28 R.
THIS BOOK MAY NOT BE PHOTOCOPIED
PROCEEDINGS
OF THE
SCIENTIFIC MEETINGS
OF THE
ZOOLOGICAL SOCIETY
OF LONDON.
FOR THE YEAR
1879.

PART 1.
CONTAINING PAPERS READ IN
JANUARY AND FEBRUARY.

JUNE 1st, 1879.

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LIST OF CONTENTS.

PART I.—1879.

January 14, 1879.

Prof. Newton. Remarks on the occasion of the death of the late President .......................... 1
The Secretary. Report on the additions to the Society's Menagerie in December 1878 .......... 2
Dr. Traquair. Exhibition of a specimen of Aleocharnas nitidissima .................................. 2
Prof. Newton. Remarks upon the specimen of Aleocharnas nitidissima exhibited by Dr. Traquair ................................................................. 2
Commodore Hoskins. Letter from, concerning the northern limit of the "Mooruk" ............. 4
Rev. G. Brown, C.M.Z.S. Letter from, addressed to the Secretary, containing information as to whether the "Mooruk" is found on New Ireland ......................................................... 5
Mr. R. Traunen, F.Z.S. Letter from, concerning Plectropterus niger ............................... 5


5. Contributions to the Ornithology of the Philippines.—No. XII. On the Collection made by Mr. A. H. Everett in the Island of Basilan. By Arthur, Marquis of Tweeddale, F.R.S., President of the Society ................................................ 68

6. List of the Mammals, Reptiles, and Batrachians sent by Mr. Everett from the Philippine Islands. By Dr. A. Günther, F.R.S., F.Z.S., Keeper of the Zoological Department, British Museum. (Plate IV.) ........................................ 74


February 4, 1879.

The Secretary. Report on the additions to the Society's Menagerie in January 1879 .......... 108
Prof. J. Reinhardt. Extract of a letter from, on a new species of Curassow ...................... 108
Mr. Selater. Remarks upon, and diagnosis of, Mitra salina, the new Curassow .............. 109

Contents continued on page 3 of wrapper.
PROCEEDINGS

OF THE

SCIENTIFIC MEETINGS

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LIST
OF THE
COUNCIL AND OFFICERS
OF THE
ZOOLOGICAL SOCIETY OF LONDON.
1879.

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LIST
OF THE
CONTRIBUTORS,
With References to the several Articles contributed by each.

<table>
<thead>
<tr>
<th>Name</th>
<th>Articles</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On the Specific Identity of the British Martens .............................. 468</td>
<td></td>
</tr>
<tr>
<td></td>
<td>On the Acanthomys leucopus of Gray .......................................... 645</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exhibition of, and remarks upon, some Burmese and Afghan Mammals collected by Mr. R. G. Wardlaw-Ramsay ........................................... 665</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exhibition of, and remarks upon, a skull of Tapirus dówi ............................. 666</td>
<td></td>
</tr>
<tr>
<td></td>
<td>On a Four-horned Chamois .................................................................. 802</td>
<td></td>
</tr>
<tr>
<td>Angas, George French, F.L.S., F.R.G.S., C.M.Z.S., &amp;c.</td>
<td>Descriptions of ten new Species of Axinae and Pectunculus in the collection of Mr. Sylvanus Hanley and the late Mr. T. L. Taylor. (Plate XXXV.) ........................................... 417</td>
<td></td>
</tr>
<tr>
<td></td>
<td>On the Terrestrial Mollusca collected in Costa Rica by the late Dr. W. M. Gabb, with Descriptions of new Species. (Plate XL.) ........................................... 475</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Descriptions of two new Species of Helix (Euryeratera) from S.E. Betsileo, Madagascar. (Plate LVII.) ....................... 728</td>
<td></td>
</tr>
<tr>
<td>Bartlett, A. D., Superintendent of the Society's Gardens.</td>
<td>Remarks upon the Habits and Change of Plumage of Humboldt's Penguin ........................................... 6</td>
<td></td>
</tr>
</tbody>
</table>
Bartlett, Edward, Curator of the Museum and Public Library, Maidstone.

Second List of Mammals and Birds collected by Mr. Thomas Waters in Madagascar. (Plate LXIII.) 767

Bell, F. Jeffrey, B.A., F.Z.S., Magdalen College, Oxford, Zoological Department, British Museum.

Observations on the Characters of the Echinoidea.—I. On the Species of the Genus Brissus, and on the allied Forms Meoma and Metalia 249

Note on the Number of Anal Plates in Echinocidaris 436

Observations on the Characters of the Echinoidea.—II. On the Species of the Genus Tripneustes, Agassiz. (Plate XLIX.) 655

Berlepsch, Hans, Graf von, C.M.Z.S.

Exhibition of, and remarks upon, two varieties of the Long-tailed Titmouse 552

Bock, Carl, F.G.S. &c.

Letter from, addressed to the Secretary, containing remarks upon Capricornis sumatrensis 308

Boucard, Adolphe, C.M.Z.S.

Descriptions of two supposed new Species of South-American Birds. (Plate XVII.) 178

Brown, Rev. George, C.M.Z.S.

Letter from, addressed to the Secretary, concerning the range of the Mooruk 5


On the Heterocera in the Collection of Lepidoptera from New Ireland obtained by the Rev. G. Brown 160
On Arachnida from the Mascarene Islands and Madagascar. (Plate LVIII.) 729


On a new Genus and Species of Spiders of the Family Salticidae. 119

On some new and little-known Species of Araneidea, with Remarks on the Genus Gasteracantha. (Plates XXVI., XXVII.) 279

On some new and rare Spiders from New Zealand, with Characters of four new Genera. (Plates LII. & LIII.) 681

CLARK, J. W., F.Z.S.

Exhibition of a drawing of a species of Lagenorhynchus lately taken off Ramsgate. 311

COLLETT, Robert, C.M.Z.S.

On a new Fish of the Genus Lycodes from the Pacific. 381

D'ALBERTIS, L. M., C.M.Z.S.

Exhibition of some new and rare Birds from the Fly River, New Guinea. 218

DALL, W. H., Smithsonian Institution.

On the Use of the generic Name Gouldia in Zoology. 131

DANFORD, C. G., F.Z.S.

Exhibition of, and remarks upon, some antlers of Deer from Asia Minor. 552

DAY, Surgeon-Major FRANCIS, F.Z.S. &c.

On the Identity of Trigla paeciopetera and T. hirundo. (Plate XVIII.) 179

On the Fishes of Weston-super-Mare. (Plates LXI. & LXII.) 742
De Folin, Marquis.

On the Mollusca of H.M.S. 'Challenger' Expedition.—

Distant, W. L.

On some African Species of the Lepidopterous Genus Papilio. (Plate XLVII.) 647

On some African Species of Lepidoptera belonging to the Subfamily Nymphalinae. (Plate LIV.) 703


Notes on some Species of Chiroptera from Zanzibar, with Descriptions of New and Rare Species. 715

Finsch, Otto, Ph.D., C.M.Z.S., &c., Director of the Bremen Museum.

On a Collection of Birds made by Mr. Hübner on Duke-of-York Island and New Britain. 9

Flower, William Henry, LL.D., F.R.S., F.L.S., President of the Society, Conservator of the Museum of the Royal College of Surgeons, and Hunterian Professor.

On the Common Dolphin, Delphinus delphis, Linn. 382

Exhibition of, and remarks upon, a drawing of Delphinus tursio. 386

Exhibition of, and remarks upon, the skull of a female Otaria (Otaria gillespii) 551

Exhibition of, and remarks upon, the skull of a Beluga, or White Whale (Delphinapterus leucas). 667

On the Caecum of the Red Wolf (Canis jubatus, Desm.) 766

Forbes, Henry O., F.Z.S.

Letters from, on the distribution of the Badger-headed Mydaus (Mydaus meliceps) in Sumatra 664
FORBES, WILLIAM ALEXANDER, F.Z.S.

On the Systematic Position of the Genus Lathamus of Lesson. (Plate XVI.) .......................... 166

A Synopsis of the Meliphagine Genus Myzomela, with Descriptions of two new Species. (Plates XXIV. & XXV.) 256

On the Anatomy of the African Elephant (Elephas africanus, Blum.) ........................................ 420


Notes on Points in the Anatomy of the Hoatzin (Opisthocomus cristatus) ..................................... 109

Notes on the Visceral Anatomy of the Tupaia of Burmah (Tupaia belangeri) .................................. 301

Notes on the Anatomy of Helictis subaurantiaca. (Plate XXIX.) ..................................................... 305

On the Conformation of the Thoracic Extremity of the Trachea in the Class Aves.—Part I. The Gallinæ 354

Notes on the Anatomy of Gelada rueppelli. (Plate XXXVIII.) ......................................................... 451

Notice of a memoir on the brain and other parts of the Hippopotamus ........................................... 553

Note on the Mechanism of Respiration, as well as of the Retraction of the Head and Limbs, in certain Chelonia 649

GODMAN, FREDERICK DuCANE, F.L.S., F.Z.S.

Exhibition of, and remarks upon, a drawing of the Manatee. 552


Descriptions of new Species of Rhopalocera from Central and South America. (Plate XIV.) .............. 150

On a Collection of Diurnal Lepidoptera made by the Rev. G. Brown in New Ireland and New Britain. (Plate XV.) 155

Notes on some hitherto unrecorded Diurnal Lepidoptera from Duke-of-York Island, New Ireland, with Descriptions of some apparently new Species .......................... 652
GODWIN-AUSTEN, Lieut.-Col. H. H., F.Z.S.

Notes on, and Descriptions of, the Female of Ceriornis blythii. (Plate XXXIX.) .................................. 457

Note on the Female of Lophophora sclateri, Jerdon, from Eastern Assam. (Plate LI.) .............................. 681


Descriptions of Shells from Perak and the Nicobar Islands. (Plates LIX. & LX.) .............................. 734

GOODACRE, F. B., M.D., F.Z.S.

On the Question of the Identity of Species of the Common Domestic and the Chinese Goose .......................... 710


Note on a Specimen of Charybdea haplonema. ............ 793

GÜNTER, ALBERT, M.D., Ph.D., F.R.S., F.Z.S., Keeper of the Zoological Department, British Museum.

List of the Mammals, Reptiles, and Batrachians sent by Mr. Everett from the Philippine Islands. (Plate IV.) .... 74

On a new Rodent from Medellin. (Plate X.) .............. 144

Description of four new Species of Chamaeleon from Madagascar. (Plates XI.—XIII.) .......................... 148

Notice of a Collection of Mammals and Reptiles from Cyprus .......................................................... 741

HARTLAUB, Dr. G., F.M.Z.S.

On a new Species of Barn-Owl from the Island of Viti-Levu .......................................................... 295

HOSKINS, Commodore.

Letter from, concerning the northern limit of the “Mooruk.” 4

JACKSON, C. L.

Exhibition of a skull of a female Sea-lion (Otaria stelleri?). 460
Jacoby, Martin.

Descriptions of new Species of Coleoptera of the Family Halticidae ................................. 439

Descriptions of new Species of Phytophagous Coleoptera. 773

Jeffreys, J. Gwyn, LL.D., F.R.S., F.Z.S.

On the Mollusca procured during the 'Lightning' and 'Porcupine' Expeditions, 1868-70 (Part II.) (Plates XLV., XLVI.) .................................................. 553

Krefft, Gerrard, C.M.Z.S.

Notice of a supposed new Species of Bat from Queensland. 386


Note on the Pachycephala icteroides of Peale, with Descriptions of a supposed new Species ......................... 146

Letter from, containing remarks upon Mr. D. G. Elliot’s paper on the genus Ptilopus. ........................................ 385

Letter from, containing remarks upon the desirability of the adoption by naturalists of a fixed scale of colour in describing animals ........................................... 713

Lubomirski, Prince Ladislas.

Notice sur quelques Coquilles du Pérou. (Plates LV. & LVI.) .................................................. 719

Meyer, Dr. A. B., Director of the Royal Zoological Museum, Dresden, C.M.Z.S.

Letter from, concerning the locality of Cervus alfredi. .... 666

Miers, Edward J., F.L.S., F.Z.S., Assistant in the Zoological Department, British Museum.

Mivart, St. George, Ph.D., F.R.S., F.Z.S., M.R.I., &c.

Exhibition of a figure of a malformed Kestrel... 311

Moore, Frederic, F.Z.S., Assistant Curator, India Museum, London.

Descriptions of new Asiatic Diurnal Lepidoptera... 136

Descriptions of new Genera and Species of Asiatic Lepidoptera Heterocera. (Plates XXXII.–XXXIV.)... 387

Morris, Rev. F. O.

Exhibition of an example of Bombyx quercus with malformed antennæ... 145

Murie, James, M.D., F.L.S., F.G.S., F.Z.S.

Notice of a memoir on the Manatee... 552


Descriptions of Shells from Perak and the Nicobar Islands. (Plates LIX. & LX.)... 734

Newton, Alfred, M.A., F.L.S., F.Z.S., Professor of Zoology and Comparative Anatomy in the University of Cambridge.

Remarks on the occasion of the death of the late President. 1

Remarks upon the specimen of Alectorœnas nitidissima exhibited by Dr. Traquair... 2

Exhibition of, and remarks upon, a specimen of Sylvia nisoria belonging to Mr. John Robinson... 219

Exhibition of, and remarks upon, some bird-skins obtained by Mr. E. Newton, C.M.Z.S., in Jamaica... 552

Ottley, W., M.B., F.R.C.S., Demonstrator of Anatomy at University College, London.

On the Attachment of the Eye-Muscles in Mammals.—I. Quadrumana... 121
A Description of the Vessels of the Neck and Head in the Ground-Hornbill (*Bucorvus abyssinicus*) ................. 461


Notice of a memoir on a large extinct Kangaroo of the genus *Palorchestes* .................. 438

**Parker, T. Jeffery, Assoc. R.S.M.**

Notice of a memoir on the intestinal spiral valve in the genus *Raia* ......................... 764


Description of a new Oriole from N.E. Borneo ......... 709

Exhibition of, and observations upon, a specimen of *Pericrocotton flammeus* in an abnormal state of plumage........... 765

**Reinhardt, J., F.M.Z.S.**

Extract of a letter from, on a new species of Curassow .. 108

**St. John, Captain H.C., R.N.**

See Miers, Edward J.

**Salvadori, Count Thomas, M.D., C.M.Z.S.**

A few Remarks on Mr. Elliot's paper "On the Fruit-Pigeons of the Genus *Ptilopus*" .................. 61

On *Acomus inornatus*, Salvad. (Plate XLVIII.) ...... 651

**Salvin, Osbert, M.A., F.R.S., F.Z.S.**

On some Birds transmitted from the Samoan Islands by the Rev. T. Powell ........................................ 128

**Salvin, Osbert, M.A., F.R.S., F.Z.S., and Godman, Frederick Du Cane, F.L.S., F.Z.S.**

Descriptions of new Species of *Rhopalocera* from Central and South America. (Plate XIV.) ................. 150
On a Collection of Diurnal Lepidoptera made by the Rev. G. Brown, in New Ireland and New Britain. (Plate XV.) 155

Notes on some hitherto unrecorded Diurnal Lepidoptera from Duke-of-York Island, New Ireland, with Descriptions of some apparently new Species .......................... 652


On the Birds collected by the late Mr. T. K. Salmon in the State of Antioquia, United States of Colombia. (Plates XLI.-XLIII.) ......................................................... 486

On the Birds collected in Bolivia by Mr. C. Buckley .... 588

Sclater, Philip Lutley, M.A., Ph.D., F.R.S., Secretary to the Society.

Report on the additions to the Society’s Menagerie in December 1878 .......................................................... 2

Report on the additions to the Society’s Menagerie in January 1879................................................................. 108

Remarks upon, and diagnosis of, Mitua salvini, the new Curassow ................................................................. 108

On the Breeding of the Argus Pheasant and other Phasi-anidae in the Society’s Gardens. (Plates VII., VIII.) .... 114

Exhibition and description of a new Humming-bird, Thau-masius taczanowskii, from Northern Peru .................. 145

Exhibition of a living Amphisbaenian from Monte Video .. 146

Report on the additions to the Society’s Menagerie in February 1879 ............................................................... 218

Exhibition of, and remarks upon, two rare Fruit-Pigeons. 218

Remarks upon the Japanese Deer (Cervus sika) .......... 294

Remarks on some Parrots living in the Society’s Gardens. (Plate XXVIII.) ......................................................... 299

Report on the additions to the Society’s Menagerie in March 1879 ................................................................. 308

Exhibition of the eggs collected by the naturalists of the ‘Challenger’ Expedition .............................................. 309
xiii

Report on the additions to the Society’s Menagerie in April 1879.............................................. 384

Report on the dimensions and weights of the Indian Elephants ...................................................... 385

Remarks on the Zoological Gardens of Rotterdam, Amsterdam, Cologne, Frankfort, and Antwerp........ 438


Remarks on two volumes of original drawings of the birds of India, by Brigadier-General A. C. M’Master .... 460

Exhibition of, and remarks upon, a collection of birds from the Argentine Republic ............................ 460

Report on the additions to the Society’s Menagerie in May 1879. (Plate XLIV.)................................. 550

Exhibition of, and remarks upon, a skin of Ara glauca ......................................................................... 551

Report on the additions to the Society’s Menagerie in June, July, August, and September 1879 .......... 663

Report on the additions to the Society’s Menagerie in October 1879.................................................... 713

Report on the additions to the Society’s Menagerie in November 1879................................................ 763

Exhibition of, and remarks upon, a small collection of birds from the island of Montserrat, West Indies .. 764


On the Birds collected by the late Mr. T. K. Salmon in the State of Antioquia, United States of Colombia. (Plates XLI.-XLIII.) .......................................................... 486

On the Birds collected in Bolivia by Mr. C. Buckley .............................................................................. 588

Seebohm, Henry, F.Z.S.

Exhibition of, and remarks upon, a collection of birds made by Captain the Hon. G. C. Napier in the valley of the Atreck river ................................................................. 764
On certain obscure Species of Siberian, Indian, and Chinese Thrushes (Plate LXIV.) ........................................ 803

**Sharpe, R. Bowdler, F.L.S., F.Z.S., &c., Senior Assistant, Zoological Department, British Museum.**

Exhibition of, and remarks upon, a series of Bulwer's Pheasants (*Lobiophasis bulweri*) from the Lawas river, N.W. Borneo ................................................................. 109

A Note on *Heliodilus soumagnii*, Grandidier ............ 175

On a second Species of *Dromacercus* from Madagascar. . 177

On Collections of Birds from Kina Balu Mountain in North-western Borneo. (Plate XXIII.) ....................... 245

A Contribution to the Avifauna of the Sooloo Islands ... 311

A List of the Birds of Labuan Island and its Dependencies. (Plate XXX.) ......................................................... 317

**Shaw, George A.**

A few Notes upon four Species of Lemurs, specimens of which were brought alive to England in 1878. (Plate IX.).. 132

**Shelley, Captain G. E., F.Z.S.**

On a Collection of Birds from the Comoro Islands .......... 673

Descriptions of two new Species of African Birds. (Plate L.) ................................................................. 679

**Smith, Edgar A., F.Z.S., Zoological Department, British Museum.**

On a Collection of Mollusca from Japan. (Plates XIX. & XX.) ................................................................. 181

**Taczanowski, L., C.M.Z.S.**

Liste des Oiseaux recueillis au Nord du Pérou par MM. Stolzmann et Jelski en 1878. (Plates XXI. & XXII.) ... 220

Description d’un nouveau Synallaxe péruvien .............. 670

Description d’un nouveau Tyrannide péruvien ................ 670

Notice sur quelques Oiseaux du Turkestan ......................... 672
Tegetmeier, W. B., F.Z.S

Exhibition of, and remarks upon, an abnormal antler of a Deer (Cervus dama) ........................................ 713

Traquair, R. H., M.D., F.G.S.

Exhibition of a specimen of Alectorænas nitidissima .... 2

Trimen, Roland, F.L.S., F.Z.S.

Letter from, concerning Plectroperus niger ............... 5

Tristram, Rev. H. B., F.R.S., C.M.Z.S.

Description of a new Species of Woodpecker from the Island of Tzus Sima, near Japan. (Plate XXXI.) ............... 386

Tweeddale, Arthur, Marquis of, F.R.S., President of the Society.

Contributions to the Ornithology of the Philippines.—No. XII. On the Collection made by Mr. A. H. Everett in the Island of Basilan ...................................................... 68

Ward, Rowland.

Exhibition of a head of a Chamois (Rupicapra tragus) with two pairs of horns ............................................ 666

Watson, Morrison, M.D., and Young, Alfred H., M.B., of The Owens College, Manchester.

On the Anatomy of Hyæna crocuta (H. maculata). (Plates V. & VI.) ....................................................... 79


See De Folin, Marquis.

White, Robert B., C.M.Z.S.

Letter from, containing remarks upon the habits of a species of Ant (Atta cephalotes) ............................ 713

Young, Alfred H., M.B., of The Owens College, Manchester, and Watson, Morrison, M.D.

On the Anatomy of Hyæna crocuta (H. maculata). (Plates V. & VI.) ....................................................... 79
ERRATUM.

Page 643, line 9, for Popoaza read Pepoaza.
<table>
<thead>
<tr>
<th>Plate</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>New Japanese Crustacea</td>
</tr>
<tr>
<td>II.</td>
<td>Dendrophis philippinensis</td>
</tr>
<tr>
<td>III.</td>
<td>Anatomy of Hyæna crocuta</td>
</tr>
<tr>
<td>IV.</td>
<td>Argus giganteus &amp; pull.</td>
</tr>
<tr>
<td>V.</td>
<td>Eggs of:—fig. 1. Argus giganteus; fig. 2. Polylec-</td>
</tr>
<tr>
<td>VI.</td>
<td>tron chinquis; fig. 3. Ceriornis temmincki; fig. 4.</td>
</tr>
<tr>
<td>VII.</td>
<td>C. satyra; fig. 5. Crossoptilon mantchuricum</td>
</tr>
<tr>
<td>IX.</td>
<td>Chirogaleus milii</td>
</tr>
<tr>
<td>X.</td>
<td>Thrinacodus albicauda</td>
</tr>
<tr>
<td>XI.</td>
<td>Chameleon malthe</td>
</tr>
<tr>
<td>XII.</td>
<td>Fig. A. Chameleon brevicornis; fig. B. C. gularis</td>
</tr>
<tr>
<td>XIII.</td>
<td>Chameleon globifer</td>
</tr>
<tr>
<td>XIV.</td>
<td>New American Butterflies</td>
</tr>
<tr>
<td>XV.</td>
<td>New Butterflies from Duke-of-York Group</td>
</tr>
<tr>
<td>XVI.</td>
<td>Structure of Lathamus</td>
</tr>
<tr>
<td>XVII.</td>
<td>Chiromacheris coronata</td>
</tr>
<tr>
<td>XVIII.</td>
<td>Trigla hirundo</td>
</tr>
<tr>
<td>XIX.</td>
<td>Shells of Japan</td>
</tr>
<tr>
<td>XX.</td>
<td>Cyclorhis contrerasi</td>
</tr>
<tr>
<td>XXI.</td>
<td>Pipreola lubomirskii</td>
</tr>
<tr>
<td>XXII.</td>
<td>Ianthocincla trecheri</td>
</tr>
<tr>
<td>XXIII.</td>
<td>Fig. 1. Myzomela chloroptera; fig. 2. M. rubrobrunnea;</td>
</tr>
<tr>
<td>XXIV.</td>
<td>fig. 3. M. adolphine</td>
</tr>
<tr>
<td>XXV.</td>
<td>Fig. 1. Myzomela chermesina; fig. 2. M. sclateri</td>
</tr>
<tr>
<td>XXVI.</td>
<td>Gasteracanthides</td>
</tr>
<tr>
<td>XXVII.</td>
<td>Caica xanthomera</td>
</tr>
<tr>
<td>XXVIII.</td>
<td>Helictis subaurantiaca</td>
</tr>
<tr>
<td>XXIX.</td>
<td>Fig. 1. Prionochilus everetti; fig. 2. P. obsoletus</td>
</tr>
</tbody>
</table>
Plate
XXXI. Dryocopus richardsi ........................................ 386
XXXII.
XXXIII.
XXXIV. New Asiatic Lepidoptera ................................ 387
XXXV. New Species of Pectunculus and Axiea .................. 417
XXXVI. Graucus sublineatus.
XXXVII. Fig. 1. Myzomela cinerea; fig. 2. Donaccola spectabilis; fig. 3. Munia forbesi 446
XXXVIII. Brain of Gelada rueppelli ................................ 451
XXXIX. Cerionis blythi ........................................... 457
XL. Land Shells from Costa Rica ................................. 475
XL. Cyphorus dichrous
XLII. Eggs of Antioquian Birds .................................. 486
XLIII. Nymphicus cornutus ...................................... 550
XLV. Mollusca of the 'Lightning' and 'Porcupine' Expeditions
XLVI. Chrysococcyx flavigularis ................................ 679
L. Lophophorus sclateri ♀ ........................................ 681
LI. New-Zealand Spiders ........................................... 681
LII. New African Lepidoptera .................................... 703
LIII. New Shells from Peru ........................................ 719
LV. New Helices from Madagascar ................................ 728
LVI. New and Rare Arachnida ..................................... 729
LVII. New Land Shells .............................................. 734
LVIII. Pleuronectes elongatus ................................... 742
LX. Fig. 1. Clupea pilchardus; fig. 2. C. sprattus ............ 767
LXI. Zaporia watersi ................................................ 803
## LIST OF WOODCUTS.

