Bulletin of the British Museum (Natural History)

Darwin's Insects

Charles Darwin's Entomological Notes

Kenneth G. V. Smith (Editor)

Historical series Vol 14 No 1 24 September 1987

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Publications Sales,
British Museum (Natural History),
Cromwell Road,
London SW7 5BD,
England.

World List abbreviation: *Bull. Br. Mus. nat. Hist.* (hist. Ser.)

ISSN 0068–2306
ISBN 0565 09003 8

British Museum (Natural History)
Cromwell Road
London SW7 5BD

Historical series
Vol 14 No. 1 pp 1–141

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Charles Darwin's Entomological Notes,
with an introduction and comments by

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To
Richard Broke Freeman
(1915–1986)

'No branch of natural science
has more fully felt the
beneficial impulse and
stimulus of Darwin's labors
than entomology'
C. V. Riley, 1883

Contents

Synopsis

The insects collected by Charles Darwin, both on the *Beagle* voyage and in the United Kingdom, are discussed and their present location indicated. Comments are made on these specimens within the framework of Darwin's entomological notes preserved in London (*Insect Notes*) and in Cambridge (*Insects in Spirits of Wine*) published here for the first time. These comments include identification of the insects with published descriptions to date and also present new information on unrecorded material, including new records for the Galapagos Islands and South America. There is some discussion of more general topics including the possibility of insect transmitted Chagas' disease as a cause of Darwin's ill health (see *Insect Notes*, 2913, 3423). A full list of entomological eponyms formed from Darwin's name is given, along with an extensive bibliography.

Introduction

Charles Darwin's interest in entomology began in childhood. In his autobiographical notes (see Darwin, F., 1887, Vol. 1: 34) he wrote:

> I must have observed insects with some little care, for when ten years old (1819) I went for three weeks to Plas Edwards on the sea coast in Wales, I was very much interested and surprised at seeing a large black and scarlet Hemipterous insect, many moths (Zygaena), and a Cicindela which are not found in Shropshire. I almost made up my mind to begin collecting all the insects which I could find dead, for on consulting my sister I concluded that it was not right to kill insects for the sake of making a collection.

Elsewhere (p. 51) in the autobiography however he says:

> I was introduced to entomology by my second cousin, W. Darwin Fox, a clever and most pleasant man, who was then at Christ's College. . .

Darwin spent much of his spare time at Cambridge (1828–31) collecting beetles with William Fox, Leonard Jenyns, Albert Way and H. Thompson.[1] He would also press others into service of 'the science' as he called it so that John Herbert[2] recalled (Darwin, F., 1887, Vol. 1: 168):

> and very soon he armed me with a bottle of alcohol, in which I had to drop any beetle which struck me as not of a common kind.

His summer vacations were given up to 'collecting beetles, to some reading, and short tours'. He visited the Reverend F.W. Hope[3] who was later to establish the Chair of Entomology at Oxford with J.O. Westwood[4] as the first Hope Professor. Hope had a high opinion of Darwin's entomological ability and in July 1829 the two men went on a collecting trip in North Wales.

Darwin's most important contact at Cambridge was Professor J.S. Henslow[5] who not only broadened his whole approach to natural history, including entomology, but was instrumental in securing his appointment as naturalist on the *Beagle* voyage.

While entomology was not the major preoccupation of the *Beagle* voyage some of the captures and observations were important and played their part in the formulation of his later theories (in contrast to his well-known comment to Lyell in 1863 (Darwin, F., 1887, Vol. 3: 69) that 'entomolo*gists* are enough to keep the subject back for half a century'—my italics).

Darwin's contributions to entomology have been briefly assessed by Riley (1883), Poulton (1901), Carpenter (1935, 1936) and Remington & Remington (1961). Freeman (1977) provides a bibliography to Darwin's publications in book form and Barrett (1977) reprints Darwin's contributions to serial publications. Kritsky (1981) gives a brief survey of Darwin's entomological work and includes a useful index to more than 1600 text references to insects contained in Darwin's published works, though mostly in American editions.

The present work indicates the sources of information of Darwin's contributions to entomology and attempts to locate and comment upon the insect specimens collected by Charles Darwin especially during the voyage of the *Beagle*. The *Beagle* material is identified within the framework of Darwin's entomological notes preserved in the British Museum (Natural History) (*Insect Notes*), at the University of Cambridge (*Insects in Spirits of Wine*) and at Down House (the original *Notebooks*). The *Zoological Diary,* preserved in the University of Cambridge, also contains

entomological notes which are quoted where they are cited in the *Insect Notes* and not already published in the *Journal* (Darwin, C., 1845).

Information (see Notes, p. 113) is also given on entomologists and others who collected insect specimens for Darwin or were otherwise involved in his entomological work.

Darwin's British Insects

Darwin was a fanatical beetle collector and in his *Autobiography* (Darwin, F., 1887; Vol. 1: 50) he says:

> But no pursuit at Cambridge was followed with nearly so much eagerness or gave me so much pleasure as collecting beetles. It was the mere passion for collecting; for I did not dissect them, and rarely compared their external characters with published descriptions, but got them named anyhow. I will give a proof of my zeal: one day, on tearing off some old bark, I saw two rare beetles, and seized one in each hand; then I saw a third and new kind, which I could not bear to lose, so that I popped the one which I held in my right hand into my mouth. Alas! it ejected some intensely acrid fluid, which burnt my tongue so that I was forced to spit the beetle out, which was lost, as was the third one.

He was always searching for new collecting methods and was very proud when his first records appeared in print and goes on to say:

> I was very successful in collecting and inventing two new methods; I employed a labourer to scrape during the winter, moss off old trees and place it in a large bag, and likewise to collect the rubbish at the bottom of the barges in which reeds are brought from the fens, and thus I got some very rare species. No poet ever felt more delighted at seeing his first poem published than I did at seeing, in Stephen's 'Illustrations of British Insects', the magic words "captured by C. Darwin, Esq.".

In Stephens, *Illustrations of British Entomology* (1827–45) the following records (given in quotes by Stephens) are attributed to 'C. Darwin Esq.'. There are several references to these records in the literature but they do not appear to have been listed before. Since in effect they constitute Darwin's first publication (Freeman, 1977: 19) they are listed here with Darwin's original data in large type and (where necessary) equivalent modern nomenclature and comments set below in small type.

Mandibulata vol. 2 (Appendix) (15 June 1829)

[Coleoptera] Carabidae

p. 188. *Ocys tempestivus* Panzer 'Cambridge'
[*Trechus quadristriatus* (Schrank)]. Common in dry open country.

p. 191. *Blethisa multipunctata* L. 'In great abundance near Cambridge in 1829'
A widely distributed but local species usually in open marshy places at the edges of ponds. It is recorded from the Cambridgeshire Fens (Donisthorpe, 1904).

[Col. Haliplidae]

p. 191. *Haliplus elevatus* Panzer 'Near Cambridge, 1829'
[*Brychius elevatus* Panzer)]. Common (less so in the north) in running water.

[Col. Dytiscidae]

p. 191. *Hygrotus scitulus* Spence ms., 'Near Cambridge'
[*Hydroporus lepidus* Olivier]. Widespread in any kind of clear water.

p. 192. *Hydroporus areolatus* Duftschmid 'Cambridge'.
[*Scarodytes halensis* (Fabricius)]. South-east and Eastern England in gravel pits, marsh drains etc.

p. 194. *Colymbetes pulverosus* Stephens 'In profusion near Cambridge'
[*Rhantus suturalis* (Macleay)]. Common in Southern Britain; usually in stagnant or slow-flowing water such as canals.

p. 194. *Colymbetes notatus* F. 'In abundance near Cambridge'
[*Rhantus frontalis* (Marsham)]. Scattered distribution in England and Ireland; in fresh and peaty water pools.

p. 194. *Colymbetes exoletus* Forster. 'Abundantly near Cambridge'
[*Rhantus exsoletus* (Forster)]. Common in England, Scotland and Ireland.

p. 194. *Colymbetes agilis* F. 'In profusion near Cambridge in 1829'
[Transferred by Stephens (1829 appendix p. 194) to *adspersus* F. but referable to *Rhantus bistriatus* Bergstrasser (Balfour-Browne, 1950: 237)]. Commoner in the north than in the south and a coastal species in Ireland; mainly in acid water.

p. 194. *Colymbetes adspersus* F. 'Plentiful near Cambridge in 1829'
[May be *Rhantus aberratus* Gemminger & Van Harold but see previous entry]. The true *adspersus* F. was known as a fen species in East Anglia up to 1829, then it disappeared until one specimen was found in 1904.

p. 195. *Hydaticus hybneri* F. 'Near Cambridge, 1829'
[*Hydaticus seminiger* (Degeer)]. Scattered distribution in England as far north as Yorkshire, mostly in fens in the east of England.

p. 195. *Dytiscus (Leionotus) conformis* Kuntze 'Near Cambridge, not rare, 1829'
[*Dytiscus marginalis* L.]. For discussion of Kirby's genus *Leionotus* and Stephens' acceptance of it see Balfour-Browne, 1950: 266, 271 (see also *Insect Notes*, entries 1324, 1325). Common in stagnant water.

Mandibulata vol. 3 (1830)

[Col., Leiodidae]

p. 7. *Ptomaphagus anisotomoides* Spence 'Shropshire'
[*Nargus anisotomoides* (Spence)]. Found among dead leaves, moss, etc.

p. 7. *Ptomaphagus wilkinii* Spence 'Salop'
[*Nargus wilkini* (Spence)]. Found among dead leaves, moss, etc.

p. 9. *Catops sericeus* Paykull 'Cambridge and Salop'
[*Ptomaphagus medius* Rey]. Found among dead leaves, moss and small carcasses.

p. 14. *Choleva angustata* F. 'North Wales'
[*Choleva angustata* (Fabricius)]. Found in plant refuse generally. Fairly common, though local, among dead leaves, moss, etc.

p. 14. *Choleva agilis* Illiger 'North Wales'
[*Choleva agilis* (Illiger)]. Fairly common among dead leaves, etc., especially in the south of England.

[Col., Silphidae]

p. 19. *Necrophorus interruptus* Stephens 'Found with the preceeding [vestigator] but occurs much less frequently.' This record 'Rev. L. Jenyns and C. Darwin Esq.'
[*Nicrophorus*]. Uncommon, southern counties of England in carcasses.

[Col., Nitidulidae]

p. 33. *Nitidula punctatissima* Illiger 'Shropshire'
[*Soronia punctatissima* (Illiger)]. A rare species found at sap in or near larval burrows of the goat moth.

p. 38. *Nitidula obsoleta* Illiger 'Cambridgeshire and North Wales'
[*Epuraea biguttata* (Thunberg)]. This genus is found at sap, under bark and in fungi.

p. 41. *Nitidula limbata* F. 'North Wales'
[*Epuraea limbata* (Fabricius)]. See previous species.

[Col., Cryptophagidae]

p. 79. *Cryptophagus typhae* Gyll. 'Cambridgeshire and North Wales'
[*Telmatophilus typhae* (Fallén)]. Beetles of this genus are found on *Typha* and other water plants.

[Col., Silvanidae]

p. 104. *Crypta bipunctata* F. 'Near Cambridge'
[*Psammoecus bipunctatus* (Fabricius)]. Local but not uncommon in marshy places in the south on reeds and rushes and in litter beneath.

[Col., Histeridae]

p. 154. *Hister quadristriatus* Paykull 'Barmouth' 'Rev F. W. Hope and C. Darwin, Esq.'
[*Hypocaccus rugiceps* (Duftschmid)]. Rare, in dung and carrion on sand-hills near the coast.

[Col., Geotrupidae]

p. 182. *Geotrupes laevis* Haw. 'Barmouth and North Wales' 'Rev F. W. Hope and C. Darwin, Esq.'
[*Geotrupes vernalis* L.]. Local, though of wide distribution. Occurs in decaying fungi.

[Col., Buprestidae]

p. 242. *Trachys pygmaea* F. 'Cambridge'
[*Trachys troglodytes* Gyllenhall]. Widespread in damp, grassy places and sphagnum bogs; can be swept from *Succisa pratensis* Moench, the larval host-plant and hibernates as an adult in *Sphagnum* moss.

[Col., Elateridae]

p. 266. *Ctenicerus cupreus* F. Stephens says:
females generally rare; at least fifty males to one female having usually occurred; but in August, 1829, out of scores of specimens now under my inspection captured by the Rev F. W. Hope and C. Darwin, Esq., in North Wales, scarcely a single male was observed.
[*Ctenicera cuprea* (Fabricius)]. A species with a generally northern distribution.

p. 278. *Campylus linearis* L. 'Woods near Cambridge'
[*Denticollis linearis* (L.)]. Fairly widely distributed but local; a woodland species.

Mandibulata vol. 4 (1831)

[Col., Curculionidae]

p. 117. *Otiorhynchus atroapterus* Degeer 'Barmouth' 'Rev F. W. Hope and C. Darwin, Esq.'
[*Otiorhynchus atroapterus* (Degeer)]. Local in sandy places on coast among grass, etc.

[Col., Chrysomelidae]

p. 274. *Donacia nigra* F. 'Near Cambridge'
[*Donacia braccata* Scopoli]. Local in the south and East Anglia, usually near the coast.

Haustellata vol. 2 (appendix) (1 June 1829).

[Lep., Noctuidae]

p. 200. *Graphiphora plecta* L. 'Cambridge'
[*Ochropleura plecta* (Linnaeus)]. The flame shoulder moth. Common and generally distributed throughout England, Ireland and the mainland of Scotland.

The Stephens collection is in the British Museum (Natural History) (see Hammond, 1972) but contains no Darwin specimens and only a few have been found in Cambridge. Darwin's records were later repeated without his name appended (Stephens, 1839).

There are comments on Darwin's collecting of beetles in Cambridgeshire in *The natural history of Wicken Fen* (Gardiner & Tansley, 1923–32). In that work Omer Cooper, Perkins & Tottenham record that:

> Darwin gave many records and specimens to Babington Jenyns, and Stephens, whose publication of them in his 'Illustrations' afforded him much gratification.

Of Babington they say:

> amassed a remarkably fine collection, but the localities are loosely recorded; in his collection, which is preserved in the University Museum, are specimens collected by Charles Darwin.

Of Jenyns, an intimate friend of Darwin's, they say:

> His collection of insects with an excellent manuscript of localities was presented to the Cambridge Philosophical Society in 1865, when he removed from the district.

They list 14 species of Carabidae collected by Darwin (*teste* Jenyns) and these are included in an assessment of the decline of certain species and the increase of others in Wicken Fen since 1834. The full list of Darwin species follows in alphabetical order of genera with modern equivalent nomenclature given in brackets where necessary: *Acupalpus luridus* Dejean (= *A. flavicollis* Sturm), *Amara lucidae* (Duft.), *A. plebeia* (Gyll.), *Auchomenus atratus* Duft. (= *Agonum nigrum* Dej.), *Bembidion adustum* Schaum. (= *B. semipunctatum* Donovan), *Chlaenius nigricornis* F., *Harpalus puncticollis* (Payk.), *H. punctatulus* (Duft.), *H. rubripes* (Duft.), *Pterostichus inaequalis* Mshm (= *P. longicollis* Duft.), *P. picimanus* (Duft.) (= *P. macer* Mshm), *Stenolophus teutonus* (Schrank), *S. vespertinus* Panz. (= *S. mixtus* Herbst.). They also list *Elaphrus uliginosus* F. as *teste* Stephens, though this does not appear in Stephens' *Illustrations of British Entomology*.

Another very rare carabid capture of Darwin's (though not mentioned by Omer Cooper *et al.*) is that of *Chlaenius tristis* Scheller (as *C. holosericeus* F.). Donisthorpe (1904) records that Darwin found this species near Cambridge. Lindroth (1974) says of it:

> on lake-shores with clayish soil and rich vegetation; often associated with *Blethisa*.— England: Huntingdon, Cambridge. Wales (doubtful). Ireland. Only old records, possibly extinct.

References to other captures of British beetles are made in the *Life and Letters* (Darwin, F., 1887, Vol. 1: 51) including the very local *Panagaeus cruxmajor* (L.) (Carabidae) which Darwin captured in Cambridge. Donisthorpe (1904) says it occurs sparingly at Wicken and other fens under sedge refuse and Lindroth (1974), whom I have followed for most of my comments on Carabidae, notes it as a local species in England up to Yorkshire and from Glamorgan and Ireland.

Francis Darwin (1887, Vol. 2: 140) also records how his father 'revived old knowledge of beetles' in helping his boys in their collecting. He sent a short notice to the *Entomologist's Weekly Intelligencer* 25 June 1859, recording the capture of *Licinus silphoides* [= *Licinus punctatulus* F., Carabidae], *Clytus mysticus* [= *Anaglyptus mysticus* L., Cerambycidae] and *Panagaeus 4-pustulatus* [= *P. bipustulatus* F., Carabidae]. The notice begins with the words 'We are three very young collectors having lately taken in the Parish of Down, &C.', and is signed by three of his boys, but was clearly not written by them (see Darwin, Darwin & Darwin, 1859). The species concerned are all rather local and uncommon.

On the same page of the *Life and Letters*, in a letter to W.D. Fox, 13 November 1858, Darwin mentions captures of *'Brachinus crepitans'* (Carabidae) and *'Licinus'* (Carabidae) by his third boy [Francis].

The two separate storeboxes of beetles, one at Down House (Figs 7–8) and one at Cambridge (Figs 5–6), are commented on in the appropriate sections, but it can be assumed that some of his other British beetles are scattered throughout the British collection at the Cambridge University Museum of Zoology. Some Darwin specimens 'ex coll. Jenyns' have been traced in the collection but none of those listed in Babington's notebook.

Between the years 1854 and 1861 Darwin was helped by five or six of his children in observations on the flight routes of male humble-bees (*Bombus hortorum* L., *B. pratorom* L. and *B. lycorum* L). These were never written up for publication in England though a précis was published in Germany along with some of his shorter works by Ernst Krause (see Darwin, C., 1885–86). The original notes have since been published (in English) by Freeman (1968).

In 1980 Richard Treadwell brought into the British Museum (Natural History) a box of microscopical preparations on slides which he claimed had once belonged to Charles Darwin. The box of slides was given to Mr Treadwell by a Miss Dorothea Flower who lived with his great-aunt Mrs Emmerson. Miss Flower told Mr Treadwell that the collection had belonged to Darwin and that 'some were prepared by Charles Darwin'. The slides were mostly typical professionally prepared Victorian slides largely of insect parts, some labelled 'Stanley. Optician, Railway Approach, London Bridge'. Some slides however were obviously 'amateur' preparations. Two of mites bore handwritten labels 'Acari from a partridge' and 'Acarus vegetans'. Photocopies of the labels were sent to P.J. Gautrey and his colleagues at Cambridge who concluded that the handwriting did not match that of Darwin or Syms Covington (his assistant), or Fletcher or Norman, two schoolmasters at Downe who transcribed for Darwin.

Miss Flower died about 1970 having lived at Hurtwood Cottage, Holmbury St Mary, near Dorking since before the Second World War. The house had been owned by her father. He had been a judge and had retired to live in Holmbury just before the war and died sometime between 1940 and 1946. Before moving to Holmbury the family lived in London. I have been unable to trace any connection with Sir William Henry Flower, sometime Director of the British Museum (Natural History) and a friend of Darwin's and the precise history of these slides must remain untold though there is no reason to doubt Mr Treadwell's story.

Mention of British (and other) insects in Darwin's published writings are listed in Kritsky (1981) and his shorter contributions to the serial literature are reprinted in full by Barrett (1977).

Entomology on the *Beagle* voyage

On the *Beagle* voyage entomology took its place with the collection of other animals and plants and all were secondary to geology. Darwin was particularly interested in collecting the smaller, less known, species of insects and wrote to Henslow from Rio de Janeiro on 18 May 1832 (see Barlow, 1967: 55)

> I am now collecting fresh-water & land animals: if what was told me in London is true viz that there are no small insects in the collections from the Tropics.—I tell Entomologists to look out & have their pens ready for describing.—I have taken as minute (if not more so) as in England, Hydropori, Hygroti, Hydrobii, Pselaphi, Staphylini, Curculio, Bembididous insects etc etc.—It is exceedingly interesting observing the difference of genera & species from those which I know, it is however much less than I expected.

Later he wrote again to Henslow from Valparaiso in March 1835 (see Barlow, 1967: 101):

> In Zoology I have done but very little; excepting a large collection of minute Diptera & Hymenoptera from Chiloe. I took in one day, Pselaphus, Anaspis, Latridius [*sic*], Leiodes, Cercyon & Elmis & two beautiful true Carabi; I might almost have fancied myself collecting in England.

Collecting methods

Most of the collecting was almost certainly done by Darwin and his servant Syms Covington[6] (Fig. 1) together. It was Captain FitzRoy's[7] rule that no one went ashore alone and since Covington was in Darwin's pay he was virtually with him at all times (though rarely mentioned by name, see *Journal* (Darwin, 1845: 52)) without inconvenience to the ship's company. It is probable that some of the collections were made entirely by Syms Covington especially towards the end of the voyage, though only once is this evident from the *Insect Notes* (see entry 3528). Darwin also went ashore with other members of the ship's company, not always collecting (see Barlow, 1933) though the acting surgeon Benjamin Bynoe[8] also made collections of plants and birds.

Sweeping with a net was probably the commonest method of collecting terrestrial insects and a special water net was employed for aquatic species (see *Insect Notes* entry 529). Larger, more robust, terrestrial insects were probably caught individually with 'fly-nippers' (see comments in *Insect Notes* entry 3). Advantage was taken of natural 'baits' especially dung, carrion, fungi, flowers and even the contents of spiders' webs (see *Insect Notes* entry 456). Many of his earlier methods of collecting such as bark stripping and moss-combing are also evident from entries in the *Insect Notes*. Specimens were also collected in pill-boxes or straight into alcohol (spirits of wine) and some of the more delicate insects such as Diptera were evidently pinned into store-boxes as is suggested in a letter to Henslow (Monte Video, 15 August 1832—see Barlow, 1967: 58):

> —Also a good many small beetles in pill boxes: but it is not the best time of year for the latter.—As I have only 3/4 of a case of Diptera etc. I have not sent them.

Return and disposal of collections

During the voyage specimens were sent back to Henslow at Cambridge who had agreed to distribute the specimens to appropriate specialists. The following extract from Darwin's letters to

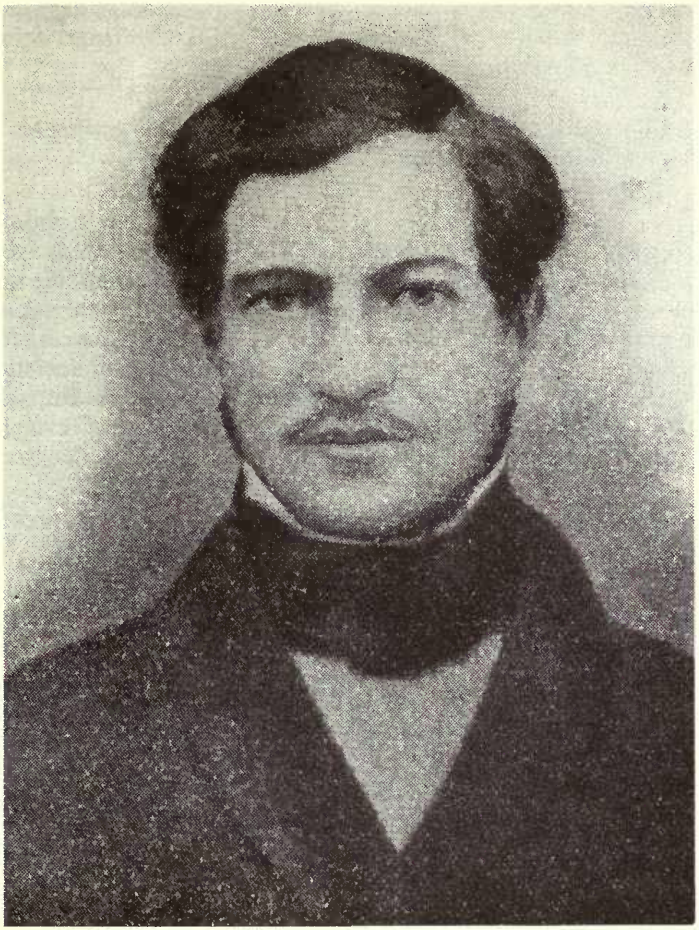


Fig. 1 Syms Covington (photograph by courtesy of Mr Brian Sirl).

Henslow (see Barlow, 1967) illustrate how this was effected and some of the considerations involved:

Rio de Janeiro, 16 June 1832 [In letter started 18 May]
I have determined not to send a box till we arrive at Monte Video—it is too great a loss of time both for carpenter and myself to pack up whilst in harbour.

Monte Video, 15 August 1832
I have sent home 4 bottles of animals in spirits I have three more, but would not send them till I had a fourth.—I shall be anxious to know how they fare—

E. Falkland Isd., March 1834
I have forgotten to mention, that for some time past and for the future, I will put a pencil cross on the pill boxes containing insects, as these alone will require being kept particularly dry, it may perhaps save you some trouble.

Valparaiso, March 1835
I shall be obliged to send away one more box; this will be the last, with which I shall trouble you. I am afraid so many boxes must have been very much in your way. I trust they may

turn out worth their storage. I will write again when this last cargo is sent. You ought to have received about a month since 2 boxes sent by H.M.S. Challenger & before that 2 casks & one jar by H.M.S. Samarang.

On his return to England Darwin was faced with the problem of getting his material identified and wrote to Henslow (Barlow, 1967: 119):

London, 30 October 1836

. . . I have scarcely met anyone who seems to wish to possess any of my specimens. . . . I see it is quite unreasonable to hope for a minute, that any man will undertake the examination of a whole order.—It is clear the collectors so much outnumber the real naturalists, that the latter have no time to spare.—I do not even find that the collections care for receiving the unnamed specimens.—The Zoological Museum [of the Zoological Society] is nearly full & upward of a thousand specimens remain unmounted. I daresay the British Museum would receive them but I cannot feel, from all that I hear, any great respect even for the present state of that establishment.

He goes on to suggest that he stays in Cambridge where he would expect more help than in London and says:

Of the Naturalists F. Hope is out of London, Westwood I have not seen; so about my insects I know nothing.

Then, as now, competent taxonomists were too few and their work-load consequently too great to be able to cope quickly with large expedition collections. Thus, as with Captain Cook's and other famous expeditions, much of Darwin's material became dispersed among available and willing specialists. Darwin was more fortunate than most and the birds, mammals (including fossils), reptiles and fish received excellent treatment in the sumptuous *Zoology* (Darwin, 1838–43). The insects from the *Beagle* voyage have received considerable attention as the rest of this paper will show.

In the *Centenary History of the Entomological Society of London* (Neave *et al.*, 1933: 68–9) it is stated:

Hope announced his intention at the General Meeting on 5th July, 1841, to present his entire collection of British Crustacea to the Society. The next month saw the presentation by Darwin of the insects collected on the voyage of the *Beagle*, and it appears that on his return from his famous voyage, Darwin was much exercised in his mind as to the disposal of his collections. For some reason he was not anxious to present them to the National Collection at the British Museum, and portions of them were presented to this Society, and, as may be seen from the Centenary History of the Zoological Society of London, others were handed over to that body. As is well known, however, the more valuable portions of both these collections eventually reached the British Museum.

However, in the *Centenary History of the Zoological Society of London* (Mitchell, 1929: 104) it is recorded that Darwin decided against giving his specimens to the Museum of the Zoological Society.

Not all of Darwin's material reached the British Museum and some of the specimens that did were again dispersed to other specialists so that collections have been located in Cambridge, Oxford, Dublin and elsewhere. Material in the British Museum is considered first.

The localities in which insects were collected on the *Beagle* voyage are shown on the maps (Figs 2–4, 19) and an itinerary of the voyage is given here since this is not easily interpreted from the *Insect Notes*.

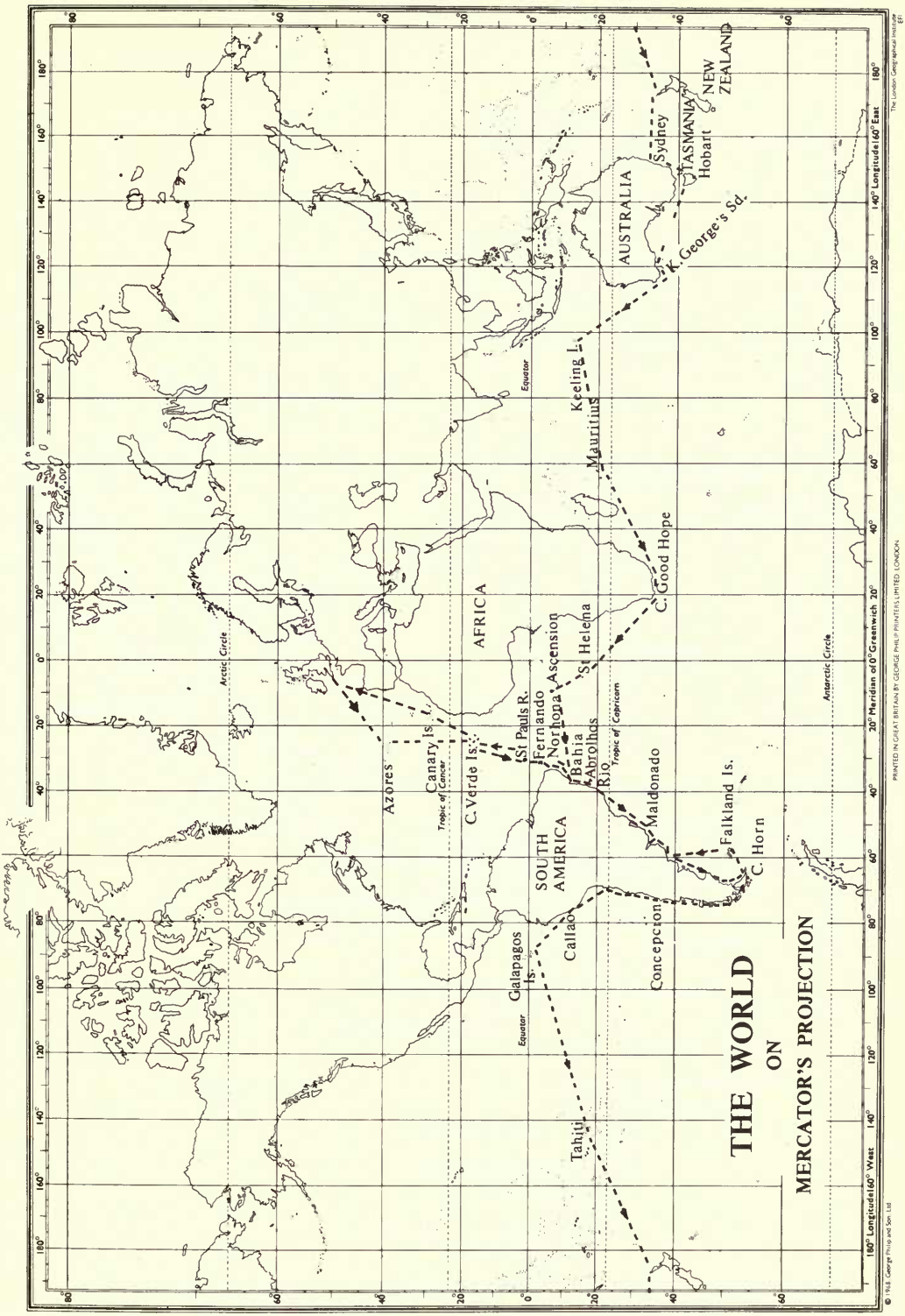


Fig. 2 Simplified route of the voyage of the *Beagle*.

Fig. 3 South America showing the localities mentioned in the *Insect Notes*.

Fig. 4 Tierra del Fuego showing localities mentioned in the *Insect Notes* and other items of Darwin interest.

Itinerary of the voyage of H.M.S. Beagle from Dec. 27, 1831 to Oct. 2, 1836
(After Barlow, 1967)

Left	Arrived	At sea	On land
Devonport, Dec. 27, 1831	Cape Verde Is., Jan. 18, 1832	21 days	21 days
C. Verde Is., Feb. 8, 1832	Bahia, Brazil, Feb. 28	20 days	19 days
Bahia, Brazil, Mar. 18	Rio de Janeiro, Apr. 5	18 days	91 days
Rio de Janeiro, Jul. 5	Monte Video, Jul. 26	21 days	24 days
Monte Video, Aug. 19	Bahia Blanca, Sept. 6	18 days	41 days
Bahia Blanca, Oct. 17	Monte Video, Nov. 2	16 days	24 days
Monte Video, Nov. 26	T. del Fuego, Dec. 16, 1832	20 days	72 days
T. del Fuego, Feb. 26, 1833	Falkland Is., Mar. 1	3 days	35 days
Falkland Is., Apr. 6	Maldonado (near Monte Video), Apr. 28	22 days	86 days
Maldonado, Jul. 23	Rio Negro, Aug. 3	11 days	122 days
Monte Video, Dec. 6	Port Desire, Dec. 23, 1833	17 days	12 days
Port Desire, Jan. 4, 1834	Port St Julien (110 miles south), Jan. 9	5 days	10 days
Port St Julien Jan. 19	Str. of Magellan (via Falkland Is.), Jan. 29	10 days	9 days
Str. of Magellan Mar. 7	Falkland Is., Mar. 10	3 days	28 days
Falkland Is., Apr. 7	Santa Cruz River, Apr. 13	6 days	29 days
Santa Cruz, May 12	Chiloe, Jun 28 (many landings in Straits)	47 days	15 days
Chiloe, Jul. 13	Valparaiso, Jul. 31	18 days	102 days
Valparaiso, Nov. 10 (Illness)	Chiloe, Nov. 21 1834	11 days	106 days
Chiloe, Feb. 4, 1835	Valdivia, Feb. 8	4 days	14 days
Valdivia, Feb. 22	Concepcion, Mar. 4 (Earthquake)	10 days	3 days
Concepcion, Mar. 7	Valparaiso, Mar. 11 (S. Jago)	4 days	117 days
Copiapò, Jul. 6	Iquiqui, Jul. 12	6 days	3 days

Left	Arrived	At sea	On land
Iquiqui, Jul. 15	Gallao, for Lima, Jul. 19	4 days	50 days
Gallao, Sept. 7	Galapagos, Sept. 16	9 days	34 days
Galapagos, Oct. 20	Tahiti, Nov. 15	26 days	11 days
Tahiti, Nov. 26	New Zealand, (Bay of Islands) Dec. 21	26 days	9 days
New Zealand, Dec. 30, 1835	Sydney, Jan. 12, 1836	13 days	18 days
Sydney, Jan. 30	Hobart, Tasmania, Feb. 2	3 days	15 days
Hobart, Feb. 17	St George's Sound, Australia, Mar. 3	14 days	11 days
St George's Sound, Mar. 14	Keeling I., Apr. 2	19 days	10 days
Keeling I., Apr. 12	Mauritius, Apr. 29	17 days	11 days
Mauritius, May 9	C. of Good Hope, May 31	22 days	18 days
C. of Good Hope, Jun. 18	St Helena, Jul. 7	19 days	7 days
St Helena, Jul. 14	Ascension, Jul. 19	5 days	4 days
Ascension, Jul. 23	Bahia, Brazil, Aug. 1	9 days	5 days
Bahia, Brazil, Aug. 6	Pernambuco, Aug. 12	6 days	5 days
Pernambuco, Aug. 17	Porto Praya, C. Verde Is., Sept. 4	18 days	16 days
Terceira, Azores, Sept. 20	Falmouth, Oct. 2, 1836	12 days	—

Paradiz (1981) treats the South American journeys in detail and gives clear maps with modern spellings and notes on the variation of place names. Some of his dates of landfall and departure differ slightly from the itinerary given above and are probably more correct.

Darwin's Insects in the British Museum (Natural History)

Although Darwin did not hold the specialists in the British Museum in high esteem this was not so of G.R. Waterhouse[10] as I have recorded elsewhere (Smith 1982*a*). Waterhouse was Keeper of Mineralogy and Geology in the British Museum from 1851 to 1880 and curator of the Royal Entomological Society's insect collections on its foundation. It was no doubt in the latter role that Darwin entrusted many insects to him and that through him many specimens came to be in the British Museum. Lea (1926) notes, quoting G.J. Arrow, 'Darwin did not give his collection to the Museum, but allowed different individuals to take particular groups which interested them, and the unsorted mass of minute specimens was given to G.R. Waterhouse, only coming here in 1887'. The Entomological Society collections were eventually dispersed; firstly the exotic species in 1858, then the British and certain historic specimens in 1863. The Museum purchased 5628 insects in 1858 (BM accession no. 1858–60) and in 1863 (1863–44) a series of 199 insects, of various orders, collected chiefly by Darwin during the *Beagle* voyage and including the types of species described by G.R. Waterhouse, J.O. Westwood and E. Newman.

The following list of summarized entries from the Museum Accession Registers indicates the numbers of Darwin insect specimens and the source of their origin.

1837.1.–1	1 specimen of Chiasognatus grantii	Chiloe	Pres. by C. Darwin
2	2 specimen of Chiasognatus grantii	Chiloe	Pres. by C. Darwin
1842.14.–	4 species of Coleoptera [names listed]	Tierra del Fuego	Pres. by C. Darwin. Originals of Mr Waterhouse's descriptions in the Annals & Magazine of Natural History, Vol. 9, April 1842.
1845.63.–	115 Coleoptera [names all listed]	[Various *Beagle* localities]	Pres. by C. Darwin. Originally described by Mr. Waterhouse in Annals & Magazine of Zoology & Botany
	13 Diptera	Galapagos	
	2 Orthoptera	Galapagos	
	1 Libellula	Galapagos	
	1 Xylocopa	Galapagos	
	44 Hemiptera	Galapagos	
	3 Aptera	Galapagos	
1845.68.–	26 Diptera	Montevideo	Presented by Charles Darwin
	7 Hymenoptera	Montevideo	
	6 Orthoptera	Montevideo	
	10 Aptera	Montevideo	
	3 Hemiptera	Montevideo	
1845.81.–	Ixodes	St Paul's I	Presented by Charles Darwin Esq
	1 Staphylinus	St Pauls I	
	2 Olfersia	St Pauls I	
1845.118.–	5 beetles [names listed]	Valparaiso and Pt Desire	Pres. by C. Darwin. Originally described by Mr Waterhouse in Ann. of Nat. Hist.

1846.38.–	9 Lepidoptera 10 Lepidoptera 4 Lepidoptera 2 Lepidoptera 1 Lepidoptera 5 Lepidoptera	Pt Famine, S. America Monte Video St Iago Keeling Is Galapagos Southern part of S. America	Presented by Charles Darwin Esq from the voyage of the *Beagle*
1848.95.–	3 Cleridae 1 Entomoderes erebi Solier	1 Sydney, 1 V.D's land, 1 Mt Wellington Mendoza	Presented by C. Darwin Esq.
1858.60.–	5031 insects [some listed by name]	Various localities	Purchased at sale of Entomological Society
1863.44.–	9 beetles [names listed]	[Various *Beagle* localities]	Collected by Charles Darwin on his late voyage of the *Beagle*; described by Revd W. Hope. For the continuation of this entry see Folio 839
	[on page 839 the names of a further 175 beetles are listed]	[Various *Beagle* localities]	Type specimens of species described by Messrs Waterhouse, Westwood & Newman in the Annals of Nat. History, Entomologist & collected principally by C. Darwin Esq. in the voyage of the *Beagle*
1885.100.–	1 Forficula sp. 2 Forficula sp.	Rio de Janeiro Patagonia (?)	Presented by G. R. Waterhouse. Collected by C. Darwin in the Forest in June.
1885.119.–	500 insects	Various localities	Presented by G.R. Waterhouse Esq. Collected by Charles Darwin during the voyage of the *Beagle*. See Ins. Room List p. 93

Many beetles seem also to have passed, through G.R. Waterhouse, directly into the Coleoptera collections. These are not covered by numbers in the Museum Accession Register but are recorded in a volume of 'Accessions to the collection of Coleoptera 1870–1909', kept in the Coleoptera section. These entries are as follows:

1871.2	17 Elateridae	S. America	Presented by Chas Darwin. Collected by Mr Darwin. Not to be Rep. 10th/71
1871.7	3 Elateridae	New Zealand	do. Not to be Reported May 1st 71
1871.17	2 Systolosoma brevis Solier 11 Lebiinae 2 Tautocerastes patagonicus	Chile S. America St Cruz	Presented C. Darwin, collected C. Darwin through Mr Waterhouse. Not to be reported
1873.8.	50 Hydradephaga	Patagonia etc	Presented by C. Darwin, Esq. through G.R. Waterhouse
1875.35	29 Coleoptera [names listed] all C. Waterhouse species	Terra del Fuego, Valparaiso and Falkland Is	Presented by G.R. Waterhouse collected by Mr Charles Darwin. Described in a paper read at the Entomological Society Nov. 3rd 1875 [see Waterhouse, C.O., 1875]
1875.36	[1751 Coleoptera]	[Various localities and sources, some Darwin]	Presented by G. R. Waterhouse

1877.1	4 Coleoptera 6 Coleoptera [a list of the names of the 8 species follows]	James I. Galapagos Charles Island	Presented by C. Darwin Esq, through G. R. Waterhouse. Not Rep.
1878.43	1 Strina aurichalcea	Cape of Good Hope	Presented G. R. Waterhouse, coll. by C. Darwin, Esq. Not to be reported
1879.34	17 Coleoptera [names listed] types of F. Waterhouse	Cape of Good Hope, E. Falklands, Rio and St Helena	Presented by G. R. Waterhouse collected by C. Darwin Esq, described by F. H. Waterhouse in the Linnean Journal
1880.67	1 Moluris [Tenebrionidae]	S. Africa	Presented by Chas Darwin Esq. This is the specimen referred to in the popular account in the Naturalist Oct or Nov. [Dec., p. 76 by S. D. Bairstow]
1887.42	2000 Coleoptera	Various localities	Presented by G. R. Waterhouse Esq. Collected by Charles Darwin in the Voyage of the *Beagle*

The '1871.2' entry also includes some Coleoptera from St Helena (see *Insect Notes* entry 3730).

It is not clear what the 'not to be reported' comment means against several of these entries. Perhaps it kept the material temporarily more freely available for loan to outside specialists if it remained among unofficial accessions. Some accessions of Waterhouse types (e.g., 1875–36) contain Darwin material although there is no indication of this in the entry (see *Insect Notes* entry 2303 under *Adioristus*).

Labelling of specimens

The majority of the specimens in the BM collections have printed BM data labels indicating the country, locality and the name C. Darwin. Often the BM accession number is also given on a separate printed label though sometimes this is handwritten. Some specimens do not have printed labels and these can be difficult to find, all the labels being handwritten (by Darwin (rarely), Waterhouse and others) and sometimes folded. Labels bearing the name of the species are frequently handwritten. The distinctive labels of other museums are described under the appropriate sections.

Some specimens bear original 'Darwin' labels and numbers, which link them directly to the *Insect Notes* entries described later. These labels are as follows:

(1) Original handwritten locality labels (by Darwin or Syms Covington but usually by others) (Figs 11, 19). Sometimes these may have a BM accession number written later or on the verso.

(2) A label bearing a handwritten (rarely by Darwin or Syms Covington and usually by later 'curators') number between 1 and 3868 usually on white paper or occasionally on coloured paper conforming to the code range described for the printed numbers below, but the number given in full (see Figs 11, 19).

(3) Printed numbers (Fig. 19) can usually be taken at face value if on white paper. If on red coloured paper then 1000 must be added to the number printed thereon, 2000 added for green and 3000 added for yellow (I have only seen *written* numbers on yellow paper; see *Insect Notes*, entry 2523). A clue to this numbering code is given in entry 325 in the *Insect Notes,* and it is described in Darwin's specimen catalogue in the University Library at Cambridge. In the University Museum of Zoology at Cambridge are specimens with small green labels bearing numbers but these are not Darwin's and are dealt with in the section on the Cambridge material.

Other comments on labels are given immediately before the *Insect Notes*.

There are certainly other undetected Darwin specimens scattered throughout the BM collections, especially in the unidentified accessions. While it has been relatively easy to locate material on which published descriptions are based, there has been difficulty in locating non-type material. Specimens representing published misidentifications have frequently been subsequently re-identified and moved to an unexpected place in the collection. However most groups have been scanned, and at least for the Neotropical Coleoptera it has been possible to comment on most of the entries in the *Insect Notes*.

Where specimens have not been located it has frequently been possible to interpolate the identity of some entries from published sources, especially the *Journal* (Darwin, 1845). Often the very nature of the entry in the *Insect Notes* has provided clues leading to a successful search for material in the collections.

Some specimens that were once in the collection have obviously been removed, probably for exhibition purposes on the occasion of a Darwin anniversary (see Ridewood, 1909: 23) or even in exchanges with other museums. Name labels with only pin-holes above them provide strong evidence for this (e.g. *Insect Notes* entry 5).

There is also evidence that Darwin specimens from the BM have 'found their way' into other collections, probably before the establishment of a proper loans system, but have 'returned home' in due course (see *Insect Notes* entries 2303, 2308 under *Adioristus,* Col., Curculionidae). There are also specimens in the David Sharp collection (BM 1905–313; see entry 618 under Nitidulidae).

Darwin's Insects in the University Museum of Zoology, Cambridge

In the main collection of the Zoology Museum at Cambridge are *Beagle* specimens of water beetles and water bugs as follows:—

Coleoptera, Hydrophilidae: 104 specimens representing 20 species; Gyrinidae: 21 specimens representing 7 species.

Hemiptera, Pelogonidae: 2 specimens representing 1 species (?); Corixidae: 1 specimen, unidentified.

These mostly bear a printed label as shown in the notes quoted and may have small green labels with numbers in the range 1–51, though no specimens were found with the numbers 1, 2, 9, 18, 26, 29, 32 or 41 (though the Corixid bears a white printed 41 which does not fit a Darwin entry—see entries 210, 677). Other specimens without numbers are present and probably all had numbers originally. Some specimens also carry printed numbers relating to the Darwin notebooks and *Insect Notes*. The specimens also bear A. Knisch (Hydrophilidae) or A. Zimmerman (Gyrinidae) det. labels (see entries in the main *Insect Notes*).

