have been added in pencil, and, in red pencil, the *Agaves* 5 and 23.

³ "A transcription of Darwin's First Notebook on 'Transmutation of Species'" edited by Paul H. Barrett, *Bull. Mus. Comp. Zool. Harvard*, vol. 122, 1960, pp. 243-296.

64. *for individual cannot propagate read individual cannot procreate*
65. *for Bears and Foxes are read Bears & Foxes &c.*
67. *for probable that northern read probably true northern*
68. *for races of man read races of men*
77. *for of species if few genera read of species of few genera.*
81. *for then plants on coral islets read Mem. plants on coral islets*
82. *for insures often mixing of read insures the mixing of*
91. *for copied with list read copied out list ; these words inserted in pencil subsequently*
93. *for or wishes to conquer read or instinct to conquer*
95. *for Man : species doubtful read Mem : species doubtful*
98. *for tone of ideas read tone of voice*
103. *for or what are barriers by read & what are barriers but*
for volcanic soil at Galapagos read volcanic soil of Galapagos
111. *for others [he] assumes created read other animals created*
the words " or hints " inserted subsequently by Darwin, are in front of instead of
behind " considers " where they appear to belong
for or typical of changes read as typical of changes
112. *for on three elements. p. 66 read or three elements p. 68*
113. *for S. H. read G. [S.] H.*
114. *for S. H. read G. [S.] H.*
for giving laws and on them read giving laws and then
115. *for quoted from Lyell read quote from Lyell*
121. *for and 30°-80° read dip 30°-80°*
133. *for S. Hilaire read G. [S.] Hilaire*
136. *for F[ox] Darwin read [Sir] F[rancis Sacheverel] Darwin*
for . . . read . . .
137. *for but the shells read but then shells*
140. *for much larger, than the dorn[estic] read much larger, than the darn*
142. *for asiatic types discernible read asiatic types discoverable*
145. *for often with same male read often with same female*
for p. 23 read p. 28
148. *for the two families read the two fine families*
155. *for would be on rays read would be in rays*
170. *for first approaching read fish approaching*
175. *for enlarged here very considerably read enlarged two very considerably*
179. *above " analogues " the words ' uses this word for similar ' inserted in pencil*
192. *for and on average read and daresays*
193. *for Jagonensis read Guyanensis*
195. *" No " is inserted in the margin in front of Mem.*
206. *for which wandered least read which has wandered least*
208. *for perfect insects read perfect insect*
for and forms low hard to tell read and forms hard to tell
217. *for we are ignorant read we are as ignorant*
219. *for character in offspring read character on offspring*
for when elevated read where elevated

122. *for* In the flora read *is* the flora
for transported then to read transported them to
123. *for* in Paris basin altered perhaps read in Paris basin allied to present
124. *for* the fact they are not read *for* the fact that they are not
for speculate on read speculate of
for and in current changes read and on amount changes
127. *for* have early been formed read have easily been formed
129. *for* grampus or an insect read fungus or an infusorian
30. *for* come from these read come from them
31. *for* the black have other mind read the black man other kind
36. *for* country where change read country when change
39. *for* cross breeding presents read cross breeding prevents
40. *for* these producing fertile hybrids read mere producing fertile hybrids
42. *for* migrating birds read migratory birds
46. *for* paleontologic table read meteorologic table
51. *for* M.D. read M.J.
63. *for* at what point at tree read at what part of tree
75. *for* Flox read Flax
80. *for* to say a little read to vary a little

Second Notebook on Transmutation of Species (C.U.L. Darwin MSS. 122)

58. *for* Roy St. Vincent read Bory St. Vincent

Printed page 80, line 14, *for* separated read separately.

ADDENDA AND CORRIGENDA TO BIBLIOGRAPHICAL REFERENCES.

In most cases the identification of a work as the one to which Darwin referred can only be conjectural where he did not give the precise reference himself. Additional references are therefore printed below to supplement those already given. Some of these references are derived from the edition of Darwin's *First Notebook* published by Professor Paul H. Barrett¹; others are due to the kindness of Dr. Sydney Smith.

Page references are to the *printed* pages of previous Numbers of this Volume of the Bulletin.