1879.

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Spheniscus humboldti</em> (before moult)</td>
<td>7</td>
</tr>
<tr>
<td><em>Spheniscus humboldti</em> (after moult)</td>
<td>8</td>
</tr>
<tr>
<td>Stomach of <em>Hyena crocuta</em></td>
<td>82</td>
</tr>
<tr>
<td>Cecum of <em>Hyena crocuta</em></td>
<td>84</td>
</tr>
<tr>
<td>Liver of <em>Hyena crocuta</em></td>
<td>85</td>
</tr>
<tr>
<td>Lungs of <em>Hyena crocuta</em></td>
<td>88</td>
</tr>
<tr>
<td>Brain of <em>Hyena crocuta</em> (upper surface)</td>
<td>90</td>
</tr>
<tr>
<td>Brain of <em>Hyena crocuta</em> (lateral view)</td>
<td>90</td>
</tr>
<tr>
<td>Trachea of <em>Opisthocomus</em> (front view)</td>
<td>110</td>
</tr>
<tr>
<td>Trachea of <em>Opisthocomus</em> (back view)</td>
<td>111</td>
</tr>
<tr>
<td>Diagram to show portion of <em>Opisthocomus</em></td>
<td>114</td>
</tr>
<tr>
<td><em>Fritzia muelleri</em></td>
<td>120</td>
</tr>
<tr>
<td>Leaf of plant showing nest of <em>Fritzia muelleri</em></td>
<td>120</td>
</tr>
<tr>
<td>Diagram of the muscles in the human eye</td>
<td>122, 124</td>
</tr>
<tr>
<td>Diagram of the eye-muscles in the Rabbit</td>
<td>122</td>
</tr>
<tr>
<td>Diagram of the eye-muscles in <em>Simia satyrus</em></td>
<td>124</td>
</tr>
<tr>
<td>Diagram of the eye-muscles in <em>Macacus inuus</em></td>
<td>125</td>
</tr>
<tr>
<td>Diagram of the eye-muscles in <em>Mycetes seniculus</em></td>
<td>126</td>
</tr>
<tr>
<td>Diagram of the eye-muscles in <em>Hapale penicillata</em></td>
<td>126</td>
</tr>
<tr>
<td>Diagram of the eye-muscles of a Lemur</td>
<td>126</td>
</tr>
<tr>
<td>Diagram of the eye-muscles in <em>Nycticebus</em></td>
<td>127</td>
</tr>
<tr>
<td>Dentition of <em>Thrinacodus albicauda</em></td>
<td>145</td>
</tr>
<tr>
<td>Head of <em>Lathamus discolor</em></td>
<td>171</td>
</tr>
<tr>
<td>Foot of <em>Lathamus discolor</em></td>
<td>171</td>
</tr>
<tr>
<td>Head of <em>Psephotus hematogaster</em></td>
<td>171</td>
</tr>
<tr>
<td>Foot of <em>Psephotus hematogaster</em></td>
<td>171</td>
</tr>
<tr>
<td>Head of <em>Trichoglossus concinnus</em></td>
<td>171</td>
</tr>
<tr>
<td>Foot of <em>Trichoglossus concinnus</em></td>
<td>171</td>
</tr>
<tr>
<td>Skull of female Roe-deer, with antlers</td>
<td>297</td>
</tr>
<tr>
<td>Brain of <em>Tupaia belangeri</em>; lateral aspect</td>
<td>303</td>
</tr>
<tr>
<td>Brain of <em>Tupaia belangeri</em>; superior aspect</td>
<td>304</td>
</tr>
<tr>
<td>Brain of <em>Tupaia belangeri</em>; mid longitudinal section</td>
<td>304</td>
</tr>
<tr>
<td>Brain of <em>Helietis subaurantiaea</em>; superior aspect</td>
<td>307</td>
</tr>
<tr>
<td>Brain of <em>Helietis subaurantiaea</em>; lateral aspect</td>
<td>307</td>
</tr>
<tr>
<td>Tail of <em>Cypselus infumatus</em></td>
<td>333</td>
</tr>
<tr>
<td>Tail of <em>Cypselus lovi</em></td>
<td>333</td>
</tr>
<tr>
<td>Nest of <em>Dendrochelidon comata</em></td>
<td>334</td>
</tr>
<tr>
<td>“Dakut,” or call used by the Khadyan natives</td>
<td>347</td>
</tr>
<tr>
<td>Trachea of <em>Pavo spicifer</em></td>
<td>355</td>
</tr>
<tr>
<td>Trachea of <em>Caccabas chukar</em></td>
<td>357</td>
</tr>
<tr>
<td>Trachea of <em>Argus giganteus</em></td>
<td>358</td>
</tr>
<tr>
<td>Trachea of <em>Lophortyx californicus</em></td>
<td>360</td>
</tr>
<tr>
<td>Trachea of <em>Coturnix communis</em></td>
<td>362</td>
</tr>
<tr>
<td>Trachea of <em>Euploceamus albochristatus</em></td>
<td>364</td>
</tr>
<tr>
<td>Trachea of <em>Phasianus colchicus</em></td>
<td>365</td>
</tr>
<tr>
<td>Trachea of <em>Thaumalea picta</em></td>
<td>366</td>
</tr>
<tr>
<td>Trachea of <em>Lagopus scoticus</em></td>
<td>367</td>
</tr>
<tr>
<td>Trachea of <em>Tetrao tetrix</em></td>
<td>369</td>
</tr>
<tr>
<td>Trachea of <em>Tetrao urogallus</em></td>
<td>370</td>
</tr>
<tr>
<td>Trachea of <em>Perdix cinerea</em></td>
<td>371</td>
</tr>
<tr>
<td>Trachea of <em>Ceriornis temmincki</em></td>
<td>373</td>
</tr>
<tr>
<td>Trachea of <em>Crossoptilon mantchuricum</em></td>
<td>374</td>
</tr>
<tr>
<td>Trachea of <em>Numida cristata</em></td>
<td>375</td>
</tr>
<tr>
<td>Trachea of <em>Meleagris gallopavo</em></td>
<td>376</td>
</tr>
<tr>
<td>Trachea of <em>Gallus bankiva</em></td>
<td>378</td>
</tr>
<tr>
<td>Trachea of <em>Aburria carunculata</em></td>
<td>379</td>
</tr>
<tr>
<td><em>Lycodes pacificus</em></td>
<td>381</td>
</tr>
<tr>
<td>Tongue of the African Elephant</td>
<td>423</td>
</tr>
<tr>
<td>View of liver of <em>Elephas indicus</em>, from above</td>
<td>426</td>
</tr>
<tr>
<td>View of liver of <em>Elephas indicus</em>, from below</td>
<td>426</td>
</tr>
<tr>
<td>View of liver of <em>Elephas africanus</em>, from above</td>
<td>427</td>
</tr>
<tr>
<td>View of liver of <em>Elephas africanus</em>, from below</td>
<td>427</td>
</tr>
<tr>
<td>Larynx of African Elephant</td>
<td>431</td>
</tr>
<tr>
<td>Uterus and vagina of African Elephant</td>
<td>433</td>
</tr>
<tr>
<td>Opening of urethra into the urino-genital canal of African Elephant</td>
<td>434</td>
</tr>
<tr>
<td>Plan of the innominate arteries and their branches in the Ground-Hornbill</td>
<td>463</td>
</tr>
<tr>
<td>Plan of the arteries for the supply of the head and neck in the Ground-Hornbill</td>
<td>465</td>
</tr>
<tr>
<td>Plan of the internal carotid and its branches, with the arteries in the orbit, in the Ground-Hornbill</td>
<td>467</td>
</tr>
<tr>
<td>Skull of <em>Martes foina</em></td>
<td>470</td>
</tr>
<tr>
<td>Skull of <em>Martes sylvatica</em></td>
<td>471</td>
</tr>
<tr>
<td>Map showing Mr. Salmon’s collecting-stations in Antioquia</td>
<td>488</td>
</tr>
<tr>
<td>Drawing showing the mode in which the Beluga was caught</td>
<td>667</td>
</tr>
<tr>
<td>Posterior surface of skull of Beluga with dislocated atlas</td>
<td>668</td>
</tr>
<tr>
<td>Cecum of the Red Wolf (<em>Canis jubatus</em>)</td>
<td>766</td>
</tr>
<tr>
<td>Abnormal horns of Chamois</td>
<td>803</td>
</tr>
</tbody>
</table>
PROCEEDINGS

OF THE

SCIENTIFIC MEETINGS

OF THE

ZOLOGICAL SOCIETY

OF LONDON

FOR THE YEAR

1879.

(PLATES.)

PRINTED FOR THE SOCIETY,
AND SOLD AT THEIR HOUSE IN HANOVER SQUARE.

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Paternoster Row.
## List of Plates

1879.

<table>
<thead>
<tr>
<th>Plate</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>New Japanese Crustacea</td>
<td>18</td>
</tr>
<tr>
<td>II.</td>
<td><em>Dendrophis philippinensis</em></td>
<td>74</td>
</tr>
<tr>
<td>III.</td>
<td>Anatomy of <em>Hyena crocuta</em></td>
<td>79</td>
</tr>
<tr>
<td>IV.</td>
<td><em>Argus giganteus</em> &amp; pull.</td>
<td>114</td>
</tr>
<tr>
<td>V.</td>
<td>Eggs of:—fig. 1. <em>Argus giganteus</em>; fig. 2. <em>Polyplectron chinquis</em>; fig. 3. <em>Cerionis temmincki</em>; fig. 4. <em>C. satyra</em>; fig. 5. <em>Crossoptilon manchuricum</em></td>
<td></td>
</tr>
<tr>
<td>VI.</td>
<td><em>Argus giganteus</em> &amp; pull.</td>
<td>132</td>
</tr>
<tr>
<td>VII.</td>
<td><em>Chirogaleus milii</em></td>
<td>144</td>
</tr>
<tr>
<td>VIII.</td>
<td><em>Polyplectron chinquis</em>; fig. 3. <em>Cerionis temmincki</em>; fig. 4. <em>C. satyra</em>; fig. 5. <em>Crossoptilon manchuricum</em></td>
<td></td>
</tr>
<tr>
<td>IX.</td>
<td><em>Chirogaleus milii</em></td>
<td>150</td>
</tr>
<tr>
<td>X.</td>
<td><em>Thrinacodus albicauda</em></td>
<td>155</td>
</tr>
<tr>
<td>XI.</td>
<td><em>Chamaeleon malthe</em></td>
<td>156</td>
</tr>
<tr>
<td>XII.</td>
<td>Fig. A. <em>Chamaeleon brevicornis</em>; fig. B. <em>C. gularis</em></td>
<td>178</td>
</tr>
<tr>
<td>XIII.</td>
<td><em>Chamaeleon globifer</em></td>
<td></td>
</tr>
<tr>
<td>XIV.</td>
<td>New American Butterflies</td>
<td>179</td>
</tr>
<tr>
<td>XV.</td>
<td>New Butterflies from Duke-of-York Group</td>
<td></td>
</tr>
<tr>
<td>XVI.</td>
<td>Structure of <em>Lathamus</em></td>
<td></td>
</tr>
<tr>
<td>XVII.</td>
<td><em>Chiromacharis coronata</em></td>
<td></td>
</tr>
<tr>
<td>XVIII</td>
<td><em>Trigla hirundo</em></td>
<td></td>
</tr>
<tr>
<td>XIX.</td>
<td>Shells of Japan</td>
<td>181</td>
</tr>
<tr>
<td>XX.</td>
<td><em>Cyclorhis contrerasi</em></td>
<td></td>
</tr>
<tr>
<td>XXI.</td>
<td><em>Pipreola lubomirskii</em></td>
<td>220</td>
</tr>
<tr>
<td>XXII.</td>
<td><em>Ianthocincla treacheri</em></td>
<td>245</td>
</tr>
<tr>
<td>XXIII</td>
<td>Fig. 1. <em>Myzonela chloroptera</em>; fig. 2. <em>M. rubrobrunnea</em>; fig. 3. <em>M. adolphine</em></td>
<td>256</td>
</tr>
<tr>
<td>XXIV.</td>
<td>Fig. 1. <em>Myzonela chermesina</em>; fig. 2. <em>M. sclateri</em></td>
<td></td>
</tr>
<tr>
<td>XXV.</td>
<td>Gasteracanthides</td>
<td>279</td>
</tr>
<tr>
<td>XXVI.</td>
<td><em>Caica xanthomera</em></td>
<td>299</td>
</tr>
<tr>
<td>XXVII</td>
<td><em>Helictis subaurantiaca</em></td>
<td>305</td>
</tr>
<tr>
<td>XXVIII</td>
<td>Fig. 1. <em>Prionochilus everetti</em>; fig. 2. <em>P. obsoletus</em></td>
<td>317</td>
</tr>
<tr>
<td>Plate</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>XXXI.</td>
<td>Dryocopus richardi</td>
<td>386</td>
</tr>
<tr>
<td>XXXII.</td>
<td>New Asiatic Lepidoptera</td>
<td>387</td>
</tr>
<tr>
<td>XXXIII.</td>
<td>New Species of Pectunculus and Axineæ</td>
<td>417</td>
</tr>
<tr>
<td>XXXIV.</td>
<td>Granular subsinea</td>
<td>446</td>
</tr>
<tr>
<td>XXXV.</td>
<td>Fig. 1. Myzomela cinerea; fig. 2. Donacicola spectabilis; fig. 3. Munia forbesi</td>
<td>446</td>
</tr>
<tr>
<td>XXXVI.</td>
<td>Brain of Gelada rueppelli</td>
<td>451</td>
</tr>
<tr>
<td>XXXVII.</td>
<td>Cerionis blythii</td>
<td>457</td>
</tr>
<tr>
<td>XL.</td>
<td>Land Shells from Costa Rica</td>
<td>475</td>
</tr>
<tr>
<td>XLI.</td>
<td>Cyphorhinus dichrous</td>
<td>486</td>
</tr>
<tr>
<td>XLII.</td>
<td>Eggs of Antioquian Birds</td>
<td>486</td>
</tr>
<tr>
<td>XLIII.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XLIV.</td>
<td>Nymphicus cornutus</td>
<td>550</td>
</tr>
<tr>
<td>XLV.</td>
<td>Mollusea of the 'Lightning' and 'Porcupine' Expeditions</td>
<td>553</td>
</tr>
<tr>
<td>XLVI.</td>
<td>Papilio hornimani</td>
<td>647</td>
</tr>
<tr>
<td>XLVII.</td>
<td>Acomus inornatus</td>
<td>651</td>
</tr>
<tr>
<td>XLVIII.</td>
<td>Dentary apparatus of Tripilenes</td>
<td>655</td>
</tr>
<tr>
<td>L.</td>
<td>Chrysococcyx flavigularis</td>
<td>679</td>
</tr>
<tr>
<td>LI.</td>
<td>Lophophorus sclateri ♀</td>
<td>681</td>
</tr>
<tr>
<td>LII.</td>
<td>New-Zealand Spiders</td>
<td>681</td>
</tr>
<tr>
<td>LIII.</td>
<td>New African Lepidoptera</td>
<td>703</td>
</tr>
<tr>
<td>LIV.</td>
<td>New Shells from Peru</td>
<td>719</td>
</tr>
<tr>
<td>LV.</td>
<td>New Helices from Madagascar</td>
<td>728</td>
</tr>
<tr>
<td>LVI.</td>
<td>New and Rare Arachnida</td>
<td>729</td>
</tr>
<tr>
<td>LVII.</td>
<td>Perak and Nicobar Shells</td>
<td>734</td>
</tr>
<tr>
<td>LVIII.</td>
<td>Pleuronectes elongatus</td>
<td>742</td>
</tr>
<tr>
<td>LIX.</td>
<td>Fig. 1. Clupea pilchardus; fig. 2. C. sprattus</td>
<td>742</td>
</tr>
<tr>
<td>LX.</td>
<td>Zapornia watersi</td>
<td>767</td>
</tr>
<tr>
<td>LXI.</td>
<td>Turdus dissimilis</td>
<td>803</td>
</tr>
</tbody>
</table>
PROCEEDINGS

OF THE

SCIENTIFIC MEETINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 14, 1879.
Prof. Newton, M.A., F.R.S., V.P., in the Chair.

The Chairman opened the proceedings of the meeting with the following remarks:

"Before we proceed to this evening's business, I think all present will deem it only fitting that your Chairman should say a few words in regard to the loss we have suffered by the death of our President since we last met. I am sure there was no Fellow of the Society who took a livelier or deeper interest in its welfare than did the late Lord Tweeddale; and if proof of this assertion seem to any one wanting, I have but to refer to the facts that he was not merely content with giving us the countenance of his high social position, not merely content with presiding at our Council Meetings and discharging the formal duties of the office he bore amongst us, but that he actively participated in our scientific work, as witness the valuable and carefully elaborated papers with which he from time to time enriched our publications, the last of which you will hear read tonight. I believe I am right in saying that since these Scientific Meetings were established, we have never had a President who was so well, so intimately, known to the majority of the Fellows who attend them, or one who was so competent to appreciate the papers read or the communications made at them; and this, I need not point out to you, has been of great benefit to us. Of Lord Tweeddale's life and labours I shall say..."
nothing. I hope they may be duly accounted by some one far more fitted than myself to do them justice; but for my own part I wish to express an opinion, in which all present I think will join, that the active sympathy which our late President invariably exhibited, not only for those who busied themselves in that branch of study especially affected by himself, but for all working zoologists, requires acknowledgment on the present occasion; and in these imperfect sentences I have endeavoured to give it utterance.”

The Secretary read the following report on the additions to the Society’s Menagerie during the month of December 1878.

The total number of registered additions to the Society’s Menagerie during the month of December was 80, of which 42 were by presentation, 33 by purchase, and 5 were received on deposit. The total number of departures during the same period, by death and removals, was 111.

The most noticeable additions during the month of December were as follows:

1. A dark-coloured Lemur new to the Society’s collection, which appears to be the Mayotte Lemur (*Lemur mayottensis*, Schl.).

2. A collection of Lemurs brought to England by Mr. George A. Shaw, who has been resident some years at Fianarantsoso, in the province of Betsileo, in Central Madagascar, and acquired by the Society partly by purchase and partly by presentation. Amongst these are representatives of two species new to the Society’s collection—one being a *Chirogaleus*, and the other *Microcebus smithi*—besides an example of the little-known *Hapalemur simus*. Mr. Shaw has favoured me with some interesting notes upon these little-known animals, which will be read at a future meeting, when I hope to be able to give the exact name of the *Chirogaleus*, if determinable with our existing knowledge.

3. A female Punjaub Wild Sheep (*Ovis cycloceros*), presented by Col. W. R. Alexander, having been obtained in the hills between Upper Sind and Beloochistan.

Dr. Traquair exhibited a specimen of *Alectororhines nitidissima*, an extinct Pigeon of Mauritius, belonging to the Museum of Science and Art of Edinburgh.

Prof. Newton made the following remarks upon this specimen:

“Dr. Traquair deserves the best thanks of those present for having been at the trouble of bringing to London and exhibiting here the specimen of *Alectororhines nitidissima* now on the table. It had been believed that but two skins of this species existed—one in the Museum at Paris, the other in that of Port Louis, the capital of Mauritius. It was therefore with extreme pleasure that, on the 26th of September last, when Dr. Traquair was kindly showing me over the Museum of Science and Art in Edinburgh, I recognized in one of the cases the third example, now before you.

“The true history of this beautiful and ill-fated species may be told in a very few words. It would take a long time to recount and re-
fute the numerous fictions that have been heaped upon the only available facts. The bird was sufficiently well described and figured by Sonnerat in his 'Voyage aux Indes orientales' (ii. p. 175, pl. 101) as coming from the Île de France, and was named by him the Pigeon hollandais—a name given, I suspect, not so much from the former inhabitants of the island, as from its plumage exhibiting the colours of the Dutch flag (red, blue, and white). Two examples obtained by him found their way to the Museum of Paris, where Temminck (Hist. Pig. ed. 2, i. p. 50, pl. 19) seems to have seen them at the beginning of the present century, their plumage very much the worse, he says, for the fumes (of sulphuric acid, as M. Alphonse Milne-Edwards informs me) to which they had been exposed. In 1790, Bonnaterre, describing the species afresh, but apparently from the same specimen, said of it (Encycl. Méth. p. 233), and probably with truth:—'On le trouve fréquemment à l’Île de France.' In or about 1816 the University of Edinburgh became possessed of what has long been known as the 'Dufresne Collection,' from the French naturalist of that name, who was originally (as I learn from M. A. Milne-Edwards) a dealer in Natural-History specimens, and had also been for some time Conservator of the Cabinet of Natural History belonging to the Empress Joséphine, but in 1815 or the following year entered the Museum of Paris as Aide-Naturaliste. In which capacity it was that he parted with the collection obtained by the University of Edinburgh I cannot say; but that collection contained the specimen of this Pigeon, now before you, as the label affixed to it shows; and it remained the property of the University until a few years ago, when it was transferred to the newly established Museum of Science and Art at Edinburgh. This brings me to the end of my facts.

"It is a very unpleasing task to expose the blunders of other naturalists; but I am sorry to say that few authors subsequent to Sonnerat and Bonnaterre have referred to this species without making some mistake about it. In one very conspicuous case this mistake can scarcely have been otherwise than intentional. The misstatements of Le Vaillant are notorious; but I do not know a more unblushing instance of his mendacity than his circumstantial account of the Ramier herisse, as he called this species (Ois. d’Af. vi. p. 74). It naturally misled all succeeding authors, until his assertions respecting this bird were concisely summed up by Sundevall (Krit. Framställn. p. 53) in the sentence 'quæ omnia inter fabulas numeranda sunt.' But Sundevall did not seem to have suspected that the species was extinct; nor perhaps had any one else, until Mr. Edward Newton, during his residence in Mauritius between 1839 and 1878, became convinced that such was the case. He indeed once hoped (Ibis, 1861, p. 277) that he had heard of it; but further inquiry proved the bird meant by his informant to be Trocaza meyeri; and the only trace of

1 "The inscription, as I copied it at the time, ran:—'The Hackled Pigeon. Ptilinopus nitidissimus, Scop. sp. Locality Isle of France. Columba Franciae Dufresne.' On the bottom of the stand was written, 'R-d Hackled Pigeon, 219. Columba Franciae Linn.'"
its former existence in the island that he met with was the stuffed skin which, as I have already said, is in the Museum there.