These specimens were formerly housed in a small box labelled as follows:

> To Dr Sharp. I send the first contribution to an Entom. Library. Also Darwin's aquatics from S. America. The tickets are no[t] intelligible to me. I have no corresponding notes. C.C. Babington[9]

To this has been added a note by Hugh Scott:

> These insects have since been named and incorporated in the general exotic collection. Though said to be from "S. America" (whence most undoubtedly are) they include certain species which can scarcely have been from that Continent: *Sternolophus solieri,* Cast., known from Afr. and Syria, and *Paranacaena* sp., a genus known (otherwise) only from Australia (both Hydrophilidae). The series included one or two Hemiptera fam. Pelogonidae. H.S. 24.4.1922

In the Cambridge Museum Register 14 November 1912 the following supplementary notes by Hugh Scott are given, dated 24 October 1922:

> These were formerly kept in a small box, just as they were handed to Dr Sharp by Prof. C.C. Babington. They were sent by Darwin to Professor Babington, and passed on by him to Dr Sharp, with the label which is stuck in below. They have now (1922) been named and incorporated in the general foreign beetle collection, the old pins being kept and the following label attached
>
> South America
> Charles Darwin
> Voyage of the
> "Beagle"
> Reg. 14.xi.1912
>
> They will be found under families Hydrophilidae and Gyrinidae [Darwin's Dytiscidae are in Brit. Mus. They were worked out by Babington and publd in Tr. Ent. Soc. iii, 1941,

pp. 1–17, Pl.1], also two or three bugs (Hemiptera) under (Pelogonidae and Corixidae). Re localities: Babington's note reads "from South America", and nearly all undoubtedly are South American. But the following are not from that continent: *Sternolophus solieri*, Cast. (Hydrophilidae; Africa & Syria); *Paranacaena* sp. (Hydrophilidae; genus known only from Australia); *Dineutes subspinosus*, Klug (Gyrinidae; Africa, Syria, India) and *Dineutes aereus*, Klug (Africa). These were probably got when the "Beagle" visited countries within their range.—The numbers borne by the specimens were not intelligible by Babington. In 1917 the collection was examined by G.C. Champion, who by consulting old literature was able to fix the localities of the big Gyrinid *Enhydrus sulcatus*, Wied., of *Gyrinus ovatus*, Aubé and of *Gyretes glabratus*, Régimbart; he attached the labels "Rio de Janeiro, C. Darwin" to these, but did not think the rest could be traced [see over page].

The full list is as follows:— [HYDROPHILIDAE] *Berosus (Enoplurus) reticulatus*, Knisch; *Berosus* (s.str.) *sticticus*, Boh. and its aberrations *confinis*, Knisch, and *aberrans*, Knisch; *Derallus rudis*, Sharp; *Hydrous ater*, Ol., **Hydrous (Diboloceles) palpalis*, Brullé; *Neohydrophilus politus*, Cast.; *Tropisternus (Cyphosternus) lateralis*, Fabr.; *Tr. nitidulus*, Brullé; *Tr.* (s.str.) *collaris*, Fabr.; *Tr. laevis*, Sturm, (=*nitens*, Cast.); *Tr. setiger*, Germar; **Sternolophus solieri*, Cast.; *Limnoxenus* sp.; *Paracymus* (s.str.) *debilis*, Sharp; *P.* (s.str.) *armatus*, Sharp; *Paranacaena* sp; *Enochrus (Lumetrus) vulgaris*, Stein; *E. (L.) affinis*, Stein; *Hugoscottia darwini*, Knisch; *Helobata (Helopeltis) striata*, Brullé; [GYRINIDAE] **Dineutes aereus*, Klug; **Dineutes subspinosus*, Klug; **Enhydrus sulcatus*, Wied.; *Macrogyrus ellipticus*, Brullé; *Gyrinus parcus*, Say; **G. ovatus*, Aubé; **Gyretes glabratus*, Régimbart.

Two kinds of printed numbers are attached; some specimens have numbers in large type, on (discoloured) white paper; these numbers correspond to Darwin's MS. Register in Brit. Mus. (Insect Dept.), and the data have been copied (1.xi.1922) from that register and attached to the specimens. The species under which such specimens stand are marked with an asterisk on the preceding page [there are numbers in similar large type on certain of Darwin's named Dytiscidae in Brit. Mus.]. Most of the numbers used are, however, in smaller type, on greenish-blue paper, with a printed line above and to one side of them. Of these there is at present no explanation, nor is it known when and by whom they were attached. They form a sequence from 1–51. Many specimens have no number. None have Darwin's MS. locality-labels, as the Brit. Mus. specimens have; except in the case of those with the big-type numbers, therefore, the evidence that they were Darwin's rests at present on Babington's covering label, & the similar nature of the pins, &c.

The presence of 'Darwin' numbers has enabled nine species to be assigned with certainty to entries in Darwin's *Insect Notes*. The other species have been interpolated and the following entries in the *Notes* should be consulted to account fully for these Cambridge specimens: 210, 213–9, 432–3, 446–8, 554–5, 573, 875, 1305, 1314, 3528, 3635.

There is also a small storebox (Figs 5–6) containing British beetles in the Museum of Zoology. The majority are ground beetles (Carabidae) and dung beetles (Scarabaeidae, etc.). Some of the species, though perhaps not the actual specimens recorded by Stephens are represented. There is an entry in the Museum Register regarding this collection dated 30 April 1913:

> Small collection of British beetles, made by Charles Darwin. The beetles were originally in a cabinet, until in the early '70s G.R. Crotch removed some or all of them into boxes, with the intention of arranging and renaming them. Only one box has been found, which was given to the Museum as Crotch left it, some of the beetles being named in Crotch's handwriting, others with printed labels. Whether the latter were Darwin's or Crotch's naming is not known. Donated by Sir Francis Darwin, F.R.S.

Crotch also gave Darwin beetles during the writing of the *Descent* where Darwin (1871: 379, footnotes 70 and 72 relating to stridulatory mechanisms in the Coleoptera) says:

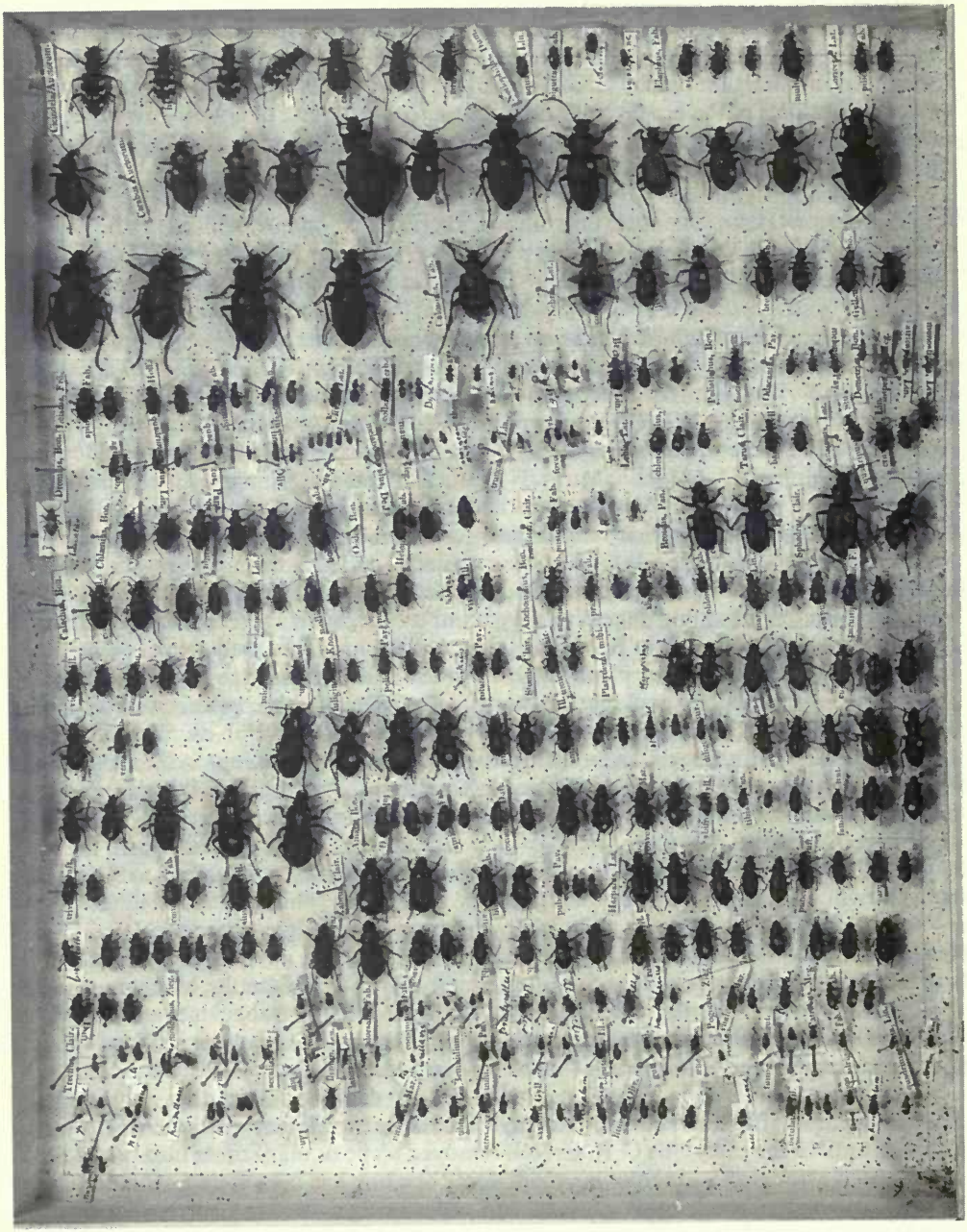


Figure 5

Figs 5–6 The store-box of British beetles at Cambridge: 5, left hand 6, right hand, sides (by courtesy of the Cambridge University Museum of Zoology).

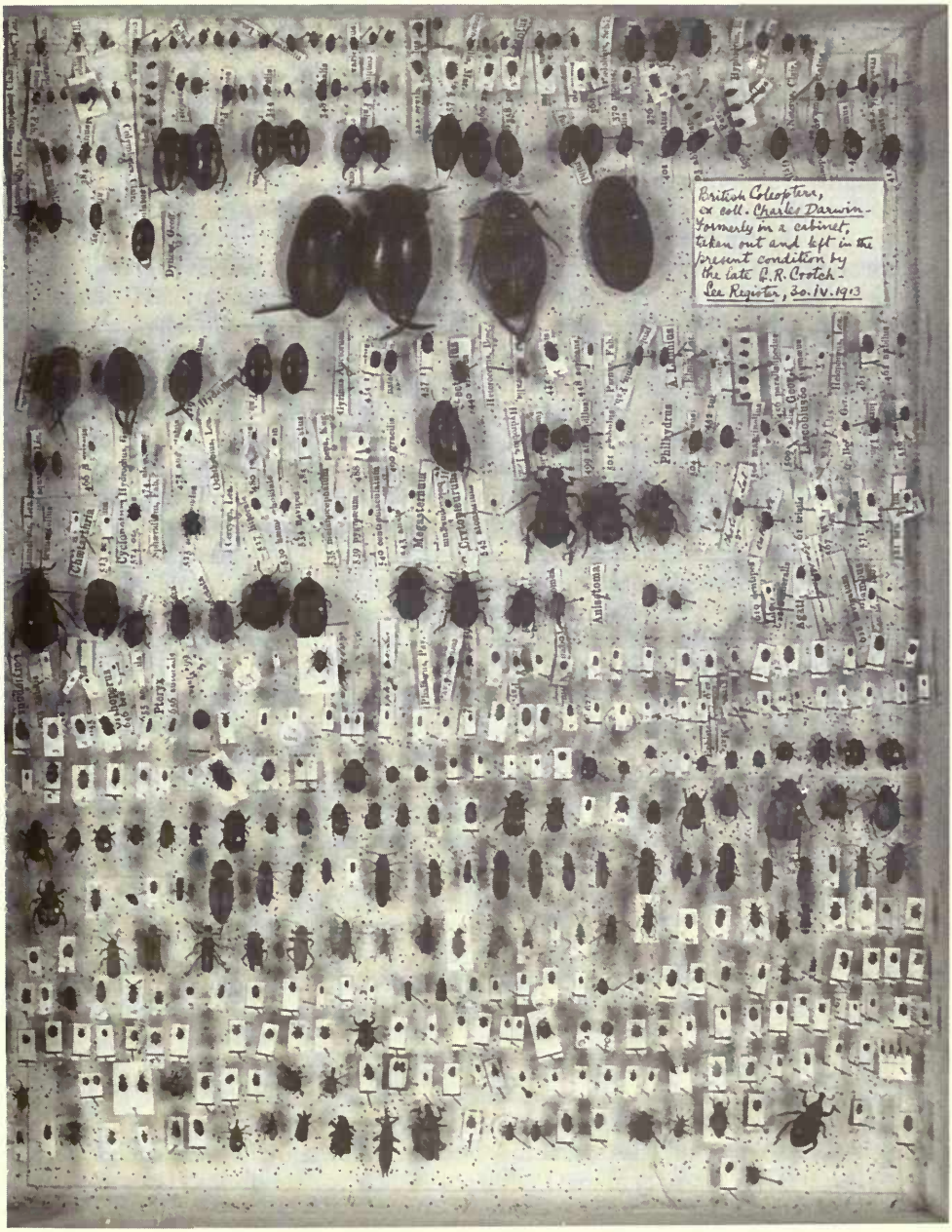

British Coleoptera,
ex coll. Charles Darwin -
formerly in a cabinet,
taken out and left in the
present condition by
the late R. R. Crotch -
See Register, 30.IV.1913

Figure 6

> I am greatly indebted to Mr G.R. Crotch for having sent me numerous prepared specimens of various beetles belonging to these three families [Crioceridae, Chrysomelidae, Tenebrionidae] and others, as well as for valuable information of all kinds . . . I am also much indebted to Mr E.W. Janson for information and specimens . . . In the Carabidae I have examined *Elaphrus uliginosus* and *Blethisa multipunctata,* sent to me by Mr Crotch.

A biographical note on Crotch is given by Smart & Wager (1977). See also under Darwin's British Insects for Cambridge holdings of Darwin material.

Darwin's Insects in the Hope Entomological Collections, University Museum, Oxford

The type specimens of various species described by F.W. Hope from Darwin material are present in the British Museum (Natural History) (e.g. *Calosoma patagoniense* Hope). However some of the material sent to Hope by Waterhouse remains in Oxford and according to a letter from Darwin to Hope postmarked 22 June 1837 this consisted of insects collected at Sydney, Hobart and King George's Sound (Poulton, 1909: 202). Some of these unidentified specimens have been removed from the general collection and are now kept in separate cabinets and include some Homoptera from Sydney and Hobart and a Chalcidoid Hymenopteran from Sydney. There are some unidentified Reduviidae (Heteroptera) from Sydney remaining in the general collections. In the Darwin-Hope letter mentioned there is also reference to some Coleoptera of which the 'carabi' were to be returned but these have not been located at Oxford and are probably back in the British Museum. Some Australian Coleoptera and Homoptera were described by G.R. Waterhouse (1838, 1839) and are listed (see *Insect Notes* entry 3528 etc.) with some other insects found.

Of greater interest is the presence of some Darwin insects in the Denny collection. Following information from F.G.A.M. Smit that he had seen a Darwin flea in that collection some 25 years ago, the flea was located in the Denny slide collection and is a female *Pulex irritans* L. from Chiloe mounted on a slide and represents entry 2561 in Darwin's *Insect Notes*. In the general Diptera collection at Oxford there is a drawer of Diptera and Siphonaptera which has inside a label indicating that the Denny fleas were sent to Rothschild in 1915. However no Darwin fleas have been located among the Rothschild collection in the British Museum. Since Denny was a specialist on lice, I searched for that order and found six specimens in the pinned part of the Denny collection (*Insect Notes* entries 1044, 1336, 1395, 2153 and 2561, and entry 658 in the *Spirits of Wine List*). Hitherto only one Darwin louse had been found (in the BM, see *Insect Notes* entry 1044).

Other Darwin insects will no doubt be found in the Hope Collections as G.R. Waterhouse says (1839: 189) of the insects included there:

> . . . insects were therefore returned to the friends who had been so kind as to lend them to me. I may remark that the greater proportion of them were from the collection of our liberal president, the Rev. F.W. Hope.

and later (1841: 121) under *Feronia cordicollis*:

> A specimen of this species has been sent to Mr Hope with the specific name of *obsidianus* but I have not yet found it described under that name.

Poulton (1910: 16) records Diptera used in various exhibits to celebrate the hundredth anniversary of Darwin's birth but the only member of this order located at Oxford is a *Bathypogon* sp. (Asilidae) found in the Bigot Collection by Greg Daniels (see entries 3524–3526).

Audrey Z. Smith (1986), Hope Librarian and Administrator, has published a history of the Hope Entomological Collections and may locate other Darwin material, but this will probably all be Australian.

Darwin's Insects in the National Museum of Ireland, Dublin

In 1971 Dr Martin Speight drew my attention to some boxes of insects in the National Museum of Ireland, Dublin, which appeared to have been collected by Darwin on the *Beagle* voyage. Investigations proved this to be so and the material was examined and the results are incorporated in comments in the *Insect Notes*. The specimens were mostly small Diptera and Hymenoptera which Francis Walker[11] had sent to A.H. Haliday[12] for identification. Francis Walker had described many of Darwin's insects (see References) but the collections he sent to Haliday appear to consist of the smaller fry mostly covered by general entries in the *Insect Notes* based on general sweeping in Bahia, Brazil; Chiloe Island, Chile; Galapagos Islands; Hobart; Tasmania; King George's Sound and Sydney, Australia; New Zealand and St Helena. However there were some specimens referring to individual entries in the diaries of greater interest.

The story of the disposal of these specimens can be gleaned from correspondence from Walker to Haliday (*Haliday Correspondence*, Vol. 2) preserved in the Library of the Royal Entomological Society of London as follows:

Arnos Grove,
Southgate
8 March 1837

> . . . Mr Darwin (grandson of the celebrated doctor Darwin) who has been travelling for the few past years through the E and W coasts of South America and the Pacific Isles and N. Holland and has made numerous interesting discoveries in geology and zoology—has lately returned to England with his collections—He has entrusted the insects to Waterhouse who will describe the Coleoptera. I was so interested in the chalcidites that I have acceded to W's request that I should describe them. He is at a loss what to do with the *Muscidae, Ichneum adscits* [?] *Thrips* (of which there are some Fitans [?] half an inch long) etc—and wishes me to offer them to you to describe in whatever Ent work you please, he would like to have an answer soon. I think you will find them very interesting and we can easily send them to you.

The next letter is dated 27 May 1837 and is written from the same address. It begins:

> My Dear Haliday,
> I have delayed writing to you till I could procure some of Darwin's insects to accompany my package. Waterhouse has been very busy so he requested me to pick out and mount some. Having done this I sent you a few near a fortnight ago per Belfast steamer, with the other insects that I promised, also one parcel from Mr Curtis and two from Mr Rudd [or Budd?]. Waterhouse requests that you will keep the No. attached to each lot as Darwin has MSS notes attached to some. He will I believe make an application to government to patronize the publication of his travels, if he succeeds all these specific descriptions will of course be included therein.

Later in the same letter he says:—

> I do not remember any recent works on Hymenoptera or Diptera of the regions where Darwin has travelled. There may be a few in the 10th Vol of the Encycl. Method.* and in Fabr Syst Piezat† which I will send to you if you have them not.

**Encyclopédie Méthodique* . . . Paris & Liege, 1789–1828.
†Fabricius, J.C., Systema Piezatorum. . ., Brunsvigae, 1804.

Later in this letter Walker says he will take specimens to Liverpool in September. The correspondence shows clearly that Walker and Haliday expected to meet at the Liverpool meeting, in September, of the British Association for the Advancement of Science (of which they were both Life Members).

The next letter was written on 15 July 1837 from the same address. It begins:

> My Dear Haliday
> I have received your kind letter announcing the safe arrival of the insects etc. I am sorry to hear that your health has suffered and I fear that this is partly occasioned by working too closely at the minute Hymenoptera which I have inflicted upon you. I well remember to have seen a figure of *Dicera* and to have been struck with its singularity, but I did not recognize it among Darwin's insects. Of these I have a few more *Diptera* etc for you which I had *set* before I received your letter. Darwin still has multitudes of them, and if I can procure them for Waterhouse before I leave I will bring them in pill boxes as you advise.

Later in this letter he says:

> Almost all that I have seen of Darwin's Diptera are as minute as those that you have. The chalcidites also are generally remarkable for their identity with the British forms. And the same may be said of the Coleoptera among which the species of Scymnus are very numerous. On a recent coral isle [St. Pauls] the only insects were bird parasites and a few Coprophagi such as a Staphylinus (Philonthus or Quedius) etc. Another isle the only species of insect was a small ant.

The next letter is written from 49 Bedford Square and is dated 19 December 1837. It includes the following:

> I have told Darwin and Waterhouse about the Diptera, and they have looked out some more for you and will have them ready in a few days and I will send them to you before a month hence, also a parcel which Curtis tells me he has ready for you.

This letter goes on to show that the two correspondents did in fact meet in Liverpool the previous September. And also states:

> I now have a lot of MSS waiting to be published in the Ent. Mag., and I must send the description of Darwin's Chalcidites to the Linn. Society or elsewhere.

Later he continues:

> I will write to you again when Darwin's insects are ready and will send the parcel to the Belfast steamer office directed to Mr Gordon for you.

The next letter is dated 17 February and post-marked 1838. It begins:

> I have hitherto delayed replying to your letter of December last that I might obtain as many as possible of Darwin's Diptera etc to form part of the parcel that I have just forwarded to you.'

The letter discusses some of the insects which are in the parcel and then continues:

> In the box also are all Darwin's Diptera yet unpacked. He has plenty more but they are in little boxes mixed with other insects and he is about to have them all mounted and then sorted. Those from the Galapagos are all the Diptera I have found among the insects yet mounted. The man employed unfortunately put them into water but he will know better in future. Though the Galapagos are situate under the line yet the insects found therein are very like those of the temperate climes and so it is with other little isles that are far from the mainland.

Later this letter continues:

> I have placed a few of Darwin's chalcids in the box for your examination. Figures of some of them would be very interesting excepting No. 1 they all appear to belong to the family Eucharidae of which I have seen no European specimens. In the structure of the head, antennae and abdomen they much resemble Figites etc.

Later he continues:

> The steamer with the box will leave London tomorrow.

And later again:

> Have you determined where you will publish Darwin's insects? I have got ready enough MSS in British Chalcid to last the Ent. Mag. for a couple of years and I wish to publish Darwin's Chalcids somewhere else.

In a letter dated 29 July 1839 Walker writes:

> My descriptions of Darwins Chalcides are printed and will be published immediately. I have all the specimens in my possession and I will forward them to you together with all my own collection and they will be speedily followed by the few remnants that I have left. you are quite welcome to retain mine as long as you feel inclined and what I ask of you is in plain words that you will point out my errors, supply my omissions, reunite the species that I have cut up and divide into groups the overpopulous and disordered genera. Your drawings of the genera would be most suitably accompanied by such an essay . . . . I have about half a dozen more of Darwins insects for you.

The drawings referred to in this letter would be those which subsequently appeared in *The Entomologist* (see Walker, 1840–42).

Various labels in the boxes indicate that the specimens had been seen (though not studied or recorded) by several specialists over the years. In box number 546 (H.28) was a label 'There is no doubt these are some of Charles Darwin's insects collected on cruise of the *Beagle*. See Hal. diary for date of receipt of same from F. Walker. A.W. Stelfox. 1932'. Beneath this label is another 'All these certainly not European (Collin)'; this would be J.E. Collin, the Dipterist. There is also a label with printed 'Haliday' and written on 'Miscellanea (chiefly Diptera) numbered 3527, 3523, 2368, 2369'. The specimens are grouped in blocks around single labels bearing these numbers (including also 3528) which refer to Darwin's notes. In box H[aliday] 24 (542) there is a note 'seen by Prof. Westwood 1885–6' and written on the bottom of the box 'Coll by Charles Darwin when in the "Beagle" AWS.' This box also contains some Walker insects from Finmark. The specimens in this box are pinned in fairly orderly columns above the labels which bear written numbers and locality data.

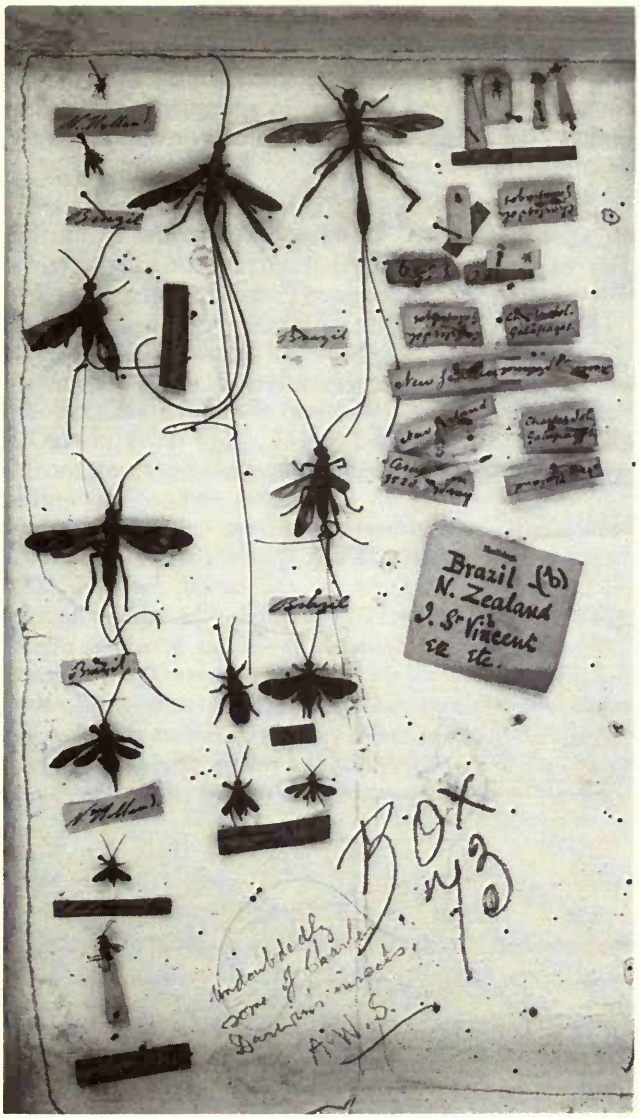


Fig. 7 The contents of 'box 73' from the Haliday collection in the National Museum of Ireland, Dublin. The specimens from St Vincent or with numbers in the sixteen hundreds are not Darwin material. The Darwin specimens include Hymenoptera of the subfamily Braconinae from Brazil and the Galapagos Islands and some Diptera (Chloropidae and Agromyzidae) from New Zealand. See *Insect Notes* 3363, 3416, 3528, 3859, and 3860.

A box numbered 555 (R.H.5) is divided inside by the pinned-in labels 'Box 73' and 'Box 69' and the former section is further labelled on the bottom of the box 'undoubtedly some of Charles Darwin's insects A.W.S.'. Also in the 73 section is a Haliday label 'Brazil (b) N. Zealand I. St. Vincent etc etc'. Of these the St Vincent specimens are not Darwin material (Fig. 7).

Box number 566 (H.68) contains Diptera, some bearing individual handwritten data labels and others either bear or stand over Darwin printed numbers. Boxes 536 (H.17) and 538 (H.20) contain parasitic Hymenoptera bearing 'Darwin' numbers 3524, 3858–3861.

All this material is included in the appropriate entries in the *Insect Notes*. In addition to the above more obvious material there may be Darwin specimens, as yet unrecognized, scattered elsewhere among the Haliday collection. General comments on the Haliday collection are given by O'Connor & Nash (1982).

Darwin's Insects at Down House and elsewhere

At Down House there is a storebox of beetles (Figs 8–9) which has been illustrated and variously reported in the literature as containing specimens from the *Beagle* voyage (e.g. Huxley & Kettlewell, 1965). However, with one exception, these insects are all British species and lack data, though some stand over printed name labels. The one non-British specimen, the largest in the box, I had taken to be a battered female of *Chiasognathus grantii* Stephens when I examined the specimen (see *Insect Notes,* entry 2110). However my colleague R.D. Pope, on seeing the photograph identified it as *Euchirus longimanus* L. (Scarabaeidae). This is certainly not a *Beagle* specimen as the species occurs in Amboina Ceram. Darwin quotes Wallace's observations on stridulation in this beetle in the *Descent* (Darwin, 1871: Vol. 1, 381) and it may be that Wallace gave him this specimen or it may have come from the entomological dealer E.W. Janson who supplied him with various horned beetles at this time (see Stecher, 1969: 113).

The British beetles in the box are mostly common species and probably represent his own collecting unless the named specimens form part of the gift of *c.* 160 species he received from Hope (see Darwin, F., 1887). Neither the species recorded by Stephens (1827–45) nor the species recorded so enthusiastically in the *Life and Letters* (Darwin, F., 1887) are present.

In Down House there is also a small oval box of European beetles on display. These are obviously the Scarabaeidae that Darwin studied for the chapter on sexual selection in Vol. 1 of the *Descent,* i.e. *Bubas bison* Boucomont (now in *Onthophagus*), *Oryctes grypus* Illiger (=*nasicornis* L.), *Lethrus cephalotes* Acharius and *Geotrupes stercorarius* L. Labels are present in the box but not all attached to the specimens. There is also a label for the moth *Lampronia calthella* L. (now in *Micropterix*) recorded as eating the pollen of *Mercurialis* in *Cross & Self Fertilization* (Darwin, 1888: 421).

Other locations

Bynoe (the acting surgeon—see Notes p. 113) collected plants, birds and possibly minerals for the official naval collections at the Haslar Hospital. Gunther (1912: 5) states:

> The Zoological Collection at the Haslar Hospital which contained the Fishes of the Voyage of the "Erebus" and "Terror" as well as other types was transferred to the BM in 1855. The specimens arrived without labels and were in a bad condition, and for economy's sake a solution of chloride of zinc had been used instead of alcohol.

In the BM accession books, there are several entries for insects from the Haslar Hospital (e.g. 1855–58, 60, 61, 63) in some of which lists of species are given but none appear to have any connection with the *Beagle* voyage. In Francis Walker's *List of Diptera* (1849) there is a list of donors which includes 38 entries under Haslar Hospital, but again, none appear to be connected with the *Beagle*. Lloyd & Coulter (1963, *Medicine and the Navy* 1200–1900, Vol. 5, 1815–1900, p. 75) state that Bynoe's collection of birds and insects is 'now in the British Museum' and his plants in the Royal Botanic Gardens, Kew but they give no source for this information. In the BM accessions book for 1844, item 4 (Jan) lists 1627 insects collected in 'New Holland N. & N.W. Coast and [Houtman's] Abrolhos, presented by [Haslar Hospital], collected by [J crossed out] Bynoe Esq Surgeon RN [Note B. Bynoe was surgeon in H.M.S. Beagle, and the types of insects described by Adam White on Stokes' Voyage of Discovery, 1846 appear to be in this collection]'. The entry is written in ink and the square brackets indicate pencil comments added later by K.G. Blair. The

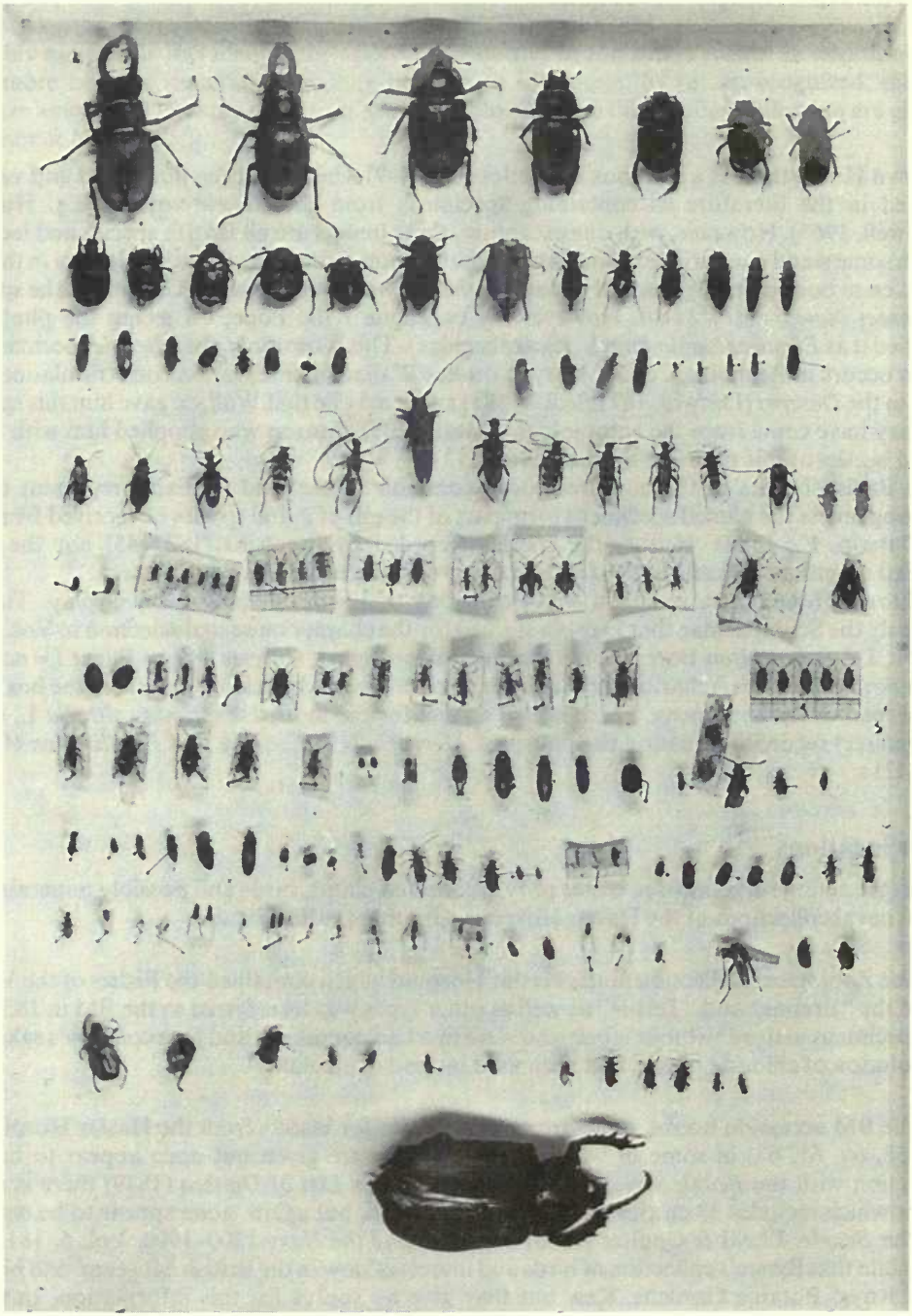


Figure 8

Figs 8–9 The store-box of British beetles at Down House, and the specimen of *Euchirus longimanus* L. (Scarabaeidae), not connected with the *Beagle* voyage: 7, left hand 8, right hand, sides (photograph by Philip Titheradge, courtesy of Down House and the Royal College of Surgeons of England).

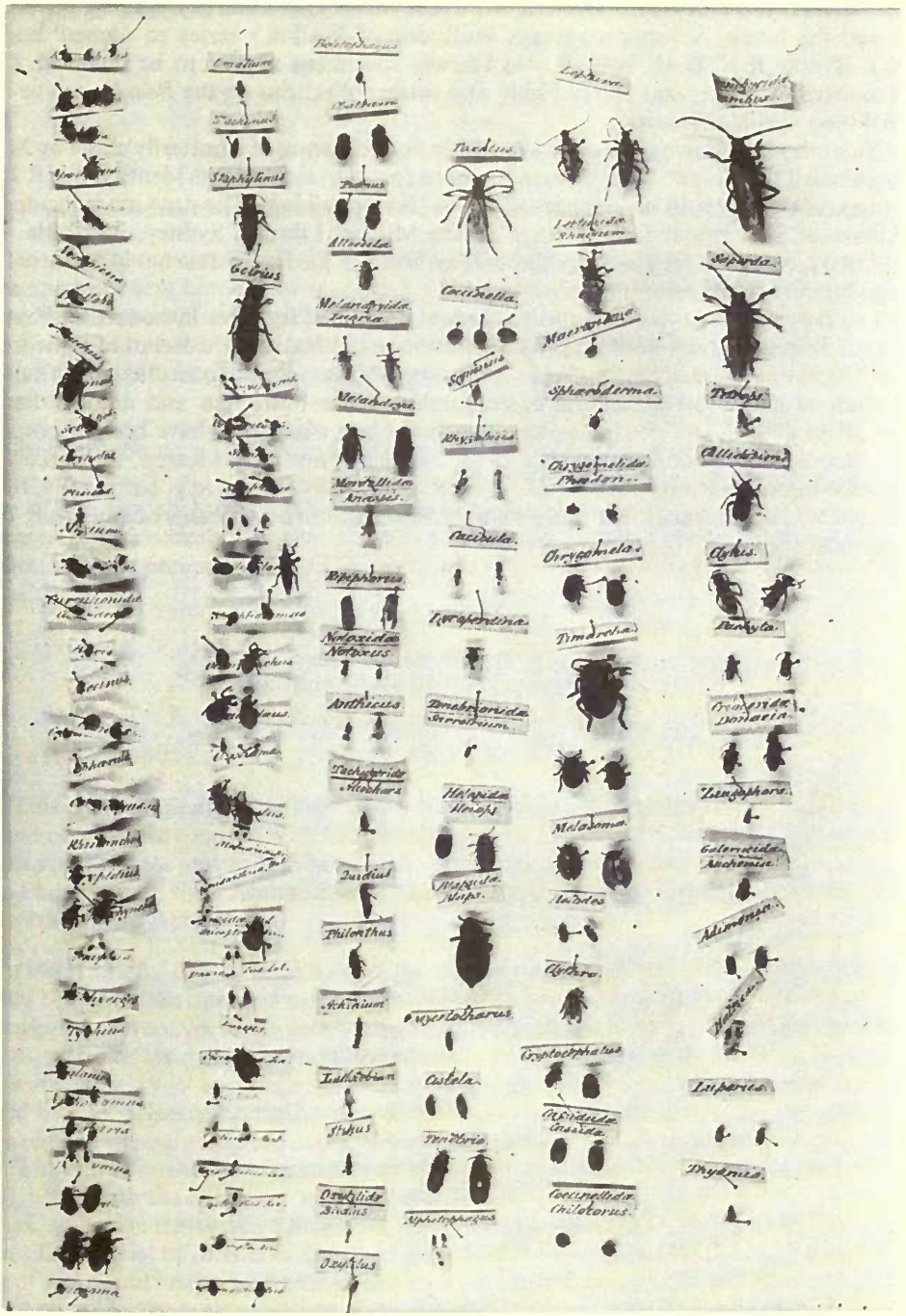


Figure 9

Stokes referred to is John Lort Stokes (1812–43, Naval Officer, Admiral, 1877) who served on all three voyages of the *Beagle* (Darwin was only on the second) and was the author of *Discoveries in Australia* published in 1846. It was in an appendix to this work that Adam Smith described new Coleoptera and E. Doubleday new Lepidoptera from Australia. A.C. Pont has located a specimen

of *Dichaetomyia reversa* (Walker) (Diptera, Muscidae) in the BM collection bearing this accession number and the labels 'Scyomyza reversa Walk/one of Walker's series so named' and 'New Holland/J. Bynoe, R.N./B.M. 1844–4'. No Darwin specimens appear to be involved. Captain FitzRoy assisted by his servant Harry Fuller also made collections on the *Beagle* voyage but it is doubtful if these included insects.

David Stanbury has shown me a copy of a rather poor drawing of a butterfly made by Midshipman King aboard the *Beagle*. No specimen has been found to establish its identity, but R.I. Vane-Wright suggests that it could be a species of *Dione* (Nymphalidae). The drawing is located in the 'King Album of Sketches and Engravings' in the Mitchel Library, Sydney, Australia. Finally Kritsky (1981) records the presence of a staphylinid beetle in the Field Museum of Natural History in Chicago but no further information is available.

Doubtless other Darwin insect material reposes unstudied in other museums. A.F. Amsden thinks he has seen specimens in the Rippon collection in the National Museum of Wales. Certain groups of insects mentioned in the *Insect Notes* seem to be absent from the collections so far studied, such as aculeate Hymenoptera, dragonflies, some butterflies and among the beetles *Cicindela, Blaps* and *Meloe*. The important 'Benchuca' bug which may have been responsible for Darwin's illness (see *Insect Notes* entries 2913, 3423) has not been located. Evidence for odd specimens having been sent to individuals is cited in the *Insect Notes* (e.g. entry 3528, to G. W. Kirkaldy and W. E. Shuckard). The author would be pleased to have details of any future findings of Darwin material.

Darwin's Insect Notes

Barlow (1945: 265) describes Darwin's notebooks on his collections as follows:

> Two sets of three note-books each sewn together with string form the catalogue of the specimens he sent home. One set included 1529 specimens all in spirits of wine—fishes, insects, sea-weeds, fungi, spiders, plants, corallines, reptiles, etc., each listed with a number as it was put into the bottle—and therefore in chronological order. The second set of three notebooks has *printed numbers* on the covers; they are again a mixed bag of bird, beast and plant life.

The original notebooks are preserved at Down House and have been studied.

The *Insect Notes* (Figs 11, 12) referred to throughout this paper are preserved in the Entomology Library of the British Museum (Natural History) and are entitled *Copy of Darwin's notes in reference to Insects collected by him*. There is a note by G.R. Waterhouse 'Many specimens from this collection were presented by C.O. Waterhouse. Reg. No. 85.119. Some of them bear Nos 1–4 as per label':

1. Sydney 3528
2. Van Dieman's Land
3. Bahia [not 3 of this journal]
4. King George's Sound Australia

There is a further note:

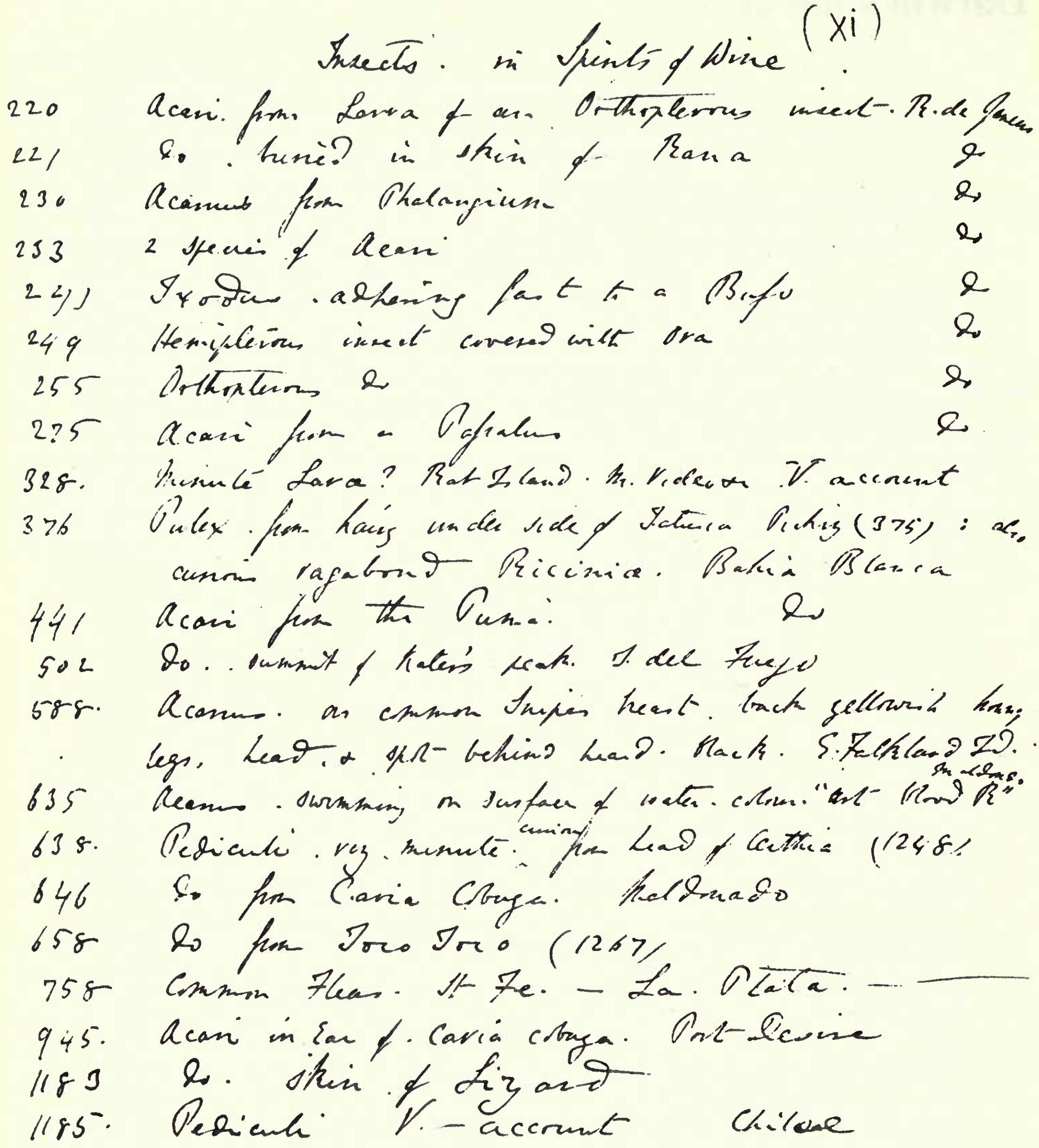
> This is the original MS of the "Insect Notes" sent to Waterhouse by Darwin. It is in the hand of Syms Covington, with additions and corrections by Darwin. It is analogous to the notes on Reptiles and Amphibians in the General Library of the B.M.(N.H.) and the notes on Plants, Birds, Fish, Mammals and Shells at the Cambridge University Library. Duncan M. Porter—16 April 1981.

Porter (1983) briefly draws attention to the *Insect Notes* and Sullaway (1982) dates them as probably being written during August 1836. Porter was misled into thinking that these notes were lost because of two entries in the bulky volume of *Insect Room Lists* (in BM): page 21, 'Darwin, C. List of numbers referring to insects collected by — during voyage of *Beagle* (List missing 5.4.27). Still missing Nov. 1976' and page 93 'Darwin, C., copy of Darwin's notes in reference to Insects collected by him'. Clearly it is the list of numbers that was, and still is, missing. Probably the *Insect Notes* had been wrongly inserted in the vacant spare at page 21 leaving the correct place in page 93 empty. The entry for the list of numbers is repeated in the *Insect Room Lists* (index) under B (for *Beagle*), again with the comment 'missing 5.4.27'.

In the Cambridge University Library is a short manuscript list in Darwin's hand *Insects in Spirits of Wine*. The full list of *Insects in Spirits of Wine* is illustrated (Fig. 10) and can be seen to consist largely of Acari (not insects). The insect entries from this list are given before the main *Insect Notes* with comments by the present author given in smaller type or in square brackets.