First Notebook on Transmutation of Species (C.U.L. Darwin MSS. 121)

Some of the page references to Lamarck's *Philosophie Zoologique*, Paris 1809, refer to the 1873 edition. The correct references to both editions are as follows:—

0.

- footnote 6 read tome 1, p. 55 (1873 ed. p. 73).
 .. 7 .. tome 1, p. 54 (1873 ed. p. 76).
 .. 8 .. tome 1, p. 99 (1873 ed. p. 112).
 .. 9 .. tome 1, p. 77 (1873 ed. p. 93).

¹ "A transcription of Darwin's *First Notebook on 'Transmutation of Species'*" edited by Paul H. Barrett, *Bull. Mus. Comp. Zool. Harvard*, vol. 122, 1960, pp. 247-296.

31.

footnote 6 *read* tome 1, p. 266 (1873 ed. p. 263).

.. 7 .. tome 1, p. 65, tome 2 p. 84 (1873 ed. tome 1 p. 8a, tome 2 p. 78).

32.

footnote 1 *read* tome 2, p. 279 (1873 ed. p. 256).

.. 2 .. tome 2, p. 283 (1873 ed. p. 259).

.. 3 .. tome 2, p. 286 (1873 ed. p. 262).

42.

footnote 1 *read* tome 1, p. 57 (1873 ed. p. 75).

.. 2 Dr. Sydney Smith has identified the reference: J. E. Gray, "Remarks on the difficulty of distinguishing certain Genera of Testaceous Mollusca by their Shells alone, and on the Anomalies in regard to Habitation observed in certain Species", *Phil. Trans. Roy. Soc.*, vol. 125, 1835, p. 301.

43.

footnote 1 *cf.* Barrett *op. cit.*, p. 285, note 7.

45.

footnote 2 *cf.* Barrett *op. cit.*, p. 285, note 2.

50.

footnote 1. The references to Mr. Don probably refer to David Don rather than George Don. David Don was Librarian to the Linnean Society and author of numerous papers on the distribution and relations of plants. According to Dr. Sydney Smith, Darwin did much of his reading in the libraries of Learned Societies, and as Darwin's reference on the excised page 187 of the first Notebook, printed above, has definitely been identified with David Don, the other references to "Mr. Don" probably relate to him.

52.

footnote 4 *cf.* Barrett *op. cit.*, p. 288, note 50.

55.

footnote 4. The anonymous author of the paper in the *Edinb. New Phil. Journ.* has been identified by Dr. Sydney Smith as Robert Jameson (1774-1854); also *cf.* Barrett *op. cit.*, p. 289, note 66.

56.

footnote 3 *read* tome 1, p. 143 (1873 ed. p. 133).

57.

footnote 2 *cf.* Barrett *op. cit.*, p. 288, note 50.

.. 4 *for* N. Baer *read* Karl Ernst von Baer.

.. 5. The reference is not to William Darwin Fox, but to Sir Francis Sacheverel Darwin (1786-1859), son of Erasmus Darwin (1731-1802) by his second wife Elizabeth Chaddes-Pole. Francis Sacheverel Darwin was therefore half-brother to Dr. Robert Waring Darwin (1766-1848, Charles Darwin's father) and uncle of Francis Galton. He travelled

widely and lived at Sydslope, Derbyshire, where he kept wild animals, including wild boars. (Karl Pearson: *The Life Letters and Labours of Francis Galton*, Cambridge 1924, vol. 1 pp. 22 & seq.) Information kindly supplied by Lady Barlow.

58.

footnote 2, 3, perhaps M. B. Wynn of the Preface to *The Breeders' and Fancier's Pedigree Book*. cf. p. 190 footnote 2 *supra*.

61.

footnote 4 for P. 26 read xxvi

64.

footnote 4. See correction to footnote 1, p. 50.

.. 6. See correction to footnote 1, p. 50.

.. 7. See correction to footnote 1, p. 50.

66.

footnote 3 read tome 2 p. 279 (1873 ed. p. 256)

67.

footnote 5 cf. Barrett *op. cit.*, p. 294, note 133.

70.

footnote 1, line 3 for deathe read deaths

73.

footnote 5 cf. Barrett *op. cit.*, p. 296, note 160.

.. 8 cf. Barrett *op. cit.*, p. 296, note 160.