"Coming to later authors, Mr. G. R. Gray, who, in 1840, had proposed (List Gen. B. p. 58) the generic separation of this pigeon from others of the family under the name of Alectoreñas (which, as Agassiz subsequently pointed out, should be written Alectoreźnias), in 1855 marked it as represented in the British Museum (Cat. Gen. B. p. 97); and so it appeared in his 'Hand-list' (ii. p. 228); but I have not been able to find that the British Museum ever possessed a specimen, and no mention is made of it in his 'List of Specimens' of Columbae of 1856. In 1868 MM. Pollen and Van Dam entered this species (Rech. Faune de Madag. p. 159) as belonging to Madagascar alone, without even giving it a place in the Mauritian list; and in 1877 Dr. Hartlaub, in his most recent work (Vög. Madag. u. s. w. p. 264), though his other statements are right enough, was misled into the error of saying that 'Fossile Reste dieser Art sam-
meltc Herr Henry H. Slater.'"  

"Allied to Alectoreźnias nitidissima are three species which still survive and are natives of Madagascar, the Comoros, and the Seychelles. All have been treated by Dr. Hartlaub as congeneric; and they will probably stand as A. madagascariensis (Linn.), A. egauzini (Verr.), and A. pulcherrírna (Scop.). It is possible that Rodriguez once possessed another member of the group, the Columba rodericana of M. A. Milne-Edwards; but we have not received sufficient remains of that species (which is certainly extinct) to decide the point, and the older voyagers give us no help here as they do in so many other cases. I shall not trouble you with commenting on the nomenclature of any of these species. That which is the subject of my remarks has had a sufficient number of useless synonyms applied to it; but on the whole they have all been fortunate, and there is no difficulty in determining the names they should bear, though both the generic and specific appellation of Alectoreźnias nitidissima were conferred by writers who had never set eyes on a specimen.

"To conclude, I may state (1) that there is no trustworthy evidence of Alectoreźnias nitidissima having inhabited any other locality than Mauritius, to which it was therefore in all probability peculiar, (2) that it is now wholly extinct, and (3) that remains of only three specimens are known to have been preserved."

The following extract was read from a letter addressed by Commodore Hoskins, of H.M.S. 'Wolverine,' dated Sydney, Oct. 9, 1878, to Capt. Evans, C.B., Hydrographer to the Admiralty:—

"It is some time since you asked me to obtain for Mr. Sclater of the Zoological Society information as to the northern limit of the 'Mooruk,' and whether it is found in New Ireland.

"I instructed Lieut. Horne, commanding the 'Sandfly,' to do all in his power to solve the point; and I have just heard from him at Brisbane (which he reached on his way down from the islands) that, having taken Mr. Brown, the Wesleyan Missionary, and some native interpreters on board in Blanche Bay, he proceeded to visit the
whole of the south coast of New Ireland, communicating constantly with the natives and anchoring in many of the bays, and that nowhere could he find any traces of the bird or learn that it exists. On the contrary, the natives seemed quite ignorant of all that concerns it, and offered to buy some eggs, which had been brought from New Britain in order to facilitate inquiries on the subject.

"P.S. Mr. Brown says the native name in New Britain is Moorup not Mooruk."

The following extract was read from a letter addressed to the Secretary by the Rev. G. Brown, C.M.Z.S., dated Port Hunter, Duke-of-York group, Sept. 7, 1878:—

"About three weeks ago H.M.S. 'Sandfly,' Capt. A. G. Horne, arrived here on her way to the extreme end of New Ireland. Capt. Horne told me that he had instructions from the Commodore to inquire as to whether the 'Moorup' was found on New Ireland or not. He asked me about it; and I told him that, so far as we knew, it was not found on any part of the west coast, but that we knew little or nothing of the east side of the island. Capt. Horne very kindly asked me to accompany them on their cruise; and as I was not at all well, and as I also wished very much to examine the coast further north, I very gladly accepted his offer. We were away about twelve days from here, and went as far as the north end of Sandwich Island, but did not reach New Hanover; nor did we visit the east coast of New Ireland at all. We anchored at Wood Harbour, on the mainland opposite Sandwich Island. We saw no traces of the Moorup—neither eggs, feathers, nor bones, all of which are used by the natives of New Britain—the feathers for head-dresses, and the bones for the ends of their spears. Of these we saw no signs, however, in New Ireland. We had a Moorup's egg with us, and showed it everywhere; but no one seemed to recognize it. I think we may be very certain that neither the Moorup nor the Cockatoo are found on New Ireland. There is much more open country on the east side of the island; but all the natives assure us that they are not found there either."

The Secretary read the following extract from a letter addressed to him by Mr. R. Trimen, F.Z.S., dated South-African Museum, Cape Town, 25th Sept. 1878:—

"With respect to your Plectropterus niger, I have ascertained that all the four specimens were brought down from Zanzibar by Capt. Garrett, of the mail-steamer 'Kafir.' Two were given to General Sir A. Cunynghame, who afterwards sent them to the Society, and the other two to Mr. W. G. Brounger. One of the latter two, while on Mr. Brounger's farm at Constantia, was shot; and the survivor subsequently disappeared, Mr. Brounger believing that it flew away.

The following papers were read:

1 [Casuarius bennetti, see above.—P. L. S.]
2 See figure and description, P. Z. S. 1877, p. 47, pl. vii.

[Received November 13, 1878.]

On the 24th of January, 1878, a specimen of Humboldt’s Penguin (Spheniscus humboldtii) was purchased from a dealer in Liverpool. The bird was in poor condition when received, and very dirty, but perfectly tame, following one about, and seeming pleased to be taken on the lap and nursed like an infant. At first it required to be fed by hand; for if its food was placed on the ground the bird took no notice of it, although hungry. After a few days, if living fishes were thrown to it and the bird saw them jumping about on the floor, it began to pick up the fishes and swallow them. From this and from the colour and condition of its plumage, I have no doubt that the bird had been reared from the nest, and had never previously fed itself.

It was some days before the Penguin ventured into the water; but after the first wash the bird rapidly improved: the feathers became clean; its appetite increased; and it passed much time in the water, evidently gaining strength and weight. About this time it frequently uttered its loud braying jackass-like notes, and became fat and in full vigour. Figure 1 (p. 7) gives a very faithful representation of the bird at this time. About the 22nd of February, the bird appeared dull, and with half-closed eyes moped about: it became ill-tempered and spiteful, bit at any one who offered to touch it, and avoided going into the water. The bird looked larger than before, its feathers standing out from its body during this condition; but its appetite continued good, and it fed as freely as usual.

In a few days the feathers began to fall off from all parts of the bird, not, as birds usually moult, a few feathers at a time, but in large quantities: for instance, the bird generally remained stationary during the night, and in the morning there was left round it a circle of cast feathers that had been shed during the night. So rapidly did the process of moulting go on, that by the 7th of March the bird had entirely renewed its plumage, and appeared in the adult dress, as represented in figure 2 (p. 8). The manner in which the flipper-like wings cast off the short scale-like feathers was remarkable: they flaked off like the shedding of the skin of a serpent; the new feathers being already plainly visible, the old feathers were pushed off by the new ones; this was very clearly noticeable, as many of the old feathers could be seen still attached to the tips of the new feathers, so that the bird was entirely covered with its new plumage before the old feathers dropped off. The bird had by these means entirely changed its dress and appearance in certainly less than ten days. It looked thinner on account of the shortness of its new feathers, and doubtless from a decrease in bulk, consequent upon the rapid deve-
Fig. 1.

*Spheniscus humboldti* (before moult).
Fig. 2.

*Spheniscus humboldti* (after moult).
lopcment of the entire plumage. The bird avoided the water for a few days before it began to moult, and also after it had renewed its feathers; it soon, however, became lively, its eyes assumed their usual form and brightness, it took freely to the water, in which it passed the greater part of the day. Its movements in the water when swimming, diving, and pursuing fish were most extraordinary; it seemed, as it were, to fly under water, using its flipper-like wings after the fashion of a Seal.

The Penguin appears so much at home in the water, so perfectly adapted to an aquatic life, that one would conclude that, but for the necessity of breeding and moulting, this bird would be far more at home on the ocean than in passing even a short period on land, being so ill-adapted in form for travelling on shore.


[Received November 20, 1878.]

From the Museum Godeffroy at Hamburg I have received a collection of the birds of Duke-of-York Island and the adjoining parts of New Britain, sent over by Mr. Hübner. Although through the zealous efforts of the Rev. George Brown, we are pretty well acquainted with the fauna of Duke-of-York Island, especially with its ornithology, on which Dr. Sclater has published some valuable papers, I think the following paper will form a not uninteresting contribution to our knowledge.

The present collection contains 52 species from Duke-of-York Island, and 7 from New Britain, 14 being new to the former group, namely Haliaéthu leucoaster, Hirundo javanica, Cuculus canorus, Sclérops nova-hollandi, Macropygia doreya, Strepsis interpres, Esacus magnirostris, Sterna bergi, St. longipennis, Procellaria neglecta, Fr. leucoptera, Puffinus leucomelas, P. tenuirostris, and Dysposus sula.

Except the native names, Mr. Hübner has given me no notices; I therefore can only copy these, reminding you that the pronunciation of them is according to the German language.

From Duke-of-York Island.


Native name Teringau, Hübner.

Male and female of this apparently constantly smaller species or race of our common Osprey.

2. **Haliaeetus leucogaster** (Gm.).
   Native name *Manigulai*, Hübner.
   One male. This widely distributed species is not mentioned in Dr. Sclater's list of the birds of Duke-of-York Island.

   Native name *Bakubukup*; iris brown; feeds on lizards, Hübner.
   Two old birds (male and female) and a young one.

   Native name *Netin*, Hübner.
   Male and female.

5. **Hirundo javanica**, Spratt.
   Native name *Pinipinagra*, Hübner.
   One male. It agrees well with a Javan specimen; but the underparts are of a little darker brownish, and the outermost tail-feather shows only a pale indication of the white cross band on the inner web, so well marked in the Javan bird.

   Native name *Kalangbabareta*, Hübner.
   One specimen (female).

   Native name *Nangia*, Hübner.
   One old and one young bird.

   Native name *Ganare*, Hübner.
   Male and female.

   Native name *Kenetam*, Hübner.
   One female, with white head and underparts, like the male.

    Native name *Loklakaulia*, Hübner.
    One specimen corresponding exactly with Dr. Sclater's description.

    One specimen.

    Native name *Na/ange*, Hübner.
    Two old males; the crown of one of a golden green, of the other more steel-green, and nearly the same as the metallic-green of the rump; one shows some pale yellow feathers on the vent, no doubt remnants of the young plumage; and one female.
Native name *Nalange-tabnan*, Hübner.
One male.

Native name *Garuk*, Hübner.
Male and female, exactly alike, of this excellent new species.

*Piezorhynchus rufolateralis*, Gray, ♀.
Native name *Nalor* (♂ and ♀), Hübner.
One male and two females, exactly like specimens from Halmahera (Gilolo).

*Sauroprocta melaleuca*, Quoy, Sel. l. e. p. 99.
Native name *Napali*, Hübner.
Male and female alike, exactly agreeing with specimens from Mysol and Aru.

Native name *Torotorotumbuan*, Hübner.
Male and female.

Native name *Nakior*, Hübner.
Male and female. The male has the upper portion of the rump pure white, the lower portion black with greyish-white tips, giving a wavy appearance; the upper tail-coverts are brownish grey. The female has the upper parts, including the rump, umber-brown instead of black; the rufous tinge on the vent and lower tail-coverts is paler.

19. *Calornis nitida*, Gray; Sel. l. e. p. 104.
Native name *Nallowut*, Hübner.
Male and female, both exactly alike, and one young male, with plumage beneath furnished with dark longitudinal stripes.
In size and coloration (distribution and lustre of the green and violet-purplish), I see not the slightest difference in specimens from New Guinea (Dorey).

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♂ ad., Duke of York.

♂, Dorey.

Native name *Pinipinatan*, Hübner.
Male and female, exactly alike.
21. Pionias cyaniceps (Puch.).


Native name *Binibiu*, Hübner.

One male, but no doubt a young one, as the head is still green and has no blue collar. I took this distinct species formerly for the female of _P. heteroelitus_, Hombr.


_E. linnæi_, Wagl. (♀).

Native name *Kulangi*, Hübner.

Three green males, agreeing exactly with specimens from Gilolo, wings 9 to 9½ inches, and two red females, wings 8 6" to 8 8" (also called *Kulangi* by the natives), exactly agreeing with the so-called _E. linnæi_, Wagl.

As Mr. Hübner apparently has sexed the specimens himself, his collection gives new evidence that Dr. Meyer was right in declaring the red ones to be the females of the green.


Native name _Nebir_, Hübner.

Two males and one female, agreeing exactly with Dr. Sclater's description.

24. Cuculus canorus, L.

One specimen, in size, colour, and markings exactly agreeing with specimens from Germany.

25. Cuculus insperatus, Gould; Sc. l. c. p. 106.

_C. sonnerati_ (pt.), Schl.

Native name _Neviu_, Hübner.

One male specimen, agreeing with Javan specimens, but breast and vent washed only very faintly with rufous, and larger. Wings 4" 9", tail 4" 9".


Native name, male, _Bakebake_; female, _Avarik_, Hübner.

Male and female.

After what the Marquis of Tweeddale has said (Ibis, 1869, p. 342) on the difficulties of making out what is the true "picata" of Solomon Müller, I follow in the determination of this species Dr. Sclater, leaving it aside whether this Koel must bear Müller's name or that of _rufiventris_, Less.

The male, altogether black, with blue lustre, agrees perfectly with Australian ones (_E. cyanoccephala_), but is smaller; the female differs totally from the New-Holland one, and comes nearest to _E. malayana_, Cab., from Java. On a black-greenish shining ground-colour, the upper parts are streaked longitudinally on the head, spotted on back and wing-coverts, and barred on wings and tail with rusty brown; chin and throat are black, spotted thickly with rusty; on the gape a white longitudinal stripe; underparts of
a whitish-rusty ground-colour, more tinged with rusty on the lower throat and under tail-coverts, with distinct black cross bands much narrower than the white interspaces. Bill in both sexes greyish horn-yellow, with base of upper jaw dark.

27. Scyphrops novæ-hollandiæ, Lath.
Native name Guloko, Hübner.
Male and female. Not recorded by Dr. Selater.

Native name Tambun, Hübner.
Male and female of this remarkable Pigeon, both alike, and with the curious Carpophaga-like knob on frontal; the male has the chin tinged faintly with bluish green.

29. Carpophaga rhodinolæma, Scl.* (?)
Native name Gurekambu, Hübner.
Male and female, precisely alike.
Dr. Selater enumerates from Duke-of-York Island C. van-wyckii, Cass. The only description of it (Proc. Acad. Sci. Philad. xiv. 1862, p. 320) I cannot refer to, this periodical being wanting in our library. In leaving it open whether the specimens before me belong to this species or not, I find, however, that they agree very well with the above-named species, originally described by Dr. Selater from the Admiralty Islands (P. Z. S. 1877, p. 555). The specimens are mostly near allied to C. pacifica; but the head, neck, and underparts are grey, only the sides of head, chin, and throat washed with rosy or vinous; a ring round the eye white, as pointed out in Dr. Selater's description. Wings in male 9" 5", in female 8" 9".

Native name Guré, Hübner.
Male and female; both alike.

M. carteretia, Sel. l. c. p. 111.
Native name Tokua, Hübner.
One old male, in bad condition, which I refer to this dark-billed species, and not to M. carteretia, Bp., as in that the bill is said to be yellow. M. nigrirostris, Salvad., which Dr. Selater also enumerates among the birds of Duke-of-York Island, seems, according to his measurements, considerably smaller.

32. Chalcophaps stephani, Puch.; Sel. l. c. p. 111.
Native name Nauvat, Hübner.
Male and female, differing as noticed by Dr. Selater.

* See remarks by Mr. Selater, March 4th, infra.
Native name Parreparre, Hübner.
Male and female, agreeing with specimens from the Moluccas.

Native name Kakiau, Hübner.
Male and female in size and coloration alike. Wings 8" 6". In dried skins: tarsus brownish (in the female more yellowish brown towards the knee); toes and nails brownish black.
Dr. Salvadori, to whom I forwarded the type specimen from the Museum Godeffroy for comparison, pronounces (in litt.) the three species referred to above undoubtedly inseparable from each other, and identical with Hartlaub's type from Echiquier Islands.

35. Ardea sacra, Gmel.; Sel. l. c. p. 112.
Native name Ambar, Hübner.
One female, in slate-black plumage.

Native names, male Nukak, female Ambar, young Kakuk, Hübner.
Old male, female, and young bird. The old male agrees perfectly with a Malaccan one. Wings 8"; female, wings 7" 8".
I do not think that a specific separation of the Australian A. Gouldi, Bp., on account of the larger size, is exactly to be relied upon.

37. Nycticorax caledonicus, Gmel.; Sel. l. c. 1878, p. 673.
Native name Anglema, Hübner.
Two males; wings 9" 9".

38. Strepsilas interpres, L.
Native name Aulie, Hübner.
One specimen.

39. E sacus magnirostris, Geoff.
Native name Kalubibil, Hübner.
One male. New for this locality.

40. Charadrius fulvus, Gmel.; Sel. l. c. p. 113.
Native name Natewabun, Hübner.
Two specimens; one with the underparts black intermixed with some white feathers.

41. Numenius uropygialis, Gould; Sel. l. c. p. 113.
Native name Kakang, Hübner.
Male and female. All the Eastern specimens have the rump strongly barred, and apparently deserve specific separation.
42. Actitis incana (Gmel.) ; Scl. l. c. p. 113.
Native name Fuvik, Hübner.
One specimen.

43. Actitis hypoleuca (L.) ; Scl. l. c. p. 113.
Native name Fuvia, Hübner.
Two specimens.

44. Sterna bergii, Licht.
Native name Aururepika, Hübner.
One specimen, a not full-grown fledgling.

45. Sterna longipennis, Nordm.
Native name Ganaibowo, Hübner.
Two old males, agreeing in every respect with Baikal specimens.

46. Sterna fuliginosa, Gmel. ; Scl. l. c. p. 113.
Native name Ganaiboro, Hübner.
One young bird.

47. Anous stolidus (L.) ; Scl. l. c. p. 113.
Native name Ganaiboro, Hübner.
One old specimen.

Native name Ururu, Hübner.
One specimen.

Mr. Salvin, to whom I sent the specimen for comparison, kindly writes to me:—“Compared with a specimen of Procellaria neglecta, Schl., in my collection from the Kermadec Islands, the head is a little lighter; and it has rather more white on the base of the wing-feathers than a specimen from the same collection as the type of P. neglecta, Schl. The bill slightly longer. Not otherwise different in my opinion.”

As the white basal portion of the plumage, so conspicuous chiefly on the inner web of wings, is not mentioned by Prof. Schlegel, and on account of the rarity of this species, I think it better to give a full description.

In form this species, with its stout bill, seems nearest allied to P. fuliginosa, Kuhl. On account of the mottled appearance the specimen looks like an immature bird; and the suggestion may be allowed that the old bird will have the head, neck, and underparts uniform white.

Head, neck, and under surface white, nearly all the feathers washed at the tips with pale brownish, giving the head above, the neck, and the sides of the body a pale brown wash; front, sides of head, throat, and middle of the underparts more pure and uniform white; under tail-coverts brown, with white basal portion; back, shoulders, wing-coverts, and remainder of upper parts dark brown, each feather white at the basal half; some of the shoulder- and smaller wing-
coverts worn off at the tips, and therefore with paler margins; wings dark brown, like the back, over the greater portion of the inner web pure white; shafts, to about the apical third, also white; wings from below white, tipped with brown, as are the under wing-coverts; tail-feathers dark brown, the basal portion of the inner web white; bill black; feet pale, the toes and webs black to about the apical third.

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Native name *Laguna-kikina*, Hübner.

One specimen.

On this Mr. Salvin also gives me the following kind remarks:—

"Your specimen from Duke-of-York Island is certainly *Aestrelata leucoptera*, Gould, of which I have a typical specimen, obtained from Gould himself. Your bird is slightly clearer, greyer on the back and rump, and has a more slender bill at the base, the difference being very little indeed."

The well-marked dark (nearly black) cross band on the rump, which Prof. Schlegel does not mention, induced me to believe it might be new; but as our first authority with respect to *Procellariidae* tells me that I am wrong, I cannot do better than follow him.

50. **Puffinus leucomelas**, Temm.

Native name *Kitai*, Hübner.

One specimen, exactly like specimens from Amboina.


Native name *Kipoli*, Hübner.

One specimen, agreeing exactly with the figure in the *Fauna Japonica* (tab. 86).

52. **Dysporus sula** (L.).

*Sula fusca*, Vieill.

Native name *Manemantoura*, Hübner.

Three specimens, among them a nearly uniformly brown young bird.

*From New Britain.*

1. **Corvus enca**, Horsf.

*Corvus*, sp. inc., Sel. *l. c.* p. 104.

Native name *Garnik*, Hübner.
One specimen, which I am not able to distinguish from a Javan one, as the differences in size are very slight.

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Native name *Giljau*, Hübner.

Male and female, showing no differences.

The figure given with the original description (*P. Z. S.* 1869, pl. ix.) shows, in contrast to the description, the upper and lower tail-coverts yellow instead of white, and gives therefore quite a wrong idea; only the middle of the vent near the anal region is yellow (orange-yellow).


Native name *Nyal*, Hübner.

One old and one young female (sex marked by Mr. Hübner) both having the whole head and neck uniform black, like the body. The old female shows on the basal half of the culmen five strongly developed plicae, the basal one measuring 17 lines in length and 18 in diameter, being flat from above; the young one lacks the plicae, and shows only a small elevated (about 6") flat casque, 2" 4" in length and 16" in diameter.

4. **Plictolephus ophthalmicus** (Scl.).


Native name *Moal*; iris brown, Hübner.

Male and female alike.

5. **Domicilla hypenochroa**, Gray.

*Lorius hypenochrous*, *Scl. l. c.* p. 108.

Native name *Kulinga*, Hübner.

Two specimens, which have been kept in confinement.


Native name *Kumkum*, Hübner.

One old male. The white "speculum" on the wings is formed by the tectrices of the primaries, which are white; the white of head and neck is washed pale ochre-yellowish. *Al. 8", caud. 10", rostr. a front. 17", tars. 21".*

7. **Carpophaga spiorrhhoa**, Gray; *Scl. l. c.* p. 109.

Native name *Ngelangele*, Hübner.

One specimen.

Dr. Sclater enumerates this species from Duke-of-York Island.

[Received November 23, 1878.]

(Plates I.–III.)

The collections of Crustacea made by Capt. H. C. St. John while engaged in surveying the Japanese coasts between the years 1870 and 1877 have been presented by Dr. J. Gwyn Jeffreys, F.R.S., to the Trustees of the British Museum, and are of so much interest, both from the geographical distribution of the species and on account of the many novelties collected, that I have thought it desirable to bring an account of them before the Society. The specimens were nearly all obtained by dredging; and Capt. St. John has furnished an interesting account of the mode adopted by him in collecting and separating the specimens, which is printed below as an Appendix. But few of the larger and well-known littoral species, which are so well described and figured by De Haan in his standard work upon the Crustacea of Japan (in Siebold, 'Fauna Japonica,' 1833–50), are represented in the collection.