Insects in Spirits of Wine

249. Hemipterous insect covered with ova
No specimen found.


Insects. in Spirits of Wine (xi)

220 Acari. from Larva of an Orthopterous insect. R. de Janeiro
221 Do. buried in skin of Rana Do
230 Acarus from Phalangium Do
233 2 Species of Acari Do
241 Ixodes. adhering fast to a Bufo Do
249 Hemipterous insect covered with Ova Do
255 Orthopterous Do Do
275 Acari from a Passalus Do.
328. Minute Larva? Rat Island. M. Video. V. account
376 Pulex. from hairy under side of Tatusia Pichiy (375): also common vagabond Ricinia. Bahia Blanca
441 Acari from the Puma. Do
502 Do. summit of Kater's peak. T. del Fuego
588. Acarus. on common Snipes head. back yellowish hairy legs, head, & spot behind head. black. E. Falkland Isd.
635 Acarus. swimming on surface of water. colour "Art Blood R" Maldonado
638. Pediculi. very minute. curious from head of Certhia (1248)
646 Do from Cavia Cobaya. Maldonado
658 Do from Toco Toco (1267)
758 Common Fleas. St Fe. — La Plata. —
945. Acari in Ear of Cavia cobaya. Port Desire
1183 Do. skin of Lizard
1185. Pediculi V. account Chiloe

Fig. 10 The *Insects in Spirits of Wine* list in Darwin's holograph (by courtesy of the Syndics of Cambridge University Library).

255. Orthopterous Do.

No specimen found.

328. Minute Larva? Rat Island M. Video. V account [error for IV]

[On a separate sheet in Syms Covington's hand is the following:]

'1833 Insects June (IV) (610 or 328 [in margin])'

Copy of Darwin's notes in reference to Insects collected by him

Many specimens from this collection were presented by
C.O. Waterhouse. Reg. No. 85.119.
Some of them bear nos 1-4 as per label:—

1 Sydney 3528
2 Van Diemen's Land
3 Bahia.
4 King George's Sound
Australia.

This is the original MS of the "Insect Notes" sent to Waterhouse by Darwin. It is in the hand of Fanny Corrington, with additions and corrections by Darwin. It is analogous to the notes on Reptiles and Amphibians in the General Library of the BM(NH) and the notes on Plants, Birds, Fish, Mammals, and Shells at the Cambridge University Library. Duncan M. Porter - 16 April 1981.

Fig. 11 The cover of Darwin's *Insect Notes* showing the title in Darwin's holograph, the notes by G. R. Waterhouse and Duncan M. Porter and sample Darwin labels (by courtesy of the Trustees of the British Museum (Natural History)).

(1834.) December. Insects. Archipelago of Chonos.
Pselaphidæ and small Staphylinidæ, the most abundant insects.

2438. Fly. bred from the soft putrid kelp on the coast of Tres Montes. I never saw such immence numbers in clusters under side of stones.

2444....2455. Insects, from under stones at an
.....
2455 elevation of 2500 feet, bare Granite mountain. "Patch Cove" North part of Tres Montes.

2444. 244b. Curious Hemipterous insects; it may be remarked there are 3 species of Curculio The Elater in numbers were far most abundant; this is a good example of the Alpine Entomology of this part; for I assiduously turned up very many Stones; Libellula 2455 from base of mountain.

2462. Carab. Trechus. Guafo Island, in the Island forest

2463. Curculio. Do. Do.

2474. Coccinella from whale, Chonos Archipelago June 1st 1835.

2482. 2483. 2484. Coleoptera. from B. Blanca Patagonia.

2485. Acari (black) under stones and on putrid vegetable matter; on beach in immense numbers. Chonos. Archipelago

248b. Fly. (biting my flesh). Do

2497. Fly. on coast. Lowes Harbour. Do

2503. 250b. Coleoptera, in dense forest. Do

2507. Cicada. Do

2508. Carab. young. Do

2509. Diptera. Hymenoptera. Coleoptera, all the above insects, taken on borders of wood by sweeping. Lowes Harbour. Do

2520. Carabus, Centre of Chiloe, in forest, at head of water; all 3 under one log of wood.

Fig. 12 A typical page of the *Insect Notes* in Syms Covington's holograph with corrections and additions by Darwin. The paper is faintly ruled and watermarked 'J. Whatman 1834'. (By courtesy of the Trustees of the British Museum (Natural History)).

The following facts I have noticed at Monte Video and frequently in this place:— After a heavy thunder storm in a little pool in a courtyard which had only existed at most seven hours. I observed the surface strewed over with black specks: these were collected in groups, and precisely resembled pinches of gunpowder dropped in different parts on the surface of the puddle.—These specks are Insects of a dark leaden colour; the younger ones being red. —Viewed through a microscope, they were continually crawling over each other and the surface of the water; on the hand they possessed a slight jumping motion.—The numbers on each pool were immense: and every puddle possessed some of the pinches . . . What are they? and how produced in such countless myriads? We have seen their birth is effected in a short time, and their life, from the drying of the puddles can not be of a much longer duration.

My colleague Peter Lawrence concurs with me that these are Collembola and points out that one of the common names for Collembola, other than springtails, is gunpowder mites! No specimens have been found.

376. Pulex from hairy underside of Tatusia [=Dasypus] pichiy [Pichi] (375) curious vagabond Ricinia. Bahia Blanca.

No specimen found but F.G.A.M. Smit suggests that this Armadillo flea must have been *Malaeopsylla grossiventris* (Weyenbergh) or the less common *Phthiropsylla agenoris* (Rothschild). In the *Zoology* (Darwin, 1838: pt. 2, 92–3) two species of armadillo are discussed, *Dasypus hybridus auctt.* and *D. minutus auctt.* Of entomological interest is the description of the gut contents of the latter 'Coleoptera, larvae, roots of plants and even a snake of the genus Amphisbaena'.

638. Pediculi very minute curious [inserted] from head of Certhia (1248)

PHTHIRAPTERA: no specimen found. See entries 450 and 451 in the *Insect Notes*. In the *Ornithological Notes* No. 1248 refers to a third species of *'Certhia'* with bluish legs and entries 1250–1256 discuss the three species at length (see Barlow, 1963).

646. Do. from Cavia Cobuga Maldonado

PHTHIRAPTERA: no specimen found. The host mammal is the Aperea (Guinea pig) described in the *Zoology* (Darwin, 1839: pt. 2, 79) as *Cavia cobaia* Auct (?=*C. aperea*).

658. Do. from Toco Toco (1267)

PHTHIRAPTERA: in the Denny collection at Oxford is a louse on a card labelled 'Ctenomys braziliensis C. Darwin'. Darwin (*Journal,* 1845: 50; *Zoology,* 1838: pt. 2, 79) writes at some length on this rodent (the Tucutucu) which he found at Maldonado, kept several alive and preserved one in spirit from which this louse undoubtedly came.

758. Common Fleas. St Fe—La Plata

SIPHONAPTERA: no specimen found.

1185. Pediculi V.—account Chiloe

[Phthiraptera. A separate sheet in Syms Covington's hand '34. Pediculus. Chiloe. July' gives the following account:]

These disgusting vermin are very abundant in Chiloe: Several people have assured me that they are quite different from the Lice in England: They are said to be much larger and softer (hence will not crack under the nail) they infest the body even more than the head.—I should suppose they originally come from the Indians, whose race is so predominant with these Islanders.—I have little doubt this is the kind so common amongst the Patagonians of Gregory Bay; they are said to be there also very large.—An accurate examination of these specimens will at once decide the fact of identity or difference.—Mr Martial, a surgeon of an English Whaler assures me that the Lice of the Sandwich Islanders are blacker and different from these, or any lice, which he ever saw.—Several of the natives lived for months and cruized [sic] in the ship, no efforts could free their bodies from these parasites but he assures me as a certain fact, known to every one on board that their Lice if they strayed to the bodies of the English in 3 or 4 days died, and were found adhering to the linen (like Pediculi from Birds or quadrupeds?). So that the Sailors, who

constantly slept close to the Sandwichers never were *constantly* infested by their vermin.—If these facts were verified their interest would be great.—Man springing from one stock according his *varieties* having different species of parasites.

A version of this appears in the *Descent* (Darwin, 1871: vol. 1, 219). See also entry 2561. This appears also in the *Zoological Diary* (preserved at Cambridge) but with the final additional comment 'It leads one into many speculations' which has then been crossed out. While races of human lice have been described in the literature, not enough critical work has been done to substantiate the above comments. Work with head lice suggests some evidence of geographical and racial differentiation and first instar lice can change colour to blend with their surroundings. Many factors affect the size of a louse. Nevertheless the entry provides an insight into Darwin's thoughts on these matters.

Insect Notes

The *Insect Notes* are in Syms Covington's hand and are here set in larger type. Important (i.e. not letters in the middle of words) corrections and additions in Darwin's hand are given in **bold type** as near as possible to the place in which they occur in the *Insect Notes*. The present author's comments are set in small type beneath each entry and interpolations are given in the appropriate type size in square brackets. Lettered entries (as (a), (b), etc.) refer to comments by Covington or Darwin on the verso of the page in the notes but for convenience these are given here immediately beneath the main entry to which they refer. Headings from the top of each page of the notes are given (in italics) as they occur, including the page number, even when this splits an entry. The ditto entries are interpolated when it is not obvious to which part of the entry they appear to refer. Thus, as far as possible the actual layout of the notes is preserved. Geographical locations are indicated in full in square brackets, where this is not already clear, which should facilitate the practical use of the notes by specialists looking up a particular entry. For the same reason related entries are often cross referenced so that a specialist can quickly assess the data relating to a particular group or association in different parts of the notes. All scientific names and localities are fully indexed.

For brevity the location of Darwin material is indicated as follows:

BM = British Museum (Natural History) and where specimens have been located the year and museum accession number follows in brackets, e.g. BM (1885–119). Where locality labels are not specifically quoted it may be assumed that such labels are present. Labels with numbers linking the specimen to a specific entry in the notes are always quoted and where they are not the assignment to an entry has been interpolated and an explanation is usually given.

Cambridge = University Museum of Zoology, Cambridge.

Oxford = Hope Entomological Collections, University Museum, Oxford.

Dublin = National Museum of Ireland, Dublin.

Further details of the material in these repositories are given in the appropriate introductory sections and information on the few other repositories is cited in full in the entry concerned.

All references to Darwin material in the literature are cited by author and date (and pagination for original descriptions of genera and species) and given fully in the list of references. Repeated text references to Darwin's own works are made by a single familiar word from the title, e.g. *Journal* [*of Researches . . . during the voyage of H.M.S. Beagle . . .*] (Darwin, 1845), but for accuracy author and date are also cited to link them to the list of references. Pagination is cited when the item is not indexed in the *Journal*. A problem with Darwin's own works and in his citation of others has been which edition to cite. Clearly where Darwin's own indication is obvious this has been cited. However since some of the original works are rare or unpublished and relatively inaccessible, later, more readily available editions are included in the list of references where they are cross-referenced to the original source, or included in the annotations (e.g. *Anson,* 1748 and Darwin's *Journal,* 1845).

Where the insect order or family is not obvious from Darwin's entry this information is added in the present author's comments.

Since much of the material examined is located in collections where taxonomic research is in progress the author has been anxious to avoid unwittingly creating new combinations, new synonymy or type fixations. Therefore no indication of type status is made nor are type labels described unless this is essential to the interpolation of the particular entry. Similarly synonymy is only indicated where known to be published, at least in a catalogue.

The main purpose of the comments on the *Insect Notes* is to indicate the present location of Darwin's material and as far as possible to allocate it accurately to the entries in the *Insect Notes* and with the published work of Darwin and others. Future taxonomic work by specialists on each group can proceed from there.

At the top left hand corner of the first page of the *Insect Notes* is an entry (enclosed in a rectangular rule and in Darwin's hand **'N.B.—Letters (as (a) (b) refer to the back of the same page'** and in the right hand half of the top margin the word **'copy'.** Darwin's insertions to indicate page numbers appear mainly to refer to his unpublished *Zoological Diary* now preserved in the Cambridge University Library.

1832 *Insects* *1.*

2. Taken on board. Jan. 10th. Lat. 21°2′N

This probably refers to the specimen of *Nomophila noctuella* Denis & Schiffermueller (Lepidoptera, Pyralidae) which was recorded (as *Stenopteryx hybridalis* Hübner) by Walker (1859: 812) and is a known long-distance migrant from North Africa. No specimen has been found in the BM collection but the name label indicates its one time presence. See also under entry 5 below.

3. Acrydium. Owing to prevailing winds must have come from Cape Blanca, in Africa, 370 miles, distant Jan 13th. Vide. **Kirby** Vol. 1. Page. 224

In Darwin's *Diary* (Barlow, 1933: 22–3), entry for January 14th and 15th is the comment 'Some few birds have been hovering about the vessel and a large gay coloured cricket found an insecure resting place within reach of my fly-nippers. He must at the least have flown 370 miles from the coast of Africa'. No specimen has been found. The Kirby reference is clearly to Kirby and Spence's *Introduction to Entomology,* probably the third edition (1818) (this book was on board, see Burkhardt & Smith, 1985) which gives, on the page cited, a record of locusts flying on board a ship 200 miles from the Canary Islands. See also the *Journal* (Darwin 1845: 159).

4. Jan. 14th—10 miles at sea from St. Jago. [Cape Verde Islands]
Lost

Possibly a moth (see 5)

5. Jan. 12th Lat: 19°. insect

Three species of Lepidoptera described from St Jago and otherwise unaccounted for may refer here and possibly to entries 2 or 4. No specimens have been found in the BM but pinholes above the labels suggest that they have sometime been removed possibly for exhibition purposes: *Stenopteryx hybridalis* Hübner (Walker, 1859: 812) (= *Nomophila noctuella,* see also entry 2); *Asopia vulgalis* Guenée (Walker, 1959: 364) (= *Hedylepta indicata* F., Pyralidae); *Alata anticalis* Walker (1863: 108) (= *Etiella zinckenella* Treitschke, Pyralidae). The last two species are also recorded from the Cape Verde Islands by Viette (1958).

201, 202. Harpalidae Quail Island. St. Jago. [Cape Verde Islands]

No specimens found. Mateu (1964) records 58 species of Carabidae (Coleoptera) from the Cape Verde Islands.

203. Allied to Cryptocus. Do. [Cape Verde Islands]

COLEOPTERA, Tenebrionidae: *Oxycara cribratum* Wollaston, five specimens in the BM (1887–94, error for 1887–42); two specimens in the BM (1845–63). This species looks very like a *Crypticus* (Español & Lindberg, 1963, pl. 5). See also 204.

204. Do. These two insects are found in the greatest profusion under stones, all over St. Jago [Cape Verde Islands]

See entry 203, the habitat described fits perfectly.

205. Allied to Trechus. St. Jago [Cape Verde Islands]

COLEOPTERA, Carabidae: no specimen found. See entries 201, 202.

206. Bee, common, making nest in the rocks. Do. [Cape Verde Islands]

HYMENOPTERA: no specimen found.

208, 209. Hygrotus stream at St. Martin. Do. [Cape Verde Islands]

COLEOPTERA, Dytiscidae: *Hyphidrus maculatus* Babington (1842: 12) (*Hyphydrus*), two specimens in the BM (1863.44) (see Bistrom, 1982 for type designation, redescription and synonymy).

210. Corixa. Do. [Cape Verde Islands]

HEMIPTERA: this may refer to the specimen reported to be in Cambridge which bears an enigmatic white, printed, 41.

211. Lice from head of Gull (185) I observed they continued alive on bird many days after its death. St. Jago [Cape Verde Islands]

In Darwin's *Ornithological Notes* (see Barlow, 1963: 211) entry 185 reads 'These birds were shot in the neighbourhood of Porto Praya from 16th. of Jany. to 7 of Feby. Gull'. No specimens found.

212. Blatta. St. Domingo [Cape Verde Islands]

No specimen found. Chopard (1958) lists 10 species of Blattodea from the Cape Verde Islands.

213. 214. Gyrinus allied to Dineutes MacLeay **(?)Hab Do.** [Cape Verde Islands]
Lost

COLEOPTERA, Gyrinidae: *Dineutes aereus* Klug., one in Cambridge, St Domingo, St Jago Island, Cape Verde Is., with white printed label 214 and small green printed label 44 and Zimmerman det. label.

215. Gyrinus **Do. (?) Hab.** Do.

COLEOPTERA, Gyrinidae: *Dineutes subspinosus* Klug, one in Cambridge, St Domingo, St Jago Island, Cape Verde Is., with white printed label 215 and small green printed label 45 and Zimmerman det. label.

216. 217. 218. Hydrobius stream near St. Domingo [Cape Verde Islands]

COLEOPTERA, Hydrophilidae: *Sternolophus solieri* Castelnau, two in Cambridge, St Domingo, Cape Verde Is., with white printed label 217 and small green printed label 46 and Knisch det. label and one similarly labelled but with white printed label 218.

219. Hydrobius and Gerris. Hab. Do. [Cape Verde Islands]

No specimens found. The only member of the family Gerridae (Hemiptera) recorded from the Cape Verde Islands is *Limnogonus cereiventris* ssp. *leptocerus* Reuter. (see Lindberg, 1958: 127).

225. 226. 227. Ornithomyia (Lat.). Feronia (Leach)

(a) **(a)** [on verso of page] **225 on, from the Booby: frequent: St. Pauls. Feb. 16th.** [St Paul's Rocks]

DIPTERA, Hippoboscidae: *Olfersia aenescens* Thompson (det. A.M. Hutson), two females in BM (1845–81), St Pauls, Atlantic Ocean. These specimens were referred to by Bequaert (1957: 438) but he confused St Paul's Rocks with St Paul Island in the Indian Ocean which led him to comment on the rather high latitude (38°40'S) for this record.

Walker (1849: 1143) recorded this as *'Ornithomyia nigra* ? *Hippobosca nigra* ? Perty' from 'St. Pauls, Brazil' (also as his *O. intertropica* from Galapagos, a synonym, see 3229). Walker probably thought St Pauls was *in* Brazil and did not mean to indicate that there was a second specimen *from* Brazil, or he would have followed his usual practice of giving each locality a suffix letter.

Darwin (1845: 10) refers to these specimens as an *Olfersia* in the *Journal.*

228. Moth. St. Pauls. Feb. 16th.

LEPIDOPTERA. This is recorded in the *Journal* (Darwin, 1845: 10) as 'a small brown moth, belonging to a genus that feeds on feathers'. None of the species described by Walker (1854–66) fits this and the specimen is presumed lost. However, in a recent study of the ecology of St Paul's Rocks (Edwards & Lubbock, 1983; Edwards, 1985) record finding larvae of a small moth amongst the booby nesting material. The species has now been described by Robinson (1983) as *Erechthias darwini* (Tineidae) subfamily Erechthiinae) and since members of this subfamily lack the ability to digest keratin these authors suggest that the larvae of this moth probably feed not on feathers but on dry sea weed in the nesting material.

229. Staphylinus. Do. Bird's dung

COLEOPTERA, Staphylinidae: one *'Staphylinus'* from St Paul's Rocks is entered in the BM Accessions Register under 1845: 81, but the specimen has not been found. However there is a specimen of *Philonthus cliens* Eppelsheim (det. P.M. Hammond), St Paul's Rocks, 8.xi.1921, in guano near bird's nest G.H. Wilkins, No. 81, BM 1922–363, Shackleton-Rowett Expedition. This could be the same species as the *Quedius* mentioned in the *Journal* (Darwin, 1845: 10). If a true *Quedius* were involved Hammond is of the opinion that it is most likely to be the widespread *Q. mesomelinus* (Marsham). *Philonthus cliens* is also known from tropical Africa, Arabia and India (Edwards & Lubbock, 1983; Edwards, 1985). See also entry 708.

231. Oniscus Do.
Lost

Crustacea (woodlouse)—not an insect. See Edwards & Lubbock, (1983); Edwards, (1985).

232. 233. 234. Tics [sic; ? ticks]

Arachnida—not insects. See Edwards & Lubbock, (1983).

304. Termites. Fernando Noronha [between St Paul's Rocks and Brazilian Coast, 3°50′S, 32°25′W]

ISOPTERA: no Darwin termites have been found.

305. Part of their nest (vide Geological Notes)

ISOPTERA: no specimen found.

308. Rhynchites, seeds of the Tamarind, St. Jago, Feb. 7 [Cape Verde Islands]

COLEOPTERA, Curculionidae: the tamarind weevil is *Sitophilus linearis* (Herbst) but no specimen has been located in the BM collections. R.T. Thompson comments that it is strange that Darwin should refer to this weevil as a *Rhynchites*.

325. Numerous single Coleoptera. Hemiptera from Bahia **Brazil.** [Written obliquely across this entry is 'Green 2000' and 'Yellow 300' [sic, error for 3000], clearly referring to the colour coding of labels. See description of labelling of specimens in the section on the British Museum collections.]

COLEOPTERA, Anthicidae: *Acanthinus striatopunctatus* Laporte, one in the BM (1887–42), Bahia.
Buprestidae: *Callimicra darwini* Hespenheid (1980: 15).
Cerambycidae: *Megacera parvula* Newman (1840: 12), one in the BM (1863–44), Bahia.
Chrysomelidae: *Crepidodera bahiensis* Bryant (1942: 103), one in the BM (1885–119).
Coccinellidae: *Diomus brasiliensis* Brèthes (1924: 162), one in the BM (1885–119), Bahia. *Diomus genialis* Brèthes (1924: 166), one in the BM (1885–119), Bahia.
I place these here because they are 'single Coleoptera'; some may refer to 348 or 349, or 3858–3864.

1832 *Insects* *Bahia* *2.*

348. 349. Numerous Coleoptera from Bahia. Part of a couple of hours collecting.

COLEOPTERA, Chrysomelidae: *Ctenispa darwini* Maulik, two in the BM (1887–42 & 1885–119), Bahia, which I place here rather than under entry 325 as there are two specimens.

Coccinellidae: *Chnoodes terminalis* Mulsant, *Hyperaspis festiva* Mulsant and *Solanophila rufoventris* Mulsant are all recorded from Darwin material by Brèthes (1925*b*). Also some unidentified coccinellids (BM 1887–94) [an error for 1887–42] and (1858–60) Bahia, may refer here.

351. Onthophilus perceiving the smell of human dung with singular quickness. **Do.**

COLEOPTERA, Scarabaeidae; *Ganthidium ruficolle* Germar, one in the BM (1887–42), Bahia, with printed label 351. See also entry 354.

352. Elater nortelucus [sic ? noctilucus] vide **p.** 25

COLEOPTERA, Elateridae: named in the *Journal* (Darwin 1845: 31) as *Pyrophorus luminosus* Illiger, 'seems the most common luminous insect' and its jumping habits are discussed with a reference to Kirby's *Entomology,* vol. ii, p. 317 (Kirby & Spence, 1818: 317). There is a very similar discussion in the *Zoological Diary* to which the page citation refers. No specimen has been found.

353. Cimex, drove its proboscis deeply into my finger. Do.

HEMIPTERA, Coreidae: *Vilga westwoodi* (Kolenati). Dolling (1977) records a Darwin specimen, female, Bahia, Brazil, ii or iii, 1832 in the British Museum. Though at first somewhat unlikely this is the only bug I can allocate to this entry. Most plant bugs have piercing mouthparts and several genera are recorded as piercing human skin. The term *'Cimex'* was loosely applied in Darwin's day and it may well be that this is the specimen Darwin alludes to. For the true skin piercing Triatomid bugs see entries 2913 & 3423 and for other 'Cimex' see entries 431 & 874.

354. Geotrupes. Bahia. Feb. 7.

COLEOPTERA, Scarabaeidae: *Trichillum heydeni* Harold, one in BM (1885–119), Bahia. *Ataenius* sp., one in BM (1887–42). These and 351 are the only Scarabaeids I can find from Bahia.

355. Acarus from Do.

Arachnida. Acari—not an insect.

356. Louse from Vespertilio **(in spirits)**

There are no lice on bats. From the possible hosts it was probably a bat fly (Streblidae or Nycteribiidae) but no specimens have been found. Possible hosts are two bats described in the *Zoology* (Darwin, 1838: pt. 2, 3–5) *Phyllostoma grayi* Waterhouse (G.R.) from Pernambuco (5° north of Bahia) and *Phyllostoma perspicillatum* Geoffroy from Bahia (lat. 13°S). These two names are synonymized in modern literature under *Carollia perspicillatum.*

357. 358. Specimens from an enormous migration of Ants. vide page 28.

HYMENOPTERA, Formicidae: no specimens found, but the entry in the *Journal* (Darwin, 1845: 35) indicates that they were 'driver ants' (subfamily Dorylinae), probably of the genus *Eciton.* The page reference is to the *Zoological Diary* from which the *Journal* account is taken. 'Spiders, Blatta and other insects' were flushed by the ants.

359. 360, 361, 362, 363, 364. A very common species of Ant; the winged ones were flying in numbers from the nest.

HYMENOPTERA, Formicidae: no specimens found.

365. 366. Feb. Hymenopterous insects

No specimens found.

367. Nest of Do. when large and complete is globular.

No specimen found.

368. Curious habitation of some insect on a root in a sand bank. May 1st. Have found out it belongs to some **Hymenopterous insects.**

No specimen found. This could belong to the wasp family Eumenidae. See also entries 449, 536, 537.

386. Mantis: caught at Bahia on the 17th of March a mantis and as I thought killed it, by holding for several minutes under water that was boiling, the head and thorax (to the insertion of the

wings) and anterior legs. These parts shortly were completely dead, and became dry and brittle, but eight days afterwards on the 25th the abdomen and hinder legs continued to possess a slight degree of irritability. This appears a well marked instance of the tenacity [continued]

1832 *Insects* *3.*

[continued] of life among insects.

MANTODEA: no specimen found. For further Bahia entries see 3858.

387. Butterfly very common, on main island of Abrolhos March 29th

LEPIDOPTERA: no specimens found.

388. Helops Do.

COLEOPTERA, Tenebrionidae: no specimen found.

389. **Ornithomya** nearly all the birds in **this** island were Totipalmes; yet this insect, I think differs from those taken at St. Pauls from the bodies of a Sula. Abrolhos. March 29th.

DIPTERA, Hippoboscidae: the only record of a Hippoboscid I have been able to trace from these islands is that cited in Bequaert (1957: 43) of *Olfersia spinifera* (Leach) '3 miles off Abrolhos Is., coast of Bahia, 18°S (Albatros Exped.—Recorded by Howard, 1890)'. This species is normally associated with frigate birds. There are no birds recorded from Albrolhos by Darwin in the *Ornithological notes* (Barlow, 1963) nor in the *Zoology* (Darwin, 1841), where Darwin's only mention of the frigate bird is on Galapagos and Ascension (op. cit., pt. 3, p. 146). However in his *Diary* (Barlow, 1933: 46) he says 'Two parties landed directly after breakfast. I commenced an attack on the rocks & insects & plants: the rest began a more bloody one on the birds. Of these an enormous number were slaughtered by sticks, stones & guns; indeed there were more killed than the boats could hold'. Fitzroy (1839: 66) in his account of Abrolhos described what is without doubt a frigate bird 'A large black bird, with a pouch like that of a Pelican, but of a bright red colour, was very remarkable as it hovered, or darted among the bright verdure, and at a distance looked handsome; but when seen close it at once descended to the level of a carrion-eating cormorant or buzzard.' Darwin's reference to Totipalmes is an old group name for pelicans, cormorants and frigate birds.

Whilst studying the photographs of Darwin's insects *in situ* in Dublin I noticed a printed label 389 and pinned with it a label 'Hippobosca' suggesting that a specimen had been removed sometime but was not among those sent to me. Dr James O'Connor made a diligent search and found a Hippoboscid bearing a Haliday collection printed label which almost certainly refers here as it has proved to be *Olfersia spinifera* (det. A.M. Hutson) and was probably moved from Haliday box 566 by E.O. Mahoney, the ectoparasite specialist.

Rio de Janeiro [inserted under a line ruled across the page]

414. Coleoptera from the neighbourhood of the Rio Macae. April.

No specimen found. See entry 460.

415. Coleoptera. Rio de Janeiro. April.

Carabidae: Bembidiini subtribe Tachyina, three unidentified specimens in the BM (1887–42), Rio, one numbered 415.

Melyridae: *Astylus lineatus* F. (Champion, 1918c) may refer here.

Scaphidiidae: *Scaphisoma elongatum* Waterhouse, F.H. (1879: 533). One in the BM (1879–34), Rio and numbered 415.

Scarabaeidae: *Aphengium sordidum* Harold. Two in the BM (1887–42), Rio, numbered 415.
Ateuchus squalidum F. Four in the BM (1887–42 and 1885–119).

The following Scarabaeidae are referred here although unnumbered:
Canthidium trinodosum Boheman. Two in the BM (1887–42), Rio.
Onthophagus haematopus Harold. One in the BM (1887–42), Rio.
Saprosites aspericeps Harold. One in the BM (1887–42), Rio.
For other Scarabaeidae from Rio see entries 457, 458 & 568.

416. 417. Cicindela from the woods, Locégo. Do. [Rio de Janeiro]

COLEOPTERA, Carabidae, Cicindelinae: no tiger beetles have been found. See also entries 416–7, 486, 504–5, 552, 1712, 2841, & 3420.

418. Carabidae, from Rio Frade. Do. [Rio de Janeiro]

COLEOPTERA, Carabidae, Bembidiini: *Trichiolopha braziliensis* Waterhouse, one in the BM (1887–42), Rio, so labelled presumably refers to *braziliensis* Sahlberg (*Tachys*). There are also three unidentified Harpalinae in the BM (1887–42) that could refer here.

420. 421. Colymbetes. small puddles. Locégo. Do. [Rio de Janeiro]

COLEOPTERA, Dytiscidae: *Colymbetes calidus* Babington (1842: 9), two in the BM, Rio [now in *Copelatus*]. *C. elegans* Babington (1842: 11), one in the BM (1863–44), Rio [now = *Copelatus posticatus* F.].

422. 423. Diptera. Rio Macãe. Do. [Rio de Janeiro]

Tabanidae: *Chrysops varians* Wiedemann. One in Dublin with printed label 422 (det. J. E. Chainey).

424. 425. 426. Blattae under bark of rotten tree at Locégo. Do. [Rio de Janeiro]

BLATTODEA: no specimens found. See entry 647.

427. Blaps. Emitted a musky, together with the usual disagreeable smell, stained my fingers for some days of a purplish red colour. Locégo. April. [Rio de Janeiro]

COLEOPTERA, Tenebrionidae: no specimen found.

428. Blaps. ——— Do. [Rio de Janeiro]

COLEOPTERA, Tenebrionidae: no specimens found.

429. Do. ——— Do. [Rio de Janeiro]

COLEOPTERA, Tenebrionidae: no specimens found.

430. Erotylus. Locégo. ——— Do. [Rio de Janeiro]

COLEOPTERA, Erotylidae: *Morphoides immaculatus* Lacordaire, one in the BM (1887–42).

431. Cimex. Rio de Janeiro

HEMIPTERA: no specimen found.

432. 433. Gyrini. Campos Novos R. de Janeiro. Do.

COLEOPTERA, Gyrinidae: *Gyrinus ovatus* Aubé, two specimens in Cambridge with above data; one has a printed white label 432 plus a small green label 50, the other has a small green label 22.

Other Darwin gyrinids in Cambridge may refer here: *Gyrinus parcus* Say. One with green label 39; *Macrogyrus ellipticus* Brullé. Nine with green label 33.

434. Diptera. Mandetiba — Do. Do. [Rio de Janeiro]

Stratiomyidae: *Chordonota ? inermis* Wiedemann (det. J.F. Chainey), one in Dublin labelled 'Clitellaria atrata' and numbered 434.

438. Coleoptera. Botafogo May [Rio de Janeiro]

Carabidae, Bembidiini, subtribe Tachyina: two in the BM (1887–42), Rio, numbered 438.

Hydrophilidae: *Enochrus atomus* d'Orchymont, one in the BM (1858–60), Rio, is numbered 438 and two others (1885–119, 1858–60) are unnumbered.

Lampyridae: *Apisoma hesperum L.*, two in the BM (1887–42 and 1858–60), one numbered 438.

Limnichidae: *Phalacrichus atomarius* Sharp, several specimens in the BM (1885–119 and 1858–60) are numbered 438.

See also entry 460.

439. Diptera—May—Do. Causing intolerable itching [Rio de Janeiro]

Muscidae: *Musca domestica* L. (det. A.C. Pont). One in Dublin numbered 439.

While the House-Fly can function as a sweat-fly in the tropics there appears to be nothing in the literature recording a reaction of this sort.

440. Lampyris. vide **P** 41 May [Rio de Janeiro]

COLEOPTERA, Lampyridae (Glow worms and fire flies): in the *Journal* (Darwin, 1845: 30) identified [by Waterhouse] as mostly 'Lampyris occidentalis' (= *Photuris fulvipes* Blanchard). No Darwin specimens found. The page reference is to the *Zoological Diary* where observations on the light flashes, etc. are recorded on which the *Journal* (p. 30) account is based; also mentioned in the *Descent* (Darwin, 1871: vol. 1, 345).

See also entries 438, 551.

441. Do. Do. [Rio de Janeiro]

No specimen found.

442. Females of this insect and Larva Do. [Rio de Janeiro]

No specimens found.

443. Do. luminous vide **P** 42 Do. [Rio de Janeiro]

No specimens found. The page reference is to the *Zoological Diary* entry, see 440.

444. Lopha (?) taken in great numbers on sand walk. [continued]

1832 *Insects* *4.*

[continued] at night [Rio de Janeiro]

COLEOPTERA, Carabidae, Bembidiini, subtribe Tachyina: one unidentified in the BM (1887–42), Rio, with white printed label 444.

445. Coleoptera — — Do. [Rio de Janeiro]

Carabidae: Harpalinae, four unidentified in the BM (1887–42), Rio, each labelled 445.

Carabidae, Bembidiini, subtribe Tachyina: fourteen unidentified in the BM (1878–43), Rio, only two numbered 445 but obviously the same series.

Curculionidae: *Endalus* sp. (det. R.T. Thompson), two in the BM (1887–42), Rio, one numbered 445.

See also entry 460.

446. Fresh water Coleoptera — — Do. [Rio de Janeiro]

I place here all those Hydrophilidae in Cambridge labelled 'South America' and not otherwise accounted for (see entries 448, 1505, 3528 and 3635) and those Dytiscidae described from Rio and unplaced elsewhere.

Hydrophilidae: *Berosus sticticus* Boheman ab. *aberrans* Knisch. One in Cambridge with green number 16, a six mount with three specimens present with green number 15, one numbered green 7, one numbered green 23 and a double mount numbered green 31. *B. sticticus* ab. *confinis* Knisch. One double mount numbered green 33, an eleven mount (9 present) numbered green 25, a nine mount (6 present) numbered green 24, a six mount (3 present) numbered green 15 and a five mount (4 present) numbered green 3. *B. reticulatus* Knisch. Ten numbered 17. *Derallus rudis* Sharp. A four mount (2 present) numbered green 13; one numbered 12. *Helobata striata* Brullé. Two numbered 20. *Neohydrophilus politus* Castelnau. One numbered 49. *Paracymus debilis* Sharp. Three numbered 11. *P. armatus* Sharp. Five numbered 8, 10, 27, 28, 32. *Tropisternus collaris* F. Ten, one of which is numbered 4. *T. lateralis* F. Three without numbers. *T. setiger* Germar. Eleven, two numbered 37, 38. *T. laevis* Sturm. Five, two numbered 1, 2. *T. nitidulus* Knisch. One numbered 51.

Most of the above have the determination labels of A. Knisch, 1922 and the numbers cited are all on green labels (see introductory section on Cambridge material).

Dytiscidae: *Hydaticus havaniensis* Laporte (Babington, 1842: 11). *Hydroporus obscurus* Babington (1842: 14) is synonymous with *H. nitidus* Babington (1842: 14) and now placed in *Bidessus* (Blackwelder, 1944). *Hydroporomorpha parallela* Babington (1842: 14, 15). Two in the BM (1863–44) (= *Celina*). See Fig. 12. *Anodochilus maculatus* Babington (1842: 15, 16). One specimen without accession number. See Fig. 13. *Desmopachria nitida* Babington (1842: 16, 17). Two in the BM (1863–44). See Fig. 13.

See also entries 530, 531.

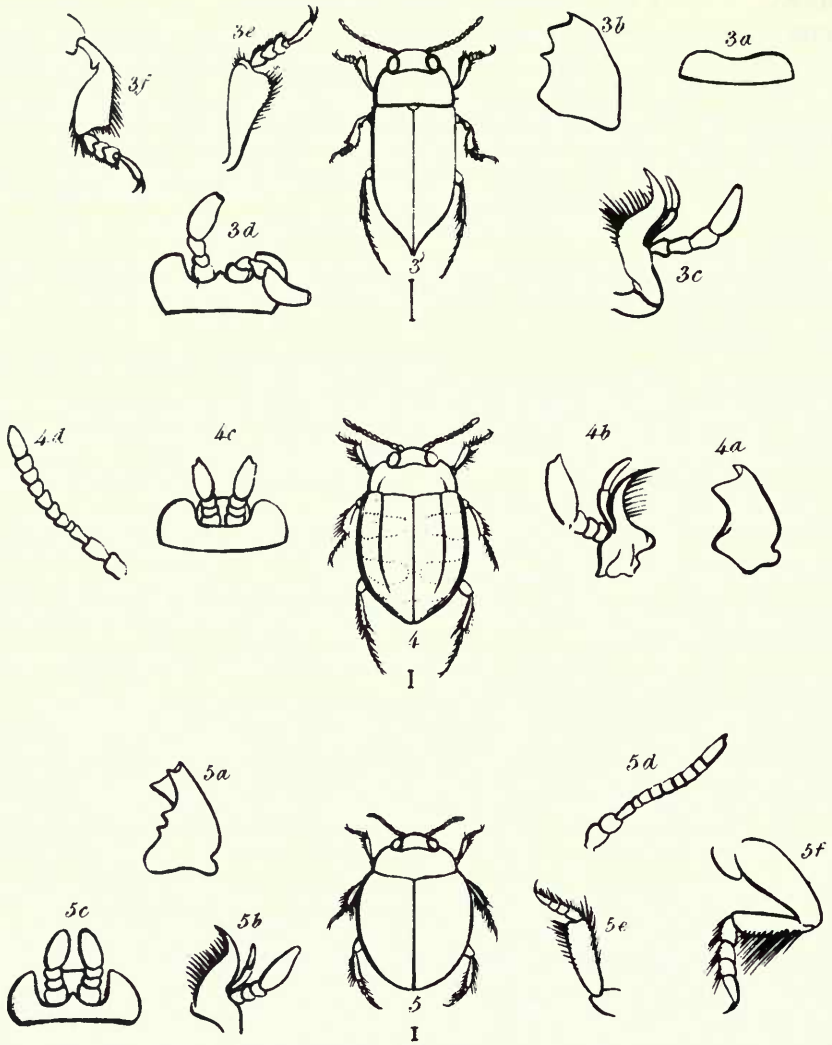


Fig. 13 Part of the plate from Babington's paper 'Dytiscidae Darwinianae' depicting new water-beetles from Rio de Janeiro: 3, *Hydroporomorpha parallela*; 4, *Anodochilus maculatus*; 5, *Desmopachria nitida* (see *Insect Notes* 446) (by courtesy of the Royal Entomological Society of London, from their *Transactions*, 1842).

447. Hydrobius inhabiting, **strongly brackish** lagoon, (road to Botanical Garden) R. de Janeiro **Lost** May.

COLEOPTERA, Hydrophilidae.

448. Hydrophilus, together with the last Do. Do.

COLEOPTERA, Hydrophilidae: in the *Journal* Darwin (1845: 22) says 'I also frequently encountered in the lagoon near the Botanic Garden, where the water is only a little less salt than the sea, a species of *Hydrophilus,* very similar to a water beetle common in the ditches of England.' The last comment would fit several genera of Hydrophilidae, but the 'Hydrophilus' could refer to a specimen of *Hydrous ater* Olivier (A.G.) present in Cambridge.

See entry 1305 also for this genus and entry 446 for other freshwater beetles.

449. Ants found in (I do not know whether making) a nest like (368) found at Bahia. Ants do not make it. I found one somewhat similar, filled with half dead spiders, evidently collected by some Hymenopterous insect; It is the case; vide No 536. Rio de Janeiro. May.

The nests probably belong to wasps of the family Sphecidae but no specimens have been found (of ants or wasps). Further comment in the *Journal* (Darwin 1845: 35) includes reference to nests with dead caterpillars as well and probably involves several genera or families of wasps. See also entries 368, 536.

450. Ricinus from a pretty, but common yellow Certhia Do. Do.

PHTHIRAPTERA: no specimen found.

Darwin used *Certhia* loosely and Dr D.W. Snow (in litt.) is of the opinion that the host was probably the very common Bananaquit (*Coereba flaveola* L.) which has the right kind of bill and is yellow underneath. About 40 races of this species are recognized. See also entry 638 in spirits of wine list.

451. Ricinus Do. Do. (another species) Do. Do.

PHTHIRAPTERA: see entry 450.

453. Insect, colour changed by boiling water from grass green into a yellow Do. Do.
Lost

454. Do. Do. Do. Do.
Lost

456. Lampyris, different species from (440); shines nearly as brightly; uncommon; caught in web of small Epeira.

COLEOPTERA. Lampyridae: no specimen found. See White (1841) for the spider.

457. 458. Geotrupes; collect human dung into balls, and push it along with hind legs. Do.

COLEOPTERA, Scarabaeidae: *Goniocanthon smaragdulus* F., two in the BM (1887–42) with printed labels 457, 458.

459. Acarus from a Passalus in very moist rotten wood Do. Do.
Lost

Arachnida—not an insect

460. Curculio nearly covered with Acari liropodes Lat.[a] in very moist rotten wood. Do. Do.

COLEOPTERA, Curculionidae; the only Rio weevils which remain unassigned elsewhere are three Beridinae, BM (1887–42), probably representing three different genera (*teste* R. T. Thompson). However none bear mites and do not fit well here in habits and may therefore be referable to one of the general Coleoptera entries (414, 415, 438, 445, 478, etc.).

462. Hymenoptera the most common species, in great numbers Do. Do.

Chalcididae: *Smiera pielus* Walker (1838: 470), now placed in *Spilochalcis,* a genus with many species known to be gregarious parasites of Lepidoptera or Diptera.

476. 477. Curculio with Acari Do. Do.

See comments under entry 460.

478. Numerous Coleoptera Do. Do.

See comments under entry 460.

479. Beetle exceedingly numerous on sandy plain near the sea Do. Do.

COLEOPTERA, Oedomeridae: four unidentified specimens in the BM, one (1887–42), with printed number 479; the others (2, 1887–94 [error for 1887–42], 1, 1885–119) without numbers.

480. Beetle. Sandy plain. R. de Janeiro. May.

COLEOPTERA: see entry 479.

482. Hymenop: was conveying off a large Mygalus; they seem to **prey on &** kill large spiders. N.B. The only two Mygali, I have yet caught were in the jaws of this insect. Do. Do.

No specimen found. Possibly Pompilidae; my colleague M. C. Day suggests *Pepsis* or *Entypus*.

483. Bee, the most frequent sort Do. Do.

HYMENOPTERA: no specimen found.

484. Diptera, vibrates its wings as its congeners do in England. Do. Do.

Otitidae: ?*Euxesta* sp. (det. B. H. Cogan). There are three specimens (standing together) in Dublin, one of which bears a printed number 484.

485. Diptera, runs swiftly **laterally** Do. Do.

No specimen found.

486. Cicindela, woods on Caucovado [Mt. Corcovado, Rio de Janeiro] Do. Do.

COLEOPTERA, Carabidae, Cicindelinae: no specimen found, see entry 416 note.

487. Capsida, Caucovado [Mt. Corcovado], as the Capsida was found on the larva, they most probably belong to it. The larva were curiously placed in two groups heads to heads round a stick. They adhered by the remains of a capsule and each group was thickly imbricate.

HEMIPTERA—Heteroptera: no specimen found.

488. 489. 490. Larva of Do. Do. Do. Do.

HEMIPTERA—Heteroptera: no specimen found.

491. Coleoptera Do. Do.

Tenebrionidae. *Crypticus platensis* Fairmaire, one in the BM (1885–119), 'Rio' (see also 677, 1321) and one *Crypticus* sp. (BM. 1887–42), 'Rio', may refer here.

492. Cerambyx, with Acari, by the friction of the thorax it made a most extraordinary noise Do. Do.

COLEOPTERA, Cerambycidae: no specimen found.

493. Diptera, very summit of Caucovado [Mt. Corcovado, Rio de Janeiro] Do.

Tabanidae: *Scaptia ?seminigra* Ricardo, one specimen in Dublin with the printed number 493 and a handwritten capital B. I have seen no explanation of the B (in Darwin's hand, see Fig. 19) label, which may merely be connected with initial sorting of material by Darwin.

494. Diptera. hovered over sandbank, like a Bombylius Do. Do.

Bombyliidae: *Anthrax ?reperta* Walker (det. J. E. Chainey), one in Dublin with printed number 494.

501. Diptera. This is the insect called sand fly, and notorious even **in** Anson's voyage, from the painful bite, which causes swelling, that lasts for many days; in centre a circular red mark is visible; the pain is half itching and half aching. Do. Do.

Simuliidae: one specimen in Dublin with printed number 501. My colleague Dr A. J. Shelley has dissected this very poor specimen and identified it as *Simulium ?pertinax* (Kollar). *S. pertinax* is the most common man-biter in that area and is considered in detail by Andretta & Andretta (1950). Simuliidae are referred to as black flies in modern parlance and the name sand fly is nowadays restricted to the biting subfamily Phlebotominae of the family Psychodidae.

Anson's (1748) 'sandfly' encountered at St Catherine's, Brazil is recorded as follows: '... at sunset, when the muscatos retired they were succeeded by an infinity of sand-flies, which, though scarce discernible to the naked eye, make a mighty buzzing, and, wherever they bite, raise a small bump in the flesh which is soon attended with a painful itching, like that arising from the bite of an English harvest bug.'

The size is suggestive of a ceratopogonid midge of the genus *Culicoides* but the buzzing not—unless they were in very large numbers—perhaps he heard the last of the mosquitoes but was bitten by the first of the *Culicoides*. An American name for these tiny midges is appropriately 'no see ums'. John Boorman of the Animal Virus Research Institute suggests that Anson's midge may be *Culicoides paraensis* Goeldi which is the principal man-biting *Culicoides* in that area of Brazil, though the buzzing remains a mystery.