Comparatively little was known of the Crustacean fauna of the deeper waters of this region until the publication, in 1857–60, of a series of papers by the late Dr. W. Stimpson, the eminent American carcinologist, on the Decapoda collected by the U.S. Expedition to the North Pacific under Commanders C. Ringgold and J. Rodgers, in the 'Proceedings of the Philadelphia Academy of Sciences,' which contain short Latin diagnoses of a large number of new species (many of them obtained at considerable depths), and in which also a considerable number of species previously described by Milne-Edwards, Dana, Adams and White, and others are added to the Japanese fauna. It is much to be regretted that no fuller account of these collections should ever have appeared, and that Stimpson's preliminary report did not extend beyond the Decapoda. As Capt. St. John's collections were made in the same region, many of Stimpson's species occur in them; and in their determination I have been greatly aided by comparing them with a series of specimens from the Japanese Seas, named by Dr. Stimpson himself, and presented some years ago by the Smithsonian Institution to the British Museum.

It is remarkable, under the circumstances, that the present collection should contain so many forms which are new to science, while so many of Stimpson's species still remain desiderata to the national collection; and this goes far to prove that a rich harvest will yet reward the collector of marine Invertebrata in the Japanese region, and that even more interesting results may be expected in many regions where no dredging-operations have yet been attempted. The
NEW JAPANESE CRUSTACEA.
NEW JAPANESE CRUSTACEA.
NEW JAPANESE CRUSTACEA.
careful manner in which the exact particulars regarding the locality, depth, and, in some cases, the temperature of the water have been recorded by Capt. St. John gives additional scientific value to the present collection; and although it is to be regretted that the labels belonging to a few of the bottles had unfortunately been washed off and lost before the collection was received by the Trustees, yet Capt. St. John assures me that all these specimens were collected in or near the Corean Straits. The only species not obtained in these seas or in the Japanese region is the remarkable Crab *Gonatonotus pentagonus* of Adams and White, which was dredged in the Javan sea, near Billiton Island, at a depth of 12 fathoms.

In the present communication 64 species or well-marked varieties belonging to the Podophthalmia are noticed; and of these 26 are apparently new to science, besides which there are several which for different reasons I have refrained from designating by a specific name. The names and the families to which they appertain are given in the systematic list which follows, where also I have noted the localities and the geographical range, when known.

In a second paper I hope to describe the remainder of the species collected, which belong chiefly to the orders Amphipoda and Isopoda, and to the Ciicipedida and Pycnogonida, and are not less interesting than the Podophthalmia.

List of Species described in the present paper.

**PODOPHTHALMIA.**

**Decapoda.**

**Brachyura.**

**Oxyrhyncha v. Maioidæ.**

**Maiide.**

*Pugettia quadridens* (De Haan). Corean Channel, Japan, Hong Kong: p. 23.

*P. incisa* (De Haan). Corean Channel, Japan: p. 23.


*Doclea orientalis*, n. Kunasiri Isl., Yeso Island: p. 28.

**Parthenopidae.**


Cyclometopa v. Cancroidea.

Cancridæ.


Eriphidæ.

Portunidæ.

G. variegatum (Fabr.). Indian and East-Asian seas: p. 33.

Corystidæ.

Trichocarcinus dentatus, n. Japan, Corean Channel: p. 34.
T. affinis, n. Corean Channel: p. 35.
Telmessus acutidens (Stm.). Japanese seas: p. 36.

Catometopa v. Grapsoidea.

Macrophthalmidæ.


Grapsidæ.


Carcinoplacidæ.


Rhizopidæ.

Typhlocarcinus villosus, Stm. Corean Channel, Hong-Kong: p. 40.

Oxystomata v. Leucosiidea.

Leucosiidæ.

Pseudophilyra tridentata, gen. and sp. n. Corean Channel: p. 41.
E. minor, n. Corean Channel: p. 43.
Cryptocnemus pentagonus, Stm. Corean Channel, Gulf of Kagosima: p. 43.
Arcania globata, Stm. Corean Channel, China Sea, “Eastern seas”: p. 44.

Anomura.
Dromidea.
Dromiidae.


Homolidae?

Paratymolus vubescens, gen. and sp. n. Matoya: p. 45.

Raninidea.

Lyreides tridentatus, De Haan? Japan, Kada Bay: p. 46.

Porcellanidea.

Porcellana spinulifrons, n. Corean Channel: p. 46.

Lithodidea.

Hapalogaster dentatus (De Haan). Japan, Goto Islands: p. 47.

Paguridea.

Pomatocheles jeffreysii, gen. and sp. n. Corean and Japanese seas: p. 49.

Galatheidea.

Galathea orientalis, Stm. Corean Channel, Hong Kong (Ly-i-moon Straits): p. 51.

Macrura.

Thalassinidea.

Gebidae.


Caridea.

Crangonidae.

Paracrangon echinatus, Dana. Yedo Island, California, Puget Sound: p. 52.
**ALPHEIDÆ.**

*Rhynchocyclus planirostris* (De Haan). Japan, Ly-i-moon Straits, near Hong Kong: p. 55.

**PENÆIDE.**


**CUMACEA.**


*Remarks on the Geographical Distribution of the Species.*

The Crustacean fauna of Japan includes many species of restricted range and peculiar to the seas of Eastern Asia, besides many of the common and widely-spread littoral Indo-Pacific forms; but it also presents affinities with the European and especially the Mediterranean fauna, and that of the west coast of the American continent. As illustrating the European affinities I may note the occurrence, both in the South-European and Japanese seas, of such well-known genera as *Achæus*, *Ebalia*, and *Eupagurus*, and the remarkable genus *Latreillia* (of this latter I have seen no specimens), and of the *Portunus corrugatus*, Pennant, originally described from the British coast; moreover the *Peneus distinctus*, De Haan, is either identical with or closely allied to the Mediterranean *Solenocera siphonocera*, Philippi, and in the present collection occur species of the genera *Mara* and *Pycnogonum*, scarcely distinct from the well-known European *M. truncatipes* and *P. littorale*. The last-mentioned is a boreal species; but the instances above given (and others which might be cited) show that the relationship which does exist is not confined to forms which may have made their way from Europe to Japan along the northern shores of Asia.

The affinity of the Japanese with the Western-American Crustacean fauna is similarly evidenced by the existence of many genera common to the shores of both regions, the species being either identical or very closely allied, so closely, indeed, that further comparative study might show the relationship is even more near than is now suspected. Instances in the present collection are the genera *Pugettia*, *Oregonia*, *Trichocarcinus*, *Telmessus*, *Heterograpsus*, *Hapalognaster*, *Pachycheles*, *Paracrangon*, *Rhynchoecyclus*, among the Podophthalmia.

Many of the genera thus common to the two regions are scarcely
found elsewhere, and are peculiarly characteristic of the Pacific coasts of America. Some, having a boreal range (Echidnocerous, Hapallogaster), evidently pass from one continent to the other via Behring’s Straits; but instances are not wanting (although rare) of forms which have never been shown to have a boreal range occurring on both coasts of the Pacific. An example occurs in the present collection in the curious Shrimp Paracrangon echinatus, Dana, in the case of which I have satisfied myself, by actual comparison, of the identity of examples from Puget Sound, California, and Yedo Island. Hyastenus (Chorilia) japonicus, and Telmessus acutidens, Stm., may, upon further comparison, prove to be identical with their American congener.

BRACHYURA.

OXYRHYNCHAVEL MAIOIDEA.

MAIIDE.

Pugettia quadridens.

Menaeithius quadridens, De Haan, Faun. Japon. Crust. p. 97, pl. xxiv. fig. 2, 3 (Halimus), and pl. G (1839).


This species is very closely allied to the Pugettia gracilis, Dana (U.S. Expl. Exp. xiii. p. 117, pl. iv. fig. 3, 1852), from the Californian coast; but the lateral lobes or expansions of the carapace are less broad and triangular in shape, and more acute at the extremity. In the females the carapace is more convex than in the males, with the hepatic regions more convex.

Otarranai, 5½ fathoms, lat. 43° 12' N., long. 141° 1' E.; Isenomi Straits, low-water mark; Corean Channel, lat. 33° 12½ N., long. 129° 5' E., 9 fathoms. Males, females, and young were collected.

Stimpson’s specimens were from Simoda, Japan, and Hong Kong.

Pugettia incisa.


Three specimens, males, all of small size, were obtained of this species, which differs from its congeners in the auriculariform shape of the first pair of lateral expansions of the carapace, in which it exhibits some affinity with the genera Hyas and Hyastenus, from the first of which it differs in the slender divergent horns of the rostrum, and from the second in the far less perfectly defined orbits. Although the basal joint of the antennæ is somewhat broader, the structure of the antennal and orbital regions is essentially that of Pugettia.

Gulf of Yedo (bottom soft mud and hard sand); Corean Channel, lat. 33° 10' N., 129° 12' E., at 36 fathoms.

This and the preceding species were previously unrepresented in the British-Museum collection.
Oregonia hirta?

? Oregonia hirta, Dana, Amer. Journ. Sci. and Arts (ser. 2), xi. p. 270 (1851); U.S. Expl. Exp. xiii., Crust. i. p. 107, pl. iii. fig. 3 (1852).

Two specimens of an Oregonia were collected, both females, the larger and mature example densely overgrown with sea-weed. These agree in almost every respect with specimens of Oregonia hirta, from California (Puget’s Sound), in the collection; but the legs are rather more robust, and the branchial regions more convex. The examination of males might show that they belong to a distinct species; for the present, however, they cannot be regarded as distinct.

Japan, Cape Blunt, lat. 41° 41' N., long. 141° 0' E. (depth 35 fathoms).

Pleistacantha, gen. nov.¹

Carapace triangular, convex, and spinose. Rostrum long and slender, composed, as in Oregonia, of two spines, which are in contact with one another to near their extremities. Eyes laterally projecting. Orbits not defined, the inferior walls wanting, the superior and posterior represented by two or three spines. Antennules long; interantennulary septum with a prominent spine projecting downward. Antennae with the basal joint extremely slender and armed with three spines; the flagellum long, reaching almost to the extremity of, and visible in a dorsal view at, the side of the rostrum. Ischium (or second) joint of the outer maxillipeds longer than the merus-joint, which has a short spine at its antero-external angle; the exognath very slender. Legs, as in Egeria, very long; the anterior pair robust, with the fingers acute and meeting near their apices along their inner margins, but leaving an hiatus at base when closed. The ambulatory legs are slender, and diminish successively in length to the last pair; their terminal joints are long, slender, and densely hairy. The male postabdomen is 6-jointed, the inflexed portion oblong, the terminal joint transverse and rounded at its distal extremity.

This genus must be placed near Oregonia, with which it is nearly allied in the structure of the rostrum and orbital and antennal region; but it differs in the convex and spinose carapace and greatly elongated legs, which gives it more the aspect of Egeria, and would necessitate its being placed among the Macropodiens in Milne-Edwards’s arrangement. From Egeria it differs in the structure of the orbital and antennal region, &c.

Pleistacantha sancti-johannis, sp. n. (Plate I. fig. 1.)

Carapace covered with very numerous small spines of uniform size; interspersed with these are longer spines, of which three are placed in a transverse series on the front and one at the back of the gastric region, two on the cardiac, two on the intestinal and about three on each branchial region; there are also several longer spines placed behind the eyes and on the sides of the branchial regions. Rostrum

¹ πλεῖστος, superl. of πολύς, many; and ἀκριβό, a spine.
nearly half as long as the carapace, the spines of which it is composed divergent near their extremities, and armed on their undersides with two or three spinules. Anterior legs with the arm and wrist covered with small spines; arm with a strong conical curved spine on the upper margin at its distal extremity; palm robust, about as long as the arm, with fewer spinules arranged in longitudinal series; fingers naked. Ambulatory legs with numerous small spinules; the terminal joints, and in the last pair the two preceding joints are without spines and hairy. Length of carapace to base of rostrum 3 inches, breadth about 3/2 inch; length of anterior leg 3 1/6 inches.

This species was obtained at a depth of 63 fathoms, in October 1874, in lat. 34° 1' N., long. 136° 20' E.

A single male individual was collected. As it is certainly one of the most striking novelties in the collection, I have much pleasure in dedicating it to its indefatigable discoverer, Capt. H. C. St. John, R.N.

ACHÆUS SPINOSUS, sp. n.

Carapace triangular, narrowed behind the orbits, as in Achæus (Inachus) lorina, and armed with six spines above, viz. one on the gastric, one (which is bilobate) on the cardiac, and two on each branchial region; there are also two or three small spines or tubercles on the sides of the body, beneath the hepatic and branchial regions. The rostrum, as in all the species of the genus, is very small and bilobate. Eye-peduncles robust, laterally projecting and armed with a strong tubercle in front. Anterior legs (in the male) robust; arm and wrist with a few scattered granules above; palm swollen, with about six spinules on the upper margin and a few small granules on the lower margin, near its base; fingers acute, with a wide hiatus at base when closed, both the fingers with a strong tooth on their inner margins near the base; both are faintly crisated on their outer margins. Ambulatory legs very slender, the terminal joint of the last pair strongly falcated. Terminal postabdominal segment subtriangular. Length 1/4 inch, breadth 3/4 inch.

A single specimen (male) was collected at a depth of 30 fathoms, in lat. 34° 10' N., long. 136° 47' E.

The nearest ally of this species seems to be the Achæus lorina (Inachus lorina, Ad. & White, Zool. Samarang, Crust. p. 3, pl. ii. fig. 2, 1848), from Mindanao, from which it differs in the number and disposition of the spines of the carapace. Both of these species externally resemble Inachus, but differ in the absence of defined orbits and in the falcated posterior legs, on account of which they must be referred to Achæus.

ACHÆUS TUBERCULATUS, sp. n.

There are several specimens of a species of Achæus in the collection, which are all unfortunately in an imperfect condition, the anterior and most of the ambulatory legs being absent. The carapace is triangular and broader than in the preceding species, without spines, not constricted behind the interocular region; the regions are con-
vex and well defined; and there is a very prominent conical tubercle upon the cardiac region which is not bilobate, also a broad lobe or tubercle upon the hepatic region. The eye-peduncles are smooth; the posterior legs have the last joint but slightly falcated. The postabdomen of the male is broader than in the preceding species, the terminal segment transverse. Length (of male) nearly \( \frac{5}{12} \) inch, breadth nearly \( \frac{1}{3} \) inch.

Specimens were collected at a depth of 36 fms., in lat. 33° 10' N., long. 129° 12' E.; and there are others without definite locality attached.

This species resembles the *Achaeus lacertosus* of Stimpson (Proc. Ac. Nat. Sci. Phil. p. 218, 1857), from Australia, Port Jackson, in the distinctly defined regions of the carapace, the presence of an hepatic lobe, and the smooth eye-peduncles, but differs in the very prominent tubercle or blunt spine on the cardiac region, which is present in both sexes, whereas Stimpson, in his description of *Achaeus lacertosus*, says, "superficie laevi spinis carente." I must therefore regard it as distinct. Stimpson's species was from Port Jackson, Australia.

*Achaeus japonicus*, De Haan (Faun. Jap. Crust. p. 99, pl. xxix. fig. 3, 1839), is described and figured as devoid of spines on the carapace, and the eye-peduncles as being 4-spinulose; there is no hepatic lobe.

**Hyastenus diacanthus.**


A single male specimen of this common inhabitant of the Japanese seas was obtained at Ousima, Japan, in 9 fathoms of water on a sandy bottom.

Two other specimens of this genus are in the collection; the first, a small female specimen, was collected in lat. 33° 4' N., long. 129° 18' E., at a depth of 23 fathoms. All the limbs are unfortunately missing. It differs in the much greater divergence of the horns of the rostrum, and very probably belongs to a distinct species; but, on account of its mutilated state, I refrain from describing it as such.

In the second, the horns of the rostrum are more than half the length of the carapace and but slightly divergent; the carapace is convex, narrower and more elongated than in *Hyastenus diacanthus*, and without any spines or tubercles, and is covered with a very short close pubescence.

This specimen is also an immature female, and was obtained at a depth of 18 fathoms, near Cape Sima. It would not be advisable to make this the type of a new species by giving it a distinct appellation; but it is distinguished from its nearest ally, *H. diacanthus*, by the total absence of the lateral epibranchial spines, which are present, although very small, in examples of *H. diacanthus* of the same size.
Hyastenus (Chorilia) Japonicus, n. sp. (Plate I. fig. 2.)

Carapace triangular, rounded behind, with the regions separated by well-marked depressions, and covered with small distant tubercles; of these there are about eight on the gastric and each branchial region, one or two on the hepatic and genital, and one larger on the intestinal region; the cardiac region is very convex. There is a spine on the side of each branchial region. The horns of the rostrum are straight, not half as long as the carapace, and more divergent than in *C. longipes*. On the pterygostomian regions, and on the sides of the carapace, there is a series of small tubercles. The anterior legs (in the adult male) are robust, the arm granulated and ridged on its under, inner, and outer sides, granulated above, and with two spines near its proximal extremity on its upper and two or three on its under surface; wrist granulated and ridged on its upper and outer surface; palm smooth, compressed, acutely carinated above; fingers smooth, denticated on their inner margins near their apices, the upper with a strong tooth near its base; when closed, they have a wide hiatus at base. The ambulatory legs are slender, smooth, diminishing successively in length from the first to the last; the terminal joints almost immobile and bent at right angles to the preceding. Length of carapace of an adult male about 1 inch to base of rostrum; greatest breadth about \( \frac{1}{4} \) inch.

A good series, including males, females, and young, were collected at a depth of 100 fathoms, in lat. 41° 40' N., long. 141° 10' E.

The description was taken from an adult male. In the females and younger animals several differences are remarked; notably, the anterior legs are much slenderer, legs granulated and ridged, the fingers nearly straight, without a hiatus and strong tooth at base.

The nearest ally of this species is unquestionably the *C. longipes* of Dana (U.S. Expl. Exp. Crust. i. p. 91, pl. i. fig. 5), from the coast of Oregon. The arrangement of the tubercles is nearly the same; but the one now described differs in its shorter, more divergent rostral spines, the shorter spines upon the basal joint of the antennae, and in the arms never being spinulose along the whole of their upper surface, &c., and must be regarded, at least provisionally, as distinct. There is very little hair on the front and sides of the carapace and rostrum; and the hands are nearly naked.

*Chorilia* scarcely differs generically from *Hyastenus*, the structure of the orbits and antennal region and the characteristic length of the first pair of ambulatory legs being the same in both. It may be convenient, however, to retain the name as a subgeneric division including those species of *Hyastenus* in which the carapace is tuberculated and uneven above—e.g., the present species, *Chorilia longipes*, and the *Hyastenus oryx* and *verrucosipes* of White.

Doclea.

The genera *Libinia*, *Libidoclea* and *Doclea* constitute, in Dana's arrangement, a natural group, characterized by their very convex and orbiculate or shortly pyriform and tuberculated or spinose carapace
and emarginate rostrum. It is extremely difficult to find reliable characters by which to define the genera, as the species pass into one another by almost insensible gradations. At one end of the series are those which belong undoubtedly to the genus Libinia, in which the carapace is triangulate rather than orbiculate, with a distinct supraocular tooth, the rostrum prominent, with the spines coalescent and divergent only toward the apex, which thus appears notched, the orbits circular and well defined, with usually a single closed fissure above, the basal joint of the antennæ moderately dilated, and the legs usually of moderate length, the first pair rather slender in the male. At the opposite extremity of the series are the species of Doclea in which the carapace is orbiculate in outline, the rostrum very short, the supraocular spine absent, the basal joint of the antennæ narrower, the orbits scarcely defined at all below, the legs usually very long, those of the first pair in the male short, with the palm dilated. The genus Libidoclea of Milne-Edwards and Lucas is somewhat intermediate between the two former, having the triangulate carapace, prominent rostrum, dilated basal antennal joint of Libinia, with the incomplete orbits and long legs of Doclea; the typical species, L. granaria (Edw. & Luc. in D’Orbigny’s Voy. Amér. Mérid. vi. Crust. p. 8, pl. iii. fig. 1 & pl. iv. fig. 1, 1845), from Valparaiso, possesses an additional character in the existence of a notch on the anterior margin of the third joint of the outer maxillipeds; and the tooth in the middle of the outer margin of the basal joint of the antennæ is very strong; the former of these fails, however, in the Libidoclea coccinea of Dana (U.S. Expl. Exp. xiii. Crust. p. 88, pl. i. fig. 3), from Patagonia, which also has a shorter rostrum. In certain species of Libinia (L. emarginata) there is a small blunt tooth on the outer margin of the basal antennal joint. There appears, then, to be no alternative between restricting the genus Libidoclea, by adopting the single character of the emarginate third joint of the outer maxillipeds, or extending its definition until it shall include all the species intermediate between the two older genera. The former is perhaps the preferable course, as, if the latter were adopted, it would be impossible to assign any definite characters to the genus.

Doclea orientalis, sp. n. (Plate II. fig. 1.)

The carapace is convex and subpyriform, with six tubercles in the middle line, of which the first three are on the gastric, two (one more elevated) on the cardiac, and one on the intestinal region; none of these are large and spiniform. There are two prominent tubercles on the lateral anterior margins, one of them placed at some distance behind the orbits, and one on the sides of the branchial region. There are four small tubercles on the front of the gastric region, forming, with the first of the median series, a figure \(:\ldots:\ldots\), seven or eight on the branchial region, on each side, and three on the pterygostomian region. The rostrum is short, but little longer than broad, and notched to its middle. The orbits have a supraocular tooth, a wide hiatus above, and two fissures below. The basal joint of the antennæ is rather
broad, with an obscure tooth on its outer margin. Anterior legs in
the female small; hands compressed, and fingers straight; the am-
bulatory legs short, those of the first pair not much exceeding in
length the greatest breadth of the carapace. Length of carapace
and rostrum 1 inch 2½ lines, breadth 11½ lines.
Two specimens, females, were obtained, one at Kunashir (Kunasiri
Island ?), N. Japan, at a depth of 11 fathoms, bottom small stones;
the other from the N. E. coast of Yeso Island.
The nearest ally of this species seems to be the Docelea gracilipes
of Stimpson (P. Ac. Nat. Sci. Phil. p. 216, 1857), from Hong-Kong,
from which it differs in the tuberculation of the carapace and very
short anterior legs.
Street, in a notice of the genus Libinia (P. Ac. Nat. Sci. Phil.
p. 106, 1870), has described a new species, L. rhomboidea, from the
East Indies, which may easily be distinguished from the present by
the existence of strong spines on the branchial regions and lateral
margins.
Another Asiatic species is the Libinia bidentata, A. M.-Edw.
(Journ. Mus. Godeffroy, i. pt. 4, p. 77, 1873), from the Amoor,
which has fewer spines upon the surface of the body. Several Doceleae
have also been described by Bleeker (Acta Soc. Sci. Indo-Neerl. ii.
pp. 7-15, 1857), from the Indian archipelago; but none have any
near affinity with Libinia orientalis.

Parthenopideæ.

Gonatonotus pentagonus.

Gonatonotus pentagonus, Ad. & White, P. Z. S. 1847, p. 58;
Zool. Samarang, Crust. p. 33, pl. vi. fig. 7 (1848).
Javan Sea, near Billiton Island, lat. 3° 21' S., long. 108° 39' E.
Dredged at a depth of 12 fathoms.
The single specimen collected is a male, and differs from the female
from Borneo, figured by Adams and White, only in the greater length
and strength of the anterior legs; the postabdomen is seven-jointed
and narrow. There are two young specimens of this species, from
reefs on the N. E. coast of Australia, in the British-Museum collection.
This is the only species of Crustacean collected elsewhere than in
the Japanese and Corean seas.