502. Xenos (??) Sandy Plain; sweeping; Do. Do.

COLEOPTERA, Stylopoidea (=Strepsiptera or 'stylops'): no specimen found.

503. Libellula, I observed this insect as it proceeded along the edge of a pool, strike [continued]

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[continued] the water violently with its curved tail, so as to throw some **drops** several inches on the bank; is this connected with **oviposition.**

ODONATA. Libellula was used rather indiscriminately and simply meant dragonfly in Darwin's day. The oviposition habits described suggest one of the larger Anisoptera but no specimen has been found.

504. 505. Cicindela, habits precisely the same as Cicin: hybrida Do. Do.

COLEOPTERA, Carabidae, Cicindelinae: no tiger beetles have been found; the species referred to is British.

506. 507. The larvae or female of Lampyrus v p. 42 Do.

COLEOPTERA: no specimen found. The page reference is to the *Zoological Diary*. See entries 438, 440–443, 551 for further comments.

508. Do; another species: all luminous Do.

No specimen found. See entries 438, 440–443, 551.

509. 510. 511. 512. 513. Coleoptera from the very summit of Caucovado [Mt. Corcovado] **Lost Lost Lost Lost** Do. Do.

No specimen found.

514. Coleoptera habits Do. Do. Do.

No specimen found.

515. 516. Hemiptera habits Do. Do. Do.

No specimen found.

517. 518. 519. 520. Diptera habits Do. Do. Do.

Bibionidae: one numbered 517 in Dublin.
Lauxaniidae: two with printed numbers 518, 520 in Dublin.

529. Coleoptera. living in the water or caught in my **water** net. Do. Do.

Scarabaeidae: *Ataenius picinus* Harold, one in BM (1885–119), Rio, numbered 529. *Ataenius* sp., one specimen in BM labelled ex series *tenebricosa* and six more numbered 529.

530. 531. Insects New genus, habits the same as Elmis, living under stones in running water; differs remarkably from that genus in shape of body, and palpi (and in spear to sternum?) Do. Do.

COLEOPTERA, Psephenidae: *Psephenus darwinii* Waterhouse, C.O. (1880: 563) one in BM, 'Rio de Janeiro', with printed number 530. Waterhouse later (1880–82, plate 26) illustrated this species in colour.

532. 533. Diptera plague the horses terribly Do.

Muscidae: *Stomoxys calcitrans* (L.) (det. A. C. Pont) (the Stable Fly), two specimens numbered 532, 533 in Dublin.

534. Hymenoptera. Pompilus (?) This family runs very quickly amongst the herbage, continually at the same time vibrating its wings. Excavates **cylindrical** holes in a trodden path. Do.

No specimen found. Could refer to Pompilidae or Sphecidae.

535. Hymenoptera caught killing spiders. v [p.] 39. Do.

No specimen found. Referred to as ? Pepsis in the *Journal* (1845: 34–5) where full observations are recorded. My colleague M. C. Day tells me that this could be a *Trypoxylon* (Sphecidae). The page reference is to the *Zoological Diary* where the observations are recorded on which the *Journal* account is based.

Some of Darwin's spiders were reported on by White (1841, 1849) and there is unidentified material both dry and in spirit in the Zoology Department at the BM.

536. Hymenoptera. I observed this insect carrying a large green caterpillar, and watched it to the cell (537): when with its mandibles, by degrees it forced the caterpillar inside. The rim of the cell is broken; this is the same as (368) found at Bahia.

No specimen found. My colleague Colin Vardy suggests a wasp of the family Eumenidae, possibly *Zeta* sp. See entries 365–8, 449, 537.

537. Cell made by the latter for its larva (May).

No specimen found.

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538. **Orthopterous insect** with Acari Do. Do.

No specimen found.

550. Leiodes from Hymenophallus vide [p.] 43.

COLEOPTERA, Nitidulidae: one unidentified specimen in BM (1885–119), Rio, with printed number 550 (*?Oxycnemis* det. R. W. Aldridge).

Leiodes is not a Nitidulid but is now placed in Leiodidae.

In the *Journal* Darwin (1845: 33) records that a *Strongylus* [Nitidulidae], attracted by the odour, alighted on the fungus as he carried it in his hand. In a postscript to a letter to Henslow 16 June 1832 (Barlow 1967: 57) he says:

'I found the other day a beautiful *Hymenophallus* (but I broke it to pieces in bringing it home) and with it an accompanying Leiodes.—almost perfect copy of the Barmouth specimen.—'

The Barmouth specimen referred to must be one of the 'Nitidula' species referred to by Stephens (1827) and discussed in the section on British insects, but is larger.

The fungi collected on the *Beagle* voyage were described by Berkeley (1839, 1842) but do not include a *Hymenophallus* so presumably there was not enough of the specimen left to warrant preservation. The page reference is to the *Zoological Diary* where Darwin says of the fungus 'resembling impudicus' [*Phallus*] with other descriptive details.

551. Beetle from the dense forest Do. Do.

Lampyridae: *Ethra maledicta* Olivier. (=*lateralis* Laporte), one in BM (1887–42) with printed number 551.

552. Cicindela from the forest Do. June.

COLEOPTERA, Carabidae: Cicindelinae: no specimen found.

553. Forficula from Do. (forceps curious). Do.

DERMAPTERA: *Sphingolabis perplexa* Kirby (1891: 529), one in BM (1885–100), Rio (now placed in *Kleter*).

554. 555: Gyrini. rapid brook in the forest; emit an odour like G. natator Do. Do.

COLEOPTERA, Gyrinidae: *Enhydrus sulcatus* Wiedemann, two specimens in Cambridge with this data and printed white labels 554 and 555. One has a small green printed label 48 and there are three other specimens with printed Museum labels. The species referred to in the note is British.

564. Larva of Lampyrus, highly luminous Do.

COLEOPTERA, Lampyridae: no specimen found. See entries 440–443 and 506–8.

565. Aphodius the only species I have yet seen in Brazil Do. Do.
Lost

COLEOPTERA, Scarabaeidae: no specimen found.

566. Agrion from the forest; common. Do. Do.

ODONATA, Zygoptera: no specimen found.

567. Frigania. Do. Do. Do.

TRICHOPTERA[Phryganea]: no specimen found.

568. Geotrupes Do. Do. Do.

COLEOPTERA, Scarabaeidae: *Chalcocopris hesperus* Olivier, one in BM (1887–42), Rio, with printed label 568.

569. Diptera common Do Do. Do.

Micropezidae: two specimens in Dublin with printed numbers 569.

570. Dipter[a] called sand fly, caught whilst inflicting its painful bite on the knuckle, its favourite place Do. Do.

?Simuliidae: no specimen found but this sounds like a *Simulium* (see entry 501).

571. Curculio. covered with yellow down, when first taken Do. Do.

COLEOPTERA, Curculionidae: no specimen found but my colleague R. T. Thompson suggests this was probably a *Lixus* or allied weevil genus.

572. Onthophilus. Inhabits the forest in plenty and does not, I suppose, feed on dung.

COLEOPTERA: *Onthophilus* is a Histerid but see entry 351 where a numbered Scarabaeid is referred to this genus. One of the unnumbered Scarabaeids referred to 415 may therefore refer here.

573. Gyrinus, brooks in the forest. Do. Do.

COLEOPTERA, Gyrinidae: *Gyretes glabratus* Règimbart, one in Cambridge labelled with above data and with printed white label 573 (no small green label) and Zimmerman det. label.

574. Coleoptera. Do. Do.

See entry 618.

580. Tricoptera (Stephens) allied to in Fungus in forest, the smallest beetle I have seen in **the** tropics. Do. Do.

COLEOPTERA, Ptiliidae: *Trichopteryx darwinii* Matthews (1889: 193), one in BM (no accession number) labelled 'In fungus in the forest Rio de Janeiro' and a printed number 580. See eponyms.

592. Bee (Social) Burrows its nest in the ground in the forest, projecting tube, with folding edges, leading to its nest. Do. Do.

HYMENOPTERA, Apidae: no specimen found but my colleague G. R. Else suggests possibly a genus of the tribe Meliponini such as *Melipona* or *Trigona*.

593. Lampyrus [sic], abdominal rings shining. Do.

COLEOPTERA, Lampyridae: no specimen found. See entries 440–443, 506–8.

594. Curculio (diamond) feigns death to a remarkable degree; is this to compensate for greater danger brought on by brilliancy of colours. Do. Do.

COLEOPTERA, Curculionidae: no specimen found but my colleague R. T. Thompson has suggested that this would be an *Entimus* species, possibly *imperialis* Forster or *nobilis* Olivier. Darwin (1871: 367) briefly mentions these beetles in the *Descent* 'other species [of beetles] are ornamented with gorgeous metallic tints,—for instance, . . . the splendid diamond-beetles which are protected by an extremely hard covering.'

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615. Butterfly vide 155. Do. Do.

LEPIDOPTERA: no specimen found. In the *Journal,* Darwin (1845: 33) mentions *'Papilio feronia'* as frequenting the orange groves and draws attention to Doubleday's (1845, *Proc. ent. Soc. Lond.*: 123) account of the sound producing mechanism of this butterfly—'... had recently examined *Peridromia Feronia,* the butterfly described by Mr C. Darwin, in his 'Tour', as making a noise during flight like the rustling of parchment, and that he had detected a small membranous sac at the base of the fore-wings, with a structure along the subcostal nervure like an Archimedean screw or diaphragm in the tracheae, especially at the dilated base of the wing.'

618. Coleoptera. Do. Do.

I regard this entry as the day to which Darwin (1845: 34) refers in a footnote in the *Journal*:

'I may mention as a common instance of one day's (June 23rd) collecting, when I was not attending particularly to the Coleoptera, that I caught sixty-eight species of that order. Among these were only two of the Carabidae, four Brachyelytra, fifteen Rhyncophora, and fourteen of the Chrysomelidae. Thirty-seven species of Arachnidae, which I brought home, will be sufficient to prove that I was not paying overmuch attention to the generally favoured order of Coleoptera.'

Anthicidae: *Acanthinus aequinoctalis* Laporte, one in BM 1887–42), Rio.

Carabidae: Bembidiini subtribe Tachyina (det. N. E. Stork): one in BM (1887–42), Rio, numbered 618.

Chrysomelidae: *Cephaloleia picta* Baly (1858: 55), one in BM (1885–119), Rio. *Diabrotica bilineata* Baly, one in BM (1885–119), Rio. *D. contigua* Baly, one in BM (1885–119), Rio. *Epitrix* spp., six in BM (3—Rio, 1855–119, one numbered 618; 2 ex Ent. Soc., Rio 1856: 86, one numbered 618).

Coccinellidae: *Diomus effusus* Brèthes (1924: 165), one in BM (1885–119), Rio, numbered 618. *Heterodiomus darwini* Brèthes (1924 gen. & sp.: 155), one in BM (1885–119), Rio. *Pullus caseyi* Brèthes (1924: 171) (subgenus of *Scymnus*), one in BM (1885–119). *P. hians* Brèthes (1924: 171), one in BM (1885–119). *Scymnus* spp., two in BM (1985–119). *Syphrea bahiensis* Bryant (1942: 107) may refer here (see also entry 3858).

Curculionidae: Leptopiinae, three species of an undetermined genus, in BM, Rio, two numbered 618.

Endomychidae: *Stenotarsus areolus* Gerstaecker, one in BM (1887–42), Rio. *Stenotarsus* sp.; one in BM (1887–42), Rio.

Languridae: two in BM (1885–119), Rio, with 618 on verso.

Leiodidae: *Adelopsis grouvellei* Jeannel (1936: 64, 66), one in BM (1885–119), Rio, numbered 618.

Nitidulidae: ?*Pallodes* sp., one in BM (1887–42), Rio, numbered 618. *Stelidota* sp., one in BM (1885–119) numbered 618 and another ex Sharp collection (1905–313) with a Darwin handwritten Rio label and numbered 618 showing that some Darwin specimens were in the Sharp collection.

Scarabaeidae: *Canthon* sp., two in the BM (1887–42), Rio, numbered 618.

Obviously not all the material has been located.

Some of the unnumbered specimens may refer to 574.

630. Coleoptera taken in Beagle between Rio de Janeiro and Monte Video Do.

Bruchidae: *Zabrotes subfasciatus* Boheman, one in BM (1858–60) with handwritten (Darwin) 'Rio' and numbered 630 on verso. This beetle is a pest of haricot beans which were probably carried on board. It occurs in central and South America and elsewhere (Aitken, 1975). It may have been on the Calavances (see 778). In the *Journal* Darwin (1845: 158–9) discusses insects at sea at some length but makes no specific reference to this and the next five entries suggesting they were all possibly 'ships fauna'.

631. Cloporta [sic—Coleoptera] **Beagle** Do.

No specimen found. See entry 630.

632. Meligethes. Beagle, common come from the ripe fruit of the Banana Do.

COLEOPTERA, Nitidulidae. No specimen found.

633. Acrydium. Rio de Janeiro. Do.

ORTHOPTERA: the only 'Acridium' found were described by Walker from Monte Video and may refer here if in fact they were taken on board the *Beagle* between Rio and Monte Video as the previous and following entries suggest (see entry 630).

Acrididae: *Acridium sellatum* Walker (1870: 585), one in the BM (1845–68) (= *Schistocerca gregaria* Forskål, the desert locust). *Acridium maculiferum* Walker (1870: 622), one in the BM (1845–68). *Eynisacris extranea* Walker (1870: 639), one in the BM (1845–68) (now in *Diponthus*).

It seems possible that some mislabelling has occurred and that some of these refer elsewhere; see entries 1329, 1330, 3152.

634. Lampyrus Do. Do. Do.

COLEOPTERA, Lampyridae: no specimen found. See entries 440–443, 506–508.

635. Diptera. Beagle. Do.

No specimen found, unless any of 646 refer here.

636. Lepidoptera. **diurna** Rio de Janeiro. Do.

No specimen found.

637. 638. Moths Do. Do.

No Darwin Lepidoptera have been described specifically from Rio but *Leucania extranea* Guenée (Walker, 1856: 93) (now *Mythimna (Pseudaletia) unipuncta* Haworth, Noctuidae) and *Calonota helymus* Boisduval (Walker, 1856: 1627) (now *Calanotos helymus* Cramer, Ctenuchidae) recorded from 'South America. C. Darwin' may refer here though no specimens have been found in the collections.

640. Colymbetes, taken on board must have at least flown 45 miles from Cape St. Mary. [Monte Video—crossed out] **R. Plata** [substituted by Darwin] (July).

COLEOPTERA, Dytiscidae: *Colymbetes signatus* Babington (1842: 7), one in the BM (1863–44), Monte Video, may refer here. Darwin mentions this in the *Origin* (1859) and asks 'how much further it might have flown with a favouring gale'. See also entry 862.

641. 642. 643. 644. Gnats, in same situation as last in great numbers Do. Do.
Lost **Lost**

DIPTERA, Tipulidae: *Limnobia reciproca* Walker (1849: 50), one in the BM (1845–68) (now *Trimicra pilipes* F.). This almost certainly refers here as Edwards (1927) recorded this species and a chironomid of the genus *Tanytarsus* in a similar situation, 32 miles from the Brazilian coast.

645. Pediculus, from a petrel called Cape-pidgeon, in the open ocean August.
Lost

PHTHIRAPTERA: the bird referred to as the cape-pidgeon is the cape petrel or pintado (*Daption capensis* L.) and is discussed by Gould in the *Zoology* (Darwin, 1841: pt. 3, 140–1).

August **M. Video R. Plata**

646. Diptera, Rat Island, M. Video Do.

The following Diptera described or recorded by Walker from Monte Video probably refer here.

Anthomyiidae: *Anthomyia corelia* Walker (1849: 953–4) (= *Delia platura* Meigen).

Asilidae: *Asilus mucius* Walker (1849: 463).

Bibionidae: *Dilophus thoracicus* Guerin (Walker, 1849: 118).

Calliphoridae: *Musca lyrcea* Walker (1849: 874) (= *Myolucilia*); *M. gamelia* Walker (1849: 878), one in the BM (1845–68) (a synonym of the previous species).

Muscidae: *Anthomyia cutilia* Walker (1849: 954) (= *Psilochaeta chalybea* Wiedemann); *A. felsina* Walker (1849: 954) (= *Neurotrixa*).

Pyrgotidae: *Chromatomyia ?distincta* Walker (1849: 806). Now referred to *Dichromyia sanguiniceps* Meigen and may not belong to this family.

Sarcophagidae: *Sarcophaga tessellata* Wiedemann (Walker, 1849: 829); *S. chlorogaster* Wiedemann (Walker, 1849: 834); *S. proerna* Walker (1849: 835) (= *Sarconesia chlorogaster* Wiedemann).

Sphaeroceridae: *Borborus quinquemaculatus* Walker (1849: 1130) (=*Archiborborus hirtipes* Macquart).

See also entry 671.

647. Blatta Do. Do. Do.

BLATTODEA: *Blabera brasiliana* Saussure (Walker, 1868: 2), no specimen found; *B. dubia* Serville (Walker, 1868: 9), one in the BM (1845–68).

664. Pediculus, from a Tringa (Peewit) Do.

PHTHIRAPTERA: no specimen found. The bird referred to is *Vanellus cayanus* Gray, the pied plover referred to as *Philomachus cayanus* by Gould in the *Zoology* (Darwin, 1841: pt. 3, 127), where, in Darwin's notes on behaviour, it is compared with the British peewit. Like our peewit it has a local name, 'tero-tero', derived from its cry.

665. Curculio, on sandy hillocks near the sea Do.

COLEOPTERA, Curculionidae: no specimen found.

666. Cillenum ?(Leach) under stones in mud, Rat Island, water brackish August.
Lost

COLEOPTERA, Carabidae: *Cillenum[s]* is a synonym of *Bembidion*. No specimen found.

667. Agonum ?allied to; elytra singularly sculptured; Habit Do. Do. Do.
Lost

COLEOPTERA, Carabidae: no specimen found.

671. Diptera. very common here Do. Do.

Sciomyzidae: *Tetanocera angulifera* Walker (1849: 1085), three in the BM (1845–68) are referred here rather than to 646, as the presence of three specimens suggests it may have been 'very common'.

672. Acarus from Cavia capybara (Linn). Do.

Arachnida, Acari—not an insect.

673. Ricinus, from Rhynchops. Do.
Lost

PHTHIRAPTERA: no specimen found. The host bird referred to is *Rhynchops niger* L., the Black Skimmer discussed in the *Zoology* (Darwin, 1841: vol. 3, 143–4) and the *Journal* (Darwin, 1845: 137).

674. Moth, common on the mount. [Green Mount, 450′ high] Do.

LEPIDOPTERA, Arctiidae: *Ecpantheria indecisa* Walker (1855: 697), four in the BM (1846–38), S. America, one with white printed label 674.

675. Beetle, found in middle of an ants nest **(accidental?)** Do.

COLEOPTERA: no specimen found. Some beetles normally live in ants nests.

676. Carabidae [beetle-struck out] common under the drift **matter** of the tide. **Do.** (August)
Lost

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677. Heterom: 4: Poecilus, Dermestes, Necrobia, Haltica, Galeruca, Coccinella, Forficula, Harpales, Amarus, Pterostichus, Trechus, Peryphus, 2 Curculio, Forficula, Corixa, 2 Harpalus, Noloptes, Capsida, Colymbetes, Feronia, Pentatoma, Silpha, Hygrotus, Hister, 2 Chrysomela. The greater **number** found under stones and sticks. Hybernating [*sic*] on the Mount. [Several scientific names have one letter spelling corrections by Darwin.]

COLEOPTERA, Carabidae: *Antarctia circumfusa* Germar, three in BM (1880–43, 1863–49), one numbered 677. *Bembidion (Notaphus) embei* Solier (det. N. E. Stork), one in the BM

(1885–119) with handwritten 677. The following untraced (and probably misidentified Carabidae recorded from Monte Video are also referred here although some may refer to 678. *'Baripus speciosus* (Klug) Dejean' (Waterhouse, G. R., 1840*c*). '*Baripus rivalis* Dejean (*Molops rivalis* Germar)' (Waterhouse, G. R., 1840*c*). *'Feronia corinthia* Dejean (*Molops corinthia* Germar.)' (Waterhouse, G. R., 1841*b*). *Feronia submetallica* Waterhouse, G. R., 1841*b*: 122). *Feronia assimilis* Dejean (Waterhouse, G. R., 1841*b*). *Feronia (Argutor) patagonica* Waterhouse, G. R. (1841*b*: 126). There are also 3 *Agonum* spp. numbered 677 in the BM (1885–119) accessions.

Chrysomelidae: *Platynocera murina* Blanchard, one in the BM (1885–119) numbered 678 (included here because this family is not mentioned under entry 678).

Coccinellidae: *Coccinella aucoralis* Germar, one in the BM (1885–119), Monte Video, is referred here as this family is not mentioned under entry 678.

Curculionidae: *Listroderes apicalis* Waterhouse, G. R. (1842*b*: 123), one in the BM (1885–119) numbered 677. (See also entry 678).

Scarabaeidae: *Trox pilularius* Germar, six in the BM (1887–42) each with a handwritten 677.

Tenebrionidae: *Crypticus platensis* Fairmaire, one in the BM (1887–42) with a handwritten 677 (see also 491, 1321). *Epipedonota bonariensis* Waterhouse, G. R. (1842*b*: 119).

HEMIPTERA, Pentatomidae: *Mecocephala acuminata* Dallas (1851: 180; also Walker, 1867), one in the BM (1845–68). *Aceratodes fulvicornis* F. (Dallas, 1851; Walker, 1867), one in the BM (1845–68) (= *Edessa*).

Pelogonidae: two of this family at Cambridge, labelled S. America and with a green label printed 6 may refer here. These bugs are semi-aquatic and seem to fit better here (with *Colymbetes* and *Corixa* mentioned) than under 2444, 2446.

No Dermaptera ('Forficula') have been found for this entry.

678. (7 Lamellicorn: I). 2 Heterom: 2 Curculio. 9 Carabidae insects found Do. Do.

COLEOPTERA, Carabidae: *Bembidion (Notaphus) embei* Solier (det. N. E. Stork), three in the BM (1885–119) and a handwritten number 678. *Feronia dejeanii* Waterhouse, G. R. (1841*b*: 121), one in the BM (1863–44) numbered 678. *Feroniola laticollis* Sol (det. S. L. Straneo, 1950), one in the BM numbered 678. *Feronia cordicollis* Dejean (Waterhouse, G. R., 1841*b*), one in the BM (1863–44) numbered 678 (= *Pterostichus*). There are also two *Agonum* spp. numbered 678 in the BM (1885–119) accessions.

Curculionidae: *Listroderes apicalis* Waterhouse, G. R. (1841*b*: 123), two in the BM (1845–63, 1885–119) both numbered 678 (see also entry 677).

Dermestidae: *Dermestes maculatus* Degeev, two in BM (1887–94), numbered 678.

Silphidae: *Oxelytrum erythrurum* Blanchard, one in the BM (1885–119) numbered 678 (see also entry 796).

691. Harpalidae (one of) Mount Do.

COLEOPTERA, Carabidae: no specimen found.

692. Cerambyx buildings: M. Video Do.

COLEOPTERA, Cerambycidae: *Cyllene spinifera* Newman (1840 gen. & sp.: 8)—'Inhabits South America taken by Mr Darwin, in cabinet of Entomological Society'—one in the BM (1863–44), Monte Video, with printed number 692.

B. Blanca. Northern Patagonia [with a short rule inserted above].

694. Harpalidae (one of) Bahia Blanca.

COLEOPTERA, Carabidae: no specimen found.

695. Meloe: elytra with bright yellow spots, sides of abdomen red, emitted yellow fluid. from Do.

COLEOPTERA, Meloidae: no specimen found.

696. 697. 698. Trox (3 species) B. Blanca Sept.

COLEOPTERA, Scarabaeidae: *Trox brevicollis* Eschscholtz, one in the BM with C. Darwin [18]87–42 printed on a green label and no further data, but the rest of the series (non-Darwin) are from Chile.

See entry 677 for another reference to this genus.

699. 700. 701. 702. 4 species of Melasomes. Tolerably abundant, in
(a) Sand hillocks Do. Do.
(a) [from verso of page] **(700) Is the commonest insect in the place runs very actively on the sand.—**

COLEOPTERA, Chrysomelidae: no specimen found.

703. Scarabidae. All these beetles inhabit sandy hillocks near sea. This beetle seems to live on the dung of ostriches. I saw one busily employed in pushing along a large peice [sic] with its frontal horns from Do. Do. 19th.

COLEOPTERA, Scarabaeidae: *Eucranium dentifrons* Guérin, one in the BM (1887–42, as *Anomiopsis*) numbered 703. *Ataenius rubripes* Boheman, two in the BM (1887–42), B. Blanca. *Homalochilus niger* Blanchard, one in the BM (1885–119), B. Blanca. *Megathopa violacea* Blanchard, one in BM (1845–63).

The last three (unnumbered) species are also allocated here but seem rather small for the above observation (see also 1492). The 'ostrich' is the common rhea (*Rhea americana* Latham) and is written about at length both in the *Zoology* (Darwin, 1841: pt. 3, 120–3) and the *Journal* (Darwin, 1845: 43, 89).

705. 706. 707. Heteromerous insects, Sandy plains Do.

COLEOPTERA, Tenebrionidae: *Nyctelia puncticollis* Waterhouse, G. R. (1842*b*: 110)—'tolerably abundant on sand hillocks'—one in the BM (1845–63). *Scotobius ovalis* Guérin, two in BM (1845–63, 1885–119), former numbered 707.

See also entry 724 for other *Nyctelia.*

708. Staphylinus Do. Sept.

COLEOPTERA, Staphylinidae: no specimen found, unless the specimen recorded by Kritsky (1981) in the Field Museum, Chicago refers here. No further data is available so the Chicago specimen could also refer to 3445.

709. Insects Do. Do.

COLEOPTERA, Nitidulidae: *Neobrachypterus darwini* Jelinek (1979: 194), 21 specimens in the BM (1885–119) numbered 709. There is also an unidentified weevil (Curculionidae, Baridinae) in the BM accessions: Bahia Blanca, 709.

717. Harpalidoes [?]: I: sandy plain. Do. Do.

COLEOPTERA, Carabidae: no specimen found.

718. Meloe. hillocks. Hind legs very long, forehead angular; sides of abdomen bluish. Do. Do.

COLEOPTERA, Meloidae: no specimen found.

719. Lamellicorn (Hoplia) copulating in great numbers, sandy plain. Do. Do. 19th.

COLEOPTERA, Scarabaeidae: no specimen found.

720. Lamellicorn Do. Do.

COLEOPTERA, Scarabaeidae: no specimen found.

721. Coccinella. Do. Do.

COLEOPTERA, Coccinellidae: *Pullus piceipennis* Brèthes (1924: 170) is from Bahia, Blanca but appears to refer to 1495.

722. Coccinella (allied to) Do. Do.

COLEOPTERA, Coccinellidae: no specimen found.

1832 Insects B. Blanca Sept. 10.

724. Coleoptera. Heterom; Rio Negro.

Tenebrionidae: *Nyctelia rugosa* Waterhouse, G. R. (1842*b*: 111), recorded from Bahia Blanca, but no specimen found; see also entry 864. *N. saundersii* Waterhouse, G. R. (1842*b*: 111), two in the BM

(1863–44), Bahia Blanca. *N. nodosa* Waterhouse, G. R. (1842*b*: 115), recorded from Bahia Blanca but no specimens found. *Epipedonota bonariensis* Waterhouse, G. R. (1842*b*: 119), recorded from Bahia Blanca but no specimen found. *Scotobius muricatus* Guérin (= *crispatus* Germar), one in the BM (1885–119) Bahia Blanca.

See also entries 705–707.

725. Colymbetes. **B. Blanca**

COLEOPTERA, Dytiscidae: no specimen found.

726. Carabidous beetle from **the mud** banks **of the harbor** [sic].
Lost

COLEOPTERA, Carabidae.

752. Carabidous beetle inhabiting sand hillocks.

COLEOPTERA, Carabidae, Harpalinae: one in the BM (1887–42), Bahia Blanca and white label with printed 752.

753. Crysomela [sic] on a flower.

COLEOPTERA, Chrysomelidae: *Cryptostetha juanae* Bechyne (det. M. Daccordi), one in BM, Bahia Blanca. See also 766).

765. Lamellicorn from Monte Hermosa B. Blanca.

COLEOPTERA: no specimen found.

766. Chrysomela [sic] near the sea Do. Do.

COLEOPTERA, Chrysomelidae: see entry 753 which could refer here instead.

767. Harpalus Do. Do.

COLEOPTERA, Carabidae: no specimen found.

768. Elater. Do. Do.

COLEOPTERA, Elateridae: no specimen found.

778. Bruchus from the Calavances **on board.**

COLEOPTERA, Bruchidae: *Acanthoscelides objectus* Say, one in the BM (1885–119) and numbered 778. Calavances was an English common name for certain varieties of pulse (Leguminosae, *Dolichos* etc.) (Mrs M. Greiff *in litt.*) This beetle is a well-known pest of stored products and although thought to have originated in tropical S. America is now almost cosmopolitan (Aitken, 1975). See also 630.

786. Curculio B. Blanco [a] Sept.

COLEOPTERA, Curculionidae: no specimen found.

787. Lamellicorn Do. Do.

COLEOPTERA: no specimen found.

788. Amara: sandy hillocks Do. Do.

COLEOPTERA, Carabidae: no specimen found.

789. Clavipalpes. Heterom. Lat: living at roots of grass; sandy hillocks Do. Do.

COLEOPTERA: no specimen found.

790. Pulex from the Armadillo (375) Do. Do.

See *Spirits of Wine* list, no. 376.

795. Carab: sand hillocks; beautiful comb of spines over the tarsi.

The following may refer here:

COLEOPTERA, Carabidae: *Odontoscelis darwinii* Waterhouse, G. R. (1840*a*: 356), one in the BM (1863–44) (= *Cnemacanthus*). See Fig. 14. *O. striatus* Waterhouse, G. R. (1840*a*: 358), one in the BM (1863–44) 'on a sandy plain at Bahia Blanca' (= *Cnemacanthus*). *Cardiophthalmus stephensi* Waterhouse, G. R. (1840*a*: 361), one in the BM (1863–44), Bahia Blanca (= *Barypus*).

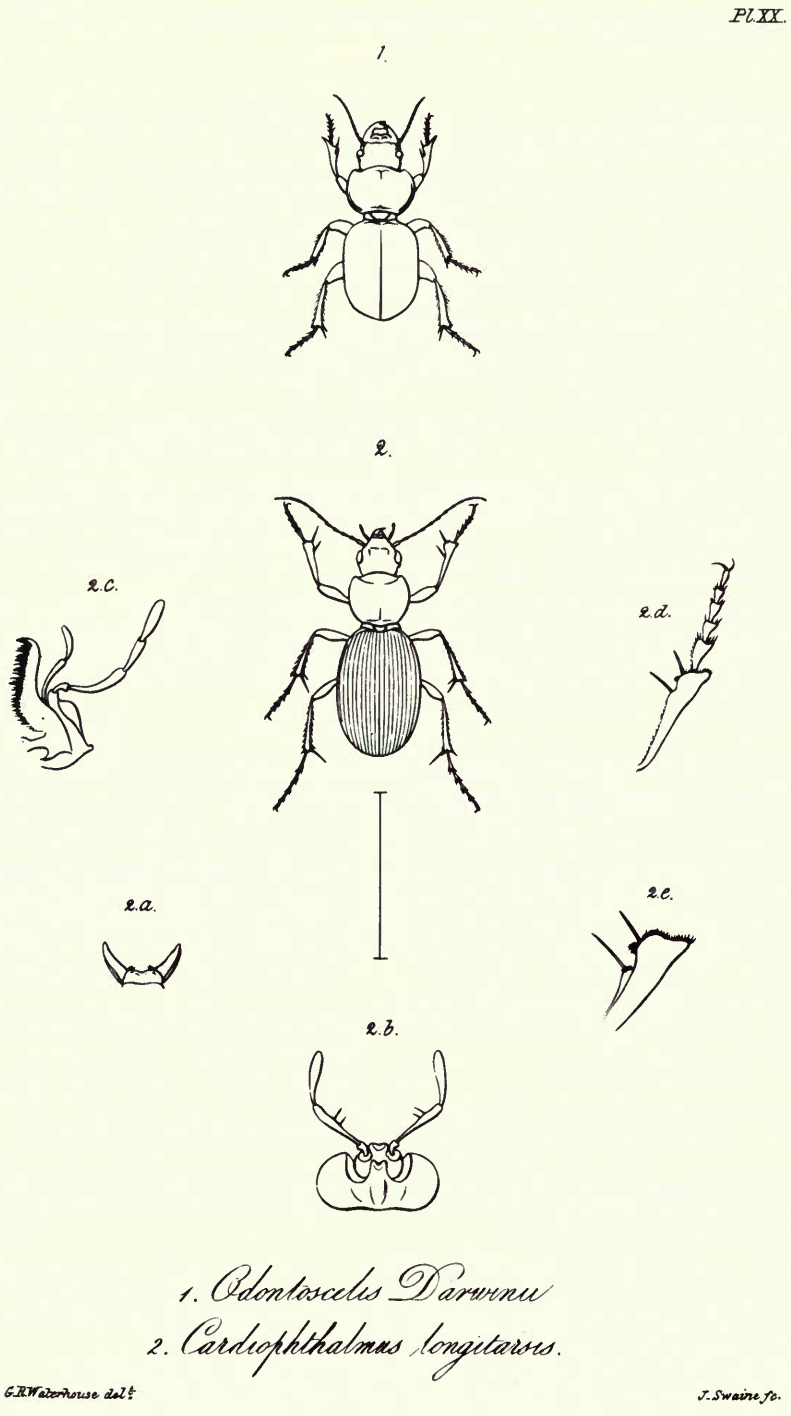

Fig. 14 Two Carabid beetles described by G. R. Waterhouse: *Odontoscelis darwinii* from Bahia Blanca and *Cardiophthalmus longitarsis* from Port Desire (see *Insect Notes*, 795 and 1794) (from the *Annals and Magazine of Natural History* (1840), by courtesy of Taylor & Francis Ltd.)

796. Silpha. in numbers feeding on carrion with Trox and Dermestes Do. Do.

COLEOPTERA, Silphidae: *Oxelytrum erythrurum* Blanchard, one in the BM (1885–119), Bahia Blanca. See also 678.

797. Lamellicorn; I think this number has been used twice: once for a large bush, bearing very sweet flowers and no leaves Do. Do.

COLEOPTERA, Scarabaeidae: *Pachrodema flaveola* Moser, one in the BM (1887–42), B. Blanca and printed label 797.

820. Harpalus M. Hermosa.

COLEOPTERA, Carabidae: no specimen found.

829. Fly just killed a gnat. B. Blanca Do. [This entry is followed by a rule across the page presumably by Darwin to indicate end of Bahia Blanca entries—see inserted heading above entry 694.]

DIPTERA: no specimen found.

839. Saperda on the trunk of the Plytocalla; (a large tree), B. Ayres.

COLEOPTERA, Cerambycidae: no specimen found.

840. Diptera on flowers. B. Ayres.

No specimen found.

841. Do. Do. Do.

No specimen found.

842. Coleoptera Do. Do.

Scarabaeidae: *Canthidium breve* Germar, two in the BM (1887–42), B. Ayres. See also entry 843 for this species.

843. Coleoptera M. Video.

Carabidae: *Bembidion (Notaphus) embei* Solier (det. N. E. Stork), one in the BM (1885–119), Monte Video and numbered 843. See also entries 677, 678 for this species. *Feronia cordicollis* Dejean (Waterhouse, G. R. 1841*b*), one in the BM (1885–119), Monte Video and numbered 843. *Feroniola laticollis* Solier (det. S. L. Straneo, 1950), one in the BM numbered 843. There are also 3 *Agonum* sp. numbered 843 in the BM (1885–119) accessions.

Scarabaeidae: *Canthidium breve* Germar, two in the BM (1887–42), Monte Video and numbered 843.

Tenebrionidae: *Scotobius pilularius* Germar (=*miliaris* Billberg), one in the BM (1885–119) numbered 843.

848. Heterom; common under stones. Do.

COLEOPTERA: no specimen found.

849. Nest of Bee, under stones. Contained leaden blue, slightly sweet honey; mouth closed by a sepal of a flower M. Video.

No specimen found.

1832 Insects M. Video 11.

850. Heterom. feeding on Compositae **flowers** and when touched, like Meloe emitting yellow fluid. Do.

COLEOPTERA, Melyridae: *Astylus quadrilineatus* Germar (Champion, 1918*c*) may refer here.

851. Heterom; habits Do. Do. Do.

COLEOPTERA: no specimen found. See entry 850.

858. Coleoptera—The Mount.

Carabidae: *Feronia (Poecillus) depressa* Waterhouse, G. R. (1841*b*: 126), one in the BM (1885–119), Monte Video, numbered 858 (= *Cynthidia planodisca* Perty).

Scarabaeidae: *Ateuchus robustum* Harold, one in the BM (1887–42), M. Video and numbered 858. See also entry 1505 for this species.

860. Meloe. San Blas: Bay of Patagonia. **North of R. Negro**

COLEOPTERA, Meloidae: no specimen found.

861. Belostomus, in Water, Rat Island. M. Video.

HEMIPTERA, Belostomatidae: no specimen found.

862. Calosoma; flew on board when we were about 10 miles from the shore; Bay of San Blas.

COLEOPTERA, Carabidae: *Calosoma patagoniense* Hope (1838: 129), one in the BM (1863–44) and numbered 862. See also entry 2484 for this species.

In the *Journal* Darwin (1845: 158) says '... and a fine beetle (Calosoma) flew on board. Other instances are known of this beetle having been caught far out at sea; and this is the more remarkable as the greater number of the Carabidae seldom or never take wing'. He goes on to discuss the weather conditions and the movements of the other insects involved. See the entry cited under 870–872. See also entries 875, 1301–1303.

863. Lamellicorn. San Blas.

COLEOPTERA: no specimen found.

864. Heterom. Do.

COLEOPTERA, Tenebrionidae: *Nyctelia rugosa* Waterhouse, G. R. (1842*a*: 138), one in the BM (1863–44), labelled 'Bahia Blanca' and with printed number 864.

866. Moths, flying about the ship, the chrysalis **probably** were in the fire wood.

LEPIDOPTERA, Geometridae: *Macaria subornata* Walker (1863: 1644), one in the BM (1846–38), 'probably from Patagonia' (described from Monte Video), may refer here. See also entry 1597.

867. 868. 869. Carabidous beetle, dead in the sea; 40 miles off the Straits of Magellan.

Carabidae: *Cardiophthalmus clivinoides* Curtis, one in the BM (1863–44) 'str. of Magellan' on handwritten label. Waterhouse, G. R. (1840*c*: 254, footnote) says 'I find that I had accidentally overlooked a specimen of the *Cardiophthalmus clivinoides* Curtis, in Mr Darwin's collection. This specimen was "found dead in the sea, 40 miles off the Straits of Magellan"—Mr Darwin's Notes.' Curtis (1839, *Trans. Linn. Soc. Lond.* **18:** 185) described the species from material collected at Port Famine by Captain King during his survey of the Straits of Magellan. *Antarctia leucoscelis* Putzeys, one in the BM (1885–119) S. America (det. Straneo 1950) with printed number 869.

870. 871. 872. Butterflies vide **P.** 138.

In the *Journal* Darwin (1845: 158) writes 'One evening, when we were about ten miles from the Bay of San Blas, vast numbers of butterflies in bands or flocks of countless myriads, extended as far as the eye could range. Even by the aid of a telescope it was not possible to see a space free from butterflies. The seamen cried out "it was snowing butterflies", and such in fact was the appearance. More than one species were present, but the main part belonged to a kind very similar to but not identical with, the common English *Colias edusa*. Some moths and hymenoptera accompanied the butterflies.' See also entries 1301–1303.

Williams (1930: 137) refers this butterfly to *Colias lesbia* F. (Pieridae) and says 'Fitzroy (1839) says "white" butterflies about 4 p.m. in very hot weather with cloudless sky. He also gives the exact date, which is omitted by Darwin'. The exact date referred to is December 4th 1832 and is included by Darwin in the *Zoological Diary* on which the *Journal* entry is based, but he goes on to ask 'How are we to account for these flights which others have also observed? Is it an instinct implanted in the animal to find new countries its own one being overtaken by a particularly favourable year?'

No specimen has been located. See also entries 1301–1303.

J. J. Walker (1931) suggests that Fitzroy's 'white' butterflies could be other Pieridae but no specimens have been found. *Colias lesbia* is greenish white, rather like the *helice* form of our 'British' *C. croceus* Geoffroy (= *edusa* F.).

873. Libellula. M. Video.

ODONATA: no specimen found.

874. Cimex, San Blas [coast S. of Bahia Blanca, Patagonia].

HEMIPTERA: no specimen found.

875. **C. Corientes south of the mouth of the R. Plata a)** Fresh water and Carabidous beetles found alive in the sea. South of Cape Corrientes, flown off the shore ? I was very much surprised to see how perfectly alive and active the fresh Water beetles were (Colymbetes, Hydroporus, Hydrobius &c; and there were other insects which I by accident lost). This may be a very instrumental means in peopling Islands with insects; I cannot help suspecting they were washed down from the Plata; although 250 miles distant from **the** fresh Water. I think this from the numbers of living and dead ones floating in the sea. The distance from the nearest shore was 17 miles, off Cape Corrientes; Capt. Cook, saw numerous insects blown off near St Georges Bay; and formerly in last voyage this fact was frequently noticed; [continued]

a) [from verso] **The neighbouring country is exceedingly arid & not likely to support freshwater insects.**

1832 Insects Good Success Bay Decr 20th 12.

[continued] it must be owing to flat country without trees, no shelter; insects once in air cannot stop.

COLEOPTERA, Carabidae: *Bembidion* sp. (det. N. E. Stork), one in the BM (1885–119). 'In sea off C. Corrientes Argentina' with handwritten 'Plata Patag 875'. There is also an *Agonum* sp. numbered 875 in the BM (1885–119) accessions.

Hydrophilidae: *Enochrus* sp., one in the BM numbered 875. There are also two *Enochrus* spp. in Cambridge which could refer here (but see also entries 1314, 1505 and 2367).

The following Dytiscidae *may* refer here though described from Tierra del Fuego.

Dytiscidae: *Colymbetes darwini* Babington (1842: 8), one in the BM (1863–44) (= *Rhantus signatus* F.); *C. magellanicus* Babington (1842: 10), two in the BM (1863–44) (= *Platynectes*); *Hydroporus unidecemlineatus* Babington (1842: 13), two in the BM (1863–44) (= *Necterosoma*) (see comment on this species in entry 3561).

A similar account to the above entry is given in the *Journal* (Darwin, 1845: 159) with a general discussion of insects at sea including items quoted under 862 and 867–872.

In the *Origin* Darwin (1859) says 'The occasional emigrations of insects of many kinds, associated together, which as I have witnessed, must perish by countless myriads in the sea, are still more remarkable, as they belong to families none of which are naturally social or even migrate'. See also entries 640, 1301–1303, and for similar accounts see Walker, J. J. (1931: 215).

880. Carabus, damp forest; **this** Carabus does not ascend the mountains. **Navarin Id. South T. del Fuego**

COLEOPTERA, Carabidae: *Carabus suturalis* F. (Hope, 1838) (s.g. *Ceroglossus*) may refer here. Hope mentions that 'when captured, it emitted (like all the other species of Carabus from Tierra del Fuego) a strong ammoniacal odour'. See also entry 2327.

881. Harpalidous **I**: found flying in numbers about sea coast in evening. These insects live amongst the soft yellow balls which are excrescences; **or rather fungi growing on the** Fagus antarcticus, and which are eaten by the Fuegians.

COLEOPTERA, Carabidae: *Abropus splendidus* Waterhouse, G. R. (1842*a*: genus 134, species 135). (= *Habropus carnifex* F.), one in the BM (1863–44) with blue handwritten labels. See also entries 906 and 1839. See Fig. 15.

The fungus was described by the Revd J. M. Berkeley (1842*b*: 37) as *Cyttaria darwinii* and it is illustrated and discussed at some length in the *Journal* (Darwin, 1845: 236).

[There are two vertical ink lines drawn (by Darwin?) through this and the following two entries apparently to link the three entries.]

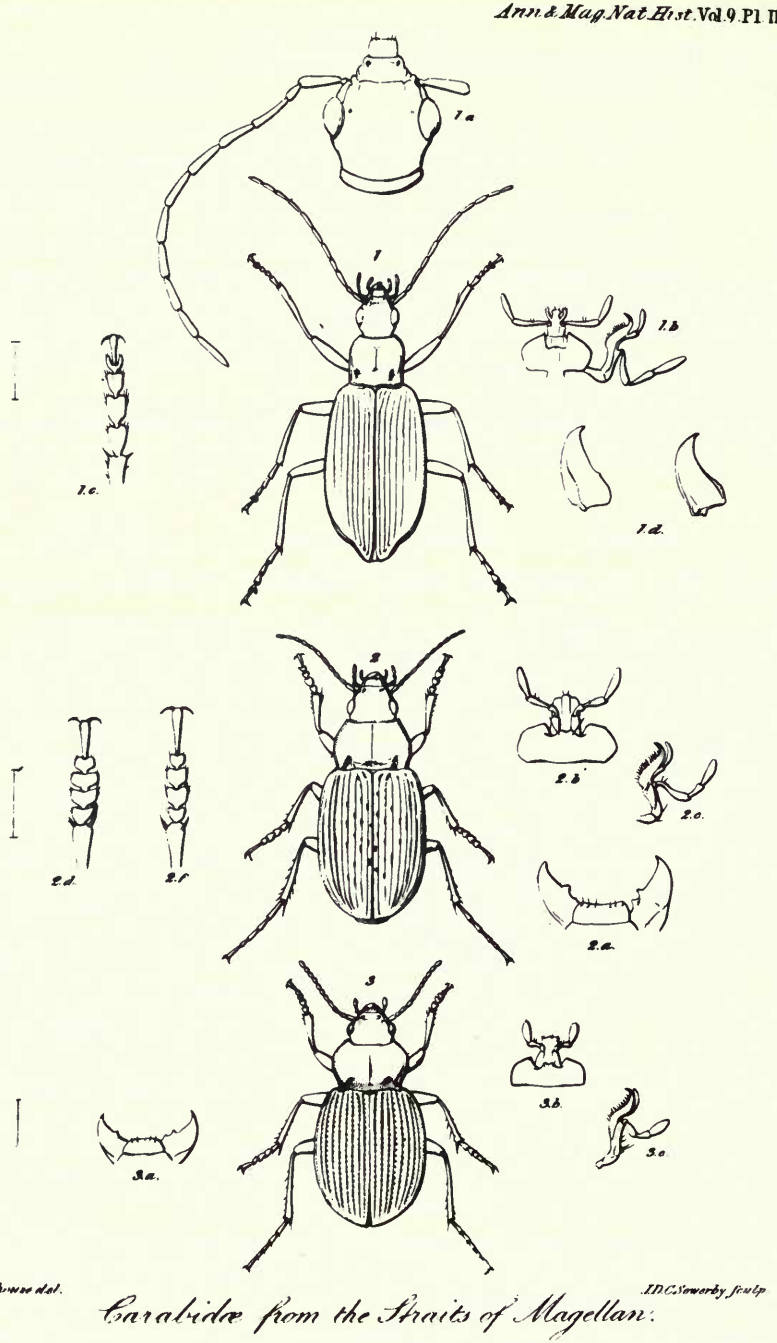

Fig. 15 Three Carabid beetles from the Straits of Magellan described by G. R. Waterhouse: 1, *Abropus splendidus*; 2, *Migadops virescens*; 3, *Migadops ovalis*. All occur in Navarin Island, both genera were new to science (see *Insect Notes* 881, 882, 906, 930) (from the *Annals and Magazine of Natural History* (1841), by courtesy of Taylor & Francis Ltd.) *Abropus splendidus* lives among the edible fungus *Cyttaria darwinii* Berkeley which grows on the Southern Beech (*Nothofagus*) and is eaten by the natives of Tierra del Fuego.