Lambrus intermedius, sp. n.
Carapace triangular, almost destitute of tubercles above, and with-
out large spines on the margins; on the upper surface are three ele-
vated ridges, one on the gastric and cardiac, and one on each branchial
region; the median ridge is marked with about four obscure tubercles;
the branchial ridges are obscurely granulated; and on the sides of the
branchial regions are seven to eight small triangular marginal teeth,
which under a lens are seen to be denticulated; the last of these is
the largest; on the posterior margin are seven small distant tubercles.
There is an elongate depression between the eyes. The rostrum is
triangular, smooth and acute; the anterior legs are of moderate length
(for a species of this genus); the arm with a longitudinal line of granules on its anterior and posterior margins and on its upper surface; the wrist nearly smooth; the hand trigonous, smooth on its three faces, with a line of small tubercles or granules on its outer and inner margins; of these about four on the outer margin are somewhat larger and equidistant; all the tubercles of the anterior legs are seen under a lens to be themselves granulated; the mobile finger has three or four spines on its upper margin; the ambulatory legs are very small and compressed; the margins of the merus-joints of the last two pairs are granulated. Length about $\frac{1}{3}$ inch, greatest breadth about $\frac{1}{2}$ inch.

Corean seas (no exact particulars regarding the locality). One male individual collected.

This species belongs to the same group as the L. lamellifrons, Ad. & Wh., L. gracilis, Dana, and L. affinis, A. M.-Edw. From the latter (of which there is a large series from the Javan and Indian seas in the British-Museum collection) it differs in the much fewer tubercles of the carapace and arms, which are less rounded, and from the two former in the much greater breadth of the carapace behind the orbits, and the absence of spines on the outer margin of the hands, &c.

**Cyclometopa vel Cancroidea.**

**Cancridæ.**

**Actea granulata.**


A small male example is in the collection without definite locality attached. This species appears to be common in the Indo-Malayan, Australian, and Japanese seas; and its range extends to the Red Sea, Mozambique, and the Mauritius.

**Actæodes tomentosus, var.**


In this variety the carapace is very broad in proportion to its length, the granules with which it is covered small and very numerous, the anterior areolts scarcely, and the posterior (e. g. the cardiac) not at all, distinguishable; the colour is dull red. Length rather more than $\frac{1}{3}$ inch, breadth $\frac{1}{2}$ inch.

Collected at the Goto Islands, at low-water mark.

The two males and female collected, on account of the indistinguishability of the areolts, present a very different appearance both
from the typical *A. tomentosus* and the species or variety designated *A. affinis* by Dana (U.S. Expl. Exp. xiii. Crust. i. p. 198, pl. xi. fig. 3), from the Paumotu or Society Islands; yet I find no characters which would justify me in considering them a distinct species.

**Leptodius exaratus, var.**


Two very small specimens of a *Leptodius*, without particulars regarding locality, appear to belong to a well-marked variety of the common *L. exaratus*, or even to a distinct species. As the specimens are immature, it is not advisable to give them a distinct specific name. The carapace is depressed, the areolets scarcely marked and somewhat eroded towards the front and antero-lateral margins; the three posterior antero-lateral marginal teeth are small and subacute, the others obsolete; the frontal lobes are broad, with the anterior margin straight, and they are separated by a very small median notch. The anterior legs have the wrist and hand very rugose on their upper and outer surfaces; the ambulatory legs somewhat dilated and compressed, and the tarsal joints very narrow. Length 3 lines, breadth $4\frac{1}{2}$ lines.

**Eriphiidae.**

**Pilumnus hirsutus.**


The large series collected agree in all respects with Stimpson's diagnosis. The outer orbital spine is smaller than the three spines of the antero-lateral margin, which are acute. The larger hand (which is usually the right, but in some individuals the left) is granulated on its upper, and in younger specimens more minutely on its outer, surface; the lower finger is usually in a straight line with the lower margin of the hand. The smaller hand is granulispinulous on its upper and outer surface. In one or two specimens the granules are fewer and more acute, and the lower finger forms a slight angle with the inferior margin of the hand.

This is evidently a very common and abundant species in the Corean seas. Specimens were collected at seven different localities in or near the Corean Straits, at depths varying from 12–40 fathoms. It was, however, previously unrepresented in the British-Museum collection.

I should have regarded this species as being synonymous with the *Pilumnus minutus* of De Haan (Faun. Jap., Crust. p. 50, pl. iii. fig. 2), which is very shortly characterized, were it not that the antero-lateral margins are described and figured as "4-deutatis" (not spinose), and the orbits as "inermibus" by De Haan.
Stimpson’s specimens of *P. hirsutus* were collected in the North-China sea and near Ousima Island.

**Pilumnus dehaanii, sp. n.**

The carapace is broader than long, convex, and everywhere covered with a close velvety pubescence, so that no traces of the regions are visible. Antero-lateral margins shorter than the postero-lateral, and armed with three small spines (excluding that of the outer orbital margin, which is not at all prominent). The orbital margins and the front (seen in a dorsal view) are minutely denticulated. In an anterior view the frontal margin is sinuated, with a median notch. The anterior legs are short, robust, the right slightly the larger; the arm trigonous and very short; the wrist with a few conical acute granules on its anterior and upper surface; the palm smooth on its inner, and armed on its upper and all its outer surface with numerous, crowded, unequal, conical, acute tubercles; fingers acute, meeting when closed, the upper granulous at base. The ambulatory legs are slightly compressed and hairy. Length $3\frac{1}{2}$ lines, breadth $4\frac{1}{4}$ lines.

The single specimen, a female, was found within the shell of a species of *Balanus* collected in the Gulf of Yedo.

This species, on account of the closely pubescent carapace and form of the hands, has more of the aspect of an *Actumnus* than of *Pilumnus*, but differs in the acute fingers and spiniform antero-lateral teeth from that genus.

I cannot refer it to any of the numerous published descriptions. It is readily distinguished by the nearly equal and closely tuberculated hands, the tubercles extending halfway along the mobile finger and covering the outer surface of the hand to the apex of the immobile finger. The fingers are nearly colourless. From the *P. actumnoides* of M. A. Milne-Edwards from New Caledonia (Nouv. Arch. Mus. H. N. ix. p. 247, pl. x. fig. 3, 1873), to which it bears some resemblance, it is at once distinguished by the fewer lateral marginal teeth, &c.

It has also some affinity with the *Pilumnus setiger* and *P. squamosus* of De Haan, which have been referred by M. A. Milne-Edwards, rightly I believe, to *Actumnus*. From the former it differs in the regions of the carapace being obliterated, and from the latter in the conical (not squamiform) tubercles of the hands, which are not seriately disposed; from both, probably, in the spiniform marginal teeth.

**Thalamita sima.**


A female example was collected of this species, which seems to
be commonly distributed along the Asiatic coasts from the Red Sea to Japan, and is also found on the coasts of Australia and New Zealand.

Uku Sima; lat. 33° 15½' N., long. 129° 5'E.

Goni osoma ornatum.

Portunus (Thalami ta) truncatus, De Haan, Faun. Japon., Crust. pp. 10, 43, pl. ii. fig. 3, & pl. xii. fig. 3 (1835), nec Fabr.


Two specimens (males) were collected—one in Ousima Harbour at 8 fathoms, on a bottom of sandy mud and broken shells, the other in lat. 34° 6' N., long. 136° 15'E., at a depth of 11 fathoms.

This species has not, so far as I know, been recorded elsewhere than in the seas of Eastern Asia. Specimens are in the British Museum from the Philippines.

Goni osoma variegatum.


Cancer callianassa, Herbst, Naturg. Krabben, iii. (2) p. 45, pl. liv. fig. 7 (1801).


A single specimen, in which all the legs (except the fifth natatory legs) are wanting, and without definite locality, is in the collection.

It seems evident that the name of variegatum should be retained for this species, as Milne-Edwards, who was the first to apply to it Herbst's later name of callianassa, considers the variegatum as only a marked variety of the same species. There is a specimen from Hong-Kong in the British-Museum collection.

Portunus corrugatus.

Cancer corrugatus, Pennant, Brit. Zool. iv. p. 5, pl. v. fig. 9 (1877).


Three specimens, of small size (two males and a female), of Portunus are in the collection, which agree in every respect with ex-
amples of the common *P. corrugatus* of the European seas. The strigose and hairy carapace, and the form of the frontal lobes, of the teeth of the antero-lateral margins, of the anterior and ambulatory legs, of the male postabdomen, and intromittent organs, are identical in the Japanese specimens and examples of the same size from the Mediterranean. It cannot be doubted that this is also the species described by Stimpson under the name of *P. strigilis*, and of which M. Alphonse Milne-Edwards, when he published his monograph of the *Portunidae*, had not seen examples.

Goto Island Ojica, at low-water mark; same locality, lat. 33° 12½' N., long. 129° 5' E., at 9 fathoms; also at lat. 32° 49' N., long. 128° 54' E., at 11 fathoms.

I am inclined to regard the species described as *P. subcorrugatus* by A. Milne-Edwards (A. Mus. H. N. x. p. 402, pl. xxxvi. fig. 2), from the Red Sea, as a mere variety of this species, from which it differs only in the obscure trilobation of the front. There is an example from Naples in the British-Museum collection. Its distribution, therefore, so far coincides with that of the typical *P. corrugatus* that it is found both in the European and Oriental regions—that is, on either side of the Isthmus of Suez.

**Corystidae.**

**Trichocarcinus.**

*Trichocera, De Haan, Faun. Japon., Crust. p. 16 (1833).*

The genus *Trichocera*, founded by De Haan, appears to be scarcely generically distinct from *Cancer*, its chief characteristics (and those wherein it exhibits a degradation from the Caneroid type) consisting in its narrower, more convex carapace and longer antennules, on which account it has been placed by Dana and other authors in the *Corystidae*. It is necessary, if it be retained, to alter its designation, as the name *Trichocera* had been previously employed (in 1803) for a genus of Dipterous insects.

I have therefore slightly modified the termination of De Haan’s name, and propose *Trichocarcinus* for the few species of this group, which includes, besides the two now described, only the *Trichocarcinus gibbosulus* (De Haan) and *Trichocarcinus oregonensis* (Dana).

**Trichocarcinus dentatus, sp. n.**

Carapace smooth, minutely granulated, with the gastric, cardiac, and the middle of the branchial regions convex; there are two somewhat higher elevations on the gastric and each branchial region. Front five-toothed, the middle one very small, the two outer separated from the rest by a wide interval. Antero-lateral margins with nine, flat, subequal teeth, which are in contact with one another at their bases and broadly triangulate at their apices, and with their margins granulated; behind the ninth tooth is usually a small tooth on the postero-lateral margin, which is defined by a line of granules. The anterior legs are rather robust; there are three spines on the wrist, on the inner and outer surface, and upper mar-
gin near the distal extremity. Hand with usually two spines on its upper margin, and three longitudinal raised lines on its outer surface.

Length of largest male 10½ lines, breadth 1 inch; of largest female, length 1 inch 1 line, breadth 1½ inch.

Specimens were collected off the Corean coast, in lat. 34° 30' N., long. 125° 20' E., at 37 fathoms; in lat. 33° 10' N., long. 129° 12' E., in 36 fathoms; in lat. 33° 23' N., long. 128° 48½' E., at 22 fathoms; and at Otarranai, lat. 43° 12' N., long. 141° 1' E., at 5½ fathoms, on a bottom of coarse sand.

In the females the gastric and branchial regions are very much more convex than in the males.

There is considerable variation in the sculpture of the wrist and hands. In some specimens the wrist is roughly ridged on its outer surface; in others it is nearly smooth. The spine on the middle of the upper margin of the hand is sometimes obsolete.

This species differs both from the T. gibbosulus, De Haan, from Japan, and the T. oregonensis, Dana, from Puget Sound, in the much broader subequal teeth of the antero-lateral margin, in which it has more resemblance to some species of Cancer, e. g. C. edwardsii, Bell; but it cannot be confounded with that or any other of the genus known to me.

**Trichocarcinus affinis, sp. n.**

Carapace everywhere granulated and sparsely pubescent, with the middle of the gastric and of the cardiac region convex, and a tubercular prominence on each side of the gastric, one smaller on the hepatic, and three on each branchial region. Front three-toothed. Antero-lateral margins with nine, alternately larger and smaller, acute triangular teeth (including the outer orbital tooth); the margins of these teeth are seen under a lens to be minutely denticulated; there is a smaller tooth on the postero-lateral margin behind the last tooth of the antero-lateral margins. Wrist and hand with three series of spinules on the outer surface; wrist with a strong spine, and hand with two spinules on its upper margin. Ambulatory legs pubescent. Length of female ½ inch, breadth rather more than ½ inch.

A male was collected at a depth of 50 fathoms, in lat. 33° 19' N., long. 129° 7½' E.; and there is a female individual without definite locality also in the collection.

The species is allied to T. gibbosulus, De Haan (Faun. Japon., Crust. p. 45, pl. ii. fig. 4, and pl. xiii. fig. 3), which it resembles in the unequal teeth of the antero-lateral margins; but it differs in the much stronger tuberculation of the carapace, and in having only two spines on the upper margin of the hand.

A larger series might show it to be the young of T. gibbosulus; but the two specimens before me differ very much from De Haan’s figure of that species.
Telmessus.


The term Cheiragonus appears to have been adopted for this genus on insufficient grounds; it is referred to by Latreille, without description, simply as follows:—"g. Cheiragone (Mém. de l’Acad. de St. Pétersb. 1812)," (see Fam. Nat. Règne Anim. p. 270, 1825).

On referring to Tilesius’ specific description in (Mém. Acad. Pétersb. v. p. 347, pl. vii. fig. 1, 1815), we find it headed Cheiragonus, the description commencing with the words Cancer cheiragonus. It seems evident to me that Tilesius intended the term Cheiragonus as a specific name for the Kamtehatkan species, which must be designated Telmessus cheiragonus, as White’s generic name Telmessus comes next in priority and is accompanied by a description.

Telmessus acutidens.


Japan, Kunashir, lat. 43° 34' N., long. 145° 20' E., at 11 fathoms, on a bottom of small stones, three specimens, and N.E. of Yedo Island, in lat. 44° 27' N., long. 14° 22' E., one specimen.

This species is separated from the Telmessus serratus of the western American coast by a very slight character, the somewhat longer and slenderer teeth of the lateral margins, particularly the third tooth; yet the distinction is constant as far as the series before me serves to prove. Two of the specimens are prettily speckled with brownish red, the spots being visible beneath the close pubescence of the carapace. The carapace of the largest of the four specimens only measures 3/4 inch in length; and the form of the teeth might undergo some modification as the animal increases in size.

It was previously unrepresented in the British-Museum collection.

Tilesius’ species, Telmessus cheiragonus from Kamchata, is described and figured as having much longer and slenderer marginal spines than even T. acutidens; and in the absence of specimens for comparison, I cannot unite the two species.

Catometopa vel Grapsoidea.

Macrophthalmidae.

Gelasimus lacteus.


Four specimens (males) are in the collection, without any particulars regarding the locality at which they were collected.
This species is distinguished by the form of the front, which at base is about one fourth the width of the carapace, with the sides slightly converging to the distal extremity, the margin of which is nearly straight. The oblique ridge on the inner surface of the larger hand is distinctly granulated; the fingers are not sulcated externally; and their inner margins are simply granulated without teeth or lobes in the adult. In younger individuals there is a very small tubercle or granule in the middle of the inferior margins. It is probable that the species figured by Milne-Edwards under the name of *G. lacteus* (l. c.) is to be referred to a distinct species, as the lower finger has a distinct subterminal tooth. This species has been hitherto unrepresented in the national collection, as the specimen purchased by the Trustees as from the Leyden Museum under this name, and referred to by White (List Crust. Brit. Mus. p. 36, 1847), belongs to Milne-Edwards’s first section of the genus, and is identical with the *G. forcipatus* of Adams and White.

**Grapsidae.**

**Heterograpsus longitarsis**, sp. n. (Plate II. fig. 3.)

Carapace nearly as long as broad, quadrate, the surface somewhat uneven and sparsely hairy; the frontal margin straight, without a median sinus; the postfrontal lobes distinctly marked, the lateral margins straight, not arcuated anteriorly as in most species of the genus, and with three prominent acute teeth. The outer maxillipeds have the third joint not dilated at its antero-external angle, and the exognath narrow as in other species of the genus. The anterior legs are clothed with short pubescence, not robust; wrist with a small spine on its inner margin; hand with a longitudinal raised line on its outer surface, and with a patch of hair on its inner surface in the males; fingers straight. Ambulatory legs slender, compressed, with short close hair disposed in longitudinal series; the tarsal joints of all the legs long and slender. Postabdomen of male nearly as in *H. penicillatus*. Length and breadth about ½ inch.

Otarranai, lat. 43° 12' N., long. 141° 1' E., at 5½ fathoms, bottom coarse sand (three males and a female); Yokoska Dock, in Gulf of Yedo, one young individual taken from the ship’s bottom; and in lat. 33° 12½' N., long. 129° 5' E., at 9 fathoms, one young male.

This species is at once distinguished from the Japanese *H. sanguineus* and *H. penicillatus*, De Haan, and most species of the genus, by the narrower hairy carapace with straight sides, and the slender elongated tarsal joints of the fifth ambulatory legs; in these characters it approaches the genus *Cyrtograpsus*, in which genus, however, the outer maxillipeds leave a wider hiatus when closed, and the lateral margins of the carapace are 4-dentated.

**Platygrapsus depressus**, junior?


Two small specimens (male and female) are in the collection. These differ from the description and figure of De Haan, and from an adult male of *P. depressus* in the British-Museum collection, in the existence of a small spine on the wrist at the antero-internal angle; and the posterior tooth of the lateral margins of the carapace is obsolete in one, and very obscurely indicated in the other specimen. The hands are slenderer, and the fingers straight and regularly denticulated on their inner margins, whereas in the adult male the fingers are arcuate and the upper has on its inner margin near the base a large and prominent tooth.

Matoya, 6½ fathoms; lat. 34° 13' N., long. 136° 73' E., 48 fathoms.

This species is a common inhabitant of the Chinese and Japanese seas.

The generic name instituted by De Haan, *Platynotus*, having been previously employed, was changed by Stimpson to *Platygrapsus*. A second species, *P. convexicusculus*, described by Stimpson from the Loo-Choo Islands, is scarcely sufficiently distinguished by the characters given.

The genus *Platygrapsus* is distinguishable from *Heterograpsus* and other allied genera, with which it has affinities and which are represented in the Japanese seas, by the form of the second and third joints of the outer maxillipeds, which are *obliquely* articulated with one another, whereas in those genera the margins along which the articulation takes place are *at right angles* with the lateral margins of the joints.

Helice tridens.

Ocypode (*Helice*) tridens, De Haan, Faun. Japon., Crust. pp. 28, 57, pl. xi. fig. 2, and pl. xv. fig. 6 (1835).


E. Japan, Yamada, lat. 39° 32' N., long. 141° 53' E., at depth of 7 fathoms; bottom sandy, with broken shells.

A single specimen, an adult female, in the collection. Length 1 inch, breadth nearly 1 inch 4 lines.

This fine species was previously unrepresented in the British-Museum collection.

Leioloophus planissimus.

Cancer planissimus, Herbst, Naturg. Krabben u. Krebse, iii. pl. lix. fig. 3 (1804).


Four examples, a male and three females, without definite locality, are in the collection.

This species is very widely distributed, occurring both in the Indo-Pacific and Atlantic Regions.

Carcinoplacidae.

Heteropla? nitidus, sp. n. (Plate II. fig. 2.)

Carapace smooth, glabrous and shining, subtrapezoidal, transverse, its greatest breadth being at the level of the second lateral marginal tooth; in front of this the carapace and frontal region is obliquely deflexed; behind it the carapace is nearly flat, and the lateral margins straight and slightly convergent to the straight posterior margin. Lateral margins with two small teeth, including the outer orbital tooth. Front about one third the breadth of the anterior margin of the carapace, with the anterior margin straight. Eyes about equalling the front. Antennæ with the first joint about twice as long as the second, which is small, occupying the hiatus between the inner angle of the orbit and the frontal margin. Outer maxillipeds with the third joint quadrate, and about half as long as the second joint, which is smooth and longitudinally sulcated on its outer surface; exognath robust.

Anterior legs (in the female) rather robust; arm very short, smooth; wrist smooth externally, and with a small tubercle on its inner surface; hand smooth, without tubercles or granules; fingers straight and acute, crossing at the tips when closed. Postabdomen of female 7-jointed. Length 3 lines, breadth rather over 4 lines. Colour whitish; brownish pink on front of carapace.

A single specimen, a female, was collected at a depth of 40 fathoms in the Corean Straits, lat. 33° 40′ N., long. 182° 55′ E.

I have some doubt whether this species should be referred to the genus Heteropla?, which is only known to me by Stimpson’s diagnosis, according to which the basal antennal joint is longer and occupies the orbital hiatus. The species in other respects appears referable to the genus. The longitudinal ridges on the palate are distinct. In this character and in the broader front and shorter eye-peduncles it differs from Gonoplax, while Litocheira of Kinahan, another allied form, has, on the contrary, much shorter eyes and broader and less deflexed front than the species here described. Specimens of the species L. bispinosa, on which the last-mentioned genus was founded, are in the British-Museum collection from Australia; and in these the longitudinal palatal ridges are distinctly marked. Kinahan, however, in his description says that they do not exist.
Rhzopidae.

Typhlocarcinus villosus.


A very small male individual is in the collection, without definite locality, which I refer to this species. The carapace and legs are clothed with a dense, short, whitish pubescence, with longer hairs on the margins, near which the scattered granules, which are elsewhere probably concealed by the hairy coat, are visible. The hands are covered with minute suberiate acute granules. The antero-lateral marginal teeth are very small, and can only be seen by removing the hairs. Length 2½, breadth 3 lines.

The specimen agrees with one (a female of larger size) from the Chinese seas, in the British Museum, presented by the Smithsonian Institution.

Oxystomata or Leucosiidea.

Leucosiidea.

Leucosia hæmatosticta, junior?

Leucosia hæmatosticta, Ad. and White, Zool. Samarang, Crust. p. 5-4, pl. xii. fig. 2 (1848); Bell, Trans. Linn. Soc. xxi. p. 289 (1855); Cat. Leucos. Brit. Mus. p. 8 (1855).

Two specimens were collected, in which the beautiful coloration is very well preserved, and which differ from the typical specimens in the British-Museum collection and White's figure as follows:—The blood-red spots on the carapace and legs are more numerous and smaller, the tubercles on the arms proportionally smaller but similarly disposed, the postabdomen of the male with the sides nearly straight and the second joint not constricted, whereas in the typical L. hæmatosticta the second joint is broad at base and greatly narrowed near the distal extremity (see figure quoted). Length of male 4½ lines.

Lat. 33° 10' N., long. 129° 12' E., at a depth of 36 fathoms. June, 1876. One male. A female is in the collection without definite locality.

The differences mentioned, although at first sight sufficiently marked, are probably due to the difference in age of the specimens, which agree in the form of the carapace, front, thoracic sinus, and legs. The male individual obtained by Mr. Adams measures rather more than ½ inch (6½ lines).

Pseudophilyra, gen. nov.

Allied to and intermediate between Leucosia and Philyra, but differing from the former genus by the absence of the pit or cavity in the subhepatic region which Prof. Bell has called the thoracic sinus, and from Philyra in the prominent tridentate front and slenderer straighter exognath of the outer maxillipeds.

So far as I am aware, this genus includes only the following species, Pseudophilyra tridentata and Pseudophilyra perryi, described by
me in 1877 as Leucosia perryi, and which is distinguished from P. tridentata by the smooth and polished carapace, which is defined by a continuous marginal beaded line. (See Trans. Linn. Soc., Zool. i. p. 238, pl. xxxviii. figs. 19–21, 1877.)

The genus Leucisc a of MacLeay (Annulosa in Smith’s Zool. S. Africa, p. 70, 1838), which resembles Leucosta, and in which no mention is made of the existence of a thoracic sinus, differs from Pseudophilyra and Leucosia in having the exognath of the outer maxillipeds robust and curved, and the eyes placed on either side at the base of the front, not at the antero-external angles.

**Pseudophilyra tridentata**, sp. n.  (Plate II. fig. 4.)

Carapace (with front) longer than broad, very coarsely punctulated except on the frontal region, where the punctuations are very fine. Frontal margin tridentate, the front itself narrowed and much produced, as in the genus Leucosia. There is a distinct elevation on the hepatic region, and immediately in front of it a marked depression. A minutely beaded line defines the posterior and posterolateral margins of the carapace, becoming obsolete on the antero-lateral margin. The inferior surface of the body is smooth; the exognath of the outer maxillipeds is rather broad, but its outer margin nearly straight, not arcuated as usual in Philyra. The postabdomen of the male has all the joints except the last coalescent, but the sutures are not entirely obliterated. Colour light brownish-pink. Length 4 ⅔, breadth 4 lines.

One specimen, a male, was collected in lat. 33° 4' N., long. 129° 18' E., in 23 fms.

In this specimen the legs are unfortunately wanting; an anterior leg that was in the same phial, and probably belongs to the specimen, has the arm very finely tuberculated, wrist and hand smooth, fingers slightly gaping at base when closed.

**Philyra**, sp.

Several specimens (males and females) of a species of Philyra, on account of their small size (their length is only about 3 lines), I do not designate by a distinct specific name, as they may not be fully matured. They resemble *Ph. platycheira*, De Haan, in the form of the carapace, which is nearly smooth and marked with a distinct depression between the cardiac and branchial regions, in the very finely granulated arms, &c. The anterior legs, however, are much shorter than in that species, the palm shorter and more swollen, and the fingers less compressed. The pterygostomian region is not angulated, and the intestinal region rather convex. From the *P. pisum* described by De Haan this species differs in the non-angulated pterygostomian region, from the *P. tuberculosa*, Stimpson, from Hong-Kong, in the non-tuberculated carapace, and from the *P. unidentata*, Stimpson, from the China Sea, in the form of the front. It may not improbably be a distinct species from any hitherto described.

Collected at Matoya, in 6 ½ fms.
The colour is light yellowish brown, flecked with spots of darker brown, of which two are rather prominent and situated one on each branchial region.

**Myra.**

The species of this genus, all of which occur in the seas of Eastern Asia, bear a very close resemblance to one another; and the form and tuberculation of the carapace and anterior legs not improbably alter considerably as the animal increases in age. On this account it is not without much hesitation that I regard the specimens described below as belonging to a distinct and undescribed form, as they are all of small size; but they cannot, in the present state of our knowledge, be referred to any of the known species.

**Myra dubia, sp. n.**

Carapace convex, rhomboid-oval, longer than broad, and covered with minute distant granules; there is a faintly but distinctly marked longitudinal median raised line. The median spine or tubercle is but little longer than the lateral ones, conical and acute; and a short distance in front of it, on the front of the intestinal region, is another very small but distinct tubercle. Front and hepatic regions as in *Myra carinata*. Anterior legs about twice as long as the body, slender; arm distinctly and hand finely granulated; fingers straight and acute. Postabdomen of the male elongate-triangular, with the sides nearly straight; surface smooth and flat; all the joints except the last coalescent. Length 6½ lines, breadth 5½ lines.

Three specimens, males, are in the collection, without definite locality.

The nearest ally of this species is evidently the *Myra carinata* of Bell from the Philippines, from which it differs in the broader carapace with shorter median posterior spine. Moreover it differs from this and all the other species of the genus in the existence of the small tubercle in front of the posterior spine. There is, however, in the British-Museum collection a male individual from Hong-Kong, of much larger size, which may be identical with the Japanese species, in which the tubercle does not exist. From *Myra fugax, affinis, elegans*, and *mamillaris* it differs in the form of the tubercles of the posterior margin and postabdomen of the male.

**Ebalia rhomboidalalis, sp. n.**

Carapace rhomboidal, rather broader than long, uniformly and finely granulated; cardiac and intestinal regions convex but not tuberculated. Frontal margin straight. Antero-lateral margins straight and not interrupted, forming nearly a right angle with the postero-lateral margins, which are nearly straight; posterior margin, behind the intestinal prominence, obscurely bilobated. A moderately prominent longitudinal median ridge joins the front and the intestinal prominence with the elevated cardiac region; and from the cardiac and intestinal regions transverse ridges reach to the postero-lateral margins. There is no tubercle on the pterygostomian
region. Anterior legs rather long and nearly smooth; arm obscurely trigonous, but without prominent angles; palm moderately convex; fingers straight and acute. Postabdomen of male with all the segments except the last coalescent. Length 5 1/2 lines, breadth 6 lines.

A male and female are in the collection, without definite locality.

This species differs from most of the genus in the entire absence of tubercles upon the carapace. It has some affinity with *Ebalia tuberosa*, Pennant (*E. pennantii*, Leach), from the British seas, but differs in the uninterrupted lateral margins and in the form of the front, which in that species is concave.

**Ebalia minor**, sp. n.

This species resembles the preceding; but the carapace is broader and very much more coarsely granulated on the frontal, cardiac, branchial, and intestinal regions and antero-lateral and postero-lateral margins. The front is slightly concave. The intestinal region is much less prominent, and there is scarcely any trace of longitudinal and transverse ridges; the posterior and postero-lateral margin of the carapace is slightly revolute. Length 3 lines, breadth 3 1/2 lines.

Three males and one female were collected with the preceding; and all are of much smaller size than the fully-grown male of the preceding species, to which they bear much external resemblance. The distinctions, however, are not sexual, and appear too considerable for the two forms to be varieties of one and the same species.

**Ebalia bituberculata**, sp. n.

This species resembles the *E. rhomboïdalis*; but the longitudinal and transverse ridges on the carapace and the depressions on the branchial region are much more strongly marked; in the centre of the carapace, upon the branchial region, are two distinct tubercles; the posterior margin is broader and straight, not bilobed.

A single female example was obtained at 52 fms., in lat. 34° 12' N., long. 136° 28' E.

**Cryptocnemus pentagonus.** (Plate II. fig. 5.)


A single male individual is in the collection, obtained at 36 fms., in lat. 33° 10' N., long. 129° 12' E., in June 1876. It has unfortunately lost all its legs, but agrees in all respects with Stimpson's description.

This is a most interesting addition to the British-Museum collection, as only three species have been described, the present being the only one not figured hitherto, and that on which the genus was founded. A comparison of the figure now given with that of the *C. holdsworthi* described by me last year in Trans. Linn. Soc. (ser. 2), Zool. i. p. 241, pl. xxxviii. figs. 30–32, will show the differences in the form of the carapace and rostrum between the two species.
Arcania globata.

A single specimen, male, was collected in 24 fms., in lat. 34° 8' N., long. 126° 24' E.

The legs are unfortunately wanting; but the form and armature of the carapace and rostrum agree exactly with Stimpson's description. Its nearest allies are apparently the Arcania tuberculata of Bell (Trans. Linn. Soc. xxi. p. 310, pl. xxxiv. fig. 8, 1855)—from which it differs in the longer, more acute, and equal spines on the surface of the body,—and the Arcania erinacea of Fabricius, which has the legs spinulose and the front much more deeply incised. There is a second specimen, from the "Eastern Seas," in the British-Museum collection.

I take this opportunity of noting that the Arcania granulosa described by me (Trans. Linn. Soc. ser. 2, Zool. i. p. 240, pl. xxxviii. fig. 29, 1877) must probably be united with the Arcania 11-spinosa of De Haan, Faun. Japon., Crust. p. 135, pl. xxxiii. fig. 8 (1841), the characters given not being sufficient to distinguish it from that species.

Arcania orientalis, sp. n.

Carapace subglobose, compressed, with the front somewhat produced, and with two depressions, well defined posteriorly, separating the cardiac and branchial regions; the whole of the upper surface covered with small closely-placed granules. Cardiac and intestinal regions very high and convex. Front slightly bilobed, with a median sulcus between the eyes; lateral margins of the carapace without spines; posterior margin straight, and forming on each side a prominent but rounded angle with the postero-lateral margins. Anterior legs rather slender, with the arm very finely granulated; wrist and hand nearly smooth. Postabdomen of the male narrow-triangular, with all the joints except the first and last coalescent; the coalesced portion is marked with a longitudinal median sulcus, a prominence on each side at base, and a prominent acute tubercle at the distal extremity, the terminal joint is narrow and elongated. Length and breadth about 3 lines.

Two individuals, males, are in the collection:—one obtained in lat. 33° 10' N., long. 129° 12' E., at 36 fms.; the other at 30 fms., in lat. 34° 10' N., and long. 136° 47' E.

This species is distinguished from its congeners by the evenly granulated carapace, which is quite destitute of spines. The granules in one specimen preserve some faint traces of a red coloration.

Anomura¹.

Dromidea.

Cryptodromia, sp.

A very small specimen, obtained at 30 fathoms, in lat. 34° 10' N., long. 136° 47' E., is in the collection.

¹ For convenience' sake, Dana's arrangement and nomenclature of the groups of Anomura is followed.
The frontal portion of the carapace is triangular, deflexed, concave above, with five obscure marginal teeth (including the supracoelar and median frontal teeth). Carapace convex, sparsely pubescent, without any indication of the different regions; antero-lateral margin with three small teeth. The anterior legs are small, weak, pubescent, and smooth. The second and third legs are compressed, pubescent, and with a tubercle at the distal extremity of the penultimate and antepenultimate joints. This individual may be the young of *C. tumida*, Stimpson, from the island of Ousima; it would not in any case be desirable to constitute it the type of a new species. Length barely 3 lines. The specimen is a young male.

**Homolidae?**

**Paratymolus.**

The carapace is shaped nearly as in *Homola*, e.g. with the front and postfrontal region deflexed, behind the hepatic region flat, with the sides nearly straight. The front is prominent and narrow, composed of two coalescent spines. The antennules are small and apparently broken in the single specimen collected. The antennae are elongated, the joints of the peduncle hairy, the flagella very slender. The eyes are slender, of normal shape, the peduncles cylindrical and laterally projecting, not, as in *Homola*, divided into two portions. The outer maxillipeds are rather slender, the second about twice as long as the third joint, the exognath slender and not prolonged beyond the end of the third joint. The anterior legs in the female very slender, fingers longer than the slender palm; the ambulatory legs all alike in form, slender, smooth, the tarsal joints long, straight, and unarmed, those of the fifth pair not raised upon the dorsal surface of the cephalothorax. Postabdomen (of female) jointed, ovate.

The systematic position of this genus is somewhat uncertain, as the specimen, which is unique and very small, cannot be dissected with safety. Stimpson placed his genus *Tymolus* among the *Doripipidae*; but the outer maxillipeds of *Paratymolus* are more of the Maioid than of the Leucosiid type; and on account of its general resemblance to *Homola* I place it, at least provisionally, with that genus among the Anomura Maiidica. Although the legs are not dorsally raised upon the cephalothorax, it evinces a certain degradation from the Brachyural type in the absence of defined orbits, the long antennae, and several other points; but it may hereafter be thought better to place it among the Maioid Brachyura. The outer maxillipeds are less pediform than in *Homola*, but less distinctly operculiform than in the generality of Maioid Crustaceans.

**Paratymolus pubescens**, sp. n. (Plate II. fig. 6.)

Carapace and legs everywhere covered with a close velvety pubescence; a strong spine at the angle of the hepatic region, and another smaller in front of it, two small tubercules in front of the gastric and one on the cardiac region, and two in the middle of the
postero-lateral margin. Arms smooth; wrist with a long spine on its inner margin. The slender terminal joints of the legs are longer than the preceding joints. Length of carapace and rostrum barely 3 lines.

A single female example was collected at Matoya, at a depth of 6½ fms.

This specimen is of very small size; but in the form of the fifth ambulatory legs it appears to be generically distinct, both from *Homola* and *Tymolus*, an allied genus from the Japanese seas, described by Stimpson; from the former genus it is further distinguished by the form of the eyes, and from the latter by that of the front, which is not quadridentate.

**Ranina serrata.**


A single individual, a male, was collected in Olvasi, Nipon, of moderate size, of this well-known species, which appears to be widely distributed through the Indo-Pacific region.

**Lyreideus tridentatus?**


A single specimen in imperfect condition was collected in Kada Bay, which I refer to De Haan's species with some doubt, as it differs in several particulars from the figure in the 'Fauna Japonica,' and the figures illustrating this work are, as a rule, most accurate. The carapace in the specimen before me is proportionally narrower, barely equalling in width half the total length. The greatest width at the lateral spines is attained at a greater distance from the front than in the specimen figured by De Haan; the median triangular lobe of the front is narrower; and there are four spines on the inferior margin of the hand.

If the species should prove upon comparison to be distinct, it may be designated *L. elongatus*. It in any case forms an interesting and valuable addition to the national collection, in which the genus was hitherto unrepresented; nor does it appear that any specimens were collected in the United States Expedition to the North Pacific, as none are mentioned in Stimpson’s Report.

**Porcellanidea.**

**Porcellana spinulifrons**, sp. n.

Two small specimens are in the collection, the exact locality
whence they were obtained not being stated. They differ from the description of *P. latifrons* Stimpson (Proc. Ac. Nat. Sci. Phil. p. 243, 1858), only in the following particulars. There are only two spines on the lateral margins of the carapace in front of the branchial regions, and one behind the outer orbital spine. The denticulations of the frontal lobes are very minute, but more numerous than in *P. latifrons*—about 9 on the median lobe and 4 on each lateral lobe; there are only two spines on the posterior margin of the carpus.

It is possible that a larger series would show these differences are not of specific importance.

**Pachycheles stevensii.**


Two specimens are in the collection, without definite locality (male and female). This species was previously unrepresented in the collection of the British Museum. Stimpson’s specimens were from the west coast of the island of Jesso, Japan.

With one exception (the *P. natulensis*, Krauss) the only species of this genus, besides the two described by Stimpson, inhabit the American coasts—another indication of the affinity existing between its Crustacean fauna and that of the Japanese seas.

**Lithodidea.**

**Hapalogaster dentatus.**


A single specimen, female, in mutilated condition, was collected at the Goto Islands at low-water mark. It agrees well with a specimen from Simoda, presented to the British Museum by the Smithsonian Institution.

This species belongs to a genus which, having a boreal range, is found on the west coast of the American continent as well as on the shores of Eastern Asia. An allied species, *H. mertensii*, has been described by Brandt from Sitka, and a third, *H. cavicauda*, by Stimpson from California.

**Cryptolithodes expansus**, sp. n.

The species which I have thus designated is represented only by a single small specimen in dried condition. The carapace is transversely oval, with the lateral wing-like expansions broadly rounded, the surface everywhere minutely punctuated. The rostrum is scarcely at all deflexed, truncated, and but very obscurely tridentate at its distal end. There is a convexity upon the gastric, and one more prominent upon the cardiac region, on either side of which is a less elevated tubercle, the three forming a transverse series. A longitudinal median ridge extends from the gastric prominence
nearly to the distal end of the rostrum. There are no tubercles on the lateral expansions of the carapace; but the lateral margins are obscurely toothed, as in *C. typicus*. The anterior legs have the palms tuberculated externally; and the ambulatory legs are cristate, as in that species. Length to end of rostrum 4½ lines, breadth 6 lines.

North Japan.

From *Cryptolithodes typicus*, Brandt, from California, this species differs in the less-deflexed rostrum, the absence of tubercles on the lateral lobes of the carapace, and the shape of these expansions, which are broadly rounded, with the lateral margins regularly arcuated, whereas in *C. typicus* the latero-anterior and latero-posterior margins form a more or less distinct angle one with another. It is probable that this character will always suffice to differentiate the species, even if the others should fail in older individuals. *C. sitchensis*, Brandt, from Sitka, has, according to Stimpson, a tridentate rostrum and smooth hands.

*C. alta-fissura*, Spence Bate, from Vancouver Island, of which there is a specimen in the Museum, is distinguished by the broad, flat, and rectangular rostrum, and the deep notch in the carapace in which the eyes are situated.

**Paguridea.**

**Eupagurus cavimanus**, sp. n. (Plate III. fig. 1.)

Carapace slightly punctuated on the sides in front of the branchial regions, and with a small acute median frontal lobe. Eye-peduncles subcylindrical, scarcely shorter than the peduncles of the antennae, not constricted in the middle, their basal scales entire, and concave above. Antennules with the peduncles rather longer than the eyes. Antennae with their slender basal acicles a little shorter than the peduncles. Anterior legs very unequal; larger (right) leg with the arm very short, trigonous, concave on its outer surface, and with a few spinules on its distal upper margin; wrist about as long as broad, and much broadest at its distal extremity, convex and faintly punctuated on its outer surface, its inner surface smooth and concave, and its upper and lower margins distally produced into thin crests, the upper of which is obscurely serrated; hand with the upper and lower margins parallel and sub-cristiform, slightly convex, and nearly smooth on its outer surface, mobile finger not cristate above, and about as long as the upper margin of the palm. Smaller leg very slender, wrist externally granulated and serrated above; palm subovate, smooth, and concave on its outer surface. Legs of second and third pairs slender, nearly smooth, the terminal joints rather longer than the preceding, and with short stiff hairs on their upper and lower margins.

1 There is also a dried specimen in the Museum, from Vancouver Island, which closely resembles *C. typicus*, but is distinguished by the form of the rostrum, which is obscurely triangular, and does not project beyond the anterior margin of the carapace. This I propose to designate *C. brevifrons*. 
One individual was collected at a depth of 100 fathoms, in lat. 41° 40' N., long. 141° 10' E.

By the form of the ophthalmic scales, the dilated carpus of the right anterior leg, and the externally concave palm of the left anterior leg, this species is easily distinguishable from its congeners.

It does not seem to be allied in any close degree to any of the species described by Stimpson from the Chinese and Japanese seas. In *Eupagurus forceps*, M.-Edw., a Chilian species, which has the wrist of the larger hand strongly cristate above and beneath, the fingers of the smaller hand are described as being very long, slender, and acute, whereas in *E. cavimanus* they are of moderate length.

There are a few other specimens of Paguridea in the collection, which, being in mutilated condition, cannot be determined with certainty. One, obtained at the Goto Islands at low-water mark, has lost the postabdomen and one of the anterior legs, but is perhaps referable to the *Pagurus lanuginosus* of De Haan. Another, which, like *Pomatocheles jeffreysii*, inhabited a shell of *Dentalium*, is too imperfect to be described.

**Pomatocheles, gen. nov.**

Cephalothorax and its appendages as in the *Paguridae*. Carapace with a median frontal lobe, and postfrontal and other sutures; posteriorly it is partly membranaceous. Postabdomen as in the *M. crurea*, extended, straight, with parallel sides, composed of seven distinct segments, inferiorly closed by two longitudinally-folding membranaceous flaps, which meet in the middle line. Eye-peduncles slender, cylindrical, straight. Antennules and antennae rather short, the latter with simple multiarticulate flagella. Antennal aciculum small. Outer maxillipeds subpediform. Anterior legs (as in *Cancellobus*) equal; hands bent obliquely downwards from the wrists, and flattened above, fingers opening horizontally, and acute at tips. Second and third legs slender, elongated, terminal joints long, straight, and acute. Fourth and fifth legs small and weak; last joint of fourth pair with a small terminal claw, and that of the fifth pair with a tuft of hairs and minute claw at its distal end. Postabdominal appendages of the second to fifth segments slender, those of the second segment elongated, and 4- or 5-jointed, the rest short. Appendages of the penultimate segment (uropoda) with two lamellate unequal rami. Telson membranaceous in its distal half, and divided by a terminal notch into two rounded lobes.

I have much pleasure in dedicating the single species of this remarkable genus to Dr. J. Gwyn Jeffreys, F.R.S., by whom the entire series of Crustacea collected by Capt. St. John was presented to the British Museum.

**Pomatocheles jeffreysii**, sp. n. (Plate III. fig. 2.)
The animal is slender and elongated. The carapace is marked

\[ \pi \underline{o}, \text{a lid, and } \chi \eta \lambda \upsilon, \text{a claw.} \]

with a distinct post frontal and lateral suture, besides two smaller and less distinct sutures on the sides towards the lateral margins. The median frontal lobe is broadly triangulate and rounded at apex. The first postabdominal segment is very small, the five following subequal, with the lateral margins straight, the last small, transparent, and membranaceous in its distal half, and ciliated on its margins, the terminal median notch very small. The ocular peduncles are a little shorter than the frontal margin, and are furnished with very small scales at base. The cornea are of a red-brown colour. The antennules are half as long again as the eye-peduncles, the antennæ about as long as the antennules; the aciculum at base very small, acute, not half as long as the eye-peduncles. The anterior legs are much as in Cancellus; the arms with a slight denticulated crest on their upper surface, the wrists very short and slightly denticulated above; the flattened upper surface of the palms is covered with thick short hair, the surface beneath being smooth, and the straight inner and arcuate outer margins very slightly denticulated. The slender and elongated legs of the second and third pairs have the antepenultimate joint short, the two following long and straight, the last in particular very long, slender, and acute. The truncated distal end of the last joint of the fourth leg is armed with a series of short stiff setæ or spinules, and a small claw or spine; that of the fifth pair is densely ciliated. The basal portion of the uropoda is short and broad, and bears two unequal lamelliform rami, which are of spongy texture on the outer surface, and ciliated on the margins; the outer is twice as long as the inner. Length 5 lines.

Two specimens were collected, inhabiting a species of Dentalium, at a depth of 58 fathoms, in lat. 32° 43' N., long. 129° 28' E., preserved in spirit. They were so firmly ensconced in the narrow conical shell that forms their home, that the one from which the foregoing description was mainly taken could not be extracted without breaking the shell. The chelæ of the anterior legs, meeting above the head, and in close contact along their flat inner margins, form a perfect operculum, fitting the aperture of the shell (hence the name of the genus), serving to defend its inhabitant against foreign intruders.

Subsequently two other specimens, in a dry state, were extracted from specimens of Dentalium, collected in 48 fathoms, in lat. 34° 13' N., long. 136° 37' E. They appear to be males, as the genital apertures are visible at the base of the fifth legs.

This remarkable form is of great interest as apparently establishing a transition from the Paguridea to the Macrura. In the form of the carapace, eyes, antennæ, and cephalothoracic limbs it has so much affinity with Cancellus, that, had the rest of the animal been wanting, I should have considered it a species of that genus. But in the narrow, straight, and distinctly-segmented postabdomen, and in the form of its appendages, it far more nearly approaches the Macrura than does Cancellus. Perhaps its nearest allies are to be found in the little-known genus Prophylax of Latreille, and Glau-

cothœ of Milne-Edwards\textsuperscript{1}. The latter, which is placed by Dana in the *Gebiūdae*, is only known to me by the figures and descriptions of its author; it presents decided affinities with the Paguridea in the form of the fourth and fifth legs of the cephalothorax, eyes, antennæ, and anterior legs, which are more distinctly Macruran in type. *Glaucothoë* has been considered by Mr. Spence Bate\textsuperscript{2} to be but the immature condition of *Pagurus*; and he figures and notices a specimen of that or a closely-allied genus that had been taken floating on the surface of the sea. Whether his contention be correct or not (and his remarks and figures do not appear to me to suffice to decide the question), there can, I think, be little doubt that the specimens of *Pomatocheles* I have examined are mature; and the fact that they had been found at considerable depths permanently ensconced within the shell of *Dentalium* seems confirmatory of that opinion. From *Glaucothoë* *Pomatocheles* is easily distinguished by the form of the chelæ of the anterior legs and of the carapace, not to mention other characters.

**Galatheidea.**


A large series of this species was collected, the specimens agreeing in all respects with Stimpson’s description, and the number of spines on the gastric region and lateral margins being remarkably constant; only it is to be noted that the large spine on the inner surface of the wrist varies considerably in size, sometimes not being much larger than the other spinules of the anterior legs; there is usually a small tooth on the inner margin of the immobile finger.

This species, like the *Pilumnus hirsutus* and *Cymodocea trilobata*, to be described in the second part of this Report, is a very common inhabitant of the Chinese seas, having been dredged at no fewer than nine different localities in or near the Corean Straits, at depths varying from 12 to 50 fathoms. Stimpson’s specimens were from the Ly-i-moon Straits, near Hong-Kong.