882. Harpalidous; the most abundant insect, under stones & c **in the** damp forest. [Navarin Island].

COLEOPTERA, Carabidae: *Migadops virescens* Waterhouse, G. R. (1842*a*: 136 (gen. & sp.), pl. 3, fig 2), above data given, six in the BM (1885–119, 1842–14, 1863–44), Tierra del Fuego, one with printed number 882 (= *M. laeta* Guérin). Champion (1918*a*) places this species in *Brachycoelus*. See Fig. 15.

883. Harpalidous **I:** the only insect which I found inhabiting the very bare Summits of the mountains. **n.b.** The woods are all more or less **elevated** above the sea.

COLEOPTERA, Carabidae: *Migadops ovalis* Waterhouse, G. R. (1842*a*: 139, pl. 3, fig. 3) may refer here, see fig. 15, also entries 908, 911 and 1049.

884. Lamellicorn ['*Sericodes Reichii* Guer.' comment inserted by unidentified hand. See also entry 968.] common in the forest.

COLEOPTERA, Scarabaeidae: *Sericoides glacialis* F., one in the BM (1885–119), Tierra del Fuego with printed 884 and handwritten 'reichii Guer'.

906. Coleoptera; wooded hills [Navarin I.]

Carabidae: *Abropus splendidus* Waterhouse, G. R. (1842*a*: genus 134, species 135) (= *Habropus carnifex* F.), one in the BM (1863–44) numbered 906, see Fig. 15 and also entries 881 and 1839. *Antarctia blanda* Dejean, one in the BM (1880–43), Tierra del Fuego and numbered 906. *Antarctonomus peroni* Chaud (Champion, 1918*b*) (= *A. complanatus* Blanchard), two in the BM (1885–119), Tierra del Fuego, numbered 906. *Bembidiomorphum convexum* Champion (1918*b*: 44, 45), one in the BM (1885–119), Navarin and numbered 906, see also entries 1010, 1049 and 2449. *Trechus antarcticus* Dejean, one in the BM (1885–119) numbered 906, see also entries 1061, 1151 (Now in *Trechisebus* see Jeannel, 1927).

Scarabaeidae: *Listronyx testaceus* F. (= *Sericoides*), one in the BM (1885–119), Tierra del Fuego, numbered 906.

Staphylinidae: *Nordenskjoldella flavitarsis* Enderlein (Champion 1918*b*) probably refers here.

908. Coleoptera—from the very summit under stones; Katers Peak. Katers Peak abrupt cone of Greenstone 1700 feet high, in Hermit Island near Wigwam Cove not far from Cape Horn.

Carabidae: *Cascellius nitidus* Waterhouse, G. R. (1840*c*: 255), two in the BM (1863–44), Tierra del Fuego and Navarin I. *Migadops ovalis* Waterhouse, G. R. (1842*a*: 139); two in the BM (1880–43), see Fig. 15, also entries 883, 911, 1049. *Trechus hornensis* Fairmaire, 12 in the BM (1885–119), numbered 908, see also entry 909.

Curculionidae: *Antarctobius lacunosus* Fairmaire (Champion, 1918*b*) (= *Listroderes*), three in the BM (1880–43), numbered 908, see also entry 2415. *A. rugirostris* Champion (1918*b*: 54), one in the BM, Hardy Peninsula, Cape Horn (= *Listroderes*). *Listroderes katerensis* Champion (1918*b*: 53), two in the BM (1880–43), numbered 908. *L. quadrituberculatus* Champion (1918*b*: 51), two in the BM (1880–43), one numbered 908.

Perimylopidae: *Hydromedion elongatum* Waterhouse, C. O. (1875: 333), three in the BM (1875–35), numbered 908.

909. Carab: very abundant. Hab. Do.

COLEOPTERA, Carabidae: *Trechus hornensis* Fairmaire, one in the BM (1885–119) with printed number 909 (= *Trechisibus*, see Jeannel, 1927). See also entries 908, 1025.

910. Carab: under stones sea beach. Wigwam Cove also in hills Navarin Island.

COLEOPTERA, Carabidae: *Migadops virescens* Waterhouse, G. R. (1842*a*: 136) (= *laeta* Guérin). Champion (1918*a*) places this species in *Brachycoelus*.

911. Carab: (same as 883?) very abundant, summit Katers Peak.

COLEOPTERA, Carabidae: *Migadops ovalis* Waterhouse, G. R. (1842*a*: 139, pl. 3, fig. 3) may refer here. See also entries 883, 908, 1049.

912. 913. Heterom. common very summit Katers Peak.

COLEOPTERA, Perimylopidae: *Hydromedion elongatum* Waterhouse, C. O. (1875: 333), one in the BM (1875–35), with printed 913.

Tenebrionidae: *Parahelops pubescens* Waterhouse, C. O. (1875: 334), one in the BM (1887–94 [error for 1887–42]), with printed 912.

914. Curculio on Fagus antarcticus [Tierra del Fuego].

COLEOPTERA, Curculionidae: *Lophotus longipes* Waterhouse, G. R. (1840*b*: 334), one in the BM (1863–44). *L. vitulus* F. (Waterhouse, G. R., 1840*b*), one in the BM (1863–44) (now var. *bulbifer* Kuschel) (= *Aegorhinus*).

Dr G. Kuschel, in a letter to R. T. Thompson, says *L. vitulus* is the commonest weevil on *Nothofagus* and that *L. longipes* (= *Alastoropolus strumosus* Olivier) is *confined* to *Nothofagus*.

923. Ricinus, from Albatross, Cape Horn, Jan: 1833.

PHTHIRAPTERA: no specimen found.

925. Libellula, Navarin Island.

ODONATA: no specimen found.

930. Harpal; Navarin Island. Jan.

COLEOPTERA, Carabidae: *Migadops darwinii* Waterhouse, G. R. (1842*a*: 138), two in the BM (1842–14, 1863–44), Tierra del Fuego. *M. virescens* Waterhouse, G. R. (1842*a*: 136), one in the BM (1885–119) with printed 930. *M. nigrocaeruleus* Waterhouse, G. R. (1842*a*: 138), one in the BM (1863–44), Tierra del Fuego.

967. Hymenoptera, Ponsonby Sound.

No specimen found.

1833 Insects Tierra del Fuego Jany 13.

968. Lucanus in rotten Beech. Ponsonby Sound. ['Dorcus femoralis Guerin see my Catal no 520 (*D. rubripes*—Dupont)' this comment added to ms by unidentified hand. See also entry 884.]

COLEOPTERA, Lucanidae: *Dorcus darwinii* Hope (1841: 33; 1844: 279), one in Oxford which Hope (1844: 280) erroneously recorded from Chile though the species does occur there (see 2773) (= *Sclerognathus femoralis* Guérin). There are other non-Darwin specimens of this species in the BM from Tierra del Fuego. See also eponyms for dedication.

969. Hemipt:, in great numbers under rotten bark Ponsonby Sound.

HEMIPTERA: no specimen found.

1005. Alpine Colymbetes. Hardy Peninsula. Feby.

COLEOPTERA, Dytiscidae: *Colymbetes rotundicollis* Babington (1842: 7), alpine situation in Tierra del Fuego, two in the BM (1863–44), one with a red printed 5 [= 1005] (= *Lancetes*). See also entry 1049.

1006. 1007. Heterom. Mountain H. Do. Do.

COLEOPTERA, Tenebrionidae: *Parahelops darwini* Waterhouse, C. O. (1875: 334), see also 1049, one in the BM (1875–35) with red printed 6 [= 1006]. *P. pubescens* Waterhouse, C. O. (1875: 334), one in the BM (1875–35) with red printed 7 [= 1007].

1008. Byrridae Do. Do. Do.

COLEOPTERA, Byrrhidae: *Morychastes australis* Blanchard (Champion, 1918*b*: 48), Champion regards two Darwin specimens in the BM as wrongly labelled Bahia and referable to Tierra del Fuego.

1009. Carab Do. Do. Do.

COLEOPTERA, Carabidae: *Cascellius aeneo-niger* Waterhouse, G. R. (1840*c*: 256), two in the BM (1863–44), Hardy Peninsula.

1010. Carab. Do. Do. Do.

COLEOPTERA, Carabidae: *Bembidiomorphum convexum* Champion (1981*b*: 44, 45), one in the BM (1885–119) with red printed 10 [= 1010]. See also entries 906, 1049, 2449.

1011. Cimex. Do. Do. Do.

HEMIPTERA: no specimen found.

1012. Haltica. Do. Do. Do.

COLEOPTERA, Chrysomelidae: *Docemina crassipes* Champion (1918*b*: 50), one in BM (1885–119) with printed red 12 [= 1012].

1021. 1022. 1023. 1024. Heteromerous insects. V. **infra (No. 1043).**

COLEOPTERA, Perimylopidae: *Chanopterus brevipennis* Waterhouse, C. O. (1875: 332) (= *paradoxus* Boheman), two in the BM (1885–119, 1875–35) with red printed numbers 21 and 23 [= 1021 and 1023], see also 1049. *Hydromedion elongatum* Waterhouse, (1875: 333), one in the BM (1875–35) with red printed number 22 [= 1022].

1025. Alpine (Bembidium) insect.

COLEOPTERA, Carabidae: *Bembidiomorphum convexum* Champion (1918*b*: 44, 45), 'Hardy Peninsula, near Cape Horn, Navarin Island, also Chile' must refer here; see also entries 906, 1010, 1049. *Trechus hornensis* Fairmaire (= *Trechisibus*, see Jeannel 1927), one in the BM (1885–119) with red printed label numbered 25 [= 1025]. See also entries 908, 909.

1043. Heterom; under stone just above high water mark.

(a) [vide 1021 crossed out? by Darwin].

a) [from verso] The habitat of these insects, was the most singular I ever observed; it was in the fissures of slate rock and in which the genus Capulus [Limpet] was adhering to the stone alive, and therefore of course beneath high watermark:— from the wet condition of the insects and their inactivity I do not believe they remove themselves.—There would appear to be two sorts or **they are** in different states of maturity:— from the soft state of some specimens, the larva must have undergone its metamorphosis in this site.

COLEOPTERA, Tenebrionidae: *Parahelops pubescens* Waterhouse, C. O. (1875: 334), one in the BM with red printed 43 [= 1043]. See 1006,1007. Something is wrong here as this species is now normally associated with alpine *Nothofagus* forest though some other Tenebrionidae are known to be intertidal (e.g. *Epantius, Phaleria*).

1044. Ricinus from the Falco (1028).

PHTHIRAPTERA, Philopteridae: *Ischnocera*, 'Degeeriella group', one tube of six specimens in the BM (1863–44), Tierra del Fuego, with red printed 44 [= 1044].

In the Denny collection at Oxford are 11 specimens mounted on celluloid from Tierra del Fuego which refer here.

The 'Falco' referred to is listed under 1028 in Darwin's *Ornithological Notes* (Barlow, 1963) as 'Falco P. Pezoporus' and is referable to *Milvago chimango* (Viellott) the Chimango Caracara. In the *Zoology* (Darwin, 1841: pt. 3, 14) it is treated by Gould, though somewhat doubtfully, as a separate species *M. pezoporus* Meyen. In the *Journal* Darwin (1845: 54–6) writes at some length on this and related species.

1049. Coleoptera, chiefly H[ardy]. Peninsula. March.

Carabidae: *Antarctonomus peroni* Chaudoir (Champion, 1918*b*) (= *A. complanatus* Blanchard), one in the BM (1885–119) numbered 1049. *Bembidiomorphum convexum* Champion (1918*b*: 44, 45), two in the BM (1885–119), numbered 1049, see also entries 906, 1010, 1025. *Migadops ovalis* Waterhouse, G. R. (1842*a*: 139), one in the BM (1844–3) numbered 1049, see also entries 883, 908, 911.

Dytiscidae: *Colymbetes rotundicollis* Babington (1842: 7), two in the BM (1863–44), numbered 1049, see also 1005.

Perimylopidae: *Chanopterus brevipennis* Waterhouse, C. O. (1875: 332) (= *paradoxus* Boheman) six in the BM (1875–35), numbered 1049, see also entries 1021, 1023.

Tenebrionidae: *Parahelops darwini* Waterhouse, C. O. (1875: 334), one in the BM (1875–35), numbered 1049, see also entry 1006. *P. pubescens* Waterhouse, C. O. (1875: 334), four in the BM (1875–35, 1885–119) and numbered 1049. See also entry 1007.

1050. Harpalidae. Falkland Island. Do.

COLEOPTERA, Carabidae: *Antarctia malachitus* Dejean (now = *Metius*), one in the BM (1885–119) labelled Tierra del Fuego but with a red printed number 50 [= 1050]. Clearly some error has occurred in labelling as the MS labels also indicate Tierra del Fuego, but the species also occurs on the Falkland Islands. G. S. Robinson (1984, *Insects of the Falkland Islands*, 38 pp. BM (NH)) lists Falkland insects.

1051. Ricinus from Scolopax (1048). **Do.**

PHTHIRAPTERA: no specimen found.

The comments under 1048 in the *Ornithological Notes* (Barlow, 1963: 213) link this to *Scolopax* (*Telmetias*) *magellanicus* King in the *Zoology* (Darwin, 1841: pt. 3, 131) which is now referable to the Puna Snipe (*Gallingo paraguaiae magellenica*).

1057. Moth on leaf of black currant bush, Good Success Bay **T. del Fuego.**

LEPIDOPTERA: no specimen found.

1060. Harpal: (Sphodrus?). Falkland Island. Was this insect imported or is it an original inhabitant. March.

COLEOPTERA, Carabidae: *Merizodus maceyi* Bates (Champion, 1918*a*) (=*Oopterus solidadenus* Guérin), one in the BM (1885–119), Falkland, may refer here.

1061. Harpal; abundant near coast East Falkland Island.

COLEOPTERA, Carabidae: *Trechus antarcticus* Guérin (Champion, 1918*a*) 'Falkland and Tierra del Fuego' in Champion's paper (=*Trechisibus*, see Jeannel, 1927), one in the BM (1885–119) with red printed 61 [=1061]. See also entries, 906, 1151.

1071. Fly.

DIPTERA, Heleomyzidae: *Prosopantrum acquiseta* Malloch (1933: 204), two in the BM (1885–119) may refer here.

1086. Harpalidous, insect Do. Both insects are common to Tierra del Fuego.

COLEOPTERA, Carabidae: *Migadops falklandicus* Waterhouse, G. R. (1842*a*: 137), one in the BM (1863–44) with red printed number 86 [=1086]. A different species of the same genus is found in Tierra del Fuego (see entries 882, 883, 910, 911).

1087. 1088. Heterom, near coast. Falkland Isld.

COLEOPTERA, Tenebrionidae: *Parahelops quadricollis* Waterhouse, C. O. (1875: 333, 335).

1137. Gonoleptes. March.

Arachnida (spider)—not an insect.

1151. Coleoptera. Do.

Carabidae: *Trechus antarcticus* Dejean (=*Trechisibus* see Jeannel, 1927), five in the BM (1885–119) numbered 1151 (see also entries 906, 1061).

Curculionidae: *Falklandius turbificatus* Enderlein (Champion, 1918*a*), one in the BM numbered 1151, see also entry 1912.

Staphylinidae: *Phytosus darwinii* Waterhouse, F. H. (1879: 531) (*Antarctophytosus* Champion, 1918*a*, now in *Halmaeusa*) ,may refer here.

1180. Diptera. Hardy Peninsula.

No specimen found.

1181. Scarabaus. Feeding on horse dung and throwing up the sand, like Geotrupes, sand dunes **Maldonado R. Plata.**

COLEOPTERA, Scarabaeidae: no specimen found. See entry 1491.

1883 ***Maldonado:*** *Insects* *March* *14.*

1182. Coleop: feeding on Lycoperdium [*sic*] and Fringi [*sic*—Fungi]

No specimen found.

1183. Notonecta.

HEMIPTERA, Notonectidae: no specimen found.

1225(a) [on verso]

(1225) Aphodius; one of the rare instances of finding these insects in this country, under horse dung which was however not quite fresh. Maldonado.

(1253) Coleoptera in Lycoperdium [*sic*] (1346). Maldonado.

(1254) Brachinus; emits loud and visible explosions, lives in families, beneath stones in open plains—Maldonado.

COLEOPTERA. There is an *Aphodius* 'Maldonado Point' (1887–42) in the BM accessions. Some Coleoptera numbered 1291 may refer to 1254. See also entry 1491.

1291. Brachinus. Explosion very loud and visible; the skin of my finger, was for many days afterwards stained brown; at the instant of explosion a sensation of warmth was felt; taste **of secretion** very acrid, even when diluted. June.

COLEOPTERA, Carabidae: *Brachinus maculipes* Waterhouse, G. R. (1841*a*: 351), one in the BM (1863–44), Maldonado. *B. nigripes* Waterhouse, G. R. (1841*a*: 352), two in the BM (1863–44), Maldonado. *B. platensis* Waterhouse, G. R. (1841*a*: 351), (= *B. vicinus* Dejean), four in the BM (1863–44), Maldonado.

1298. Hymenoptera. B. Blanca June.

No specimens found.

1299. 1300. Hymenoptera: Bay of San Blas. Do.

No specimens found.

1301. **1302.** 1303. Lepidop. 1302 Coleoptera, taken 60 miles from nearest land, but much further in direction of wind, mouth of Rio Plata.

LEPIDOPTERA: no specimens found, but probably some species under 1597 refer here.

COLEOPTERA, Carabidae: *Feronia (Poecillus) guerinii* Waterhouse, G. R. (1841*b*: 125), one in the BM (1863–44). Waterhouse repeats Darwin's comments.

1304. Brachinus. Maldonado.

COLEOPTERA, Carabidae. See entry 1291.

1305. Hydrous. **Do.**

COLEOPTERA, Hydrophilidae: *Hydrous palpalis* Brullé, one in Cambridge has a red label printed 305 [= 1305] and a small green printed 43. Alongside is a handwritten label 'Wrong no. attached. In Darwin's list 305 refers to a termites nest from Fernando Noronha'. Clearly the writer had been misled by lack of knowledge of the colour code system of labelling previously explained.

1306. Hemiptera. **Do.**

No specimens found.

1307. 1308. 1309. Hymenoptera. **Do.**

No specimens found.

1310. Coleoptera. **Do.**

Carabidae. *Antarctia striata* Putzeys, three in the BM (1885–119, 1880–43), two numbered 1310, see also entry 1839. *Feronia chilensis* Dejean (Waterhouse, G. R., 1841*b*) (= *Pterostichus*) one in the BM (1885–119), Maldonado, numbered 1310.

Chrysomelidae (Halticinae): *Distigmoptera darwini* Scherer (1964: 291), one in the BM (1887–94 error for 1887–42) numbered 1310 (see Fig. 18, also entry 1321). *Epitrix darwini* Bryant (1942: 101), one in BM (1885–119) numbered 1310. *E. uruguayica* Bryant (1942: 102) may also refer here (or 1321).

Coccinellidae: *Ceratomegilla 18-pustulatus* Mulsant, one in the BM (1885–119), numbered 1310. *Heterodiomus tetraspilotus* Brèthes (see Brèthes 1925*a*), one in the BM (1887–94 error for 1887–42) numbered 1310. *Hyperaspis arrowi* Brèthes var. *darwini* Brèthes (see Brèthes, 1925*a*).

Curculionidae: *Listroderes apicalis* Waterhouse, G. R. (1842*b*: 123), one in the BM (1875–36), 'Maldonado Pl', standing apparently as a syntype, is in fact a specimen of *L. delaigei* and since Waterhouse did not record *apicalis* from Maldonado this may be the specimen he determined as

'costirostris Scho' and is also recorded from Coquimbo. *Torcus nitidulus* Hustache. Two in the BM (1885–119) 'Maldonado Plata', numbered 1310. Baridinae, two unidentified in the BM labelled Maldonado Pl., C.D., numbered 5182. 5183 (not Darwin numbers and 'D' [? = Darwin] on a square label.)

Leiodidae: *Adelopsis darwini* Jeannel (1936: 64, 66), one in the BM (1885–119), numbered 1310.

Melyridae: *Astylus quadrilineatus* Germar (Champion, 1918*c*) may refer here.

Phalacridae: *Phalacrus picipennis* Champion and *P. stratiodiscus* Champion (both 1925: 603), numbered 1310 refer here, see also 1321. In the BM there is also an unidentified species numbered 1310.

Scarabaeidae: *Ataenius opatroides* Blanchard, one in the BM (1887–42), Maldonado, numbered 1310 on verso.

Tenebrionidae: *Scotobius tristis* Guérin, one in BM (1885–119) numbered 1310. *S. muricatus* Guérin (= *crispatus* Germar) one in BM (1885–119).

1314. Fresh Water Coleoptera. **Maldonado** [Maldonado indicated by a bracket including 1314–1332].

Hydrophilidae: *Enochrus,* one in the BM (1885–119), numbered 1314. In Cambridge there are specimens of *E. affinis* Stein and *E. vulgaris* Stein which may refer here, but see also entries 875, 1505, 2367. *Hugoscottia darwini* Knisch (1922: 90) may well refer here. The holotype and paratypes are in the BM (1922–127) ex Mus Cambridge. There are three paratypes in Cambridge. None have data labels or numbers but are attributed to South America. Other members of the genus are from Uruguay and Bolivia.

1316. Coleoptera. [Maldonado].

Carabidae: *Feronia cordicollis* Dejean. (Waterhouse, G. R., 1841) (= *Pterostichus*), one in the BM (1863–44), Maldonado, numbered 1316 (see also entries 678, 843). There is an *Agonum* sp. numbered 1316 in the BM (1885–119) accessions.

1321. 1322. 1323. Coleoptera. [Maldonado].

Anthicidae: *Acanthinus postmaculatus* Pic, one in the BM, Maldonado, numbered 1322 (det. Werner, 1940).

Carabidae: *Antarctia carnifex* Dejean, one in the BM (1880–43), Maldonado, numbered 1323. *A. antiqua* Motschulsky, one in the BM (1880–43) (= *Metius bonariensis* Putzeys, det. S. L. Straneo, 1957), Maldonado. *Baripus rivalis* Dejean (Waterhouse, G. R., 1841*a*), no specimen found. *Chlaenius violaceus* Waterhouse, G. R. (1841*a*: 353), one in the BM (1863–44), Maldonado. *C. westwoodi* Waterhouse, G. R. (1841*a*: 354), one in the BM (1863–44), Maldonado, large blue handwritten data label. *C. platensis* Waterhouse, G. R. (1841*a*: 353) (?*braziliensis* Dejean), one in the BM (1863–44), Maldonado, handwritten label. *Feroniola laticollis* Solier (det. S. L. Straneo, 1950), one in the BM, Maldonado, numbered 1323. *Feronia apicalis* Waterhouse, G. R. (1841*b*: 128) (= *Pterostichus*), two in the BM (1863–44), Maldonado, numbered 1323. *F. corinthia* Dejean (Waterhouse, G. R., 1841*b*), no specimen found. *F. chalcea* Dejean (Waterhouse, G. R., 1841*b*), no specimen found. *F. cordicollis* Dejean (Waterhouse, G. R., 1941*b*), no specimen found. *Geobius pubescens* Dejean (Waterhouse, G. R., 1841*b*), one in the BM (1863–44), Maldonado.

Chrysomelidae (Halticinae): *Distigmoptera darwini* Scherer (1964: 297), one in the BM (1885–119), Maldonado, numbered 1321 (see also entry 1310). *Longitarsus darwini* Bryant (1942: 105) may also refer here (or 1310).

Coccinellidae: *Heterodiomus tetraspilotus* Brèthes (1924: 156), two in the BM (1885–119, 1887–42), Maldonado, numbered 1322. *Nephopullus darwini* Brèthes, one in the BM (1885–119), Maldonado, numbered 1322.

Curculionidae: *Listroderes costirostris* Schoenherr, one in the BM (1845–63), Maldonado, numbered 1323.

Dermestidae: *Dermestes maculatus* Degeer, one in BM (1885–119), numbered 1323.

Dynastidae: *Archophileurus darwini* Arrow (1937: 55) (Scarabaeidae, Dynastinae), one in the BM (1875–35), Maldonado, numbered 1323.

Dytiscidae: *Cybister biungulatus* Babington (1842: 3), Champion (1918*b*: 45) lists this as a synonym of *Megadytes* Brullé and points out that it was overlooked by Sharp (1882) in his important work on Dytiscidae, seven in the BM (1873–8), numbered 1323.

Lathridiidae: one, unidentified, in the BM (1885–119), Maldonado, numbered 1322.

Nitidulidae: one indet. in BM (1885–119) numbered 1321.

Phalacridae: *Phalacrus picipennis* Champion (1925: 603), numbered 1321, 1322 refer here.

Tenebrionidae: *Crypticus platensis* Fairmaire, two in the BM (1885–119, 1887–94 [error for 1887–42]), Maldonado, numbered 1321 (see also 491, 677).

1324. 1325. Leionotus.

COLEOPTERA, Dytiscidae: no specimens found.

This name has been used in Hymenoptera and Coleoptera but was undoubtedly familiar to Darwin as a beetle name used in the Dytiscidae by Stephens (1827–45) for some of his captures. For usage see Balfour-Browne (1950: 266, 271).

1326. 1327. 1328. Lamellicorns. [Maldonado].

COLEOPTERA: no specimens found.

1329. 1330. Orthoptera. [Maldonado].

Tettigoniidae: *Meroncidius inornatus* Walker (1870*a*: 453), one in the BM (1845–68), labelled Monte Video may refer here. See also entry 633.

1331. 1332. Hemiptera. [Maldonado].

No specimens found.

1336. Pediculi from the Bay of St Matthies. Procellaria (1335).

PHTHIRAPTERA: in the Denny collection at Oxford there are six lice on one card with a red printed label 336 [= 1336] and labelled 'Procellaria glacialoides det Y. Z. Eonst c.f. Patagonia C. Darwin'.

The host was 'caught on a bent pin on a string baited with fat' and is discussed in the *Ornithological Notes* (Barlow, 1963: 224) and described in the *Zoology* (Darwin, 1841: pt. 3, 140) under *Procellaria glacialoides* Smith (= *Fulmarus glacialoides*, the southern fulmar).

1379. Forficula, near sand dunes; there is another species in the houses; they are held in extreme dread; it is curious this prejudice against a harmless insect, being so general (July).— **Maldonado.**

DERMAPTERA: *Demogorgon patagonicus* Kirby (1891: 515, pl. 12, fig. 2) (= *labidura*), two in the BM (1885–100) erroneously labelled Patagonia but one specimen with a red printed label 379 [= 1379] clearly refers them here.

1380. Coleoptera (chiefly Carabidous) under stones Guritti Island Maldonado.

See under entry 1397.

1381. Excrescences, containing larvae; **aperture** most beautifully constructed; one found in a particular [continued]

1833 July Insects [Maldonado—crossed out] *15.*

[continued] valley near M. Video. It is said, that a large fly, which bites horses is produced.

This sounds very like the work of semi-aquatic larval Tabanidae (Diptera) which are known to construct mud cylinders in which they avoid dessication in times of drought (see Lamborn, 1929, *Proc. R. Soc.* (B) **106:** 83–7; Parsons, 1971, *Entomologist's mon. Mag.* **107:** 89–90). Darwin collected a specimen of *Tabanus dorsiger* Wiedemann (Walker, 1849: 180) M. Video, which attacks horses.

1394. Phalangium. **Maldonado.**

Arachnida, Opiliones—not an insect; a 'harvestman'.

1395. Pediculi from Falco (1396).

PHTHIRAPTERA: in the Denny collection at Oxford is one unidentified louse mounted on a card with a red label printed 395 [= 1395] and labelled 'Circus megpilus? Maldonado'. This is the *Circus megaspilus* Gould of the *Zoology* (Darwin, 1841: pt. 3, 29) referable to *Circus buffoni* (Gmelin), the long-winged harrier (Dr D. W. Snow *in litt.*).

1397. Coleoptera for (1380 number destroyed).

Carabidae: *Feronia patagonica* Waterhouse, G. R. (1841*b*: 126), two in the BM (1863–44), one numbered 1397. *F. submetallica* Waterhouse, G. R. (1841*b*: 122) (= *Pterostichus lucidus* Curtis), two in the BM (1863–44, 1885–119) numbered 1397; also one specimen Valparaiso; see also entries 2209–2213, 2776, 2837. *Pterostichus* sp., one in the BM, Maldonado, numbered 1397. There are also two *Agonum* sp. numbered 1397 in the BM (1885–119) accessions.

1488. 1489. 1490. Coleoptera. Rio Colorado.

Carabidae: *Pterostichus*. One in the BM (1885–119) with a red label printed 488 [= 1488].

1491. Copris. Bahia Blanca vide **p.** 200 (b).

COLEOPTERA, Scarabaeidae: no specimen found. The page citation in this and entry 1492 refers to the *Zoological Diary* and a discussion of dung beetles, partly used in his long footnote on the subject in the *Journal* (Darwin, 1845: 490) and with cross-references to 1181 and 1225 and which I have spread over 2102, 3506 and 3819. The footnote however lacks the following interesting comment 'This absence of coprophagous beetles appears to me to be a very beautiful fact; as showing a connection in the creation between two animals as widely apart as Mammalia and the Insecta Coleoptera, which, when one of them is removed out of its original zone can scarcely be produced by a length of time and the most favourable circumstances'.

1492. Aphodius, flying by thousands, but not alighting on plentiful horse dung; 10 leagues north of Sierra de la Ventana vide **p** 200 (b).

COLEOPTERA, Scarabaeidae: no specimen found, unless any of the three last entries under 703 refer here. See comments under 1491.

1493. Hemiptera; very abundant in herbage. B. Blanco [a].

No specimen found.

1495. Coleoptera B. Blanco [a].

Coccinellidae: *Pullus piceipennis* Brèthes (1924: 170), one in the BM (1885–119), Bahia Blanca, numbered 1495. See also entry 721.

1496. Carabus. Bajada St. Fe.

COLEOPTERA, Carabidae: no specimen found.

1497. Brachinus. Gorodoña. Rio Parana.

COLEOPTERA, Carabidae: no specimen found.

1498. Heterom; St. Fe Bajada.

COLEOPTERA: no specimen found.

1500. 1501. 1502. 1503. Coleoptera. Bajada.

No specimens found.

1504. Heterom. Rozario **R. Parana.**

COLEOPTERA: no specimen found.

1505. Coleoptera. Bajada. [St. Fe].

Carabidae: *Bembidion* sp. (det. Dr N. E. Stork), five in the BM (1885–119), Santa Fe, two numbered 1505. *Feronia (Argutor) audouini* Waterhouse, G. R. (1841*b*: 128) (= *Pterostichus*), one in the BM (1863–44), St. Fe, numbered 1505. *F. brullei* Waterhouse, G. R. (1841*b*: 127) (= *Pterostichus*), one in the BM (1863–44), St. Fé, numbered 1505. *Pterostichus* sp., one in the BM (1885–119). There is also an *Agonum* sp. numbered 1505 in the BM (1885–119) accessions.

Hydrophilidae: *Enochrus* sp., one unidentified species in the BM, St. Fé, numbered 1505. In Cambridge there are two identified species which could refer here, but see also entries 875, 1314, 2367.

Melyridae: *Astylus quadrilineatus* Germar (Champion, 1918*c*) may refer here.

Scarabaeidae: *Ataenius picinus* Harold, one in the BM (1887–42), St. Fé with 1505 on verso of label; see also entry 529. *Ateuchus robustum* Harold, one in the BM (1887–42), St. Fé and numbered 1505, see also entry 858.

Scraptiidae: *Anaspella* sp. Five in the BM (1885–119), St. Fé, one numbered 1505.

1507. 1508. 1509. Onthophagi caught crawling in a ditch, Buenos Aires.

COLEOPTERA, Scarabaeidae: no specimens found.

1596. Cerambyx. Maldonado.

COLEOPTERA, Cerambycidae: no specimen found.

1597. Moth flew on board in wonderful numbers. Mouth of Rio Plata.

LEPIDOPTERA: moths located in the BM that were described from Monte Video but have no numbers are included here and probably include entries 1302 and 1598. See also entries 674 and 866.

Geometridae: *Camptogramma corticeata* Walker (1863: 1715), one in the BM (1846–38). *Ypsipetes ? impromissata* Walker (1862: 1268), two in the BM (1846–38) (= *Perizoma*).

Noctuidae: *Agrotis intecta* Walker (1857–338), one in the BM (1846–38). *Noctua (Agrotis) suffusa* Meigen (Walker, 1857: 310), no specimen found. *Plusia detrusa* Walker (1858: 919), one in the BM (1846–38).

Sphingidae: *Chaerocampa chiron* Drury (Walker, 1856: 132), no specimen found.

1598. Flew on board in considerable numbers, in Lat, of Rio Negro.

Order ? May include some of the previous entry.

1712. Cicindela (2 specimens) taken on dry mud bank, incrusted with salt, habits like Hybrida. Port St Julian Jany 1834

COLEOPTERA Carabidae, Cicindelinae: no specimen found.

In the *Journal* Darwin (1845: 170), in an entry for 9 January 1834, says 'I found on the surface of the salt water near the head of the bay, a Colymbetes not quite dead, which must have lived in some not distant pool. Three other insects (a Cicindela, like *hybrida,* a Cymindis, and a Harpalus, which all live on muddy flats occasionally overflowed by the sea), and one other found dead on the plain, complete the list of the beetles'. *Cicindela hybrida* is a British species.

For the *Colymbetes* see entry 1715.

1713. Truncatipennis, under salt, loving plant just above high water **mark.**

COLEOPTERA, Carabidae: by inference from the following entry, but no specimen found. The only Carabid I have been able to trace with such a name is the African *Cycloba truncatipennis* Boheman

1714. Hab Do. (young specimen).

COLEOPTERA, Carabidae; ?Pterostichinae, one in the BM (1887–42), St Cruz and with a red printed 714 [= 1714]. See entry 1713.

1715. Colymbites, nearly drowned in salt water, head of Harbour; proving **existence of** fresh water although we could find none.

COLEOPTERA, Dytiscidae: *Colymbetes angusticollis* Curtis (Babington, 1842). See quotation under entry 1712.

1834 Jany Insects Port St Julian 16.

1716. Diptera, very numerous, bite very badly. What animal did nature intend for them? they are out of all proportion too numerous for Guanaco and scarcely any other large animal existed here.

DIPTERA, Tabanidae: no specimen found but my colleague J. E. Chainey suggests it would probably be a *Dasybasis* sp. from these latitudes.

In the *Journal,* in an entry 9 January 1834, Darwin (1845: 170) says 'A good-sized fly (Tabanus) was extremely numerous and tormented us by its painful bite. The common horsefly, which was so troublesome in the shady lanes of E. England, belongs to this same genus. We here have the puzzle that so frequently occurs in the case of mosquitoes—on the blood of what animals do these insects

commonly feed? The guanaco is nearly the only warm-blooded quadruped, and it is found in quite inconsiderable numbers compared with the multitude of flies'.

The guanaco (*Lama guanacoe*) is a llama of the southern plains of South America and included in the *Zoology* (Darwin, 1841: pt. 2, 26) (as *Auchenia llama* Desm.) and written on at some length in the *Journal* (Darwin, 1845: 166). Darwin does not mention horses here but see entries 2524, 2525, 2569.

1717. Heterom (found dead).

COLEOPTERA: no specimen found, but see quotation under entry 1712.

1747. Cells of Bee (1748) adhering to round stones; (on the hills) plain cylinders applied side to side.

HYMENOPTERA: no specimen found.

1748. Bee. (Nest above).

HYMENOPTERA: no specimen found.

1749. Diptera.

No specimen found, unless any of the unnumbered specimens described from Port Famine refer here (see entry 1841).

1750. Curculio, sterile plain.

COLEOPTERA, Curculionidae: no weevil found with this number in the BM, but see entry 2049.

1751. Heterom Do. Do.

COLEOPTERA, Tenebrionidae: *Nyctelia newporti* Waterhouse, G. R. (1842*b*: 113), one in the BM (1863–44), Patagonia. Another in the BM, Patagonia Pt. St Julian C. Darwin with a red printed 751 [= 1751] and the accession number 1881–19 of the F. Bates collection and his type no. 1313. F. Bates, brother of H. W. Bates and a specialist in Tenebrionidae, must clearly have had some of the Darwin material, including some Waterhouse types (see also entries 3201, 3561). [A page width rule follows this entry].

1760. Coleoptera. Port Desire.

Carabidae: *Cardiophthalmus longitarsis* Waterhouse, G. R. (1840*a*: 360) (= *Barypus*), one in the BM (1863–44), Pt Desire. *Odontoscelis curtisii* Waterhouse, G. R. (1840*a*: 357), Port Desire, may refer here.

Coccinellidae: *Adalia deficiens* Mulsant (Babington, 1842), one in the BM (1885–119), Pt Desire, Patagonia, numbered 1760.

Dytiscidae: *Colymbetes nigro-rematus* Babington (1842: 5). (= *Lancetes varius* F.), two Darwin specimens are in the BM without accession or other number.

Tenebrionidae: *Epipedonota lata* Waterhouse, G. R. (1842*b*: 119), two in the BM (1845–63, 1863–44), Pt Desire. *Megalophrys patagonica* Waterhouse, G. R. (1845*b*: 321 gen. et sp.), one in BM (1845–118). *Nyctelia darwinii* Waterhouse, G. R. (1842*b*: 108), three in the BM. *N. fitzroyi* Waterhouse, G. R. (1842*b*: 109), one in the BM (1863–44), Port Desire. *N. plicata* Waterhouse, G. R. (1842*b*: 107), two in the BM (1863–44). *N. solieri* Waterhouse, G. R. (1842*b*: 108), 'Patagonia' may refer here, one in the BM (1863–44). *N. westwoodii* Waterhouse, G. R. (1842*b*: 112), one in the BM (1863–44). *Platesthes silphoides* Waterhouse, G. R. (1845*b*: 317, 319 gen. et sp.), three Darwin specimens in the BM, Port Desire, but no numbers. *Scotobius akidoides* (Waterhouse, G. R., 1845*b*: 319), one in the BM (1845–118).

1793. Heterom. Cape Negro (it is here that the features of Patagonia and Tierra del Fuego are united).

COLEOPTERA, Tenebrionidae: *Nyctelia granulata* Waterhouse, G. R. (1842*b*: 109), one in the BM (1863–44), Cape Negro, with a red printed label 793 [= 1793].

1794. Carab. Hab. Do.

COLEOPTERA, Carabidae: *Antarctia blanda* Dejean, one in the BM (1880–43) and a red printed label 794 [= 1794]. See also entry 906.

1839. Coleoptera under bark. Port Famine. Feb.

Carabidae: *Abropus splendidus* Waterhouse, G. R. (1842*a*: 134, 135 gen. et sp.). (= *Habropus carnifex* F.), one in the BM (1863–44) with Darwin's above data quoted, see also entries 881, 906. *Antarctia striata* Putzeys, one in BM (1863–49), see also entry 1310.

1841. Fly. P. Famine.

DIPTERA, Tachinidae: *Pelycops darwini* Aldrich (1934: 169), one in the BM (1885–119), Port Famine and with a red printed 841 [= 1841].

Other Diptera described from Port Famine but lacking a specific number are referred here although Darwin's entry is in the singular. See also entry 1749.

Anisopodidae: *Anisopus fuscipennis* Macquart (Edwards, 1930: 118), two in the BM (1885–119).

Tephritidae: *Trypanea nigriseta* Malloch (1933: 283), one in the BM (1863–44).

Muscidae: *Euphaonia fulvohumeralis* Malloch (1933: 340), one in the BM (1863–44).

1842. Lepidop. Cape Negro.

The following moths described from 'Port Famine' must refer here.

Lasiocampidae: *Amydona humeralis* Walker (1855: 1413) (= *Trabala*), one in the BM (1846–38).

Geometridae: *Cidaria opprestata* Walker (1863: 1731), no specimen found. *Larentia esuriata* Walker (1863: 1702), one in the BM (1846–38). *Marcodava egenaria* Walker (1863: 1745), one in the BM (1846–38).

Doubleday (1848) records three Darwin butterflies from Port Famine: Pieridae, *Pieris* (p. 9); Satyridae, *Chionabas* and *Erebia* (p. 31). My colleague R. I. Vane-Wright has located these in the BM collections as follows: *Tatochila theodice gymnodice* Staudinger (Pieridae), one female, Pt Famine (BM 1846–38) and with red label numbered 842 [= 1842]. *Argyrophorus williamsianus* Butler (1868: 159, pl. 4, fig. 1) (= *Stuardosatyrus*), one male, Pt Famine (BM 1846–38) (see Herrera & Etcheverry, 1965, *Publnes Cent. Estud. ent. Univ. Chile* **7:** 74); *Tetraphlebia? plumbeola* Butler (1868: 95, pl. 2, fig. 11) (= *Cosmosatyrus leptoneurodes plumbeola*), one male, Pt Famine (BM 1846–38) (see Herrera & Howarth, 1966, *Publnes Cent. Estud. ent. Univ. Chile* **8:** 78).

Vane-Wright also located another Darwin butterfly: Nymphalidae, *Argynnis cytheris* Drury, one male, Pt Famine (BM 1946–38). This is the specimen cited by Hall (1906–1919, Last notes, Book 1, microform sheet 168: 104) with the comment '*darwini* is treated as a synonym and there is a specimen from Port Famine taken by Darwin himself'. *Argynnis darwini* Staudinger is included in the eponyms section and Vane-Wright tells me it represents a distinct species (now = *Issoria lathonioides* (Blanchard)).

1843. Bee P. Famine.

HYMENOPTERA: no specimen found.

1910. Sphodrus, with four indistinct orange spots (March) on elytra; under dead bird sea coast. E. Falkland Id.

COLEOPTERA, Carabidae: *Lissopterus quadrinotatus* Waterhouse, G. R. (1843: 281–2), two in the BM (1845–63), E. Falkland.

1911. Catops. under old dead calf: far in country.

COLEOPTERA, Leiodidae: *Choleva falklandicus* F. (Waterhouse, F. H., 1879: 531) (Champion (1918*a*) places this in *Catops*) (= *Falkocholeva cribellata* F. & G.), two in the BM (1879–34), Falkland Is. and E. Falkland.

1912. Curculio, in berry of Tea plant.

COLEOPTERA, Curculionidae: *Falklandius turbificatus* Enderlein (Champion, 1918*a*), three in the BM (1885–119). See also entry 1151.

1999. Fly. under dead birds, sea-beach from Falkland Islands.

DIPTERA, Helcomyzidae: *Paractora trichosterna* (Thomson) (Malloch, 1933: 331), one in the BM (1885–119) with a red printed 999 [= 1999], and another (1863–44).

2002. Coleoptera, high up, St Cruz river all the Carabidous and Staphylini under stones on the beach.

Carabidae: *Bembidion* sp., seven in the BM (1885–119), St Cruz, one numbered 2002 but are obviously all the same series. *Trechisibus australis* Jeannel, subsp. *patagonicus* Jeannel: two in BM numbered 2002 (see Jeannel, 1927).

Coccinellidae: *Eriopis* sp., one in the BM (1885–119), St Cruz, numbered 2002.

Dytiscidae: *Colymbetes reticulatus* Babington (1842: 5) (=*Lancetes varius* F.), two in the BM (1873–8), St Cruz, numbered 2002.

Staphylinidae: no specimen found.

HEMIPTERA–Heteroptera, Corixidae: *Ectemnostega darwini* Hungerford (1948: 203), one in BM (1885–119) numbered 2002.

2049. Curculio lying dead by thousands on all parts of plains; interior, **both** far up and **on sea coast** St Cruz. April.

COLEOPTERA, Curculionidae: *Cylydrorhinus angulatus* Guérin (?) (Waterhouse, G. R., 1842*b*), three in the BM (1863–44, 1875–36), St Cruz, one with a green printed 49 [=2049]. See also entry 1750 (Waterhouse included Port St Julian).

2050. 2051. 2052. Curious Heteromerous insects, [continued].

1834 April Insects St Cruz 17.

[continued] (2050 and 2051) far up the country, ['quite original' crossed out by Darwin] **where no white man probably every before arrived.**

COLEOPTERA, Tenebrionidae: *Cerostena punctulata* Waterhouse, G. R. (1842*b*: 120) (=*Psectrascelis*), one in the BM (1863–44), St Cruz). *Nyctelia guerini* Waterhouse, G. R. (1842*b*: 114), one in the BM (1863–44), St Cruz *N. stephensii* Waterhouse, G. R. (1842*b*: 113), two in the BM (1863–44), St Cruz, *N. sulcicollis* Waterhouse, G. R. (1842*b*: 115) (=*Psectrascelis*), one in the BM, St Cruz and a green printed 52 [=2052].

2053. Lamellicorn, lying dead in great numbers; interior probably feed on Guanaco dung.

COLEOPTERA, ?Scarabaeidae: no specimens found.

The guanaco (*Lama guanacoe*) is a llama of the southern plains of South America; see also entry 1716.

2054. Galeruca; a tribe very rare in such countries.

COLEOPTERA, Chrysomelidae; Galerucinae. No specimen found.

2055. Fly feeding on a Phallus.

DIPTERA: no specimen found.

The only *Phallus* (fungus) described by Berkeley (1842*a*) was from Maldonado.