**Munida japonica.**


A single specimen was collected in the Corean Straits, lat. 33° 14' N., long. 182° 55' E., at a depth of 40 fathoms. The legs are, unfortunately, wanting; but in the form of the carapace and rostrum, and the number and position of the spines of the cephalothorax, it agrees perfectly with Stimpson’s description, whose specimens were collected at Kagosima, Japan.


MACRURA.

THALASSINIDEA.

GEBIIÆ.

Gebia major.


Several specimens are in the collection from Katzura and Kada Bay, some obtained from coarse sand and gravel 18 to 20 inches below surface. The spinules on the upper margin of the hand, mentioned by De Haan, are very small, and concealed by the longer hairs, so as to be scarcely distinguishable.

CARIDEA.

CRANGONIDÆ.

_Paracrangon echinatus._


A single specimen, apparently a male, was collected north-east of Yedo Island, in lat. 44° 27' N., long. 141° 22' E., and differs in no respect whatever from the Californian species described by Dana, which was described from specimens dredged in Puget Sound, and of which authentic examples from California are in the Museum collection, presented by the Smithsonian Institution.

The occurrence of the single species known of this curious genus (which, with the hands of a _Crangon_, has the external appearance, elongate rostrum, &c. of a _Hippolyte_, and which is remarkable for the total obsolescence of the cephalothoracic legs of the second pair) on both sides of the Pacific Ocean is a noteworthy fact; and it is probable that, with further opportunities of comparison, other species will be shown to have a similarly extended range.

ALPHEIDÆ.

Alpheus.

There is probably scarcely any genus of Crustacea in which the species are more numerous, and which more greatly needs thorough revision than the present. Not only are the characters in themselves hardly to be defined and accurately appreciated without the aid of well-executed figures, but we do not know at present how far those which are generally adopted in distinguishing the species (i.e. the form and sculpture of the hands and the proportional length of the joints of the wrists of the anterior legs) may be modified by the age and sex of the individual. Under these circumstances it is not without considerable hesitation that I describe below two species as new, which, however, are distinct from any hitherto recorded, so far as I can judge from the materials available to me for comparison.
ALPHEUS BIS-INCISUS.


Two specimens are in the collection, one female, in fine condition, obtained at Katsura, on the east coast of Japan, and a smaller individual, without definite locality.

Dr. Stimpson, in his report, quoted above, retains the name of bis-incisus for a species which he regards as distinct from the Alpheus avarus of Fabricius, with which, on the other hand, he considers the Alpheus strenuus of Dana (Expl. Exp., Crust. p. 543, pl. xxxiv. fig. 4), from Tongatabu, identical. Both species were collected in the American expedition to the North Pacific; and as I do not know the grounds on which he separated them, I follow for the present his nomenclature—although it would appear from comparison of the figures and descriptions that the Alpheus bis-incisus and A. strenuus are identical, while the A. avarus of Fabricius is described in such general terms that it would apply to several very different species; indeed by Milne-Edwards it is thought to be probably identical with Alpheus brevirostris of Olivier, which belongs to a different section of the genus from A. bis-incisus and A. strenuus.

ALPHEUS JAPONICUS, sp. n.

Carapace smooth. Rostrum narrow-triangular and acute, projecting rather beyond the orbits, which themselves project beyond the lateral margins of the carapace. Orbits without spines. Between the eyes and rostrum the carapace is very slightly concave. Second joint of the antennules not twice as long as the first. Anterior legs very unequal, the larger with the arm short, trigonous, enlarging distally, with a small spine at the distal end of its upper and lower margin; wrist very small, transverse; hand (with fingers) laterally compressed, very slightly contorted, nearly three times as long as broad; palm smooth, not cristate above, with the upper and lower margins straight and terminating in an acute lobe a short distance behind the articulation of the fingers; on the inner and outer sides of the palm, near the upper margin, is a longitudinal depression gradually obliterated towards the proximal extremity, that on the inner surface is narrow and triangulate, that on the outer broader and oblong in shape; the upper finger is broadest and rounded at its distal extremity, with a large tooth on its inner margin, fitting into a corresponding cavity on the inner margin of the lower finger; both are slightly hairy: the other anterior leg is slightly longer but very much more slender than the first described, which it resembles in the shape of the arm and wrist; the hand is very slender, smooth, and straight, no thicker than the wrist, the fingers hairy, and very slightly longer than the palm; the first joint of the wrist is longest, the third subequal and shortest, the fifth but little longer than the
third. The outer maxillipeds are densely hairy towards the extremities; the ambulatory legs slightly hairy on the penultimate joints.

Length of largest specimen about 1½ inch.

Two specimens were collected:—one in lat. 34° 6' N., long. 136° 15' E., at 11 fathoms; the other in lat. 35° 7' N., long. 136° 55' E., at 3 fathoms, on a bottom of soft mud.

So far as can be judged from the descriptions of the numerous species of this genus, the one now described differs from all those of the same section (in which the rostrum rises from the margin of the front, the basal joint of the antennæ is without a spine, the larger hand excavated above and below, and the orbital margins without spines) in the form and proportions of the anterior legs. The anterior legs somewhat resemble those of A. bis-incisus and A. lobidens, De Haan, but are much more slender and elongate, there is a spine at the distal end of both the upper and lower margins of the arms, and the lobes terminating the upper and lower margins of the larger hand are both acute.

Alpheus Kingsleyi, sp. n.

Carapace smooth; upper orbital margins rounded and without spines. Rostrum acute, projecting little beyond the orbits, between the eyes very narrow-linear, and separated from them by deep depressions in the surface of the carapace. Antennules with the second joint of the peduncle more than twice as long as the first, and, like the antennæ, without a basal spine. Antennal scale narrow, with a prominent spine at its antero-external angle. Anterior legs very finely granulated, the margins of palms and fingers with long flexible hairs; in the larger (right) leg the arm is without spines at its distal extremity; wrist very small, transverse; hand (with fingers) rather more than twice as long as broad, laterally compressed; palm with its upper margin marked with two longitudinal lines of long hairs, and with a small transverse groove near the base of the mobile finger, inner and outer surface smooth, not carinated, outer surface slightly concave below upper margin, with a faintly-marked oblique impressed line near its base; lower margin straight, entire, subacute; fingers nearly as long as the palm, nearly straight, the upper broad and bluntly rounded at its distal extremity: the other leg is slender, smooth, the palm compressed, the fingers about twice as long as the palm, slightly arcuated, leaving a space between their inner margins, and crossing at the tips when closed. The second pair of legs has the first and second joints of the carpus each nearly as long as the three following together, the third and fourth joints being very short, the fifth but little longer. The dactyli of the following legs are slender and straight. Length about 1 inch 1 line.

One individual is in the collection, obtained with a specimen of the preceding species, in lat. 35° 7' N., long. 136° 55' E., at 3 fathoms, on a muddy bottom.

This species, on account of the form of the front and anterior legs, belongs to a small section of the genus Alpheus including the A.
brevirostris, Olivier, and *A. lobidens*, De Haan, and the *A. malabaricus* and *A. rapax*, Fabricius, as described and figured by the latter-mentioned author in the *Fauna Japonica*. From the *A. brevirostris* it differs in the absence of crests upon the upper surface of the larger hand, the finger of which is proportionally much longer, and nearly straight, and from the three other species in the absence of ridges on the outer and inner surface of the palm, and of spines at the distal extremity of the arm, &c. It is evidently very nearly allied to *A. rapax*, which, however, is described (De Haan, *l. c.*) as having "*manus major glabra 4-costata, brachia carina superiore apice unispinosa*." I dedicate this species to Mr. J. S. Kingsley, of Salem, U. S., who, by his recent researches, has greatly facilitated the determination of the American species of this genus.

**Alpheus gracilipes?**


I refer to this species with some hesitation a small individual collected in lat. 32° 49' N., long. 128° 54' E. It agrees in all particulars with Stimpson's description, based on a specimen from Tahiti, except that the orbits can scarcely be called acute in front, and the penultimate joint of the ambulatory legs is about 6-spined below. I may add that the larger hand is sparsely pilose and slightly twisted, the mobile finger about one third the total length of the hand. The smaller hand is wanting in the specimen.

**Rhynchocyclus planirostris.**

*Cyclochynchus planirostris*, De Haan, Faun. Japon., Crust. p. 175, pl. xlv. fig. 7 (1849).


*Rhynchocyclus mucronatus*, Stimpson, *l. c.* p. 28 (1860), var.

One adult female, with ova, was collected at Cape Sima, Nippon, at a depth of 18 fathoms, on a bottom of sand and broken shells, and one, apparently male, in the Gulf of Yedo. It is to be noted that in neither specimen is the wrist carinated above and spinose at apex, as in De Haan's description. In all other respects the female, however, agrees with the description and figure of that author. The second specimen, in the somewhat narrower longer rostrum, and the existence of but a single spine on the dorsal surface of the carapace, agrees with Stimpson's diagnosis of *R. mucronatus*, which was based on specimens collected in the Strait of Ly-i-moon, near Hong Kong; but the denticles on the anterior margin of the rostrum are more numerous in both individuals. In both, moreover, exist the spines on the anterior margin of the carapace, mentioned by Stimpson; and in both the joints of the wrist are of the same proportional length, *i.* *e.* the second longer than either the first and third. It is probable that Stimpson's species is at most a mere
variety of the *planirostris*; or the differences may be those peculiar to the male sex.

**Hippolyte leptognatha, var.**  
Rather slender. Carapace dorsally carinated, the carina reaching nearly to the posterior margin; anterior margin with two small spines below the eye, and another at the antero-inferior angle. Rostrum elongated, longer than the carapace, its apex reaching beyond the end of the shorter thickened flagellum of the antennules; its upper margin straight, horizontal, and 6-dentate, the two or three last teeth situate on the dorsal crest, inferior margin with about six small and crowded teeth. The postabdomen is strongly geniculated. The outer maxillipeds slender and elongated, reaching nearly to the apex of the rostrum. Anterior legs rather slender; the palm longer than the fingers, and rather longer than the wrist. Wrist of second pair of legs 7-jointed, the second and sixth joints shortest, and the third joint the longest. Only one of the following legs exists in the specimen before me; in this the merus joint is armed with a series of spinules on its inferior margin, the penultimate joint is long, and the last joint short.

The single specimen, a female with *ova*, was collected in the Gulf of Yedo, and is in a mutilated condition.

It agrees in so many particulars with Stimpson's description of *H. leptognatha*, from Hakodadi, that I have not ventured to consider it distinct; as will be seen from the description, however, it differs in the more numerous teeth of the rostrum, of which fewer are placed on the dorsal surface of the carapace.

**Pandalus gracilis.**  

A single specimen was obtained in the Korean Straits, in lat. 34° 8' N., long. 126° 24' E.; temp. of water 71°, at a depth of 17 fathoms. It is in a very mutilated condition, the legs being imperfect and rostrum broken at the tip; but it agrees well with Stimpson's description and a specimen presented by the Smithsonian Institution from Hakodadi.

**Peneide.**  
**Peneidea.**  
**Peneus affinis**, M.-Edw.


*Peneus velutinus*, Dana, U.S. Expl. Exp. xiii., Crust. i. p. 604, pl. xl. fig. 4 (1852).

One male individual, was collected in lat. 32° 49' N., long. 128° 54' E.
This species has apparently a very wide geographical range, as there are specimens which do not seem to differ specifically in the British Museum from the Gulf of Suez and Western Australia; and I am informed in a letter from Mr. J. S. Kingsley, of the Peabody Academy of Science, Massachusetts, that the Museum of that Institution possesses specimens from Hong-Kong, the Sandwich Islands, and Zanzibar.

CUMACEA.

**HETEROCUMA, gen. nov.**

Cephalothorax without a distinct rostrum, and (viewed laterally) nearly straight in its dorsal outline. Five free segments of the body exposed. Postabdomen much longer than the carapace, terminal segment obsolete. Eye large and distinct. Antennules robust, 5-jointed, without any accessory flagellum, and with the first three joints of the peduncle dilated. Mandibles with the apex strongly dentated, the inner margins armed with 10–12 stiff setæ and with a prominent molar tubercle. First maxillæ with the slender flagella terminating in two unequal setæ. First and second maxillipeds 6-jointed; third maxillipeds 6-jointed, the basal joint considerably dilated, and produced at its extero-distal angle, which is subacute, the second joint very short, transverse, the third with its extero-distal angle greatly produced and acuminated, the fourth, dilated and truncated at its distal extremity, and the fifth and sixth slender. First three pairs of legs palpigerous in both sexes. The appendages of the sixth postabdominal segment (uropoda) are elongated, the basal portion being about as long as the fifth postabdominal segment, and terminating in two flattened subequal rami, which are two-jointed and about as long as the base.

In the males there exist well-developed appendages on the ventral surface of the first five postabdominal segments, and the antennæ are well developed and have the last joint of the peduncle dilated and terminate in a slender flagellum, which is directed backward and is as long as the animal.

This genus is apparently nearly allied to *Eudorella*, Norman (*Eudo- dora, S. Bate*), which it resembles in general form, the obsolescence of the terminal postabdominal segment, the form of the uropoda, &c., but differs in the existence of a well-developed eye, in the structure of the flagellum of the first maxilla, which terminates in two setæ, and particularly in the dilatation of the third and fourth joints of the third pair of maxillipeds. In the males, moreover, the first five postabdominal segments are all furnished with appendages.

It is also very nearly allied to *Leptocuma*, Sars, from Rio Plata, a genus recently described and beautifully figured by its distinguished author in Kongl. Vetensk.-Akad. Handl. xi. no. 5, p. 24; but in that genus the eye is indistinct, and not furnished with corneæ, the first pair of legs more robust, and, moreover, the third maxillipeds (so far as they could be seen without dissection in the unique specimen) are described as “of perfectly normal structure” in *Leptocuma*. 
Heterocuma sarsi, sp. n. (Plate III. fig. 3.)

The body is slender; the carapace or dorsal shield is somewhat laterally compressed, with an obscure median dorsal keel, which is flattened and sulcate posteriorly, and terminates anteriorly in the oculigerous lobe. Viewed laterally, the dorsal outline of the carapace is nearly straight, the inferior or lateral margin is at first straight and parallel with the upper, but anteriorly it is curved upward toward the front. The antero-lateral margins meet in front of the eye, but are not prolonged into a rostrum. The surface is smooth, or only very minutely punctulated; on either side there is a wide and rather deep incision in the antero-lateral margin, through which the antennules are visible; and the lobe beneath the sinus is triangular and subacute.

Five free segments of the body are exposed, the first being very narrow and overlapped upon the sides by the carapace; the second is longest, with the latero-inferior margins straight; the third very short upon the dorsal surface, but, like the two following, produced backward at its postero-lateral angle. Similarly the first four post-abdominal segments are produced backward on the sides, the produced portion forming a subacute lobe; these segments are subequal, the fifth is longer, the sixth rather smaller than any of the preceding; all are marked with longitudinal depressions on the dorsal surface, which are best visible in the dried specimens; the last segment or telson is represented only by an obscurely bilobate tubercle.

The large black eye is placed immediately behind the frontal margin. The antennules, visible through the lateral sinus, are short and 5-jointed, the basal joint very short, the second longest and considerably dilated, the third dilated and shorter, the fourth slender and longer, and the fifth very small and ending in a pencil of setae. The first pair of legs are greatly elongated and slender, the extremity being clothed with a pencil of long setae, which arise near the distal end of the penultimate joint; the fifth pair of legs is very short. The appendages of the first five postabdominal segments in the male are biramose; the rami flattened, ovate, and fringed at their distal extremities with long and flexible cilia; those of the sixth segment (uropoda) are fringed with short stiff setae along the inner margins of the base and the inner ramus, of which the two joints are subequal; in the outer ramus the basal joint is much shorter than the terminal. Length of animal (excluding appendages) not exceeding \( \frac{3}{4} \) inch.

A good series of specimens of both sexes were collected at a depth of 40 fathoms in lat. 32° 41' N., long. 128° 57' E.; one (a male) occurred at a depth of 50 fathoms, in lat. 33° 19' N., long. 129° 7' 5" E.; and two males and a female were taken in lat. 32° 48' N., long. 128° 56' E.

Var. granulata.

In two or three specimens (male and female), collected, with the typical form, in 40 fathoms, in lat. 32° 41' N., long. 128° 57' E.,
the carapace is more or less covered on its dorsal surface with small tuberculiform granules, which are largest along the line of the median dorsal cariina, and are gradually obliterated toward the lateral margins.

As in all other respects these specimens resemble the typical forms, I have not ventured to regard them as belonging to a distinct species.

APPENDIX.

On the Method of Dredging and Separating the Specimens, &c., with Remarks on Temperature, &c. By Capt. H. C. St. John, R.N.

During the years 1870 to 1877, when employed surveying the Japanese coasts, I usually kept a small dredge pretty well at work.

There is so little trouble and the few arrangements necessary are so simple, that I venture to give a brief outline of the plan I adopted, hoping, if it meets the eyes of those who have business on the deep, that they might be induced, at any rate occasionally, to try their luck in a similar way.

After ascertaining the depth, the dredge (which was always kept ready, hanging over the stern) would be lowered into the water, a 28-pound lead attached to the rope 5 to 8 fathoms from the dredge; this is to ensure the dredge passing over or along the bottom at the right angle. If the ship is just moving through the water, so much the better; the dredge then goes out clear. I think about one mile an hour not too fast for the dredge to pass along the bottom, and half an hour generally long enough for it to remain down.

On its being brought up, a boy, whom I had shown how to sift the contents, immediately commenced operations, using three diffe-

1 To complete the account of the Podophthalmia collected by Capt. St. John, I subjoin the following description of a Stomatopod crustacean without definite locality, which, being represented only by a single specimen in mutilated condition, I cannot determine with certainty. It is apparently allied to Cyrtopoda, Dana. The carapace which loosely covers the body, is attached only near its anterior margin, and is deeply excavated posteriorly on the dorsal surface, leaving three or four segments of the cephalothorax exposed. Anteriorly, it is prolonged forwards between and half conceals the eyes, and is armed with a strong median and two small lateral frontal spines; beneath the eyes there are two small spines on the lateral margins, and one on the posterolateral lobe on either side of the median excavation. The surface of the carapace is covered with small scattered granules. The postabdominal segments are nearly smooth; the sixth has two teeth on its lateral margins. The terminal segment is entire, tapers slightly to its distal extremity, which is subtruncate and armed with two strong stiff setae. The eyes are large, red, and only slightly project from beneath the margins of the carapace. The antennules have the peduncle thickened, and are furnished with two flagella, which are broken; but the outer in its imperfect state is nearly as long as the animal. The antennae are furnished at base with an ovate leaf-like scale, and have each a single flagellum (unfortunately broken). The cephalothoracic legs are in very imperfect condition; but there seem to have existed six pairs, furnished (at least the anterior pair) with a palp and a branchial leaflet at base. The first five postabdominal segments are furnished with swimming-appendages; the appendages of the sixth segment have subequal rami, ciliated along their inner margins, the outer ovate-lanceolate, and the inner lanceolate and acute. Length about 9 lines (½ inch).
rent-sized sieves for the purpose, and placing every thing he found in a wooden tub filled with clean salt water. From this receptacle I always took the specimens myself, putting them at once into bottles with spirit. In working the contents of the dredge, care should be taken that the hand is not used to rub or force them through the sieves. The sieves ought to be shaken backwards and forwards in a tub of water; the sand or mud will quickly pass away, leaving all but microscopic life behind.

I usually kept a small canvas bag of the contents of the dredge previous to its being examined and just as it came up. If hung up, the contents of the bag soon harden and dry; it takes little room, and frequently contains interesting subjects for microscopic examination.

Generally quantities of animal life came up attached to the bag, outside as well as in. It is always well to examine the bag closely immediately the dredge reaches the surface. The small colourless and otherwise difficult-to-distinguish forms which abound in about 50 fathoms will then be more easily found by their movements, whereas if left to die, which they very soon do, they are far more difficult to find.

As the depth of water increases, so ought the distance of the 28-pound lead from the dredge, so as to ensure the lips of the dredge taking the bottom at a proper angle. I used a 2½-inch rope next the dredge, increasing that size at 200 fathoms to 3 inches.

The dredge was about 3 feet long by 18 inches wide. This size I found most convenient, the bag being about 3 feet 6 inches deep, and made of ordinary bread-bag stuff, with a good strong network bag outside to protect the inner or real bag from being torn or injured on the hard bottom.

During the seven years I spent in Japan most of the time was on the south coast, where, in consequence, the chief part of the dredgings were obtained. In 1871, however, I had an opportunity of dipping into the cold stream from the north, as it flowed past the north and north-east coast of Yedo. The temperature of this stream was 36° to 39° F. in the month of August, whereas that of the Kuro Sinvo or equatorial current, a small portion of which enters the Sea of Japan by the Korean Strait and passes out to the Pacific by the Tsuga Strait, was 58° to 60° at the same time, and in close proximity to the counterstream. These two currents rub together, but do not mix.

From the cold waters the most interesting things were obtained; and I feel sure there is much to be done in this particular portion of the globe, which may be termed the north-west corner of the Pacific.

When practicable, I always took the temperature at the bottom as well as at the surface.
EXPLANATION OF THE PLATES.

PLATE I.

Fig. 1. Pulea sancti-johannis (p. 24), male individual, natural size.
1 a. Inferior view of buccal, orbital, and antennal region of the same. × 3 diameters.
1 b. Lateral view of rostrum. × 3 diameters.
1 c. Outer view of hand of the same. × 3 diameters.
1 d. Postabdomen of the same. × 3 diameters.
2. Hydastenus (Chorilia) japonicus (p. 27), male individual, dorsal view, natural size.
2 a. Orbital and antennal region of the same. × 2 diameters.
2 b. Postabdomen of the same. × 2 diameters.

PLATE II.

Fig. 1. Doclea orientalis (p. 28), female individual, natural size.
1 a. Inferior view of orbital and antennal region of the same. × 3 diameters.
2. Heteroplax nitidus (p. 39), female individual. × 2 diameters.
2 a. Inferior view of frontal, orbital, and antennal region of the same, further magnified.
2 b. Outer view of hand of the same. × 4 diameters.
3. Heterograpus longitarsis (p. 37), male individual, natural size.
3 a. Outer view of hand of the same. × 3 diameters.
4. Pseudophilyra tridentata (p. 41), male individual. × 3 diameters.
4 a. Outer view of hand of the same. × 2 diameters.
5. Cryptocenmus pentagonus, Stimpson (p. 43), carapace of male individual. × 3 diameters.
6. Paratymolus pubescens (p. 45), female individual. × 3 diameters.
6 a. Inferior view of buccal, antennal, and orbital region of the same. × 8 diameters.
6 b. Lateral view of carapace of the same. × 3 diameters.

PLATE III.

Fig. 1. Eupagurus cavimanus (p. 48), male individual. × 1 ½ diameter.
2. Pomatocheles jeffreysi (p. 49), male individual, dorsal view. × 4 diameters.
2 a. Lateral view of the same. × 4 diameters.
2 b. Fourth cephalothoracic leg of the same, greatly magnified.
2 c. Fifth cephalothoracic leg, greatly magnified.
2 d. Terminal segment and uropoda, greatly magnified.
3. Heterocurva sarisi (p. 58), male individual. × 3 diameters.
3 a. Front of cephalothorax, dorsal view, further magnified.
3 b. Second maxilliped, greatly magnified.
3 c. Third maxilliped of the same, greatly magnified.
3 d. Leg of the first pair, greatly magnified.
3 e. Terminal segment and uropoda, greatly magnified.


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My friend Mr. Elliot, in his paper “On the Fruit-Pigeons of the Genus Ptilopus” (P. Z. S. 1878, pp. 500, 525) has requested that his conclusions should not be rejected or condemned until after the examination of materials at least approximating somewhat to that which he has consulted. I hope that he will allow that as regards Moluc-
can and Papuan species I have seen a good deal more than he has, and that I am not liable to the reproach of the Greek sculptor to the cobbler of Athens, "Ne sutor ultra crepidam." Just for this reason I shall confine myself to some remarks on the Papuan and Moluccan species, leaving to somebody else to test Mr. Elliot's conclusions as to the species from other localities.