[Darwin has ruled a line across the page to separate these entries and inserted Chiloe]

Chiloe

(a) 2102. Earth-bulls [*sic* for balls]

[on verso] (a) 2102. Geotrupes. This insect is excessively abundant, borring [sic] deep holes beneath every heap of horse dung (and once I saw sheeps). Curious instance of increase in number and change of habit no large quadrupid [sic] in Chiloe. At the depth of 2 and 3 feet. balls of earth, lined with a darker kind, (dung?) containing larva are very commonly found, in Gardens (where dung is not directly present); from what I can hear, I have little doubt that no other beetle than the Geotrupes, exists in numbers proportionate to the balls. I saw a man dig up 10 or 12 in a few minutes.

When first found they are not quite so hard as at present. The larva of many had eaten their way out and had escaped.

COLEOPTERA, Scarabaeidae: *'Phanaeus'*, no specimen found. This beetle is so recorded by Darwin in the *Journal* (1845: 490) where he says 'on the opposite side of the Cordillera in Chiloe, another

species of Phaeneus is exceedingly abundant, and it buries the dung of the cattle in large earthen balls beneath the ground. There is reason to believe that the genus Phanaeus, before the introduction of cattle, acted as scavengers to man'.

Darwin develops this theme in this long footnote on dung beetles in general. (See also entries 1491, 3506, 3819).

2107. 2108. Geotrupes.

COLEOPTERA, Scarabaeidae: *Pinotus torulosa* Eschscholtz, two in the BM (1887–42), one with a green printed 108 [=2108]

2109. Carab. Bemb. in moss.

COLEOPTERA, Carabidae: *Bembidion* sp., one in the BM (1887–42), 'Valparaiso', and with a green printed 109 [=2109].

2110. [2]111. The great curious Lucanus; given me by Mr R. Williams; caught when flying about in summer. The male insect is said to make a very loud clacking noise with its horns, when molested or even approached; is not very uncommon; is found abundantly in Mainland near Valdivia. In end of Jany, found 3 females, flying about during the day; when touched, stood on four hind legs, and raised their head, as in battle; very strong; caught male at Valdivia; fought most boldly, turning round to face enemy; the noise alluded to, is not very loud, and produced by friction of abdomen, when even frightened, but not touched; jaws not so strong as to produce pain to finger.

Mr Douglass, sent me 12 specimens of this fine insect and the following account: 'I found them in the crutch of an Atenihue tree, thirty feet above the ground, in a nest of moss. I was led to the spot by following one of them morning and evening for several days and always lost sight of it near this tree. I at last climbed up the tree and discovered them as mentioned. This is in the Island of Cancahue.'

Chiloe
(1835)

COLEOPTERA, Lucanidae: *Chiasognathus grantii* Stephens, two in the BM (1837–1, 1837–2).

Darwin collected 12 specimens which he forwarded to Cambridge (Babington 1837, Westwood 1837). Darwin (1871: vol. 1, 377, 384) writes at some length on this species in the *Descent* (chapter 10, Sexual Selection) and in correspondence with H. W. Bates (Stecher, 1969: 113) says 'I heard in Chile *Chiasognathus Grantii* squeaking loudly so I wd gladly pay £1 for a pr, if they can be bought: I brought home a dozen sp. T. but gave them all away'. A reply from Bates indicates that the dealer E. W. Janson had promised to try to obtain specimens.

1834 *July* *Insects* *18.*

2137. 2138. Heterom. Coleoptera. Pt St Julian.

Tenebrionidae: *Nyctelia angustata* Waterhouse, G. R. (1842*b*: 116) (= *N. brunnipes* Latreille), one in the BM (1863–44) described from 'Patagonia' probably refers here. *N. newporti* Waterhouse, G. R. (1842*b*: 113), was doubtfully recorded from St Julian. See also entry 1751.

2139 Cicada, very abundant, uttering shrill cry on the plains of Patagonia. Pt Desire &c.

2152a) [on verso] **a) (2152) Pulex from Didelphis (2204)**
2153 **(2153) Ricinus from a Condor.—**

(2139) HEMIPTERA–Homoptera, Cicadidae: no specimen found. Darwin (1871; vol. 1, 350) makes reference to Cicada song in the *Descent* (chapter 10, Sexual Selection) as follows: 'The noise thus made could be plainly heard on board the "Beagle" when anchored at a quarter of a mile from the shore of Brazil; and Captain Hancock says it can be heard at the distance of a mile'. There is no entry for Cicada in the Brazilian section of the notes and the recollection may refer to this entry. See also entry 2507.

(2152) SIPHONAPTERA: no specimen found but F. G. A. M. Smit suggests that this opossum flea was possibly a *Polygenis* sp. Four species of *Didelphis* (opossums) are included in the *Zoology* (Darwin, 1839: pt. 2, 93–7).

(2153) PHTHIRAPTERA: in the Denny collection at Oxford are three unidentified specimens on a card, from a condor, with green printed 153 [=2153]. The host is the condor (*Vultur gryphus* L.) and is treated in the *Zoology* (Darwin, 1841: pt. 3, 3).

2158. Coleoptera. Onthoph: under stones not dung feeder; rolls up like armadillo.

?Histeridae: *Onthophilus*, no specimen found.

2209 . . . 2213. Coleoptera under stones on mountains, valley of Aconcagua.

Carabidae, tribe Agonini: one in the BM (1887–42), Valparaiso, with a green printed 210 [=2210]. *Feronia (Poecillus) chaudoiri* Guérin. (Waterhouse, G. R., 1841*b*) (=*Pterostichus*), one in the BM (1884–119), S. America, with green printed 209 [=2209], see also entries 3201 for this species.

2214. Serica flying about in evening great (August) numbers. 5000 feet, elevation:— **on the** Campana of Quillota, **which is** 6200 feet.

COLEOPTERA, Scarabaeidae: no specimens found.

2215. Dromius, under dead bark, foot of Andes.

COLEOPTERA, Carabidae: no specimen found.

2216. Harpal. Hab. Do.

COLEOPTERA, Carabidae, Harpalinae: six in the BM (1887–42), Valparaiso, may refer here. See also entry 2776.

2217. Septaira, under stones, brook valley of Canguenes, high up. [Entry struck out—not entomological].

2218. Colymbetes, rapid brook. Hab. Do.

COLEOPTERA, Dytiscidae: *Colymbetes chiliensis* Laporte (Babington, 1842) (=*Lancetes nigriceps* Erichson), two in the BM (1863–44). Valparaiso. *C. punctum* Babington (1842: 10) (=*Leuronectes gaudicaudi* Laporte), five in the BM (1863–44), Valparaiso. *C. reticulatus* Babington (1842: 5) (=*Lancetes varius* F.), one in the BM (1863–44), Valparaiso. *C. suturalis* Babington (1842: 6) (=*Rhantus signatus* F.), one in the BM (1863–44), Valparaiso.

2219. Coleoptera, flying about in evening, 4000 feet elevation, Campana of Quillota.

No specimen found. See also entry 2214.

2303. 2308. Coleoptera, Diptera &c; all the latter and most of others taken by sweeping in the month of October, Valparaiso.

COLEOPTERA, Coccinellidae: *Adalia deficiens* Mulsant (Babington, 1842). *Coccinella fulvipennis* Mulsant (Babington, 1842), one in the BM (1887–42), Valparaiso.

Curculionidae: *Adioristus angustatus, A. conspersus, A. punctulatus* and *A. simplex,* all described by Waterhouse, G. R. (1842*b*: 124–6) from 'Valleys at Petorca', may refer here. The specimens marked 'type' in the BM have, at first glance, no clear connection with Darwin but the accession numbers 1875–36 on some refer to types presented by Waterhouse to the Beetle section. The types of *A. punctulatus* and *A. angustatus* bear accession numbers 1908–158 and 'formed part of Mr Bridges collection in Mr Bond's collection sold at Stevens auction 12.xii.07 and purchased from Mr O. Janson 26.v.08'. All four species appear under the original accession number (1875–36) in the Register!

Lathridiidae: one in the BM (1885–119), Valparaiso.

Melyridae: *Astylus gayi* Guérin (Champion, 1918*c*) may refer here, see also entry 2773.

Tenebrionidae: *Grammicus chilensis* Waterhouse, G. R. (1845*b*: 324, gen. et sp.), two in the BM (1845–118, 1885–119), Valparaiso.

DIPTERA, Sarcophagidae: *Sarcophaga* sp., one in the BM (1885–119).

HEMIPTERA, Henicocephalidae, one in BM labelled Valparaiso.

HYMENOPTERA, Pteromalidae: *Asaphes aenea* Nees (Walker, 1846: 23). Also the following Chalcidoidea (Walker, 1842*a*: 113–116): *Asaphes vulgaris, Callimome eumelis, C. nonacris, Entedon bedius, E. flacilla, Eulophus rhianus, Lamprotatus caecina, Lyrcus origo, Pteromalus gryneus, Tetrastichus polybaea, T. scadius, Torymus phormio.* See also entry 2776.

2317. Hister, under dry human dung abundant. **The red spots were much brighter** [presumably Darwin means in life].

COLEOPTERA, Histeridae: No specimen found.

2318. Gonoleptes, certainly from West coast, of S. America, but I cannot find out what part, given to me.

?Arachnida, spider—not an insect.

2323. Curculio. First appears in November. Very abundant, injurious to young shoots of plums and peaches; this is time of year when many Lamellicorn beetles, first appear **Valparaiso.**

COLEOPTERA, Curculionidae: *Lophotus eschscholtzi* Schoenherr (Waterhouse, G. R., 1840*b*), no specimen found in the BM, but the species would now be placed in the genus *Aegorhinus*.

2325. Lamellicorn **Do: Flying in numbers round the young peach trees, first appeared in first week of November.**

COLEOPTERA: no specimen found, but *Brachysternus castaneus* Guérin (Scarabaeidae), listed in the BM accessions book under 1845–63, may refer here.

2326. Coleoptera, in Fungus Decemr. Archipelago of Chiloe.

No specimen found.

2327. Blue Carabus, under logs of wood in the forest. Island of Lemuy. I notice all the [continued].

1834 *Insects* *Archipelago of Chiloe* *19.*

[continued] blue ones are males and coppery ones females, yet surely they are different species; do not Carabi, abound in one sex at one period. Emit a powerful acrid fluid, and smell like some of the Heteromerous insects very disagreeable and powerful.

COLEOPTERA, Carabidae: *Carabus darwinii* Hope (1838: 129) (subgenus *Ceroglossus*), one in the BM (1863–44) Chiloe. See section on eponyms for Hope's dedication and other comment. See also entries 2328, 2329, where it can be seen that different species were involved though it appears that Darwin collected more specimens than have survived.

2328. Carabus, far more common same Hab. and locality.

COLEOPTERA, Carabidae: *Carabus insularis* Hope (1838: 129), one (bluish-black) in the BM (1863–44) with green printed label 328 [= 2328] (s.g. *Ceroglossus*, as a variety of *C. valdiviae* Hope). See also entries 2327, 2329, 2520, 2914.

2329. Brighter variety (?) different locality.

COLEOPTERA, Carabidae: *Carabus chiloensis* Escholtz (Hope, 1838) (s.g. *Ceroglossus*, as variety of *C. valdiviae* Hope), the only specimen found in the BM (as *chiloensis* Hope) is labelled Valdivia. See entry 2520.

2330. Carab: Harpal same habitat and locality.

COLEOPTERA, Carabidae, Harpalinae: no specimen found.

2331. Heterom. rotten wood.

COLEOPTERA: no specimen found.

2332. Do. under stones near beach

COLEOPTERA: no specimen found.

2333. Carab. Harpal. very abundant.

COLEOPTERA, Carabidae, Harpalinae: no specimen found.

2338. Elmis. small stream, under stone. Various parts, east coast of Chiloe.

COLEOPTERA, Elmidae: *Elmis chiloensis* Champion (1918*b*: 48), four in the BM numbered 2338.

2367.... Coleoptera Diptera &c. &c. collected by sweeping the bushes and
... 2372 some from a Fungus. The whole country is one great forest.

COLEOPTERA, Carabidae: *Bembidion* spp., three in the BM (1887–42), Chili and numbered 2367. [Tribe Agonini det. N.E. Stork], four in the BM (1887–42), Chili and numbered 2367. Subfamily Harpalinae, four in the BM (1887–42), Chili and numbered 2367.

The following Carabidae are also included here though lacking specific numbers: *Antarctia circumfusa* Germar, one in the BM (1880–43) (det. Straneo); *Cascellius aeneo-niger* Waterhouse, G. R. (1840*c*: 256), two in the BM (1863–44); *Feronia (Pterostichus) bonellii* Waterhouse, G. R. (1841*b*: 123); *F. (Argutor) chilensis* Dejean (Waterhouse, G. R., 1841*b*: 129), one in the BM (1863–44); *F. nebroides* Curtis (Waterhouse, G. R., 1841*b*: 124); *Metius flavipes* Dejean (Straneo, 1951: 63) (= *Antarctia*), two in the BM (1885–119); *M. femoratus* Dejean (Straneo, 1951: 63) (= *Antarctia*), one in the BM (1880–43, wrong number); *M. ovalipennis* Straneo (1951: 71, 80) (= *Antarctia*), one in the BM (1880–43, wrong number), standing over an *Antarctia chilensis* Dejean label.

Cerambycidae: *Callisphyris macropus* Newman (1840: 1), *Hephaestion macer* Newman and *H. ocretus* Newman (both 1840: 10) may refer here, all described from Chiloe. Darwin has usually made separate entries for the Cerambycidae but none fit these specimens (see entries 50, 62, 76, 81, 101, 127, 133). See Fig. 18.

Chrysomelidae: *Aulonodera darwini* Champion (1918*b*: 51, gen. et sp.). *Strichosa eborata* Blanchard, two in the BM (1885–119), Chiloe, one numbered 2368. *Longitarsus chiloensis* (Bryant, 1942: 104) may also refer here. *Crepidodera chiloensis* Bryant (1942: 104), one in the BM (1885–119), numbered 2368.

Coccinellidae: *Stictospilus darwini* Brèthes (1924: 153 genus, 154 species), two in the BM (1885–119), numbered 2369. *Orynipus darwini* Brèthes (1924: 158), one in the BM (1885–119) and numbered 2368.

Colydiidae: *Philothermus cribricollis* Champion (1918*b*: 48), four in the BM numbered 2369.

Curculionidae, Leptopiinae: three in the BM numbered 2369, 2372, plus one *Dasydema hirtella* Blanchard in BM (1885–119) Chiloe, numbered 2368. There is also one unidentified specimen (BM 1887–42) of Baridinae.

Hydrophilidae: *Enochrus* sp., one in the BM (1885–119) numbered 2367. There are also two *Enochrus* spp. in Cambridge, but see entries 875, 1314.

Languridae: one in the BM (1885–119), Chiloe and numbered 2731, certainly an error for 2371.

Lathridiidae: seven in the BM (1885–119), Chiloe, numbered 2368 (1), 2369 (2) and 2371 (4).

Passandridae: *Catogenus decoratus* Newman (1839: 303) may refer here, one in BM (63.44) labelled 'Type' and on blue paper 'South of Chile, C. Darwin'. Described from Chiloe 'in the cabinet of Mr Melly'.

Silphidae: *Micragyrtes ocelligerus* Champion (1918*b*: 46, gen. et sp.), two in the BM numbered 2369. *Hydnobius forticornis* Champion (1918*b*: 47), one in the BM numbered 2369.

Staphylinidae: *Polylobus darwini* Bernhauer (1935: 96), one in the BM (1885–119) and numbered 2371.

DIPTERA. Some 120 specimens of unidentified Diptera are present in Dublin numbered 2368, 2369, 2523 and the following families are represented.—Agromyzidae, Calliphoridae, Ceratopogonidae, Chironomidae, Chloropidae, Clusiidae, Dolichopodidae (*Sympycnum* and *Somillus*), Empididae, Ephydridae (*Hydrellia* and *Notiphila* spp.), Lauxaniidae, Micropezidae, Muscidae, Mycetophilidae, Phoridae, ?Piophilidae, Rhagionidae, Sciaridae, Sciomyzidae, Sphaeroceridae, Stratiomyidae, Tephritidae, Tipulidae. Of these the most interesting is the Dolichopodid genus *Somillus* (= *Ionthodophrys*) (det. C. E. Dyte) which was originally described as an Acalyptrate.

HEMIPTERA: there are eight unidentified Homoptera in Dublin and ten Psyllidae in the BM (1885–119) accessions.

HYMENOPTERA: the following Chalcidoidea were described by Walker (1839) on the pages indicated.

Eurytomidae. *Eurytoma philager* (81).

Lamprotatidae. *Lamprotata nages* (83), *L. eleus* (85).

Pteromalidae. *Pteromalus protheus* (87), *P. mydon* (87), *P. traulus* (88), *P. rhaeo* (88), *P. vulso* (89).

Eulophidae. *Lophocomus anaitis* (91), *Elachestus gyes* (89), *Eulophus laonome* (90), *Tetrastichus xenocles* (90).

These probably all refer here but no attempt has been made to locate them in the BM collections. Little work has been done on this difficult group from these regions since Walker's day and the labour involved in interpolating Walker's work would merit only specialist attention for revisionary purposes (see Notes on Walker).

In Dublin there are about 20 small unidentified Hymenoptera from Chiloe.

2376. Elater. from considerable height. St Pedro [San Pedro Island at the S.E. extremity of Chiloe].

COLEOPTERA, Elateridae: *Elater luteipennis* Guérin, one in the BM (1845–63), Chiloe.

2414. Lampyrus? the genus to which this insect belongs, is in number of individuals and, species the most abundant kind in Chiloe and Chonos **Archipelago.**

COLEOPTERA, Lampyridae: no specimen found.

2415. Curculio (of Tierra del Fuego?) St Andrews Cape Tres Montes.

COLEOPTERA, Curculionidae: *Antarctobius lacunosus* Fairmaire (Champion, 1918*b*) (= *Listroderes*). See also entry 908.

2416. Locality. Do. Carab in rotten wood, high up on hilly forest.

COLEOPTERA, Carabidae: no specimen found.

2417. Curculio, Locality and Hab. same.

COLEOPTERA, Curculionidae: no specimen found.

2418. Harpal, under log of wood Locality Do.

COLEOPTERA, Carabidae: *Antarctonomus peroni* Chaudoir (Champion, 1918*b*), one in the BM (1885–119), Tierre del Fuego and labelled with green 418 [= 2418]. Clearly there is a labelling error here but the species also occurs in Tierra del Fuego (see entries 906, 1049).

2419. Bee. Midship Bay Chonos.

HYMENOPTERA: no specimen found.

2420. Libellula. East coast of Chiloe.

ODONATA: No specimen found.

2424. Coleoptera. thick forest **Chonos Arch:** In the very thick (Crytogamic [*sic* = Cryptogamic] flora) damp forest, [continued]

1834 December Insects Archipelago of Chonos 20.

[continued] Pselaphidae and small Staphylinidae the most abundant insects.

No specimens found, but in the *Journal* Darwin (1845: 286, footnote) records 'By sweeping with my insect-net, I procured from these situations a considerable number of minute insects, of the family Staphylinidae, and others allied to Pselaphus, and minute Hymenoptera. But the most characteristic family in number, both of individuals and species, throughout the more open parts of Chiloe and Chonos, is that of the Telephoridae'.

The comment on Telephoridae (= Cantharidae) is strange as this family is absent from Darwin's collections (though not from the Region) and notes. This may be a slip for Tenebrionidae to which most 'Heteromera' references allude.

2438. Fly. bred from the soft putrid kelp on the coast of Tres Montes. I never saw such immense numbers in clusters under side of stones.

DIPTERA: no specimen found. The true 'kelp-flies' of the family Coelopidae are not known to occur south of Mexico and this fly would probably be a *Paractora* sp. (see entry 1999) (Helcomyzidae) or a *Fucellia* sp. (Anthomyiidae).

2444–2455. Insects, from under stones at an elevation of 2500 feet, bare Granite mountain Patch Cove North part of Tres Montes 2444, 2446. Curious Hemipterous insects; it may be remarked there are 3 species of Curculio. The Elater in numbers were far most abundant; this

is a good example of The Alpine **Entomology of this part**; for **I sedulously** turned up **very many** stones; Libellula 2455 from base of mountain [clearly Syms Covington had been unable to interpolate Darwin's writing in the original Notebooks and had left spaces here for Darwin's insertions].

COLEOPTERA, Carabidae: *Bembidiomorphum convexum* Champion (1918*b*: 44, 45), one in the BM (1885–119), Tres Montes with green printed 449 [=2449].

Curculionidae: *Antarctobius laticauda* Champion (1918*b*: 54), one in the BM (1885–119) with green printed label 453 [=2453] (now placed in *Telurus* Juschel).

Tenebrionidae: *Parahelops darwini* Waterhouse, C. O. (1875: 334), one in the BM (1875: 35), 'Tierra del Fuego' but with a green printed 454 [=2454].

HEMIPTERA. These may be the two Cambridge Pelogonidae referred to entry 677 but the above habitat hardly sounds suitable for semi-aquatic species.

2462. Carab. Trechus Yuche Island **in the** forest [a little to the N of Tres Montes].

COLEOPTERA, Carabidae: *Cascellius kingii* Curtis (Waterhouse, G. R., 1840*c*), no specimen found. *C. gravesii* Curtis (Waterhouse, G. R., 1841), no specimen found. *Feronia (Pterostichus) bonellii* Waterhouse, G. R. (1841*b*: 123), no specimen found. *F. rufipalpis* Curtis (= *Pterostichus chalybicolor* Chaudoir), one in the BM (1863–44), Yuche I.

2463. Curculio. Do. Do.

COLEOPTERA, Curculionidae: *Lophotus nodipennis* Hope (Waterhouse, G. R., 1840*b*), one in the BM (1863–44) probably refers here.

2474. Coronula from whale, Chonos Archipelago Jany 1835 [crossed out? by Darwin—not entomological].

2482. 2483. 2484. Coleoptera from B[ahia] Blanca Patagonia.

Carabidae: *Calosoma patagoniense* Hope (1838: 129), one in the BM (1863–44) with green printed 484 [=2484]. See also entry 862 for this species.

2485. Acari (black) under stones and on putrid vegetable matter on beach in immense numbers. **Chonos Archipelago**

Arachnida—not an insect.

2486. Fly (biting my flesh). **Do.**

DIPTERA: no specimen found.

2497. Fly. on coast Lowes Harbour. **Do.**

DIPTERA: no specimen found.

2505. 2506. Coleoptera, in dense forest. **Do.**

No specimens found.

2507. Cicada. **Do.**

HEMIPTERA-Homoptera, Cicadidae: no specimen found.

2508. Carab: young. **Do.**

COLEOPTERA, Carabidae: no specimen found.

2509. Diptera. Hymenoptera. Coleoptera, all the above insects, taken on borders of wood by sweeping, Lowes Harbour. **Do.**

DIPTERA: many of the miscellaneous unidentified flies in Dublin from Chiloe, etc. may refer here, but they lack precise data.

HYMENOPTERA: the following Chalcidoidea described from 'Isle of Chonos' by Walker (1843*c*: 184–5) must refer here.

Lamprotatidae: *Lamprotatus numitus*.

Pteromalidae: *Pteromalus ?oxynethes*.

Eulophidae: *Entedon ufens, Closterocerus pelor*.

See comments on Hymenoptera under entries 2367–2372.

COLEOPTERA: no specimens found.

2520. Carabus, Centre of Chiloe, in forest **at level** of water; all [what looks like small figure 3 here] under one log of wood [continued].

1835 Jany Insects [Chonos Archipelago crossed out] *21.*

[continued] It is remarkable that the same variety (2329) is also a female and was equally found low down; is it distinct species?

COLEOPTERA, Carabidae: *Carabus chiloensis* Escholtz (Hope, 1838) (s.g. *Ceroglossus*), ?See entry 2329.

2521. Glow-worm. Centre of Chiloe.

COLEOPTERA, Lampyridae: ?larva, no specimen found.

2523. Insects, sweeping, Chiloe.

COLEOPTERA, Chrysomelidae: *Crepidodera chiloensis* Bryant (1942: 104), one in BM (1885–119) numbered 2523 (see also 2368).

Curculionidae. *Rhopalomerus tenuirostris* Blanchard (det. R. T. Thompson), one in the BM (1887–42) and numbered 2523.

For the Diptera, Hymenoptera and Hemiptera see comments under entry 2367. Dublin material definitely referable to this day's collecting and bearing numbers 2523 handwritten on small yellow labels are:

DIPTERA: Chloropidae, Empididae, Ephydridae (*Notiphila*, det. B. H. Cogan). In the BM accessions there are also two unidentified Chloropidae (Diptera) numbered 2523.

HEMIPTERA–Homoptera, Aetalionidae: *Melizoderes darwini* Funkhouser (1934: 203), two in BM (1885–119) numbered 2523.

Delphacidae: *Delphacodes chiloensis* and *D. darwini* Muir (1929: 78, 79), one of each in BM (1885–119), Chiloe, the latter numbered 2523.

Psyllidae: *Notophorina* sp. (det. D. Hollis), one in BM (1885–119) labelled Chiloe and numbered 2523. There are also unidentified Hemiptera of the families Cicadellidae, Lygaeidae and Miridae in BM accessions drawers.

2524. 2525. Flys [sic] which bite both men and horses the first especially abundant; Chiloe.

DIPTERA, Tabanidae: *Tabanus (Stypommia) anachoreta* Philippi (Kröber, 1930: 140) (= *Dasybasis* s.g. *Agelanius meridiana* Rondani), one in the BM (1885–119), E. Chili, certainly belongs here as two other non-Darwin specimens are from Chiloe.

It is possible that the Tabanid-like *Pelecorhynchus darwini* Ricardo (1900: 102) (family Pelecorhynchidae) is the second fly here as there is a specimen from Chiloe (BM 1885–119) and no other Darwin material fits here. However this species is a nectar-feeder and does not bite.

See also entries 1716, 2486, 2569.

2544. 2 Beetles from, either Cacao or Sugar, on board.

COLEOPTERA: no specimen found.

2545. Insects from S. Carlos de Chiloe.

?Order, no specimens found.

2546. Meloe, common. crawling about grass and flying about, Cudico, S. of Valdivia. The Padre told me, that the Indians use this as a poison, and likewise apply it as a caustic **or Blister.**

COLEOPTERA, Meloidae: no specimen found.

2557. 2558. 2559. Insects, sweeping, in and on borders of forest. Valdivia.

HYMENOPTERA: I refer here the Chalcidoidea described by Walker (1842*b*) as most likely to have been collected by sweeping: *Closterocerus xenodice, Dicyclus lynastes, Inostemma quinda, Lamprotatus bisaltes, L. natta, L. orobia, Pachylarthrus sariaster, Platygaster paches, Pteromalus megareus, Romilius zotale.*

2561. Pediculi. vide **p.** 315 and Pulex. The Fleas may be compared with some I collected at St Fe.

PHTHIRAPTERA: in the Denny collection at Oxford is a card mount of four unidentified lice bearing a green printed 564 [= 2564]. See also entries 1185 in *Spirits of Wine List* (the page reference is to the *Zoological Diary* which is cited under that entry).

SIPHONAPTERA. *Pulex irritans* L., female, Chiloe Island. In the Denny collection, Oxford. The other human flea referred to is under entry 758 and other flea entries are 376, 790, 2152, 3200. However, this is the only Darwin flea found.

2569. Fly which together with (2524–2525) torments man and horse in forest of Chiloe.

DIPTERA: no specimen found, but see 1716, 2524, 2525.

2596. 2597. Heterom. Sand dunes. Concepcion.

COLEOPTERA: no specimens found.

2764 **to** 2772 Small insects from Concepcion. S. C.

(a) [verso] **(a) Insects of Coquimbo and Valparaiso taken in the winter, those of Concepcion in the Autumn.**

COLEOPTERA, Carabidae: *Antarctia femorata* Dejean, one in the BM (1880–43). Concepcion (= *Metius*, see Straneo, 1951: 67). *A. euryptera* Putzeys, one in BM (1885–119) (det. Straneo, 1950). *Feronia nebroides* Curtis (Waterhouse, G. R., 1841). *F. (Steropus) marginata* Waterhouse, G. R. (1841*b*: 124), one in the BM (= *Pterostichus blandus* Er., det. S. L. Straneo). *Metius flavipes* Dejean (Straneo, 1951: 63). Subfamily Harpalinae: four unidentified species in BM (1887–42).

Coccinellidae: *Eriopis 16-pustulata* Brèthes (1924: 149) (= *E. connexa* Germar), one in the BM (1885–119).

Lathridiidae: two unidentified species in the BM accessions (1887–42), Concepcion, numbered 2770, 2772.

Melyridae: *Astylus gayi* Guérin (Champion, 1918*c*) may refer here.

DIPTERA, Empididae: *Platypalpus* sp. (det. K. G. V. Smith), one in the BM (1885–119).

Ephydridae: *Scatella vulgata* Cresson (1933: 108), one in the BM (1863–44), numbered 2770).

Pipunculidae: *Pipunculus posticus* Collin (1931: 59).

Sphaeroceridae: *Leptocera (Limosina) darwini* Richards (1931: 80), one in the BM (1885–119), labelled 2772.

HYMENOPTERA, Walker (1843*a*: 30–32) describes the following Chalcidoidea: *Lamprotatus alcander* (p. 30), *Gastrancistrus cephalon* (p. 30), *Pteromalus calenus* (p. 31), *Derostenus alcetas* (p. 31), *Closterocerus cercius* (p. 31), *Bellerus anaitis* (p. 32), *Tetrastichus naucles* (p. 32), *T. norax* (p. 32). See comments on Walker's Hymenoptera under entries 2367–2372.

2773. 2774. 2775. Small insects Coquimbo. S. C.

COLEOPTERA, Carabidae: *Antarctia latigastrica* Dejean, one in the BM, Coquimbo. *Feronia (Steropus) marginata* Waterhouse, G. R. (1841*b*: 124), one in the BM (1885–119), Coquimbo (= *Pterostichus blandus* Er. det. S. L. Straneo, 1950).

Coccinellidae: *Eriopis connexa* Germar (= *E. 16-pustulata* Brèthes), one in the BM (1885–119) (see also entry 2764).

Curculionidae: *Listroderes costirostris* Schoenherr and *L. robustus* Waterhouse, G. R. (Waterhouse, G. R., 1842*b*: 122). *Pentarthrum* sp., pair in BM (1885–119), Coquimbo.

Lucanidae: *Sclerognathus femoralis* Guérin, one in the BM (1887–42) (= *Dorcus darwinii* Hope), see also entry 968. *Dorcus bacchus* Hope (= *Apterodorcus*), one in the BM (1887–42).

Melyridae. *Astylus gayi* Guérin (Champion, 1918*c*), see also entry 2303.

Scarabaeidae: *Trox bullatus* Curtis, one in the BM (1885–119).

Tenebrionidae: *Psectrascelis pilipes* Guérin (Waterhouse, G. R., 1842*b*), 'numerous' but only one in the BM (1885–119), Coquimbo. *Scotobius gayi* Solier, one in the BM (1885–119). *S. rugosulus* Guérin is listed in the BM Accessions register under 1845–63 but has not been found.

HYMENOPTERA, the following Chalcidoidea were described by Walker (1843*d*): *Gastriancistrus polles, Lamprotatus naevolus, L. tubero, Omaloderus affine, O. intrepidus, Platygaster sylea, Platyterma nephele, Pteromalus oenoe, P. rhoebus, P. toxeus, P. vitula, Tetrastichus narcaeus.*

2776. 2836. 2837. Do. Valparaiso. Do.

I have placed here unnumbered Valparaiso specimens unlikely to have been swept (see entries 2303, 2308).'

COLEOPTERA, Carabidae: *Bembidion* sp. (det. N. E. Stork), one in the BM (1885–119). *Feronia aerea* Dejean (Waterhouse, G. R., 1841*b*), one in the BM (1863–44). *F. chilensis* Dejean (Waterhouse, G. R., 1841*b*), no specimen found. *F. marginata* Waterhouse, G. R. (1841*b*: 124), five in the BM (1885–119) (= *Pterostichus blandus* Er., det. Straneo, 1950). *F. meticulosa* Dejean (Waterhouse, G. R., 1841*b*), one in the BM (1863–44). *F. nebroides* Curtis (Waterhouse, G. R., 1841*b*), no specimen found. *F. submetallica* Waterhouse, G. R. (1841*b*: 122), one in the BM (see also entry 1397). *Metius flavipes* Dejean (Straneo, 1951: 63) (= *Antarctia*), one in the BM. *M. ovalipennis* Straneo (1951: 71, 80) (= *Antarctia*), one in the BM (1885–119). *Odontoscelis substriatus* Waterhouse, G. R. (1840*a*: 359), one in the BM (= *Barypus*). *O. tentyrioides* Curtis (Waterhouse, G. R., 1840*a*). *Trechisibus femoralis* Germain and *T. politus* Brullé (Jeannel, 1927).

Tenebrionidae: *Callyntra vicina* Solier (Waterhouse, G. R. 1842*b*) (= *Epipedonota multicosta* Guérin). *Parahelops darwini* Waterhouse, C. O. (1875: 334).

2838. Lamellicorn. Island of S. Maria.

COLEOPTERA, Scarabaeidae: *Trox bullatus* Curtis, one in the BM (1887–42), Valparaiso.

2839. 2840. Insects. Copiapo.

No specimens found.

2841. Insects. Mendoza. Cicindela, Elmis. The Cicindela comes from the saline mud-banks of 'Rio Estacado; the Elmis and Colymbetes from the tepid and slightly mineral waters of Villa Vicencia in Cordilleras. The Cryptocephalus is Chilean insect.

COLEOPTERA, Carabidae: *Bembidion* sp. (det. N. E. Stork), one in the BM (1885–119), Mendoza

Curculionidae: *Adioristus subdenudatus* Waterhouse, G. R. (1842*b*: 126), Mendoza. These must refer here as they fit none of the other Mendoza entries for beetles, 2916, 2917.

2913. Bug mentioned by all authors, as so great a pest near Mendoza **&** in the **Traversias**; sucks very much blood, frequents houses; but this was [continued]

1835 *Insects* [Coquimbo—crossed out] *22.*

[continued] caught in sandy ravine of cordilleras of Copiapo; called Benchuca, caught in my bed.

HEMIPTERA, Reduviidae, Triatominae: *Triatoma infestans* Klug but no specimen found. See entry 3423 for a full account of the Benchuca.

2914. 2915. Insects. Valdivia.

COLEOPTERA, Carabidae: *Cascellius aeneo-niger* Waterhouse, G. R. (1840*c*: 256). *Carabus valdiviae* Hope (1838: 128) (s.g. *Ceroglossus,* see 2329). *Feronia bonellii* Waterhouse, G. R. (1841*b*: 123) (= *Pterostichus chalybicolor* Chaudoir).

DIPTERA, Syrphidae: *Valdivia darwini* Shannon (1927: 32), one in the BM (1885–119) (= *Valdiviomyia*).

2916. Heterom. high valleys of East cordilleras and **Traversia** of Mendoza.

COLEOPTERA, Tenebrionidae: *Entomoderes erebi* Solier (Waterhouse, G. R., 1842*b*), one in the BM (1848–95), Mendoza. *Epipedonota affinis* Waterhouse, G. R. (1842*b*: 118) (= *E. ebenina* Lacordaire, ssp. *affinis*), no specimen found. *E. erythropus* Solier, *Nyctelia erythropus* auctt (Waterhouse, G. R., 1842*b*). *E. rugosa* Waterhouse, G. R. (1842*b*: 118), no specimen found. *'Nyctelia nodosa* Latrielle, *Zophosis nodosa* Germar' (Waterhouse, G. R., 1842*b*) also 'Maldonado (La Plata) & Bahia Blanca' but no specimens found. *N. subsulcata* Waterhouse, G. R. (1842*b*: 110), one in the BM (1863–44), Mendoza.

2917. Lamellicorn, abundant Do. **Traversia.**

COLEOPTERA, Dynastidae: *Oryctomorphus pictus* Waterhouse, G. R. (1842*c*: 281), one in the BM (1845–63) may refer here.

3152. Locust v. private ground P. Mendoza.

ORTHOPTERA, Acridiidae: no specimen found. See entries 1329, 1330 for other Acridiidae. In the *Journal* Darwin (1845: 329) records a swarm of locusts during his passage of the Cordillera, near Luxan. He says of the insects concerned 'This species of locust closely resembles, and perhaps is identical with the famous Gryllus migratorius of the East'.

3195. Insect (interesting) from the country near Callao. **(Peru)** [the sea port of Lima].

Order ? no specimen found, unless one of those under entry 3201 refers here.

3196. 3197. Male and female Crysomela [sic], about Lima. 1400 feet elevation, lower limit of winter vegetation. [Peru].

COLEOPTERA, Chrysomelidae: no specimen found.

3199. Prionus. Valparaiso (interior country).

COLEOPTERA, Cerambycidae: *Microcleptes aranea* Newman (1840: 11, gen. et sp.), 'resembles a small brown spider', one in the BM (1863–44), Valparaiso.

3200. Pulex (I believe irritans) (Callao) [Peru].

SIPHONAPTERA: the human flea, see entry 2561.

3201. Insects, sweeping, Callao.

COLEOPTERA, Carabidae: *Feronia eydouxii* Guérin (Waterhouse, G. R., 1840*c*) *Feronia peruviana* Dejean (Waterhouse, G. R., 1841*b*), two in the BM (1863–44). *F. (Poecillus) unistriata* Dejean (= *Pterostichus chaudoiri* Guérin), one in the BM (1863–44), Callao (see also entry 2209 for this species).

Dytiscidae: *Colymbetes saulcyii* 'Dufour ms in Hope Collection' (Babington, 1842: 9).

Tenebrionidae: *Melaphorus reichei* Guérin, one in the BM (1881–19, F. Bates) labelled 'Callao, C. Darwin' is numbered 1346. This number is not a Darwin number but refers to F. Bates' collection though none of the species described by him appear to include Darwin material (except 3561). See also entry 1751 for F. Bates material.

HYMENOPTERA. Chalcidoidea: the following were described by Walker (1843*b*): *Dicylus arduine, Entedon cleodora. Pachylarthyus cleodoxa, Pteromalus archia.*

3227. Buprestis. common between Guasco and Coquimbo.

COLEOPTERA, Buprestidae: no specimen found.

Galapagos Archipelago [inserted between two short lines by Darwin]

3228. Acarus, from great black sea Guano or Lizard. Galapagos—Chatham Island. September.

Arachnida, Acari—not an insect, see also entry 3240.

3229. Fly from Caracara Do. Do.

DIPTERA, Hippoboscidae: *Ornithomyia intertropica* Walker (1849: 1144) (= *Icosta nigra* Perty), three in the BM (1845–63), Galapagos Is. This 'Caracara' is *Buteo galapagoensis* Gould, the Galapagos hawk treated in the *Zoology* (Darwin, 1841: pt. 3, 23).

3230. 3231. 3232. Three Coleoptera, Heterom, under stones on hill. Do. [Chatham I. = San Cristóbal].

COLEOPTERA, Carabidae: *Feronia calathoides* Waterhouse, G. R. (1845: 21) is included here because the species is only recorded from here (Linsley & Usinger 1966: 141). Darwin's specimen is labelled 'Galapagos'.

Tenebrionidae: *Ammophorus galapagoensis* Waterhouse, G. R. (1845*a*: 30, gen. et sp.) 'under stones upon a hill in Chatham I.'. *Pedonoeces pubescens* Waterhouse, G. R. (1845*a*: 36) 'under stones on a hill on Chatham I. Sept'. *Stomion galapagoensis* Waterhouse, G. R. (1845*a*: 27 genus, 29 species), this must refer here; there is a specimen in the BM with a (white, should be yellow) printed 231 [= 3231].

HEMIPTERA–Heteroptera, Coreidae: *Anasa obscura* Dallas (1852: 505), described from 'Galapagos C. Darwin' is recorded from San Cristóbal by Linsley & Usinger (1966) and Froeschner (1985) and may refer here although no Hemiptera are mentioned by Darwin in this entry.

For Darwin's general comments on collecting in the Galapagos Archipelago see the *Journal* (1845: 391–2).

3240. Acarus, same as (3228).

Arachnida, Acari—not an insect.

3241. Acarus, from Pudenda of common great land Tortoise.

Arachnida, Acari—not an insect.

3245. Scolytus. branches of dead Mimosa **tree** Do. [Chatham I.] (long cavities, in whole length of bough, very numerous).

COLEOPTERA, Bostrichidae: *Apate* sp. (Waterhouse, 1845*a*) cites Darwin's data, Chatham I. (= *Amphicerus cornutus galapaganus* Lesne) (Linsley & Usinger, 1966: 151).

3246. Staphylinus, under dead bird. [Chatham I.]

COLEOPTERA, Staphylinidae: *Creophilus* sp. (Waterhouse, G. R., 1845*a*: 24) 'under dead bird', Chatham I. Linsley & Usinger (1966: 143) record *C. villosus* Gravenhorst from Chatham I.

3363. 3364. Small insects, sweeping high up, central parts of Charles Island. [= Floreana, = Santa Maria] October (Galapagos Is).

COLEOPTERA, Anthribidae: *Ormiscus variegatus* Waterhouse, G. R. (1845*a*: 37, genus, sp. & var. β), Darwin's data cited.

Carabidae: *Selenophorus galapagoensis* Waterhouse, G. R. (1845*a*: 22), see also Waterhouse, C. O. (1877). *S. obscuricornis* Waterhouse, G. R. (1845*a*: 22) may refer here though recorded only from Albemarle by Linsley & Usinger (1966).

Chrysomelidae: *Haltica galapagoensis* Waterhouse, G. R. (1845*a*: 39), later C. O. Waterhouse (1877: 80) erected the genus *Docema* to receive this species. *Longitarsus lunatus* Waterhouse, C. O. (1877: 81).

Coccinellidae: *Scymnus galapagoensis* Waterhouse, G. R. (1845*a*: 39), two in the BM (1845–63), Galapagos; (1877–1) Charles I. numbered 3363 (see also entry 3366).

Curculionidae: *Otiorhynchus cuneiformis* Waterhouse, G. R. (1845*a*: 38) (= *Amphideritus*).

Dytiscidae: *Copelatus galapagoensis* Waterhouse, G. R. (1845*a*: 23) may refer here although Linsley & Usinger (1966: 142) do not include Charles I.

Hydrophilidae: *Tropisternus lateralis* F. (Waterhouse, G. R. 1845*a*), see Blair (1933).

Phalacridae: *Phalacrus darwini* Waterhouse, C. O. (1877: 78), omitted by Linsley & Usinger (1966) and Linsley (1977).

Nitidulidae: *Acribis serrativentris* Waterhouse, C. O. (1877: 78, gen. et sp.) (= *Cybocephalus*), omitted by Linsley & Usinger (1966) and Linsley (1977).

Scarabaeidae: *Oryctes galapagoensis* Waterhouse, G. R. (1845: 26) may refer here.

Tenebrionidae: *Ammophorus obscurus* Waterhouse, G. R. (1845: 32) refers here (Blair, 1933). *Stomion helopoides* and *S. laevigatus* Waterhouse, G. R. (1845*a*: 30) may refer here.

DIPTERA: the following Diptera were not described from a specified island but Linsley & Usinger (1966) include Charles Island in their distribution.

Bombyliidae: *Anthrax primitiva* Walker (1849: 257) (= *Villa*).

Calliphoridae: *Musca pionia* Walker (1849: 881) (= *Phaenica* s.g. *Viridinsula*); *Musca phauda* Walker (1849: 896) (= *Cochliomyia macellaria* F., the secondary screw-worm fly).

Muscidae: *Anthomyia setia* Walker 1849: 956 (= *Ophyra aenescens* Wiedemann).

In Dublin there are 35 unidentified Diptera from Charles I. representing the following families: Agromyzidae, Anthomyzidae, Asteiidae, Bombyliidae, Ceratopogonidae (*Dasyhelea? paracincta* Wirth, det. R. P. Lane), Dolichopodidae (?*Chrysotus* sp., det. C. E. Dyte), Ephydridae, Otitidae, Syrphidae.

HYMENOPTERA, Braconidae: in Dublin are unidentified specimens of *Apanteles, Chelonus* and *Opius*. No Braconidae are recorded from Galapagos by Linsley & Usinger (1966) or Linsley (1977).

Chalcididae: *Chalcis cabira* Walker (1838: 472), Charles I., omitted by Linsley & Usinger (1966).

Cleonymidae: *Merostenus sadales* Walker (1839: 93, plate P, Walker 1840–1842, see fig. 16 of the present paper), omitted by Linsley & Usinger (1966).

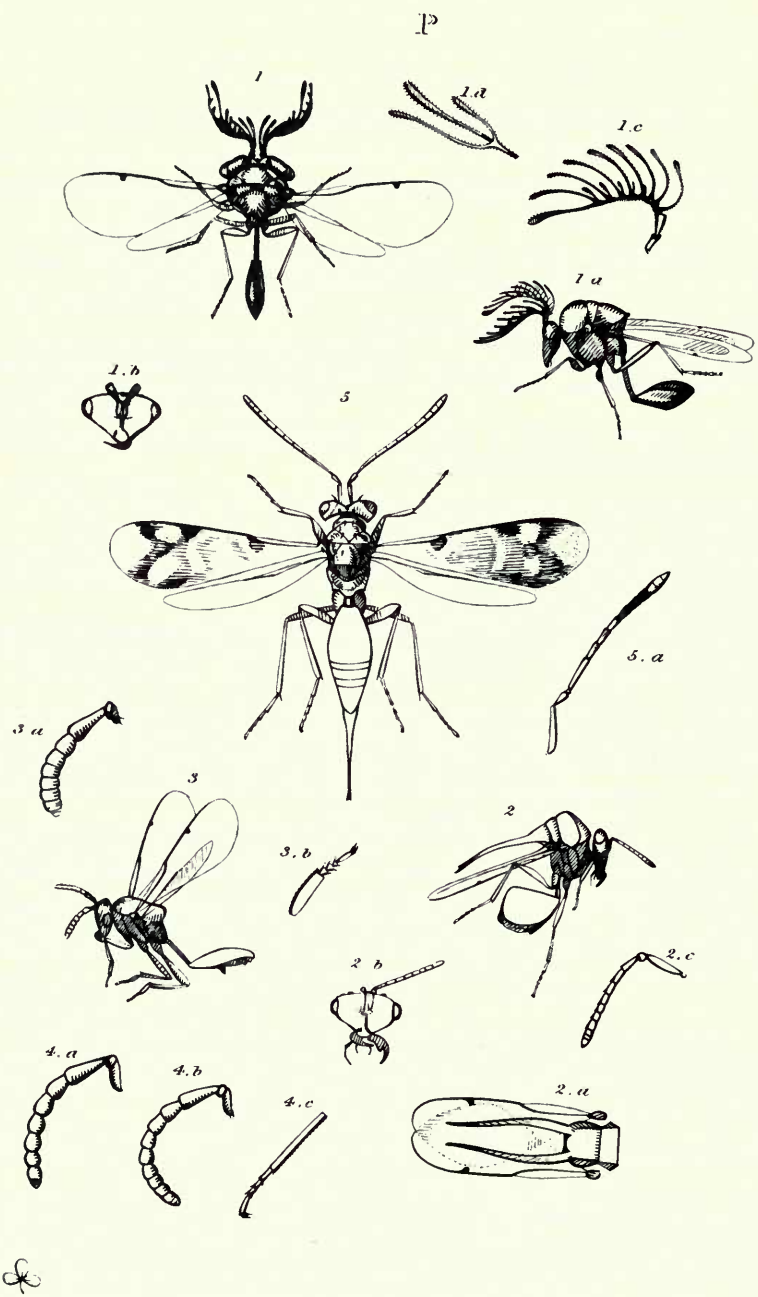

Fig. 16 Chalcidoid Hymenoptera depicted on Plate P in the first volume of the *Entomologist* (see Walker, 1840–42). This illustrated Darwin's *Beagle* captures described by Walker in his *Monographia Chalciditum* (1839): 1, *Eucharis volusus* Walker (see *Insect Notes*, 3561, King George's Sound, Australia); 2, *Thoracantha furcata* Fabricius (see 3858, Bahia, Brazil); 3, *Eucharis iello* Walker (see 3524, Hobart, Tasmania); 4, *Eucharis zalates* Walker (see 3561, King George's Sound, Australia); 5, *Merostenus sadales* Haliday (see 3363, Charles Island, Galapagos). The *Thoracantha* should be compared with the illustration and comments on that genus in Fig. 17.

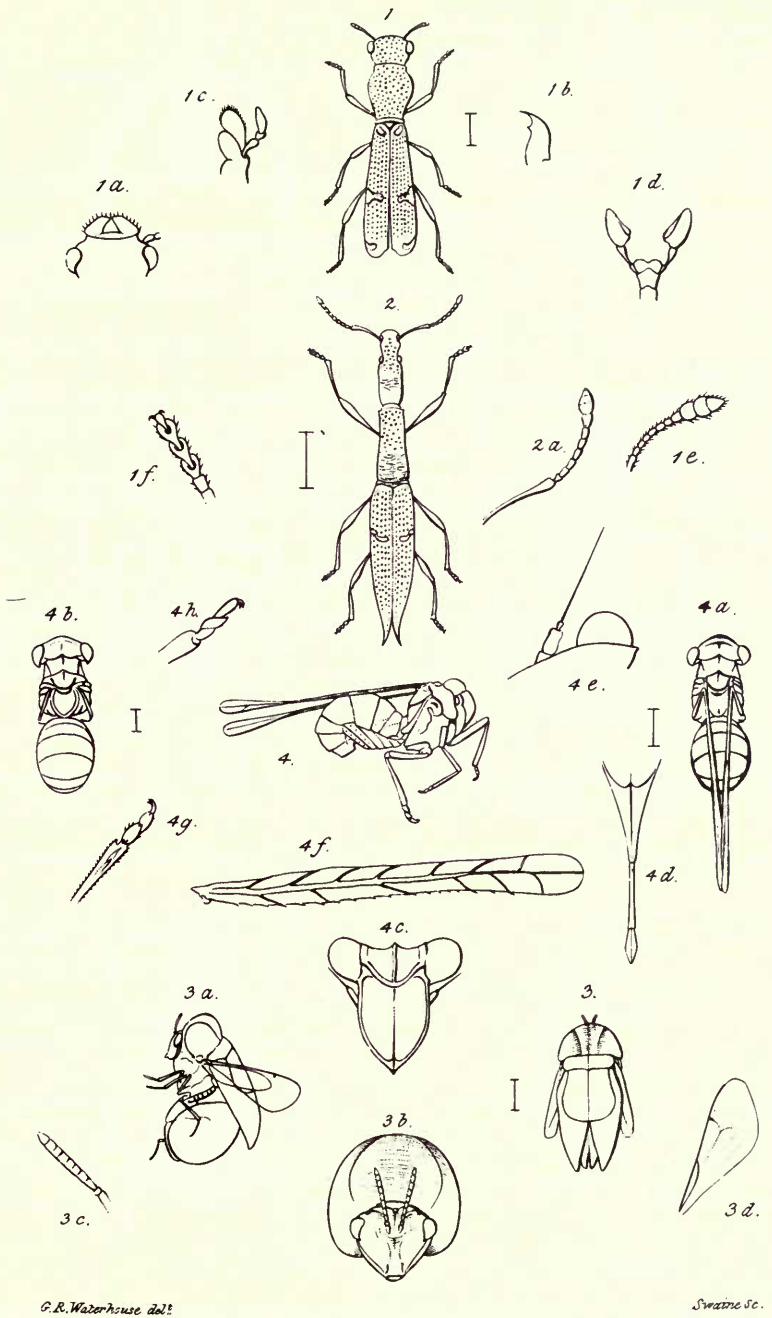

Fig. 17 Insects collected in Australia and Bahia, Brazil and described by G. R. Waterhouse: 1, *Allelidea ctenostonoides* (Coleoptera, Malachiidae, see *Insect Notes*, 3550, King George's Sound); 2, *Leptosomus acuminatus* L. (Coleoptera, Curculionidae, see 3528, Sydney); 3, *Thoracantha latreilli* (Hymenoptera, Eucharitidae, see 3858, Bahia); 4, *Alleloplasis darwinii* (Hemiptera, Derbidae, see 3561, King George's Sound and Eponyms). The *Thoracantha* should be compared with the species depicted in Fig. 16. These chalcid wasps have remarkable projections from the thorax over the abdomen so that from above they bear a strong resemblance to beetles of the genus *Mordella*. (By courtesy of the Royal Entomological Society of London from their *Transactions* for 1839).

Formicidae: *Camponotus planus* Smith (1877: 83); *C. macilentus* Smith (1877: 83), each of these ants have since been divided into several subspecies (mostly by Wheeler, 1919) on the different islands of the Galapagos (Linsley & Usinger, 1966).

Pteromalidae: *Pteromalus eneobulus* Walker (1838: 475), Charles I., omitted by Linsley & Usinger (1966).

Sphecidae: *Nitela darwini* Turner (1916: 345).

Thynnidae: *Agriomyia vagans* Smith (1877: 83).

HEMIPTERA–Heteroptera, Lygaeidae: *Nysius* (?) *marginalis* Dallas (1852: 556). Ashlock (1967: 42) erected the genus *Darwinysius* for this species.

Miridae: *Capsus darwini* Butler (1877: 89), 'a pretty and well-marked species' (= *Dagbertus*); *C. nigritulus* Walker (1873: 112) (= *Polymerus*); *C. quadrinotatus* Walker (1873: 113) 'evidently a common species' (see Fig. 18 of the present paper); *C. spoliatus* Walker (1873: 112) (= *Dagbertus*); *Miris lineata* Butler (1877: 89) (= *Trigonotylus*).

Homoptera, Cicadellidae: *Jassus planus* Butler (1877: 91) (= *Agallia*); *J. striolarius* Butler (1877: 91) (= *Agallia*).

Fulgoridae: *Delphax simulans* Walker (1851*a*: 356) (= *Ilburnia*); *D. substituta* Walker (1851*a*: 354) (= *Delphacodes*); *D. vicaria* Walker (1851*a*: 355) (= *Delphacodes*); *Issus rostrifer* Butler (1877: 90) (= *Galapagosana*); *I. varius* Walker (1851*a*: 355) (= *Philatis*).

Several Hemiptera occur also on James I. (see entries 3365, 3366) (see also entries 3230, 3232).

ORTHOPTERA, Acrididae: *Acridium literosum* Walker and *A. melanocerum* Stål (Walker 1870: 582) may refer here.

3365. 3366. Small insects Do. Do. James Island. [= Santiago]. October.

COLEOPTERA, Carabidae: *Calosoma galapageium* Hope (1838: 130), island unspecified by Hope but see Linsley & Usinger (1966); *Feronia galapagoensis* Waterhouse, G. R. (1845*a*: 21) (= *Pterostichus*); *Notaphus galapagoensis* Waterhouse, G. R. (1845*a*: 23) (= *Bembidion*).

Coccinellidae: *Scymnus galapagoensis* Waterhouse, G. R. (1845*a*: 41).

Chrysomelidae: *Diabrotica limbata* Waterhouse, C. O. (1877: 81) (= *Acylymma*).

Curculionidae: *Anchonus galapagoensis* Waterhouse, G. R. (1845*a*: 39).

Dermestidae: *Dermestes vulpinus* Auct. (Waterhouse, G. R. 1845) (= *D. maculatus* De Geer).

Elateridae: *Physorhinus galapagoensis* Waterhouse, G. R. (1845*a*: 25) (= *Anchastus*) may refer here.

Melyridae: *Ablechrus flavipes* Waterhouse, C. O. (1877: 79, gen. et sp.) (also listed in error by Waterhouse on p. 81 as *A. darwinii*).

Tenebrionidae: *Ammophorus bifoveatus* (Waterhouse, G. R., 1845*a*: 31) (= *A. bifoveatus* subsp. *bifoveatus*), there is another subspecies *barringtoni* Van Dyke on Barrington I. [= Santa Fé]. *Pedonoeces costatus* Waterhouse, G. R. (1845*a*: 35, gen. et sp.). *Stomion helopoides* and *S. laevigatus* Waterhouse, G. R. (1845*a*: 30 gen. et sp.) may refer here.

DIPTERA, Piophilidae: *Piophila atrata* Meigen (Walker, 1849: 1065) (= *P. casei* L.), one in the BM (1845–63), 'Galapagos'; the well known 'cheese skipper' widely dispersed by commerce. This family is not recorded from Galapagos by Linsley & Usinger (1966) or Linsley (1977).

Sarcophagidae: *Sarcophaga inoa* Walker (1849: 832), 'Galapagos' is included here as Linsley & Usinger (1966) include Santiago though Lopes (1878) does not (= *Galapagomyia*). *S. violenta* Walker (1849: 826), 'Galapagos' is recorded from James I. by Lopes (1978) (= *Gigantotheca*).

Tephritidae: *Trypeta* (now *Euaresta*) *aesia* Walker (1849: 1006) 'St James's Isle, Galapagos' has not been reported since (Foote 1982), one specimen in the BM (1845–63), James Island numbered 3365.

HYMENOPTERA, Cleonymidae: *Lelaps sadates* Haliday (Walker, 1839: 93).

Eulophidae: *Cirrospilus buselus* Walker (1839: 96).

Pteromalidae: *Spalangia endius* Walker (1839: 96) (= *S. nigra* Latreille).

All of these Chalcidoid Hymenoptera are omitted by Linsley & Usinger (1966).

LEPIDOPTERA, Arctiidae: *Deiopeia ornatrix* L. var. (= *Utetheisa*) (Butler, 1877), 'Albemarle' is included here as there is no provision in Darwin's *Notes* for it. Linsley & Usinger (1966) record it from Isabella [= Albemarle] and Baltra [= South Seymour].

HEMIPTERA–Heteroptera, Coreidae: *Stenocephalus insularis* Dallas (1852: 482) (= *Dicranocephalus*).

Lygaeidae: *Nysius marginalis* Dallas (1852: 556) (= *Darwinysius* Ashlock, 1967).

Miridae: *Capsus quadrinotatus* Walker (1873: 113) (= *Dagbertus*); *C. spoliatus* Walker (1873: 112) (= *Dagbertus*).

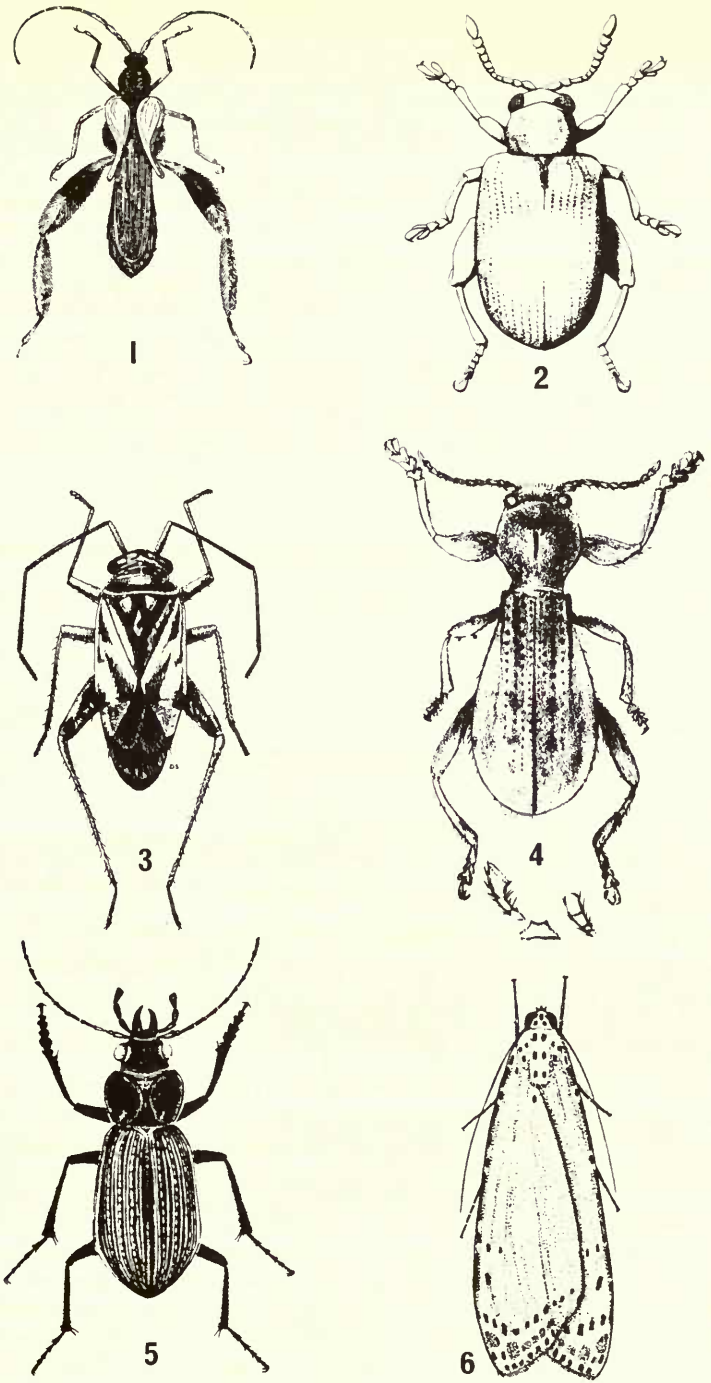

Fig. 18 1, *Callisphyris macropus* Newman (Coleoptera, Cerambycidae, Chiloe, see 2367) (from the *Entomologist,* 1841); 2, *Distigmoptera darwini* Scherer (Coleoptera, Chrysomelidae, Halticinae, Maldonado, see 1310) (by courtesy of the Museum G. Frey); 3, *Capsus quadrinotatus* (Walker) (Hemiptera, Miridae, Galapagos, see 3363) (by courtesy of the California Academy of Sciences); 4, *Cormodes darwini* Pascoe (Coleoptera, Cleridae, Lord Howe's Island) 'An insect so suggestive of Mr Darwin's theory should appropriately bear his name' (see Eponyms) (from the *Journal of Entomology*, 1862); 5, *Calosoma galapageium* Hope (Coleoptera, Carabidae, Galapagos Islands, see 3366); 6, *Utetheisa ornatrix* L. (Lepidoptera, Arctiidae, Galapagos Islands, see 3365). Last two from Hickin (1979).

Tingidae: *Monanthia cytharina* Butler (1877: 90) (= *Corythaica*).

Homoptera, Cicadellidae: *Acocephalus obliquus* Walker (1851*b*: 851) (= *Mesamia*). *Jassus lucidus* Butler (1877: 91) (= *Baclutha*).

Fulgoridae: *Delphax simulans* Walker (1851*a*: 356) (= *Ilburnia*); *D. substituta* Walker (1851*a*: 354) (= *Delphacodes*); *D. vicaria* Walker (1851*a*: 355) (= *Delphacodes*), *Delphax* larva and pupa ab. (Walker, 1851*a*: 356); *Issus varius* Walker (1851*a*: 355) (= *Philatis*).

Several Hemiptera are common to Charles I. (see entries 3363, 3364). See also entries 3230, 3232.

3390. Small insects, sweeping. November. Tahiti.

No specimens found.

3393. 3394. Insects. Do. Do.

No specimens found.

3415. 3416. 3417. 3418. Insects sweeping; Bay of Islands, New Zealand. December.

COLEOPTERA, Cerambycidae: *Oemona humilis* Newman (1840: 8, gen. et sp. in 'Cabinet of the Entomological Society'); *Xylotoles lentus* Newman (1840: 12, gen. et sp. in 'Cabinet of the Entomological Society').

Chrysomelidae, Alticinae: An unidentified specimen in the BM (1887–42) Accessions, New Zealand.

Coccinellidae: *Coccinella leonina* F., one in the BM, and some unidentified specimens in accessions (1887–41).

Curculionidae: *Cyttalia griseipila* Pascoe (Lea, 1926) probably refers here.

Lathridiidae: one in the BM (1887–42 accessions, numbered 3415.

DIPTERA. There are twelve unidentified specimens in Dublin, of the families Agromyzidae, Chloropidae and Syrphidae.

HEMIPTERA: Cixiidae: *Oliarus oppositus* (Walker) in the BM (1885–119) are two numbered 3415 and two numbered 3418 (det. C. Butcher). Some unidentified Miridae and Pentatomidae (unnumbered) are present in BM accessions.

HYMENOPTERA, Pteromalidae: *Pteromalus lelex* Walker (1839: 95).

3420. Cicindela in extraordinary numbers, in all parts of the country. Do. Do.

COLEOPTERA, Carabidae: *Cicindela,* No specimen found.

1835 *Decr* *Insects* *23.*

[Some pages are crossed out here, by Darwin?, as they were thought to have been repeated; however, only parts of pages were repeated and entries 3421–3528 were not. The double entries are not included here]

3421. 3422. Insects inhabiting rotten wood. N. Zealand.

No specimens found.

3423. Bug. caught at Iquique, Peru. Is called in the Mendoza country, Benchuca; is mentioned by many travellers, as so great a pest and bloodsucker; inhabits crevices in old walls. This specimen when caught was very thin; even when showing it a finger, would, when placed on a table immediately run at it with protruded sucker. Being allowed, sucked for 10 minutes **caused very little pain** [inserted by Darwin]; became bloated and globular & 5 or 6 times the original size; 18 days afterwards was again ready to suck; being kept 4 and $\frac{1}{2}$ months became of proper proportions, as thin as at first; I then killed it. A most bold and fearless insect.

HEMIPTERA–Heteroptera, Reduviidae (Triatominae): no specimen found, but from Peru this would be *Triatoma infestans* Klug. This bug is one of the vectors of American trypanosomiasis or Chagas' disease (after its discoverer, Carlos Chagas).

Adler (1959) first suggested that Darwin may have contracted Chagas's disease during his sojourn in Mendoza and that his persistent ill-health in later life could be attributed to this disease, though it was not clinically recognized until 1909. This was contested by a number of authors including Woodruff (1965) and others (Winslow, 1971), largely on the grounds that victims usually presented

with cardiac symptoms and did not survive to Darwin's age. Lewinsohn (1979) has recently reviewed the history of the disease and draws attention to the important rediscovery of Chagas' first patient, still alive and well in 1979 (aged 72). This patient presented with similar symptoms to Darwin and led Lewinsohn to suggest that 'Berenice is (and Darwin perhaps was) a carrier of the infection rather than the disease'.

To become infected a patient must not only be bitten by the bug but, since the infective stage of the causative protozoan (*Trypanosoma cruzi*) resides in the gut, the wound must be contaminated by its faeces. Almost invariably the bug defecates while sucking blood on the skin of its victim.

Darwin (1845: 330) records in the *Journal* observations similar to the entry in the *Insect Notes* above, but his additional comment shows that while the bug was indebted to one of the officers for the meal described above, it nevertheless establishes that Darwin too had been exposed to them on another occasion. Writing of a night spent in the village of Luxan [Argentina] he says 'At night I experienced an attack (for it deserves no less a name) of the Benchuca, a species of Reduvius, the great black bug of the Pampas. It is most disgusting to feel soft wingless insects, about an inch long, crawling over one's body. Before sucking they are quite thin but afterwards they become round and bloated with blood, and in this state are easily crushed'.

Entry 2913 also shows that on yet another occasion, this time at Copiapo in Chile, he was exposed to the attacks of the Benchuca. The chances of his contracting Chagas' disease do therefore seem rather high. In all of these localities the bug concerned would have been *Triatoma infestans* and not *Panstrongylus* (= *Conorrhinus*) *megistus* (Burmeister) as suggested by Poulton (1904) when comparing W. J. Burchell's and Darwin's experiences with these bugs. Burchell's specimens were collected in Brazil where *P. megistus* is the principal bug biting man and thus the vector of Chagas' disease. There is no evidence that Burchell suffered the symptoms of Chagas' disease. Little is known of his later life but he died at the age of 80, by his own hand (Poulton 1905).

3445. Staphylinus; Carrion. Hobart Town. Van Dieman's Land [Tasmania]. Feby.

COLEOPTERA, Staphylinidae: no specimen found, but my colleague P. M. Hammond suggests that this might be *Creophilus erythrocephalus* F., a common carrion species frequently collected by early travellers in Tasmania. See also entry 708.

3446. Aphodius, Cows dung. Do.

COLEOPTERA, Scarabaeidae: no specimens found. See entry 3506.

3504. Aphodius, Horses, dung. Do.

COLEOPTERA, Scarabaeidae: no specimen found. See entry 3506.

3505. Aphodius. Cows, dung. Do.

COLEOPTERA, Scarabaeidae: no specimen found. See entry 3506.

3506. 3507. 3508. 3509. 3510. 3511. 3512. I believe includes 3 species of Onthophagus; 2 latter common in cows dung:—from Do.

COLEOPTERA, Scarabaeidae: no specimens found.

In the *Journal* Darwin (1845: 490, footnote), in a discussion on dung beetles seen on the voyage, says 'In Van Dieman's Land, however, I found four species of Onthophagus, two of Aphodius, and one of a third genus, very abundant under the dung of cows; yet these latter animals had been then introduced only thirty-three years. Previously to that time, the Kangaroo and some other small animals were the only quadrupeds; and their dung is of a very different quality from that of their successors introduced by man'. (See also entries 1491, 2102, 3506, 3819). Bornemissza (1983) suggests that: Darwin's four *Onthophagus* species were probably *auritus* Erichson, *fuliginosus* Erichson, *mutatus* Harold and *posticus* Erichson, all then undescribed; one of his *Aphodius* species was *pseudotasmaniae* Given; his third genus was probably *Proctammodes* (= *Proctophanes*) *sculptus* Hope. He also verifies the accuracy of Darwin's observations. No specimens have been found.

3513. Phalacrus, in rotten wood; has a **Phalacrus** been taken **before** out of Europe? Do.

COLEOPTERA, Phalacridae: *Litochrus sydneyensis* Blackburn, 'King George's Sound'; *Phalacrus corruscans*, Panzer, 'King George's Sound'.

These are the only Australian Phalacridae collected by Darwin, both recorded by Lea (1926: 281). Although the entry here apparently alludes to Hobart Town from the 'Do' I refer them here because

of Darwin's special comment. The entries in the *Notes* are clearly out of sequence anyway as the *Beagle* visited Sydney, Tasmania, King George's Sound, in that order. In fact Phalacridae had previously been collected during the voyage in Maldonado (entries 1310, 1321–2) and Galapagos (3363–4).

3514. Larva. beneath stones, fresh water. Do.

Order (?), no specimen found.

3524. 3525. 3526. Insects by sweeping. Do.

In the following list of Coleoptera BM data are only cited where new records or misidentifications of Darwin material are involved. All are from Lea (1926) unless otherwise indicated (Lea's new species have the reference and pagination).

COLEOPTERA, Anthribidae: *Araeocerus lindensis* Blackburn; *Xynotropis micans* Blackburn.

Carabidae: *Bradycellus promtus* Erichson.

Chrysomelidae: *Ditropidus minutus* Lea; *Haltica variegata* Waterhouse, G. R. (1838: 133); *Idiocephala darwini*; *I. semibrunnea*; *I. tasmanica* Saunders (1843: 317) (all 'In Cabinet of Entomological Society'); *Monolepta ordinaria* Blackburn; *M. nigricornis* Blackburn; *Rhyparida commutabilis* Lea.

Coccinellidae: *Diomus pumilio* Weise, one in the BM; *Rhizobius alphabeticus* Lea; *R. pulcher* Blackburn; *Scymnus maestus* Lea (1926: 287); *S. vagans* Blackburn.

Curculionidae: *Elleschodes tenuistriatus* Lea; *Encosmia ventralis* Lea (1926: 282); *Epamaebus ziczac* Lea; *Epamaebus* sp., one unidentified in the BM (1885–119), numbered 3524; *Eristus blackburni* Lea, one in the BM (1885–119), numbered 3524, but not included in Lea (1926); *Misophrice submetallica* Blackburn, one in the BM (1887–42), not in Lea (1926); *Rhamphus acaciae* Lea; *R. setistriatus* Lea (1926: 285); *Storeus brachyderes* Lea; *S. metasternalis* Lea (1926: 283); *Symbothinus squalidus* Blackburn (det. Lea), one in the BM (1887–42), not in Lea (1926); *Thecia pygmaea* Pascoe, one in the BM (1885–119), my colleague R. T. Thompson informs me that this species was wrongly identified by Lea. *Tychius minutissimus* Boh.

Dermestidae: *Anthrenus ocellifer* Blackburn.

Hydrophilidae: *Octhebius macrognathus* Lea (1926: 279).

Malacodermidae: *Hypattalus abdominalis* Erichson.

Mordellidae: One unidentified specimen in the BM Accessions.

Ptinidae: *Dryophilodes angustus* Lea (1926: 282); *D. squalidus* Lea (1926: 282).

Scaphidiidae: *Scaphisoma instabile* Lea (1926: 280).

DIPTERA, Asilidae: *Bathypogon* sp. (det. G. Daniels), Tasmania. One in the Bigot collection at Oxford.

There are about 40 mostly unidentified Diptera in Dublin representing the following families: Chamaemyiidae (*Pseudoleucopis ?fasciventris* Malloch), Chironomidae *Chironomus* sp., det. P. S. Cranston), Chloropidae, Dolichopodidae, Empididae (*Hilarempis* sp., det. K. G. V. Smith), Phoridae, Muscidae (including *Coenosia acuticornis* Stein, det. A. C. Pont), Sciaridae and other small Nematocera and Acalyptratae.

HEMIPTERA–Heteroptera. In Oxford are a few specimens as follows: Pentatomidae (genus near *Nezara, Dinocoris* sp.), Coreidae (*Amorbus* sp.), Homoptera, Psyllidae. *Acizzia.* Three specimens of probably the same species in the BM (1885–119), Hobart Town and numbered 3524 and 3526 and another damaged Psyllid numbered 3524 (see also entry 3561).

Spodyliaspidae: three in the BM Accessions (1885–119), Hobart Town, numbered 3524 and 3526 (one a *Glycaspis* sp. det. D. Hollis).

These Homoptera were probably swept from *Acacia* and *Eucalyptus.* In Oxford there are some unidentified specimens of Homoptera.

HYMENOPTERA: The following Chalcidoidea were described or identified in Walker (1838, 1839, 1840–1842) and are grouped in families assuming Walker's generic placements were correct.

Chalcididae: *Hockeria eracon, H. proxenus, Smiera teleute.*

Encyrtidae: *Encyrtus arsanes, E. cheles, E. lucetius, E. odacon, E. salacon, E. xuthus, E. zebina.*

Eucharitidae: *Eucharis eribotes, E. iello* (illustrated in *Entomologist* plate P, fig. 3, see Walker. 1840–1842)—see Fig. 16 of the present paper).

Eulophidae; *Elachestus artoeus, Entedon hestia, Eulophus itea, Euplectrus bicolor* Swederus, *Ophelimus sabella, O. ursidus* Haliday, *Tetrastichus arses, T. autonae, T. dymas, T. fannius, T. glycon, T. hippasus, T. neis, T. proto, T. valens, T. xenares, T. zaleucus.*

Eurytomidae: *Eurytoma eleuthor, E. pidytes, E. volux, Isosoma ravola.*

Lamprotatidae: *Lamprotatus bato, L. ciron, L. hecatoeus, L. thera, Seladerma cernus, S. letus, Semiotus merula.*

Pteromalidae: *Pteromalus baton, P. niphe, P. oceia, P. thestor, P. unca.*

Torymidae: *Megastigmus borus, M. drances, M. laminus.*

Halictidae: *Halictus repertus* Cockerell (1932: 520) in Oxford, refers here.

NEUROPTERA, Mantispidae: one unidentified specimen in Oxford.

ORTHOPTERA, Acrididae: one unidentified in Oxford.

3527. Do. Alpine; **Insects** Mount Wellington, elevation 3100 feet. [Tasmania].

COLEOPTERA, Coccinellidae: *Scymnus flavolaterus* Lea (1926: 287).

HYMENOPTERA, Pteromalidae: *Micromelus silanus* Walker (1843*e*: 46).

In Dublin there are about 40 unidentified Diptera and Hymenoptera standing over the number 3527. The Diptera include the families Agromyzidae, Dolichopodidae, Empididae, Ephydridae (*Hydriellia* and *Notiphila*, det. B. H. Cogan), Lauxaniidae, Phoridae, Stratiomyiidae (*Actina* sp., det. J. Chainey), Tipulidae.

3528. Insects sweeping near Sydney, S. Covington.

COLEOPTERA, Buprestidae: *Cisseis puella* Kerr, *Germarica lilliputana* Thomson.

Chrysomelidae: *Coenobius spissus* Lea, *Ditropidus inconspicuus* Lea, *D. lentulus* Charpentier, *D. striatopunctatus* Lea.

The following list of Coleoptera are all recorded in Lea (1926), unless other references are cited.

Chrysomelidae (continued): *Haltica aenea, H. bicolor, H. crassicornis, H. labialis, H. scutellata* (all Waterhouse, G. R. 1838), *Monolepta subsuturalis* Blackburn, *M. sordidula* Blackburn.

Coccinellidae: *Novius bellus* Blackburn, *N. sanguinolentus* Mulsant, *Rhizobius debilis* Blackburn, *R. ventralis* Erichson, *Scymnus elutus* Lea, *S. notescens* Blackburn, *Serangium mysticum* Blackburn, *S. obscuripes* Lea. In the BM are also the following Darwin Coccinellidae from Sydney but, unrecorded by Lea: *Coelophora inequalis* (F.), *Diomus notescens* Blackburn, *D. pumilio* Weise, *Harmonia conformis* (Boisduval), *Rhizobius forestieri* (Mulsant) and two unidentified specimens in the Accessions.

Curculionidae: *Cydmaea cara* Lea, *C. pusilla* Pascoe, *Desiantha malevolens* Lea, *Empolis leai* Blackburn, *Leptosomus acuminatus* L., (Waterhouse, G. R., 1839) (= *Rhadinosomus*), see Fig. 17.

Hydrophilidae: *Paracymus lindi* Blackburn; *Paranacaena* sp. near *horni* Blackburn, one in Cambridge with a label suggesting that it is Australian, as are other members of the genus.

Lathridiidae: *Croticaria australis* Blackburn.

Malacodermidae: *Laius cinctus* Redtenbacher.

Scarabaeidae: *Automolus humilis* Blanchard.

DIPTERA. In Dublin there are about 70 specimens, mostly unidentified, as follows: Chironomidae (*Chironomus* sp., det. P. S. Cranston), Dolichopodidae, Empididae (*Hybos* sp., det. K. G. V. Smith), Micropezidae (*Taeniaptera lasciva* F., *Cardiocephalus triluminata* Cresson, det. B. H. Cogan), Muscidae (*Atherigona tibiseta* Malloch, *Coenosia acuticornis* Stein, det. A. C. Pont), Sciaridae, Sepsidae (*Xenosepsis sydneyensis* Malloch, *Parapalaeosepsis plebeia* Meijere, det. A. C. Pont), Stratiomyidae and other small Nematocera and Acalyptrates in poor condition.

HEMIPTERA–Heteroptera. At Oxford there are specimens of Pentatomidae (*Canthecona, Dinocoris, Elasmostethus* and a genus near *Nezara*); Lygaeidae (*Graptostethus* sp.); Reduviidae (immature); Corixidae (two *Sigara australis* (Fieber) 'sent to G. W. Kirkaldy'). Lygaeidae: *Ontiscus darwini* Hamid (1975: 42), two in BM (1885–119) numbered 3528, see also 3561.

Homoptera. *Cephalelus brunneus* (Waterhouse, G. R., 1839: 195). In the BM there are unidentified Cicadellidae (1) and Fulgoroidea (1) numbered 3528. At Oxford there are a few specimens of Cicadidae (*Melampsalta*), Flatidae (*Carthaea*), Cercopidae (*Orthoraphia*) and some unidentified genera.

HYMENOPTERA, Gasteruptiidae (= Evaniidae): *Foenus darwinii* Westwood (1841: 537; 1844: 259) (= *Hyptiogaster*). In the 1844 version of this paper under *Monomachus falcator* Klug ms Westwood says 'Obs. C. Darwin, Esq. brought home a species of this genus which has for some time been in the hands of W. E. Shuckard, Esq., for description.

Halictidae: *Halictus (Evylaeus) darwiniellus* Cockerell (1932: 519). Cockerell comments on another Australian bee (*Reepenia testacea* Smith) possibly from the *Beagle* expedition via J. G.

Children's collection but the provenance is uncertain. Both bees are in Oxford and are the only Darwin bees so far located.

Chalcidoidea: Francis Walker (1838, 1839) described the following species from Sydney. These are placed in families assuming the generic placement to be correct, which knowing Walker's reputation may not be the case (see Notes to this paper).

Chalcididae: *Chalcis phya, Hockeria nyssa, H. proxenus.*

Encyrtidae: *Encyrtus pacorus.*

Eucharitidae: *Eucharis eribotes, E. theocles, E. valgius, E. xeniades, E. zalates.*

Eulophidae: *Entedon diocles.*

Eupelmidae: *Eupelmus eurozonus* Dalman.

Eurytomidae: *Eurytoma olbus, E. tellis, E. volux. Palmon olenus.*

Lamprotatidae: *Gastrancistrus menoetes. Lamprotatus damia, L. mycon, L. nicon. Seladerma athanis.*

Torymidae: *Callimome vibidia.*

In Dublin there are about 25 Hymenoptera from Sydney, mostly Braconinae, Opiinae and *Apanteles* (det. T. Huddleston). In Oxford there is one unidentified Chalcidid.

ORTHOPTERA, Acrididae: there are seven unidentified specimens in Oxford

Tettigonidae: there are two unidentified specimens in Oxford plus 14 other Orthoptera.

1836 *Insects* *24.*

[Entries 3390–3527 repeated and crossed out]

1836 *Insects* *25.*

3550. Beetle, inhabiting in numbers a large flower [Hobart town Feby—crossed out] King George's Sound [Australia] March.

COLEOPTERA, Malachiidae: *Allelidea ctenostomoides* (Waterhouse, G. R., 1839: 194). Six in the BM (1841–32). See Fig. 17.

3556. Curculio, one of the most abundant insects here [Hobart Town Feby—crossed out] King George's Sound March.

COLEOPTERA, Curculionidae: *Belus testaceus* Waterhouse (1839: 188).

Probably refers here as it appears to have been singled out for description by Waterhouse; all other weevils are included in the next entry.

3561. Small insects sweeping on coarse grass or brush wood. King George's Sound. March.

COLEOPTERA: In the following list all are recorded in Lea (1926) unless otherwise indicated (date and page given for Lea if his new species).

Clambidae: *Clambus australiae* Lea (1926: 280).

Chrysomelidae: *Haltica acuminata, H. aeneo-nigra, H. bivittata, H. nitida, H. ochracea, H. ovata, H. picea, H. pygmaea, H. subaena, H. substriata* (all described by G. R. Waterhouse, 1838). *Ditropidus jacobyi* Baly.

Coccinellidae: *Rhizobius occidentalis* Blackburn, *R. subhirtellus* Lea (1926: 286), *Scymnus flavifrons* Blackburn.

Curculionidae: *Antyllis latipennis* Lea. One in the BM (1885–119) labelled Swan River, W. Australia (? non-Darwin) is referred here (Lea, 1926: 284). *Calandra oryzae* L. *Cydmaea diversa* Blackburn. *Decilaus moluris* Lea. *Ethadomorpha clauda* Blackburn. *Microberosiris exilis* Lea. *Olanea* sp. *Orichora trivirgata* Pascoe. *Rhamphus perpusillus* Pascoe. *Storeus variabilis* Lea. *Thechia brevirostris* Lea (1926: 284). *T. longirostris* Lea (1926: 285).

Dascillidae: *Cyphon fenestratus* Blackburn.

Dytiscidae: *Hydroporus darwinii* Babington (1842: 13) (= *Necterosoma*); *H. unidecemlineatus* Babington, two in the BM (1863–44) are labelled Tierra del Fuego apparently in error as this species is referable to *Necterosoma*, a genus which does not occur in South America (Watts, 1978: 95).

Tenebrionidae: *Hypaulax ampliata* Bates, F. var. *parryi* Bates, F. (1874:20), two in the BM (1881–19, F. Bates acc. No.). 'Voyage of the Beagle' on blue paper. I refer these here although they are large beetles. The typical form came from Nicol Bay, Western Australia. Bates described the

two specimens of the var. on the same page and noted that they were ex coll. [F.J.S.] Parry, but the precise locality is unknown.

DIPTERA, Acroceridae: *Ogcodes darwini* Westwood (1876: 516) in Oxford may refer here.

In Dublin there are about 20 Diptera in poor condition including several Dolichopodidae.

HEMIPTERA–Heteroptera, Lygaeidae: *Ontiscus darwini* Hamid (1975: 42), two in BM (1885–119), see also 3528.

Pentatomidae: Genus near *Nezara*, one in Oxford.

Homoptera, Cicadellidae: *Cephalelus marginatus* (Waterhouse, G. R., 1839: 195, var. β, var. γ).

Delphacidae: *Haplodelphax darwini* Fennah (1965: 33), one in BM (1885–119).

Derbidae: *Alleloplasis darwinii* Waterhouse, G. R. (1839:194). See eponyms for dedication. See Fig. 17.

Eurymelidae: *Anipo darwini* Evans (1942: 144), one in BM (1885–119).

Psyllidae: *Acizzia* sp., one in the BM (1885–119), a different species from 3524–5.

HYMENOPTERA: Walker (1838, 1839) described the following Chalcidoidea. See comments under previous entries 3528.

Chalcididae: *Hockeria dexius*.

Encyrtidae: *Encyrtus lucetius, E. xuthus, E. zameis. Ericydnus chryscus*.

Eucharitidae: *Eucharis volusus* (Plate P) (see Fig. 16, present paper), *E. zalates* (Plate P, Walker 1840–1842) (see Fig. 16, present paper).

Eulophidae: *Euderus mestor, Eulophus megalarus. Tetrastichus lelaps*.

Eupelmidae: *Eupelmus dodone*.

Eurytomidae: *Eurytoma aretheas, E. pidytes. Isosoma oritias*.

Lamprotatidae: *Lamprotatus nelo, Seladerma athanis, Semiotus dice, S. theope*.

Perilampidae: *Perilampis saleius*.

Pteromalidae: *Pteromalus fabia*.

Torymidae: *Callimome daonus, C. osinus*.

3588. Beetle taken on board the *Beagle*, Keeling Ids.

COLEOPTERA: no specimen found.

3593. Insects sweeping: the small ant swarms in countless numbers Keeling Isd.

In the *Journal* Darwin (1845, 456, footnote) says of the Keeling fauna 'of insects I took pains to collect every kind. Exclusive of spiders, which were numerous, there were thirteen species[1]. Of these one only was a beetle. A small ant swarmed by thousands under the loose dry blocks of coral, and was the only true insect which was abundant.' The superscript refers to a more informative footnote: 'The thirteen species belong to the following orders:— In the *Coleoptera* a minute Elater; *Orthoptera*, a Gryllus and a Blatta; *Hemiptera*, one species; *Homoptera*, two; *Neuroptera*, a Chrysopa; *Hymenoptera*, two ants; *Lepidoptera nocturna*, a Diopaea, and a Pterophorus (?); *Diptera*, two species.'

No specimens have been found. The *Deiopeia* was listed by Walker (1854: 567) as *D. pulchella* L., but Jordan (1939: 283) described this as subspecies *darwini* of *Utetheisa pulchelloides* Hampson (Arctiidae) and records two males coll. C. Darwin plus other specimens. See entry 3594 for the *Chrysopa*.

3594. Hemerobius.—(last three in April) Do. [Keeling].

NEUROPTERA, Chrysopidae: this is undoubtedly the *Chrysopa* referred to in the *Journal* (Darwin, 1845: 456, footnote) (see entry 3593). There are two specimens in the BM (1885–119), Keeling Isld, one numbered 594 [= 3594], the other bearing a label 'seems to be *Chrysopa innotata*' but they are in fact *C. ramburi* Schneider (det. P. C. Barnard).

3635. Water beetles, mountain stream Mauritius. May.

COLOEPTERA, Hydrophilidae: *Limnoxenus* sp., one in Cambridge labelled 'South America' may refer here. Other specimens (non-Darwin) in the BM are from Europe, Ghana, S. Africa, Sandwich Is. and Australia.

HEMIPTERA–Homoptera, Cicadidae: *Stagira darwini* Distant (1905: 213), one in the BM (1885–119), Mauritius, is referred here as there is no other entry.

3688. 3689. 3690. 3691. Small insects sweeping in valleys of mountains near Simons Bay. [Cape] June.

COLEOPTERA, Anthicidae: *Anthicus (Aulacoderus) atronitidus* Laferté, two in the BM (1885–119, 1887–42), numbered 3689 and 3691 (det. J. C. van Hille).

Chrysomelidae: *Aphthona bevinsi* Bryant (1942: 106), one in the BM numbered 3691. *A. capensis* Bryant (1942: 106) may also refer here.

Curculionidae. *Oosomus hariolus* (Dollman in Schoenherr), one in the BM (1875: 36), Cape of Good Hope, numbered 3689 and labelled 'examined by Lacordaire' by Waterhouse and marked with a double asterisk on a separate label. Another Cape specimen is also present in the BM (1887–42) but represents a different species.

Dytiscidae: *Darwinhydrus solidus* Sharp (1882: 374, gen. et sp.), one in the BM (1885–119) numbered 3688.

Hydrophilidae: *Prosthetops capensis* Waterhouse, F. H. (1879: 533, gen. et sp.).

Nitidulidae: *Meligethes splendidulus* Reitter (det. A. M. Easton), two in the BM, one (1885–119) numbered 3691 and the other (1887–42) numbered 3690. *M. viridulus* Reitter (det. Kirejtshuk), four in the BM (1885–119).

DIPTERA, Tachinidae: *Leskia darwini* Emden (1960: 391). One in the BM (1885–119), Cape.

HEMIPTERA–Heteroptera, Lygaeidae: *Ischnodemus darwini* Slater (1964: 116), one in the BM (1885–119).

Homoptera, Cicadellidae: *Caffrolix cyclopia* (Cogan) (Theron, 1983: 150). *Kaapia darwini* Theron (1983: 147, 148), one in the BM (1885–119), numbered 3690.

Dictyopharidae: *Risius darwini* Fennah (1962: 233), one in the BM (1885–119) numbered 3689.

Tropiduchidae: *Stenoconchyoptera darwini* Muir (1931: 308, gen. et sp.), one in the BM numbered 3690.

3692. Acarus, from the common land tortoise of the Cape.—June.

Arachnida, Acari—not an insect.

3693. 3694. 3695. 3696. 3697. 3698. Small Aphodii very numerous beneath dung Do.- June.

COLEOPTERA, Scarabaeidae: no specimens found.

St Helena. July.

3730. Small insects, sweeping high central land.

COLEOPTERA, Carabidae: *Calosoma helenae* Hope (1838: 130), one in the BM (1863–44) (= *Campalita chlorostictum* Dejean spp. *helenae*), see Wollaston, 1877, Basilewsky, 1972.

Elateridae: *Anchastus atlanticus* Candéz. Three in BM (1871.2, Coleoptera accession no.) 'St Helena', with small blue paper triangle.

Scydmaenidae: *Anthicus wollastoni* (Waterhouse, F. H., 1879: 532), Champion (1895: 75) established that this is not an Anthicid but a Scydmaenid, one in the BM (1879–34) (= *Euconnus*).

Four previously described Wollaston (1877) species of Coleoptera were also represented among Darwin's material (see Waterhouse, F. H., 1879) in the BM. These have only handwritten rectangular labels 'St Helena' with 3730 written on the verso and Coleoptera accession number 1879: 35 (error for 34):

Anthribidae: *Homoeodera pygmaea, Notioxenus ferrugineus.*

Cryptophagidae: *Cryptophagus gracilipes* (not found)

Staphylinidae: *Oxytelus alutaceifrons.*

The Coleoptera of St Helena have been recently assessed (Basilewsky, 1972).

DIPTERA, Scathophagidae: *Scathophaga stercoraria* L., one in BM (1885–119) St Helena.

The following St Helena Diptera are in Dublin:

Chironomidae: *Chironomus* sp. (det. P. S. Cranston).

Chloropidae: *Elachiptera lyrica* Sabrosky (det. B. H. Cogan).

Mycetophilidae: *Leia* sp. (det. A. M. Hutson).

Sphaeroceridae: *Leptocera* sp. (det. B. H. Cogan).

HYMENOPTERA, Eulophidae: *Cirrospilus nirreus* Walker (1839: 98).

Pteromalidae: *Pteromalus ipsea* Walker (1839: 97).

There are 20 specimens of unidentified Hymenoptera in Dublin as follows:

Braconidae (*Aphidius* spp.), Ichneumonidae (Campopleginae) (det. T. Huddleston).
The Diptera and Hymenoptera of St Helena are assessed in Basilewsky (1977).

3819. 3820. Very common beetle beneath dung on higher parts of St Helena. This is the most extraordinary instance yet met with by me of transported, or change of habits of stercovorous insects.

COLEOPTERA, Scarabaeidae: no specimen found, but see entries 3821, 3822.

In the *Journal* (Darwin, 1845, 490, footnote) in a lengthy footnote on dung beetles says of the St Helena insects:— 'Among these insects, I was surprised to find a small Aphodius (nov. spec.) and an Oryctes both numerous under dung. When the island was discovered it certainly possessed no quadruped, excepting *perhaps* a *mouse*: it becomes therefore, a difficult point to ascertain, whether these stercovorous insects have since been imported by accident, or if aborigines, on what food they formerly subsisted.' (See also entries 1491, 2102, 3506, 3821, 3822 for other parts of this discussion).

In the *Ornithological Notes* Barlow (1963: 211) cites Darwin's use of the word 'Krotophagous' and says 'Not in *O.E.D.* In the small pocketbooks Darwin carried with him on expeditions inland, he coins the word "omni-stercivorous" for dung-eating Coleoptera; date, 4th September 1833.'

3821. 3822. Aphodius higher part of St Helena.

COLEOPTERA, Scarabaeidae: no specimens found but this and the previous entry could refer to *Aphodius (Nialus) pseudolividus* Balthasar or *A. granarius* (L.). Both species occur on St Helena (Wollaston 1877, Decelle 1972).

3823. 3824. 3825. 3826. 3827. 3828. 3829. Flys [*sic*] and other insects taken on the mountainous parts and far from houses in Ascension. July.

Duffy (1964) provides a faunal list of Ascension but even by using this no Darwin material has been found. See also entries 3865–3867.

3858. 3859. 3860. Small insects sweeping in forest and open places. These insects products of two whole days sweeping.—After winters rainy season. Beginning of August. Bahia. Brazil. August.

COLEOPTERA, Bruchidae: *Bruchus* with an apparently unpublished Pic name, two in the BM (1885–119, 1887–42), one numbered 3860. *Bruchus* sp., one in the BM (1858–60).

Chrysomelidae: *Syphrea bahiensis* Bryant (1942: 107) may refer here (or 325). See also 618.

Curculionidae: Baridinae, three in the BM (1887–42) plus one *Geraeus* sp. (det. G. C. Champion) in BM (1885–119), Bahia, numbered 3680 (error for 3860).

DIPTERA: In Dublin there are about 100 unidentified Diptera and 20 Hymenoptera as follows:— Agromyzidae, Bombyliidae, Calliphoridae (including *Cochliomyia macellaria* F. and *Lucilia eximia* Wiedemann, det. J. P. Dear), Ceratopogonidae, Chironomidae (*Cricotopus,* det. P. S. Cranston), Dolichopodidae (including *Condylostylus,* det. C. E. Dyte), Drosophilidae, Ephydridae (including *Nostima,* det. B. H. Cogan), Lauxaniidae, Mycetophilidae, Pipunculidae, Sarcophagidae (*Sarcodexia* and *Oxysarcodia,* det. J. P. Dear), Sciaridae, Sphaeroceridae, Stratiomyidae, Syrphidae (including *Ornidea obesa* F., det. K. G. V. Smith), Tachinidae, Tephritidae (*Xanthaciura ?insecta* Loew, det. B. H. Cogan), Therevidae.

HYMENOPTERA: Braconidae (Braconinae, Opiinae, Microgasterini, including *Apanteles,* det. T. Huddleston) and Ichneumonidae (Phygaduontinae).

Sphecidae: *Stigmus neotropicus* Kohl. one in BM (1885–119), Bahia, numbered 3860.

The following Chalcidoid Hymenoptera were described by Walker (1838, 1839) unless otherwise indicated. (See comments under entries 3528, 3561, and Notes).

Chalcididae: *Smiera punctata* F., *S. subpunctata.*

Encyrtidae: *Encyrtus epytus.*

Eucharitidae: *Eucharis furcata* F. (= *Thoracantha*), *E. rapo, Thoracantha latreilli* Guérin (Waterhouse, G. R., 1839, pl. xvii, fig. 3, see Fig. 17 of the present paper).

Eulophidae: *Elachestus catta. Entedon antander, E. hegelochus, E. thestius. Tetrastichus archideus, T. athenais, T. cacus, T. cleonica, T. daimachus, T. deilochus, T. februs, T. valerus.*

Eurytomidae: *Decatoma diphilus, Eurytoma euclus, E. menon.*

Lamprotatidae: *Lamprotatus dioxippe.*

Pteromalidae: *Pteromalus cosis, P. driopides.*

Torymidae: *Callimome caburus, C. sulcius.*

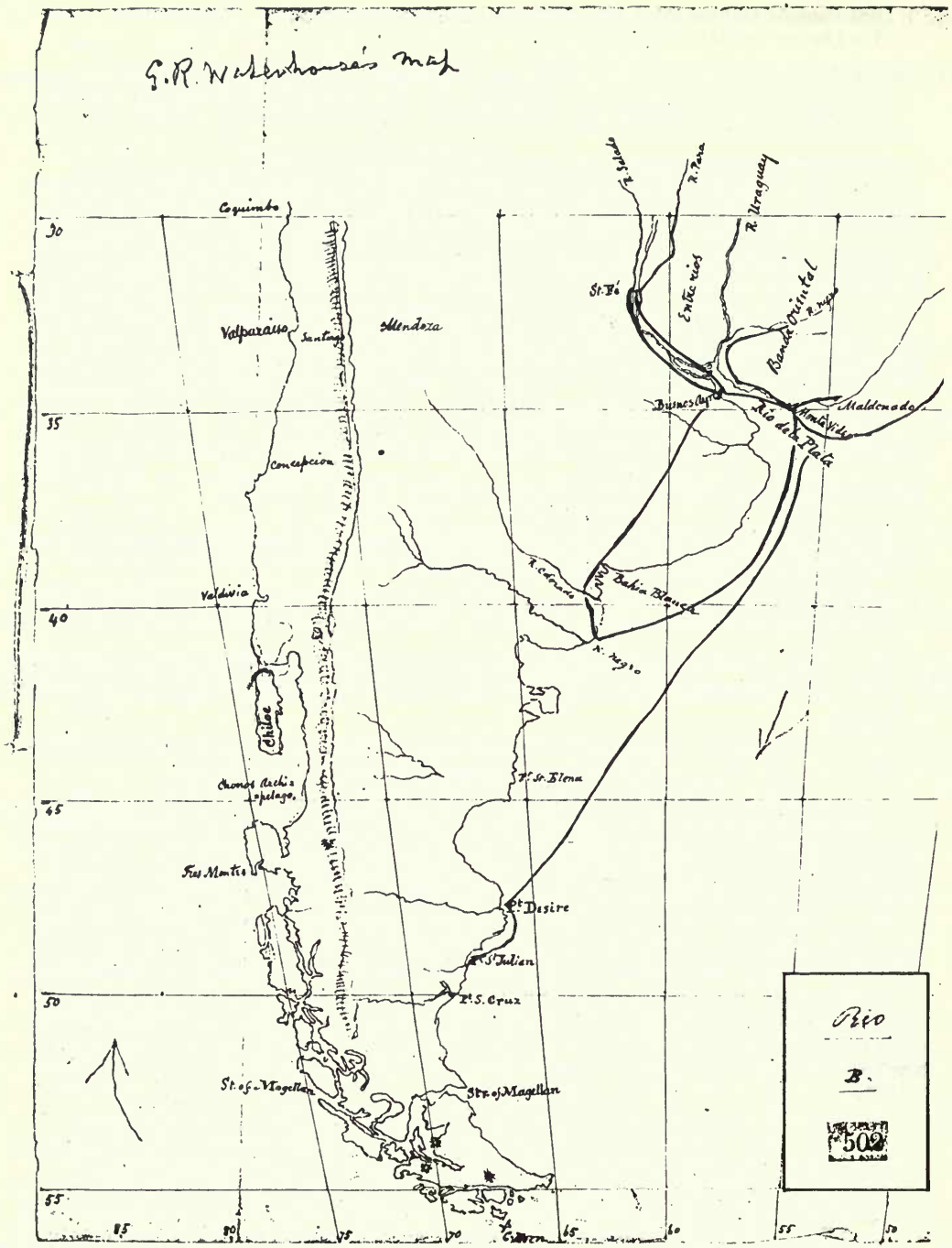

Fig. 19 G. R. Waterhouse's map inserted at the end of the *Insect Notes* and showing Darwin's route including his overland journeys in Uruguay and Argentina. The map is drawn on thin paper watermarked 'J. Whatman Turkey Mill 1840' with the route shown in red ink. In the copy reproduced here the route has been inked over in black for clarity.

Inset in panel is a 'Rio' label in Darwin's hand and a 'B' label also in his hand, probably connected with sorting of material and present on some specimens (see *Insect Notes*, 493). A Darwin Printed number is also shown. The majority of labels are in unknown hands (see text).

1836 *Insects* *26.*

3861. 3862. 3863. 3864. Insects. Bahia. August.
See entries 3858–3860.

3865. 3866. 3867. Insects. Ascension. July.
See entries 3823–3829.

The Notes end with G. R. Waterhouse's sketch map of South America (Fig. 19).

Eponyms

All generic and specific names formed from Darwin's name and used in the Insecta are included here with indications of author and group. Where these names have been used for Darwin's specimens, only author, date and page are given and the full reference will be found in the list of references and other comments elsewhere in the text (see Index). For names *not* based on Darwin material a full reference to the journal is given here which is not repeated in the main list of references. Where the name is not in Charles Darwin's honour, e.g. based on the town (Port) of Darwin (Northern Territory, Australia) (which, incidentally should more correctly have been coined *darwinensis* not *darwini*; similarly *darwinii* should have been *darwini*) etc., this is indicated. For the convenience of taxonomists in assessing the validity of any future eponyms all generic names are given first in alphabetical order (with full bibliographical data) and all specific eponyms are given in the alphabetical order of their original genera which are grouped into insect orders. Families and modern generic placings are also indicated where the latter information is already published. Some original dedications are quoted where of sufficient interest and reflect on Darwin's standing among entomologists of the day.

Considering Darwin's antipathy to the practice of taxonomists appending their names to new genera and species in perpetuity (Darwin, F., 1887: vol. 1, 364 et seq.), he would have probably been concerned at the superlative adulation of his name in the formation of so many eponyms.

Genera

Darwinella Enderlein, 1912, *Kungliga Svenska Vetenskapsakademiens Handlingar* **48**(3): 14. (Coleoptera, Tenebrionidae). Erected for *D. amaroides* Enderlein 1912. Falkland Islands. Not based on Darwin material.

Darwinhydrus Sharp, 1882, *Scientific Transactions of the Royal Dublin Society* (II)**2:** 373. (Coleoptera, Dytiscidae). Erected for *D. solidus* Sharp 1882. South Africa.

Darwinivelia Anderson & Polhemus, 1980, *Entomologica Scandinavica* **11:** 373. (Hemiptera, Mesoveliidae). Erected for *D. fosteri* Anderson & Polhemus 1980. Galapagos. Not based on Darwin material.

Darwinomyia Malloch, 1922, *Annals and Magazine of Natural History* (9) **9:** 277. (Diptera, Muscidae, *Palpibracus*). Erected for *D. univittata* Malloch 1922: 278. Chile. Not based on Darwin material.

Darwinysius Ashlock (1967). (Hemiptera, Lygaeidae). Erected for *Nysius ?marginalis* Dallas 1852: 556. Galapagos Islands. 'Named after Charles Darwin, who collected the type species of the genus on the voyage of the *Beagle*.'

Species

DERMAPTERA

Diplatys darwini Bey-Bienko 1959, *Entomologicheskoe Obozrenie* **38:** 591. (Diplatydae). China. Not based on Darwin material.

ORTHOPTERA

Anaulocomera darwinii Scudder 1893, *Bulletin of the Museum of Comparative Zoology Harvard* **25:** 19. (Tettigoniidae). Galapagos Islands. Not based on Darwin material.

ISOPTERA

Kalotermes darwini Light 1935, *Proceedings of the California Academy of (Natural) Sciences* (4) **21:** 242. (Kalotermitidae). Galapagos Islands. Not based on Darwin material.

Mastotermes darwiniensis Froggatt, 1896, *Proceedings of the Linnean Society of New South Wales* **21:** 519. (Mastotermitidae). Named after the town of Darwin, Australia.

ODONATA

Diplax frequens var *darwiniana* Selys 1883 (=*Sympetrum*, Libellulidae), *Annals de la Société Entomologique de Belgique* **27:** 14. Japan. Not based on Darwin material.

Tramea darwini Kirby 1889. (Libellulidae), *Transactions of the Zoological Society of London* **12:** 315. Galapagos Is. Not based on Darwin material.

HEMIPTERA

Alleloplasis darwini Waterhouse (G.R.) 1839: 194 (Derbidae). King George's Sound, Australia (Fig. 16).

'Named after this gentleman who has done so much towards the advancement of science, and to whom entomology owes so much, since he has brought to this country an immense collection of insects from the various parts of the world, and particularly of the minute species which had been comparatively neglected.'

Anipo darwini Evans (1942: 144). (Eurymelidae). King George's Sound, Australia.

Capsus darwini Butler, 1877: 89. (Miridae *Dagbertus*). Galapagos, Charles I.

Cephaloplatus darwini Distant, 1910. *Annals and Magazine of Natural History* **8**(6): 473 (Pentatomidae). Named after Port Darwin, N. Australia.

Corythaica darwiniana Drake & Froeschner, 1967, *Proceedings of the Entomological Society of Washington* **69:** 89. (Tingidae). Darwin Island (=Guerra, Culpepper), Galapagos.

Delphacodes darwini Muir (1929: 78). (Delphacidae). Chiloe Island, Chile.

Ectemnostega darwini Hungerford (1948: 203). (Corixidae). St Cruz, Patagonia.

Halobates darwini Herring, 1961, *Pacific Insects* **3**(2–3): 278. (Corixidae). Named after Port Darwin, N. Territory, Australia.

Haplodelphax darwini Fennah (1965: 33). (Delphacidae). King George's Sound, Australia.

Ischnodemus darwini Slater (1964: 116). (Lygaeidae). Cape of Good Hope, South Africa. 'Dedicated to the memory of its collector, the immortal Charles Darwin'.

Kaapia darwini Theron (1983: 148). (Cicadellidae). Cape of Good Hope, South Africa.

Melizoderes darwini Funkhouser (1934: 203). (Aetalionidae). Chiloe Island, Chile.

Ontiscus darwini Hamid (1975: 42). (Lygaeidae). King George's Sound and Sydney, Australia.

Pantinia darwini China 1962, *Transactions of the Royal Entomological Society of London* **114**(5): 151, Fig 12. (Peloridiidae). Chiloe Island, Chile. Not a Darwin specimen.

Pristhesancus darwinensis Miller, 1958, *Nova Guinea* (N.S.) **9:** 156. (Reduviidae). Named after the town of Darwin, Australia.

Risius darwini Fennah (1962: 233). (Dictyopharidae). Cape of Good Hope, South Africa.

Stagira darwini Distant (1905: 213). (Cicadidae). Mauritius.

Stenoconchyoptera darwini Muir (1931: 308). (Tropiduchidae). Cape of Good Hope, South Africa.

NEUROPTERA

Brachynemorus darwini Stange, 1969, *Acta Zoologica Lilloana* **25:** 19. (Myrmeleontidae). Galapagos Islands. Not based on Darwin material.

Chrysopa darwini Banks, 1940, *Psyche, a Journal of Entomology*, Cambridge, Mass. **47:** 135. (Chrysopidae). Named after the town of Darwin, Australia.

Macronemurus darwini Banks, 1915, *Proceedings of the Academy of Natural Sciences of Philadelphia* **96:** 619. (Macronemuridae). Named after the town of Darwin, Australia.

Megalomus darwini Banks, 1924, *Zoologica. Scientific Contributions of the New York Zoological Society*, **5**(717): 179. (Hemerobiidae). Galapagos Islands. Not based on Darwin material.

COLEOPTERA

Ablechrus darwinii Waterhouse (C.), 1877: 81. (Melyridae, listed in error for *Ablechrus flavipes* Waterhouse (C.), 1877: 79).

Achryson galapagoense darwini Linsley and Chemsak, 1966, *Proceedings of the California Academy of Sciences* (4) **33:** 213. (Cerambycidae). Galapagos Islands. Not based on Darwin material.

Adelopsis darwini Jeannel (1936: 64, 66). (Leiodidae). Maldonado, Uruguay.

Agonum darwini Van Dyke 1953, *Occasional Papers of the California Academy of Sciences*, **22:** 25. (Carabidae). Galapagos Islands. Not based on Darwin material.

Agrilus darwinii Wollaston, 1857, *Catalogue of the Coleopterous insects of Madeira in the collection of the British Museum*. London, p. 82 (Buprestidae). Madeira. Not based on Darwin material. Wollaston says:

'I have dedicated this species to Charles Darwin Esq., M.A., V.P.R.S., whose enquiries into the obscurer phenomena of geographical zoology have contributed more than those of any other man living to our knowledge, in the general questions of animal distribution'.

Anaploderma darwini Lameere, 1902, *Bulletin et Annals de la Société Royale Entomologique de Belgique* **46:** 210. (Cerambycidae). Brazil. Not based on Darwin material.

Archophileurus darwini Arrow, 1937: 55. (Scarabaeidae, Dynastinae). Maldonado, Uruguay.

Atheta (Acronota) darwini Cameron, 1943, *Annals and Magazine of Natural History* (11) **10:** 351. (Staphylinidae). Named after Port Darwin, Australia.

Aulonodera darwini Champion, 1918*b*: 51. (Halticidae). Chiloe Island, Chile.

Callimicra darwini Hespenheide, 1980: 15. (Buprestidae). Bahia, Brazil.

Calosoma darwini Van Dyke, 1953, *Occasional Papers of the California Academy of Sciences,* **22:** 10. (Carabidae). Galapagos Islands. Not based on Darwin material.

Carabus darwinii Hope, 1838: 129. (Carabidae, s.g. *Ceroglossus*). Chiloe Island, Chile.

'This beautiful insect I have named in honour of my friend Charles Darwin, Esq., a zealous entomologist. His exertions in advancing the progress of Zoology in general entitle him to thanks of the scientific world.' Kraatze's (1878, *Dt. ent. Z.* **22:** 325) citation of this name probably refers to another species which has led to *'darwinii* Kraatze' entries in catalogues, similarly with Gerstaecker (1858, *Linn. Ent.* **12:** 435).

Carenum darwiniense Macleay, 1878, *Proceedings of the Linnean Society of New South Wales* **2:** 214. (Carabidae). Named after Port Darwin, Australia.

Chlamydopsis formicola King var. *darwinensis* Lea, 1918, *Record of the South Australian Museum* **1:** 85. (Histeridae). Named after the town of Darwin, Australia.

Clivina darwini Sloane, 1916, *Proceedings of the Linnean Society of New South Wales* **41:** 609. (Carabidae). Named after Port Darwin, Australia.

Coelostoma darwini Blair, 1933, *Annals and Magazine of Natural History* (10) **11:** 474. (Hydrophilidae, *Galapodacnum*). Galapagos Islands. Not based on Darwin material.

Coenonica darwini Cameron, 1943, *Annals and Magazine of Natural History* **11**(10): 347. (Staphylinidae). Named after the town of Darwin, Australia.

Colymbetes darwini Babington, 1842: 8. (Dytiscidae, (= *Rhantus signatus* F.)). Tierra del Fuego.

Cormodes darwinii Pascoe, 1860, *Journal of Entomology,* **1:** 17. (Cleridae). Lord Howe Island. (Fig. 18).

'An insect so suggestive of Mr Darwin's theory should appropriately bear his name.' This dedication refers to the wingless condition of this beetle 'a condition due, as Mr Darwin tells us, in reference to other insular apterous Coleoptera, to "the action of natural selection but combined probably with disuse" '.

Ctenispa darwini Maulik, 1930: 51. (Chrysomelidae). Bahia, Brazil.

Diastichus darwini Cartwright, 1970, *Proceedings of the Biological Society of Washington,* **83:** 53. (Scarabaeidae, *Platytomus*). Galapagos Islands. Not based on Darwin material.

Distigmoptera darwini Scherer, 1964: 297. (Chrysomelidae). Uruguay, (Fig. 17).

Docema darwini Mutchler, 1924, *Zoologica, Scientific Contributions of the New York Zoological Society,* **5:** 230. (Halticidae). Galapagos Islands. Not based on Darwin material.

Dorcus darwinii Hope, 1841: 302, 1844: 279. (Lucanidae, = *Sclerognathus femoralis* Guérin). Chile.

Hope (1844) says 'The above insect lately received from Chile. It is named in honour of Charles Darwin Esq., who has greatly contributed to our acquaintance with the entomology of Valparaiso, Chile, and other parts of the South American continent'.

Epitrix darwini Bryant, 1942: 101. (Chrysomelidae). Maldonado, Uruguay.

Epuraea darwinensis Blackburn, 1927, *Transactions of the Royal Society of Australia* **27:** 115. (Nitidulidae). Australia. Not based on Darwin material.

Eudicella darwiniana Kraatz, 1840, *Deutsche Entomologische Zeitschrift* **24**(1): 170 (= *darwini* Kraatz, 1890, *antea* **34**(1): 216). (Scarabaeidae). Ashanti, Africa. Not based on Darwin material.

Gnathaphanus darwini Blackburn, 1888. *Proceedings of the Linnean Society of New South Wales* **13:** 808. (Carabidae). 'Northern Territory of South Australia'. Not Darwin material.

Haptoncura darwinensis Blackburn, 1903, *Transactions of the Royal Society of Southern Australia* **27:** 115. (Nitidulidae). Named after the town of Darwin, Australia.

Heterodiomus darwini Brèthes, 1924: 155. (Coccinellidae). Rio de Janeiro, Brazil.

Heteronyx darwini Blackburn, 1889, *Proceedings of the Linnean Society of New South Wales,* **14:** 435. (Scarabaeidae). 'N. Territory of S. Australia'. Not based on Darwin material.

Hugoscottia darwini Knisch, 1922: 90. (Hydrophilidae, = *Enochrus*). South America—no further locality; see comment in introduction and *Insect Notes,* 1314.

Hydroporus darwinii Babington, 1842: 13. (Dytiscidae, *Necterosoma*). King George's Sound, Australia.

Hyperaspis arrowi Brèthes var *darwini* Brèthes 1925*a*: 13. (Coccinellidae). Maldonado, Uruguay.

Idiocephala darwini Saunders, 1843: 317. (Chrysomelidae). Sydney, Australia.

Lepidiota darwini Blackburn, 1888, *Proceedings of the Linnean Society of New South Wales,* **13:** 850. (Scarabaeidae, Melolonthiinae). Northern Territory of South Australia. Not based on Darwin material.

Longitarsus darwini Bryant, 1942: 105. (Chrysomelidae). Maldonado, Uruguay.
Medon (Hypomedon) darwini Cameron, 1943, *Annals and Magazine of Natural History*, (11) **10:** 341. (Staphylinidae). Named after the town of Darwin, Australia.
Migadops darwinii Waterhouse, (G.R.), 1842*a*: 138. (Carabidae). Tierra del Fuego, Navarin Island.
Neobrachypterus darwini Jelinek, 1979: 194. (Nitidulidae). Bahia Blanca, Patagonia.
Nephopullus darwini Brèthes, 1924: 168. (Coccinellidae, *Scymnus*). Rio de Janeiro, Brazil.
Nyctelia darwinii Waterhouse (G.R.), 1842*b*: 108. (Tenebrionidae). Port Desire, Patagonia.
Odontoscelis darwini Waterhouse (G.R.), 1840*a*: 356. (Carabidae, *Cnemacanthus*). Patagonia, (Fig. 13).
Onthophagus darwini Paulian, 1937, *Arbeiten über morphologische u. taxonomische Entomologie*, **4:** 345 (now synonymized with *O. fissiceps* McCleay). (Scarabaeidae). Named after the town of Darwin, Australia.
Orynipus darwini Brèthes, 1924: 158. (Coccinellidae). Chiloe Island, Chile.
Oxytelus (Anotylus) darwini Cameron, 1843, *Annals and Magazine of Natural History* (11) **10:** 339. (Staphylinidae). Named after the town of Darwin, Australia.
Oxytelus (Anotylus) darwinianus Cameron, 1943, *Annals and Magazine of Natural History* (11) **10:** 340. (Staphylinidae). Named after the town of Darwin, Australia.
Parahelops darwini Waterhouse (C.O.), 1875: 334. (Tenebrionidae). Tierra del Fuego and Valparaiso.
Phalacrus darwinii Waterhouse (C.O.), 1877: 78. (Phalacridae). Galapagos, Charles Island.
Phytosus darwinii Waterhouse (F.H.), 1879: 531. (Staphylinidae, *Halmaeusa*). Falkland Islands.
Plagithmysus darwinianus Sharp, 1896, *Entomologist's Monthly Magazine*, **32:** 271. (Cerambycidae). Hawaii. Not based on Darwin material.
Plotopuserica darwiniana Brenske, 1900, *Berliner Entomologische Zeitschrift*, **45:** 59. (Scarabaeidae). Madagascar. Not based on Darwin material.
Polylobus darwini Bernhauer, 1935: 96. (Staphylinidae). Chiloe Island, Chile.
Psephenus darwinii Waterhouse, C.O., 1880: 563 (Psephenidae). Rio de Janeiro.
Sclerostomus darwini sensu Burmeister is a misidentification (for *Sclerognathus bacchus* Hope) of *Dorcus darwinii* Hope see above.
Scolytogenes darwini Eichoff, 1878, *Mémoires de la Société Royale des Sciences de Liège* (2) **8:** 497. (Scolytidae). Burma. Not based on Darwin material.
Stictospilus darwini Brèthes, 1924: 154. (Coccinellidae). Chile.
Telephorus darwinianus Sharp, 1866, *Transactions of the Entomological Society of London*, **5:** 436. (Cantharidae, = *Cantharis darwiniana*). Scotland. Not based on Darwin material.
Trechisibus darwini Jeannel, 1927: 38. (Carabidae). Argentina. Not based on Darwin material though other Darwin records are given for other species. Dedication as follows: 'Cette espèce est dédiée à Ch. Darwin dont une partie des récoltes, faites au cours du voyage du Beagle, m'ont été communiquées par le British Museum et m'ont grandement facilité la revision du groupe difficile des *Trechisibus*.'
Trichopteryx darwini Matthews, 1889: 193. (Trichopterygidae). Rio de Janeiro (= *Acrotrichis*, Ptiliidae). Matthews says 'I feel much pleasure in dedicating this insect to the memory of the late C. R. Darwin by whom it was found in a fungus near Rio de Janeiro'.

DIPTERA

Leptocera (Limosina) darwini Richards, 1931: 80. (Sphaeroceridae). Concepcion.
Leskia darwini, Emden, 1960, *Proceedings of the Zoological Society of London*, **134:** 391. (Tachinidae). South Africa. Not based on Darwin material.
Nocticanace darwini Wirth, 1969, *Proceedings of the California Academy of Sciences*, (4) **36:** 585. (Canaceidae). Galapagos. Not based on Darwin material.
Ogcodes darwini Westwood, 1876: 516. (Acroceridae). Australia.
Parachlus darwini Brundin, 1966, *Kuniliga Svenska Vetenskapsakademiens Handlingar* (4) **11**(1): 172. (Chironomidae). Chile. Not based on Darwin material.
Paracleis darwini Parent, 1933, *Annales de la Société Scientifique de Bruxelles*, **53:** 184. (Dolichopodidae). Named after the town of Darwin, Australia.
Pelecorhynchus darwini Ricardo, 1900: 102. (Tabanidae). Chiloe.
Pelycops darwini Aldrich, 1934: 169. (Tachinidae). Tierra del Fuego.
Strongyloneura darwini Curran, 1938, *American Museum Novitates*, **985:** 3. (Calliphoridae, *Isomyia*). Named after the town of Darwin, Rhodesia. Not based on Darwin material.
Tabanus darwinensis Taylor, 1917, *Proceedings of the Linnean Society of New South Wales*, **48:** 758. (Tabanidae, = *Dasybasis clavicallosa* Ricardo). Named after the town of Darwin, Australia.
Valdivia darwini Shannon, 1927: 32. (Syrphidae, *Valdiviomyia*) Chile.

LEPIDOPTERA

Agarista darwiniensis Butler, 1884, *Annals and Magazine of Natural History* (5) **14:** 406. (Noctuidae, *Cruria*). Named after the town of Darwin, Australia.

Aplodes rubrofrontaria var. *darwiniata* Dyar, 1904, *Proceedings of the United States National Museum,* **27:** 903. (Geometridae, *Nemoria*). British Columbia. Not based on Darwin material.

Argynnis darwini Staudinger, 1899, Lepidoptera in *Ergebnisse Hamburger Megalahhaensische Sammelreise Hamburg,* **4**(7) (1898): 32. (Nymphalidae, = *Issoria lathonioides* (Blanchard)). Tierra del Fuego. Not based on Darwin material.

Coenonympha arcania subsp. *darwiniana* Staudinger, 1871, *Catalog der Lepidopteren des Palaearctischen Faunengebietes* **2:** 32. (Satyridae). Alps. Not based on Darwin material.

Erechthias darwini Robinson, 1983: 304. (Tineidae). St Paul's Rocks. Not based on Darwin's material but conspecific with material he collected.

Hypolimnas alimena darwinensis Waterhouse (G.A.) & Lyell (G.), 1914, *The Butterflies of Australia* 60. (Nymphalidae). Named after the town of Darwin, Australia.

Mimacraea darwinia Butler, 1872, *Lepidoptera Exotica* **104,** pl. 38, f. 8 (Lycaenidae). West Africa. Not based on Darwin material.

Orthosia ? darwini Staudinger, 1899, Lepidoptera in *Ergebnisse Hamburger Megalahhaensische Sammelreise Hamburg* **4**(7) (1898): 74. (Noctuidae). 'Uschuaia'. Not based on Darwin material.

Phlyctaenodes darwinalis Sauber, 1904, *Verhandlungen des Vereins für Naturwissenschaftliche Unterhaltung zu Hamburg,* **12:** 109. (Pyralidae, *Loxostege*). Central Asia. Not based on Darwin material.

Pieris napi bryonia (subsp. *darwiniana*) Stichel, 1910, *Berliner Entomologische Zeitschrift,* **55:** 251. (Pieridae). Europe. Not based on Darwin material.

Utetheisa pulchelloides subsp. *darwini* Jordan, 1939: 283. (Arctiidae). Keeling Islands.

HYMENOPTERA

Achrysocharis darwini Girault, 1917, *New Chalcid Flies:* 5 (privately published). (Eulophidae). Maryland. Not based on Darwin material.

Anastatus darwini Girault, 1915, *Memoirs of the Queensland Museum,* **4:** 24. (Eupelmidae). Queensland. Not based on Darwin material.

Anthophora darwini Cockerell, 1910, *Annals and Magazine of Natural History* (8) **5:** 409. (Anthophoridae). Named after the town of Darwin, Australia. Not based on Darwin material.

Ceratina darwini Friese, 1910, *Deutsche Entomologische Zeitschrift* **1910:** 700. (Xylocopidae). South America. Not based on Darwin material.

Coelioxys albolineata var. *darwiniensis* Cockerell, 1929, *American Museum Novitates,* **346:** 8. (Megachilidae). Named after the town of Darwin, Australia.

Corynura darwini Cockerell, 1901. *Proceedings of the Academy of Natural Sciences of Philadelphia,* **53:** 220. (Halictidae, *Rhinocorynura*). Brazil.

Crocisa caeruleifrons Kirby var. *darwini* Cockerell, 1905, *Annals and Magazine of Natural History* (7) **16:** 219. (Anthophoridae). Named after the town of Darwin, Australia.

Foenus darwinii Westwood, 1841: 537; 1844: 259 (Gasteruptiidae, *Hyptiogaster*). Australia.

Gonatocerus darwini Girault, 1912, *Memoirs of the Queensland Museum* **1:** 131. (Trichogrammatidae). Queensland. Not based on Darwin material, but dedicated respectfully to him.

Halictus (Evylaeus) darwiniellus Cockerell, 1932: 519 (Halictidae). Sydney, Australia.

Halictus eyrei darwiniensis Cockerell, 1929, *American Museum Novitates,* **346:** 2. (Halictidae, *Homalictus*). Named after the town of Darwin, Australia.

Megachile darwiniana Cockerell, 1906, *Annals and Magazine of Natural History* (7) **17:** 535. (Megachilidae). Named after the town of Darwin, Australia.

Nitela darwini Turner, 1916: 345. (Sphecidae). Galapagos Islands.

Nomia darwinorum Cockerell, 1910, *Annals and Magazine of Natural History* (8) **5:** 502. (Halictidae). Named after the town of Darwin, Australia.

Paralaster darwinianus Perkins, 1914, *Proceedings of the Zoological Society of London* **1914:** 617. (Eumenidae). Named after the town of Darwin, Australia.

Pediobomyia darwini Girault, 1913, *Memoirs of the Queensland Museum* **2:** 155. (Eulophidae). Nelson, ? Western Australia. Not based on Darwin material.

Polynema darwini Girault, 1913, *Memoirs of the Queensland Museum* **2:** 122. (Mymaridae). Queensland, Australia. Not based on Darwin material.

Selitrichodes darwini Girault, 1915, *Memoirs of the Queensland Museum* **3:** 233. (Pteromalidae). Queensland. Not based on Darwin material.

Sphex darwinensis Turner, 1912, *Annals and Magazine of Natural History* (8) **10:** 56. (Sphecidae). Named after the town of Darwin, Australia.

Tetrastichus darwini Girault, 1913, *Memoirs of the Queensland Museum* **2:** 202. (Eulophidae). Nelson, ? Western Australia. Not based on Darwin material.

Thynnus darwinensis Turner, 1908, *Proceedings of the Linnean Society of New South Wales* **33**(1): 206. (Thynnidae). Named after Darwin, Australia.

Xylocopa darwini Cockerell, 1926, *Annals and Magazine of Natural History* (9) **17:** 659. (Xylocopidae). Galapagos Islands. Not based on Darwin material.

Acknowledgements

I thank the Trustees of the British Museum (Natural History) for permission to publish the text of Darwin's *Insect Notes* and Miss Pamela Gilbert, Librarian to the Department of Entomology, for making them available for study. Collectively I thank my colleagues (acknowledged individually at appropriate places in the text) in the Department of Entomology for help in locating Darwin specimens and their tolerance of my browsing among the valuable collections in their care.

I thank Mr George Pemberton Darwin and John Murray Ltd. for permission to quote from Charles Darwin's works and to Lady Nora Barlow for permission to reproduce her itinerary of the *Beagle* voyage and to quote from her works on her grandfather.

The Syndics of Cambridge University Library are thanked for permission to reproduce the *List of Insects in Spirits of Wine*, and to quote the other MS notes on Darwin's insects; Mr P. J. Gautrey very kindly answered many enquiries on manuscript sources preserved there. Dr W. A. Foster kindly provided hospitality and help in locating Darwin specimens in the Cambridge University of Zoology and gave permission to reproduce a photograph of the box of Darwin beetles there.

I thank the Hope Professor in the University of Oxford for permission to study Darwin material preserved in the Hope Entomological Collections and Dr M. J. Scoble and Mrs A. Z. Smith for expediting its location and other information.

Dr James P. O'Connor and the National Museum of Ireland are thanked for the loan of the Darwin insects from the Haliday collection and permission to reproduce one of their photographs.

Mr Philip Titheradge, Custodian of Down House kindly provided help and hospitality when I studied Darwin's material there and supplied the photograph of Darwin's box of beetles reproduced here by courtesy of Down House and the Royal College of Surgeons of England.

Mr Brian Sirl kindly gave permission to reproduce the portrait of Syms Covington and Mrs Betty Ferguson kindly provided further information on Darwin's assistant and a copy of her booklet on him.

I thank the Registrar and Librarian of the Royal Entomological Society of London for permission to study and quote from the Walker–Haliday correspondence in their care and to reproduce early illustrations depicting Darwin insects from the Society's *Transactions*.

Mr M. I. Dawes, Director of Publishing for Taylor & Francis Ltd. kindly gave permission to reproduce the G. R. Waterhouse illustrations of Darwin's insects appearing in the *Annals and Magazine of Natural History*.

Dr Gerhard Scherer and the Museum Georg Frey, Munich kindly gave permission to use the illustration of *Distigmoptera darwini* from their journal *Entomologische Arbeiten aus dem Museum Georg Frey*.

Drs José C. M. Carvalho and W. C. Gagne, and the California Academy of Sciences are thanked for permission to use the illustration of *Capsus quadrinotatus* from their *Proceedings*.

I thank Dr N. E. Hickin and Mr Eric Classey for permission to reproduce two of Dr Hickin's scraperboard illustrations from *Animal Life of the Galapagos*.

I thank those other individuals who have kindly provided information on Darwin and his insects as follows: Mr J. Boorman, Mr Alan Brindle, Mr C. E. Dyte, Mr R. B. Freeman, Dr K. M. Harris, Dr J. Jelinek, Dr Gene Kritsky, Dr G. Kuschel, Miss Cynthia Longfield, Mrs M. Grieff, Dr Robert Nash, Dr Sydney Smith, Dr David Snow, Mr David Stanbury, Dr F. J. Sulloway, Mr Ernest Taylor, Dr J. G. Theron, and Dr J. C. Van Hille.

Finally I thank my wife for so cheerfully accepting Charles Darwin and his affairs as a normal concern of the family and for her careful and critical preparation of the typescript.

Notes

For further details of certain entries in these Notes see Freeman (1978) and for obituaries of entomologists, throughout the text, see Gilbert (1977). See also textual comments via the index.

1. William Darwin Fox (1805–80). C.D.'s second cousin. Vicar of Delamere, Cheshire (1838–73). At Christ's College, Cambridge during C.D.'s first two terms of residence. Albert Way (1805–74). Antiquary. Friend of C.D. at Cambridge where they collected beetles.

   Leonard Jenyns (later Blomefield) (1800–93). Anglican priest and naturalist. Vicar of Swaffham Bulbeck, Camb. Henslow's brother-in-law. Was asked (as was Henslow) to join *Beagle* as naturalist before Darwin but declined (Winwood, 1894, *Proc. Bath nat. Hist. antiq. Fld Club* **8**(1): 35–55, portrait). Wrote (1862) *Memoir of John Stevens Henslow,* with recollections by C.D. and the section on fishes in the *Zoology of the Beagle* (1840–42) (see also Darwin, F., 1903). There are some British C.D. insect specimens in his collection at Cambridge, also his notebooks.

   Sir. Harry Stephen Meysey Thompson, Bart. (1809–74). Agriculturist. M.P. for Whitby 1859–65. Cambridge Friend of C.D.
2. John Maurice Herbert (1808–82). County Court judge on the Monmouth and Cardiff circuit. Close friend of C.D. at Cambridge. Collected beetles with C.D. at Barmouth, N. Wales. Gave C.D. his Coddington microscope.
3. Revd Frederick William Hope (1792–1862). Entomologist and print collector, FRS 1834, Founder of the Hope Chair of Zoology (Entomology) Oxford. In 1829 gave C.D. *ca.* 160 specimens of beetles from his collection in London. Collected in Barmouth with C.D. but due to illness (eczema of lips, see C.D. to Fox July 3rd, 1829) C.D. returned to Shrewsbury after two days (see Stephen's List of British captures). C.D. gave Hope beetles from the *Beagle* voyage; see C.D.'s letter to Hope about Australian insects (Poulton, 1909), and letter from Babington to C.D. in Cambridge University Library.
4. John Obadiah Westwood (1805–93). Solicitor and entomologist. First Hope Professor of Zoology (Entomology) in the University of Oxford (1861–91). Proposed to the last University Commission the permanent endowment of a lecturer to combat the 'errors of Darwinism'. Ironically C.D. had proposed Westwood for the Royal Medal of the Royal Society in 1855.
5. Revd John Stevens Henslow (1796–1861). Professor of Mineralogy at Cambridge (1822–27), then Professor of Botany (1827–61). Vicar of Hitcham, Suffolk (1837–61). FRS 1818. At Cambridge C.D. was known as 'the man who walked with Henslow'. Became strong personal friend of C.D. and looked after the collections sent back from the Beagle, see Jenyns, 1862, *Memoir of John Stevens Henslow* with recollections by C.D., and Barlow (1967).
6. Syms Covington (1813–61). 'Fiddler and boy to the poop cabin' on the *Beagle*. Became personal servant to C.D. on 22 May, 1833 and later secretary amanuensis until 25 February, 1839. He copied out the *Insect Notes* (and others, see Sulloway 1982, Porter 1983), much of the MS of the book on *Coral-reefs* and extracts later used in *Variation in Animals and Plants*. He also collected Australian barnacles for C.D. for use in his Cirripede monograph. In 1840 he emigrated to New South Wales but corresponded with C.D. until 1859. See De Beer (1959) and Ferguson (1971). Manuscript material on Covington, including a *Beagle* diary and drawings, is held in the archives of the Linnean Society of New South Wales at the Mitchell Library in Sydney.
7. Robert FitzRoy (1805–65), RN, hydrographer and meteorologist, in command of the *Beagle*. FRS 1851. Edited (1839) *Narrative of the Surveying Voyages of His Majesty's Ships Adventure and Beagle*. Anti-Darwin in later life. Governor General of New Zealand (1843–45). There is FitzRoy material preserved in the Michael Faraday Correspondence collection at the Institute of Electrical Engineers and his own account of the discoveries of the *Beagle* at the Royal Geographical Society (see also 1836, *J. R. geogr. Soc.* **6:** 311–343).
8. Benjamin Bynoe (*ca.* 1804–1865). Assistant surgeon on the *Beagle* and Acting Surgeon from April 1832 when the Surgeon, Robert McCormick, returned to England. Made official collections of plants, birds and possibly insects (see section on 'other locations' of collections via Haslar Hospital). Looked after C.D. during his illness in Valparaiso.

9. Charles Cardale Babington (1808–95). Botanist. FRS 1851. Succeeded Henslow as Professor of Botany at Cambridge, 1861. He, like Darwin, was an original member of the Entomological Society of London and a keen entomologist in his early days. His collection and notebooks, including records of C.D.'s British captures are in the Cambridge University Museum of Zoology. He described C.D.'s *Beagle* Dytiscidae (1842) and there is a letter from him to C.D. in the Cambridge University Library which discusses this.
10. George Robert Waterhouse (1810–88). Mammalogist and entomologist. Keeper of Mineralogy and Geology at the British Museum (Natural History). Friend of C.D. and frequent visitor to Down House. Wrote section of *Living Mammalia* in the *Zoology of the Voyage of the Beagle*. In 1843 C.D. wrote of him 'If Waterhouse is hired he will enjoy his seven shillings a day from the British Museum as much as most men would ten times the sum!' (see *Life and Letters,* Darwin, F., 1887: vol. 1, 344). In the *Journal* Darwin (1845:30, footnote) says 'I am greatly indebted to Mr Waterhouse for his kindness in naming for me this and many other insects, and in giving me much valuable assistance.' He (G.R.W.) and two of his three Coleopterist sons (Charles Owen and Frederick Herschel) described most of C.D.'s beetles (see references). For obituary notes of these three entomologists see *Entomologist's mon. Mag,* 1888, **24:** 233–4; 1917, **15:** 67–68 and 1920, **56:** 17; others are cited in Gilbert (1977).
11. Francis Walker (1809–74). Entomologist. Assistant at the British Museum. Renowned for his prolific output of inadequate descriptions of new species (over 20,000 in all) such that an unsigned obituary [actually by J. T. Carrington] in the *Entomologist's Monthly Magazine* (1874, **11:** 140–141) began 'More than twenty years too late for his scientific reputation, and after having done an amount of injury almost inconceivable in its immensity, Francis Walker has passed from among us'. On the other hand no lesser an entomologist than Edward Newman (1874, *Entomologist,* **7:** 260–264) described him as the 'most voluminous and most industrious writer on Entomology this country has ever produced' and said of him 'I never met anyone who possessed more correct, more diversified, or more general information, or who imparted that information to others with greater readiness and kindness'.

    His 'Catalogues of Insects in the British Museum Collections' will always stand as a tribute to his industry. Walker (1836) also described the Diptera from Captain P. P. King's collection made on the first surveying voyage of *Adventure* and *Beagle*.

    Fortunately, many of his descriptions of Darwin's insects will endure because they were of little known groups from little worked regions and most of his types are still in the British Museum (Natural History).

    For a recent balanced account of this remarkable man see Graham (1979).
12. Alexander Henry Haliday (1807–70). Entomologist and lifelong correspondent of Francis Walker. High Sheriff of Antrim 1843. Haliday described (1836) the Hymenoptera collected by Captain King's first surveying voyage on the *Adventure* and *Beagle* (see FitzRoy, 1839), John Curtis (1839, 1845) described the Coleoptera and Francis Walker (1836) the Diptera. Haliday's collections, including some C.D. specimens, are in the National Museum of Ireland (see O'Connor & Nash, 1982). See also comments under Walker (1840–1842) in References.

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[——] 1840–1842. Plate P. *Entomologist* **1.** [In the first volume of the *Entomologist* are 15 plates lettered A–P which illustrate species described by Walker (1839). The plates were engraved from drawings made by A. H. Haliday (see Gradwell, 1967). The legend to the plates was issued with the index to the last part of volume 1 of the *Entomologist*, presumably in December 1842. The date of issue of the plates is unknown. Only plate P depicts Darwin material.]

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Geographical and Name Index

In addition to geographical place names this index includes the names of institutions, ships and the more important textual references to historic persons associated with Darwin and/or his insects.

Scientific Index

In addition to taxonomic names this index includes Darwin's preliminary identifications, local common names and pabulum, to facilitate reference to this work by scholars using Darwin's published and unpublished writings. Numbers in italics indicate illustrations. Scientific names are as recorded in the literature cited, but later generic and specific names are also indexed so that specialists can locate their groups under original or modern combinations.

Charles Darwin's Notebooks, 1836–1844

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Darwin's notebooks provide an invaluable record of his scientific thinking and, most importantly, the development of his theory of natural selection. This edition of the notebooks, prepared to the highest modern standards of textual editing, thus affords a unified view of Darwin's professional interests.

The *Red Notebook*, used on the voyage of H.M.S. *Beagle* and afterwards in England, contains Darwin's first evolutionary statements. In July of 1837, Darwin began his 'Transmutation Notebooks' (B–E) devoted to the solution of the species problem, and in the third notebook of this series he first formulated the theory of natural selection. To this can now be added another species notebook reconstructed from loose sheets; this 'Torn-Apart Notebook' represents the fifth Transmutation Notebook.

This volume also contains Notebook A on geology, Notebooks M and N on man and behaviour, and other notebook and manuscript materials from the period 1836–1844.

Contents

October 1987, 768 pp (approx)
Published in association with
Cambridge University Press (ISBN 052 135 0557) £65.00
Cornell University Press (ISBN 0 8014-1660-4) $75.00