I shall follow Mr. Elliot's order.

18. **Ptilopus xanthogaster.**

I do not find among the synonyms the following:—*Ptilopus aurantiiventris*, Rosenb. Tijdschr. Ned. Ind. xxix. p. 144 (1867); id. Reis. naar Zuidoostereil. pp. 81, 86 (1867).

The specimens from Lettie Island are smaller, with the head and the neck of a darker and less pure ashy white. Those from Khoor are larger, with the neck whiter.

In the British Museum I examined a specimen marked Marianne Islands (!), smaller, but otherwise not different from those of the Ké Islands.

21. **Ptilopus superbus.**

I have examined the type of *Lamprotrocor porphyrostictus*, Gould; and there is not the least doubt that it is a female of this species.

As to the habitat of this species and of many others, I must make the remark that it is a pity Mr. Elliot has not mentioned the islands by groups; by mixing together Moluccan and Papuan islands he makes it very difficult to the reader to form a clear idea of the distribution of the species.

This bird has been found not only in the northern part of New Guinea, but also in the southern, on the Fly River and in Yule Island (*D'Albertis*).

22. **Ptilopus temmincki.**

I did not make the mistake of calling this species *Megaloprepia formosa*. My *Megaloprepia formosa* (Ann. Mus. Civ. Gen. ix. p. 122) (1876) is the bird which Mr. Elliot calls *Ptilopus bernsteini*. Mr. Elliot might have perceived which was my bird from its habitat; and besides he knew very well that I was well acquainted with *P. temmincki*, as I suggested to him that this was the proper name for *Ptilopus formosus*, Gray.

24. **Ptilopus coronulatus.**

The following important quotation is missing:—


This species is confined to the Aru Islands and to the southern part of New Guinea; the localities Salwatty and Sorong, and that of Jobie are wrong, and belong respectively to *P. trigeminus* and *P. geminus*. Ansus is not a distinct island, but a locality in the island of Jobie.

I question whether Mr. Elliot, who says that it may well be doubted if *P. trigeminus* should be separated from *P. geminus,* has ever seen a specimen of *P. trigeminus.* He says that the only difference is in the slightly paler crown. The case is quite the contrary. I have seen one specimen in the British Museum (Wallace's collection), most likely from Sorong, a second from Salwatty in Gould's collection, and many in the Museum of Leiden. They differ from *P. geminus* in the brighter crown, in the paler throat, in the saffron-colour round the violet spot of the abdomen being much reduced, and in the yellow of the lower part of the abdomen being less extended. In fact, as regards the pale violet crown, *P. trigeminus* is intermediate between *P. coronulatus* with a bright violet crown, and *P. geminus* with a pinkish, nearly white crown.

27. *Ptilopus iozonus.*

The habitat of this species is the Aru Islands and south of New Guinea.

29. *Ptilopus jobiensis.*

The synonymy given is not exact; Mr. Rowley and I used the binomial name, and not a trinomial name like Schlegel.

This species, rather than approaching *P. humeralis,* is allied to *P. iozonus,* of which it is the northern representative. *P. humeralis* differs from both in the deep purple band on the small wing-coverts, whereas these both in *P. jobiensis* and *P. iozonus* are grey-violet; *P. jobiensis* differs from *P. iozonus* in having the tail above uniform green; in *P. iozonus* the tail has a very conspicuous apical grey band.

*P. jobiensis* lately has been found also in Tarawai or D’Urville Island (Attī R. Ac. Sc. Tor. xiii. p. 321).


This species has been obtained by D’Albertis on the Fly River (Ann. Mus. Civ. Gen. ix. p. 43); and I think that it is confined to the south of New Guinea and Mysol.

32. *Ptilopus monachus.*

Mr. Elliot says that the birds from Ternate differ from those of Gilolo, and that the Gilolo bird may require separation. Mr. Gray in his 'Hand-list' had already mentioned that the specimens from Gilolo belong to a variety. I may say that I have seen many specimens from both localities, and that I have not been able to detect any real difference.

34. *Ptilopus melanocephalus.*

The locality Sula-bessie does not belong to this form, but to *P. chrysorrhous.*

I cannot offer any additional remark on the specimens from Flores (*P. melanauchen,* Salvad.); but I think that they belong to a form equivalent to *P. melanocephalus,* *P. melanospilus,* and *P. chrysorrhous.*
38. _Ptilopus porphyreus._

This is not a Moluccan nor a Papuan species; still I may mention that, to avoid the confusion with _Columba porphyracea_, Temm. (1822), it would be better to call it _P. roseicollis_, Wagl. Besides Java it inhabits also Sumatra, as has been stated by Bonaparte. I have seen many skins from Sumatra, collected by Dr. Beccari.

42. _Ptilopus ornatus._

The authority of Laglaize for this species being found on Mount Arfak is not correct, as Mr. Laglaize was never there. Mr. Laglaize’s specimens, which I have seen, are from Amberbaki, a locality far away from Mount Arfak.

44. _Ptilopus perlatus._

The locality Aru Islands does not belong to this species, but to _P. zonurus_. The two are representative forms, one living in Northern New Guinea, Jobie, and Salwatty, and the other in the Aru Islands and in the south of New Guinea, on the Fly River, where D’Albertis has lately collected several specimens entirely agreeing with those from the Aru Islands.

45. _Ptilopus zonurus._

Mr. Elliot could have added many quotations to the synonymy of this species; all the references to _P. perlatus_ from the Aru Islands belong to it.

Beside the type, I have seen many specimens of this form from the Aru Islands and from the Fly River; and all of them show the grey band at the tip of the upper surface of the tail. _P. zonurus_ has in that respect the same relation to _P. perlatus_ that _P. iozonus_ has to _P. jobiensis_. It is important to notice that _P. perlatus_ and _P. jobiensis_ are respectively the northern representative forms of _P. zonurus_ and _P. iozonus_. Mr. Elliot’s statement that _P. zonurus_ is barely distinguishable from _P. perlatus_ is rather inconsistent, after he has accepted as distinct _P. jobiensis_ and _P. iozonus_, which differ exactly in the same particulars as _P. zonurus_ from _P. perlatus_.

47. _Ptilopus pectoralis._

The synonymy of this species is not correct. Instead of _Columba virens_, Less. Voy. Coq. descr. [sic], it ought to be _Columba cyanovirens_, Less. Voy. Coq. Zool. i. 2, p. 713 (1828). The name of _C. cyanovirens_ was given to the female of _P. superbus_ and to the present species! It is important to notice the mistake, as, if Lesson had really named this species _C. virens_, this name would have had priority over that of _C. pectoralis_, Wagl. Isis, 1829, p. 739. From the localities Mr. Elliot has left out Koffiao (Beccari).

48. _Ptilopus viridis._

S. Müller and many others after him have said that this species is also found in New Guinea, near Lobo. But this is a mistake which has arisen from S. Müller having (Verh. Land.- en Volkenk. p. 22) given the name of _Columba viridis_ to a young specimen of _P. pectoralis_.

49. Ptilopus geelvinkianus.

I do not think that the name used by Mr. Elliot is the proper one. The exact and full synonymy of this species stands as follows:—


*Ptilopus musschenbroeki*, Rosenb. in litt. (Schlegel, l. c.).


From the above synonymy it appears that the first name given to this species by Prof. Schlegel can not be used, being a trinomial one; and as at the same time he published that of *P. musschenbroeki*, Rosenb., this is the one which Mr. Elliot ought to have used, instead of making a binomial one of his own.

51. Ptilopus rivolii.

I also have examined the type of *P. solomonensis*, Gray, and quite agree with Mr. Elliot in referring it to *P. rivolii* ♀. *If I remember rightly*, I wrote on the label of the typical specimen that such was my opinion.

52. Ptilopus prasinorrhous.

To the localities registered by Mr. Elliot must be added the following, already mentioned by me—Gagie, Guebeh, Dammar, Mafor.

As to *P. prasinorrhous* being different from *P. rivolii*, I do not think there can be the least doubt, although some specimens have the under tail-coverts more or less yellow, and even entirely yellow, but of much paler hue than in *P. rivolii*.

53. Ptilopus strophiun.

Mr. Elliot unites *P. miqueli*, Rosenb., with *P. strophiun*, Gould. The latter is based on a specimen, collected by Macgillivray during the voyage of the ‘Rattlesnake’ in Dutchateau Island, one of the Louisiade group, beyond the south-eastern extremity of New Guinea. *P. miqueli* is founded on specimens from Jobie and the small island of Miosnom, very near the west coast of Jobie, in Geelvink Bay. In Miosnom *P. miqueli* is very common; Dr. Beccari has collected many specimens there. In no other place intermediate to those mentioned have *P. strophiun* or *P. miqueli* been found. That in such far-away and limited localities the same bird should be found, and not in the very wide intervening tract, is a thing which very few will be disposed to believe; and, besides, the two birds are, according to my views, really different. When I was in London last year I took with me two specimens of *P. miqueli* to compare with the type of *P. strophiun*, and found that the latter differs in having the anterior

**Proc. Zool. Soc.—1879, No. V.**

5
half of the crown rosy red, the green feathers of the upper parts dusty greyish, as if they were powdered, and the under tail-coverts of a light yellow. *P. miqueli* has the anterior part of the crown purplish red, the feathers of the upper parts of a pure, not dusty-greyish green, and the under tail-coverts of a brighter yellow. Mr. Elliot believes that the type specimen of *P. strophiurn* is faded upon the forehead; but he has overlooked that the figure of the same, published in Jardine's 'Contributions to Ornithology' when the bird was newly brought to London, shows the same rosy colour of the crown as it now has after twenty-eight years.

The second specimen named *P. strophiurn* in the British Museum, which was bought from M. Verreaux, without any locality, has the forehead purplish red, and certainly belongs to *P. miqueli*.

54. **Ptilopus bellus.**

Although this species has the pectoral band yellow and white, like *P. speciosus*, I do not think that this is its nearest ally, but rather *P. prasinorhous*, in which sometimes the white pectoral band is more or less tinged with light yellow. Besides that, *P. speciosus*, unlike any other species, instead of having the crown purple, has only two purple spots in front of the eyes, and the abdomen of a beautiful lilac.

56. **Ptilopus johannis.**

Certainly this bird has its nearest ally in *P. speciosus*, having the abdomen lilac; but, unlike any other species, it has the breast-band all yellow, and the top of the head lilac like the abdomen.

59. **Ptilopus puella.**

70. **Ptilopus assimilis.**

71. **Ptilopus magnificus.**

I must state that, notwithstanding the contrary opinion of Mr. Elliot, I think that these species, and a fourth lately discriminated by me, should be referred to a distinct genus from *Ptilopus*, i.e. to *Megaloprepia*, Rehb., the type of which is *Columba magnifica*, Temm.

If Reichenbach included in the same genus *Ptilopus perlatus*, Temm., which certainly does not belong to it, that is not a good reason for completely discarding the genus, which, according to me, is perfectly recognizable by the rather long tail of the birds, the uniform colour of the same, the first primary not attenuated, and the peculiar colouring of the different members. It is not by taking these characters separately, but combined as they are, that the generic value of the group appears evident.

Then Mr. Elliot seriously questions if the three races mentioned should be continued as distinct species. To maintain this he begins by saying that "they only differ in size," which is not exact; and the proof of this we have from Mr. Elliot himself, who a few lines below says:— "The specimens of the smallest race, called *P. puella*, which are found in the island of Jobie and also at Mount Epa, in the south of New Guinea, have the under surface of the tail lighter
in colour than those from other localities, being blackish-grey, instead of blackish-brown." But Mr. Elliot disposes very easily of this difference, saying, "this, however, cannot be considered of any specific importance." But the truth is, that, guided by the black colour of the under surface of the tail, any one can pick up a true *Megaloprepia puella* among hundreds of the other forms.

Mr. Elliot, as the *habitat* of *P. puella*, besides Mysol, Salwatty, Waigiou, Ghemien, and Dorey, enumerates also Cape York, Jobie, and New Ireland, which are wrong or doubtful. As to Cape York, this locality is given on the authority of Mr. Ramsay; but I doubt whether Mr. Ramsay has ever had the opportunity of comparing a specimen from the northern peninsula of New Guinea with the supposed *M. puella* from Cape York; and I even doubt whether Mr. Ramsay is acquainted with the difference in the under surface of the tail between the true *M. puella* and *M. assimilis*. Even Mr. Elliot did not know the difference, as he asked me how I could distinguish *M. puella* from *M. assimilis* except by size! Most likely Mr. Ramsay's *M. puella* is a small, not full-grown *M. assimilis*. The fact to be shown is that the form with the under surface of the tail black lives at Cape York. For my own part, I am not disposed to believe it without additional proofs, as all such birds I have seen (and many they are) were from the northern peninsula of New Guinea, from Waigiou, Ghemien, Salwatty, and Batanta. All the birds from Jobi and the south of New Guinea (Mount Epa and Fly River) have the under face of the tail dark greyish; and these I have lately named *Megaloprepia poliura*, which would be the eastern and southern form representative of *M. puella*. There is an apparently strong objection against this view. A specimen in the Museum of Paris, marked New Ireland, which I have also seen, has the under surface of the tail black. But are we sure that the locality is exact? The bird was collected by Lesson and Garnot during the voyage of the 'Coquille;' and it would not be the first instance of a wrong locality given to a bird collected by them.

In a recent paper, where I have described *M. poliura*, I have given what I think satisfactory characters for discriminating the four forms allied to *M. magnifica*; the principal differences can be tabulated as follows:—

1. Cauda inferne grisea.
   a. Major: long. tot. circa $0^\text{m}.420-0^\text{m}.490$, al. $0^\text{m}.240-$
   b. Media: long. tot. circa $0^\text{m}.360$, al. $0^\text{m}.190$ ....... 2. *M. assimilis*.
   c. Minor: long. tot. circa $0^\text{m}.330$, al. $0^\text{m}.175-0^\text{m}.170$ ...... 3. *M. poliura*.

2. Cauda inferne nigra: long. tot. $0^\text{m}.330$, al. $0^\text{m}.170$ ...... 4. *M. puella*.

The four forms mentioned above occupy different areas:—

*Megaloprepia puella* inhabits the northern peninsula of New Guinea, with the islands of Waigheu, Guebeh, Batanta, Salwatty, and Mysol.

*M. poliura* has been found hitherto only in the island of Jobie and in the south of New Guinea (Hall Bay and Fly River).
5. Contributions to the Ornithology of the Philippines.—
No. XII. On the Collection made by Mr. A. H. Everett in the island of Basilan. By ARTHUR, Marquis of Tweeddale, F.R.S., President of the Society.

[Received November 26, 1878.]

In the year 1876, the island of Basilan was for the first time visited by an ornithological collector, Dr. Steere, who, during the fortnight he resided at the Spanish settlement of Isabella, obtained examples of 23 species of birds. Mr. Everett reached the same island in the month of May of the present year, and remained there during June. Of the collection of birds he formed it is now proposed to give an account.

In all Mr. Everett obtained representatives of 56 species. Of these 12 only have already been enumerated by Mr. Sharpe; so that through Mr. Everett’s exertions I am enabled to increase the number of known Basilan birds by 48. To the 56 species collected by Mr. Everett must be added the 11 obtained over and above by Dr. Steere; and the known total of Basilan birds will thus be found to be 67.

By the discovery of Totanus calidris in Basilan, Mr. Everett has established one certain Philippine habitat for a species hitherto but doubtfully known to inhabit the archipelago. So now only 28 species are left, the occurrence of which in the Philippines still remains somewhat uncertain.

Mr. Everett writes, that he finds the “wet season at its height, and the rain has been incessant. The hostility of the natives renders it impossible to go beyond a radius of four or five miles from the village without a well-armed party. Hence the collection is rather meagre. Apart from these causes, however, the collection is likely to prove disappointing; for the avifauna of the island does not seem to offer any very marked features to distinguish it from that of the Zamboanga peninsula.”

1. Prioniturus discurus (2).
[Basilan, ♂ ♀, May, June.]

2. Tanygnathus luconensis (3).
[Basilan, ♂, May.]

3. Loriculus hartlaubi (7).
[Basilan, ♂, May.]
4. **Spilornis holospilus** (16).
[Basilan, ♀, June.]

5. **Elanus hypoleucus** (18).
[Basilan, ♀, June.]
Not quite mature.

6. **Ninox spilocephala**.
[Basilan, ♂ ♀, May, June.]

7. **Scops everetti**.
[Basilan, ♂, May.]

8. **Thriponax javensis** (28).
[Basilan, ♀, May: iris orange-yellow. ♀ juv., May: iris white.]

9. **Yungipicus validirostris**.
*Yungipicus validirostris* (Blyth), Tweeddale, *P. Z. S. 1878*, p. 943.
[Basilan, ♂, May: iris crimson.]
Basilan examples agree with those from Zamboanga. The description given by Cabanis (*Mus. Hein. iv. pt. ii. p. 60*), under the above title, of a Philippine member of the genus agrees best with the Luzon bird.

10. **Eurystomus orientalis** (37).
[Basilan, ♀, May.]

11. **Pelargopsis gigantea**.
[Basilan, ♀, May: coloration of soft parts identical with that in *P. leucocephala*.]

12. **Sauropatis chloris** (47).
[Basilan, ♀, May.]

13. **Caprimulgus manillensis** (55).
[Basilan, ♂ ♀, May and June.]

14. **Cacomantis merulinus** (57).
[Basilan, ♂ ♀, May.]
The male is in mature plumage, the female in rufous dress.

15. **Surniculus velutinus**.
[Basilan, sex ?, May: iris dark brown; bill black; feet grey; soles ochreous.]
16. **Eudynamis mindanensis** (61).  
[Basilan, ♀, May.]

17. **Pyrrhocentor melanops** (65).  
[Basilan, ♂, May.]

18. **Buceros mindanensis**.  
*Buceros mindanensis*, Tweeddale, P. Z. S. 1877, p. 543.  
[Basilan, ♂ ♀, May.]

19. **Penelopeides affinis**.  
[Basilan, ♂ ♀, June.]

20. **Artamus leucorhynchus** (73).  
[Basilan, ♂ ♀, May.]

21. **Graucalus striatus** (74).  
[Basilan, ♀: iris pale lemon-yellow.]

22. **Lalage dominica** (76).  
[Basilan, ♂ ♀, May.]

23. **Dicrurus striatus**.  
*Dicrurus striatus*, Tweeddale, P. Z. S. 1877, p. 545, no. 20.  
[Basilan, ♂, June; ♀, May.]

24. **Leucocerca nigritorquis** (83).  
[Basilan, ♀, June.]

25. **Hypothymis azurea** (85).  
[Basilan, ♂, May and June.]

26. **Hypothymis superciliaris**.  
*Hypothymis superciliaris*, Sharpe, Tr. L. S. ser. 2, Zool. i. p. 326,  
no. 53.  
[Basilan, ♀, June: iris dark brown; bill black; legs dark brown.]

27. **Setaria ruficauda**.  
[Basilan.]  
Identified by Mr. Sharpe.

28. **Sarcophanops steerii**.  
*Sarcophanops steerii*, id. Tr. L. S. ser. 2, Zool. i. p. 344, no. 115,  
t. liv. f. 1, 2.  
[Basilan, ♀, May: iris fine bluish green.]  
With reference to the colour of the iris as stated by Mr. Sharpe
on Dr. Steere’s authority, Mr. Everett remarks:—“Dr. Steere is in error in saying that the iris of Sarcophanops is like ‘a clear crystal, crowded with specks of gold.’ The iris is not yellow, but rich mineral green, and precisely resembles the iris of Cymborhynchus macrorhynchus. If the describer had said ‘a clear crystal of emerald, crowded with specks of gold,’ the peculiar grained appearance of the eye and its colour would have been correctly indicated.”

The series sent by Mr. Everett corroborates Mr. Sharpe’s statement (l. c.) that the females are distinguished from the males by having the breast pure white and not vinaceous. In Mr. Sharpe’s plate of the species, the male bird is marked with the feminine symbol, and the female with the masculine. The Dinagat bird in no respect differs from these typical specimens.

29. Broderipus acrorhynchus (90).
[Basilan, ♂, May.]

30. Oriolus steerii.

[Basilan, ♂, May: iris carmine; bill burnt sienna-brown; legs dark grey.]

The series sent by Mr. Everett enables me to compare O. steerii with its representative form O. assimilis, ex Zebu, and to confirm the absolute distinctness of the two species.

31. Erythropitta erythrogastra (94).
[Basilan, sex ?, May.]
Examples of an apparently immature female.

32. Megalurus ruficeps.

Megalurus ruficeps, Tweeddale, P. Z. S. 1877, p. 695, no. 41, t. lxxii.
[Basilan, ♂, June.]

33. Mixornis capitalis.

Mixornis capitalis, Tweeddale, P. Z. S. 1878, p. 110, pl. vii. f. 2.
[Basilan, ♂, June: iris orange; bill blackish; legs light olive-green.]

34. Irena melanochlamys.

Irena melanochlamys, Sharpe, Tr. L. S. ser. 2. Zool. i. p. 334, no. 75.
[Basilan, ♂, June: iris pure Indian-red. ♂, May: iris pure Indian-red; bill and legs jet-black.]

A representative form of I. cyanogastra, from which it appears only to differ by having the scapulars and interscapular region black, without any tint of purplish blue.
35. **Ixus goiavier** (99).
[Basilan, ♀, June.]

36. **Hypsipetes rufigularis**.
[Basilan, ♂, May, June.]

37. **Copsychus mindanensis** (106).
[Basilan, ♂ ♀, May and June.]

38. **Orthotomus frontalis**.
[Basilan, ♀, May: iris clay-colour; maxilla brown; mandible pale whitish; legs pale clear brown.]

The amount of rufous on the head of this species varies considerably in different individuals. In some it occupies the whole forehead and extends back to the vertex, and also colours the ear-coverts and a broad space below the eyes.

39. **Dicaeum hypoleucum**.
[Basilan, ♂, May: iris bright warm brown; bill black; legs dark grey.]

40. **Cyrtostomus jugularis** (123).
[Basilan, ♂ ♀, May and June.]

One of the four adult males sent by Mr. Everett has a distinct broad metallic blue frontal patch.

41. **Anthothreptus chlorogaster**.
[Basilan, ♀, June.]

I thus identify a single example of the female; but specimens of the male have to be examined before the identity of the species can with certainty be determined.

42. **Corvus philippinus** (125).
[Basilan, ♂ juv., May.]
Basal portion of body-plumage grey.

43. **Calornis panayensis** (128).
[Basilan, ♀, May.]

44. **Sarcops calvus** (129).
[Basilan, ♂ ♀, June.]

One example (♂) with interscapular region brown, the others with that part hoary-grey.
45. Osmotheron vernans (135).
[Basilan, ♀, May.]

46. Ptilopus melanochephalus.
*Ptilopus melanochephalus* (Forster); Tweeddale, P. Z. S. 1878, p. 951.
[Basilan, ♂ ♀, May, June.]
Not to be distinguished from Zamboanga examples.

47. Ramphiculus occipitalis (138).
[Basilan, ♀, June: iris light hazel-brown.]

48. Phabotreron brevirostris.
[Basilan, ♀, May: iris light warm brown; bill black; feet carmine.]

49. Carpophaga ænea (141).
[Basilan, ♂ ♀, May.]

50. Ianthænas griseigularis (145).
[Basilan, ♂ ♀, May and June.]

51. Macropygia eurycerca.
[Basilan, ♀, May.]

52. Chalcophaps indica (150).
[Basilan, ♂ ♀, May and June.]

53. Gallus bankiva (153).
[Basilan, ♂ ♀, May.]

54. Megapodus dillwyni (158).
[Basilan, ♀, June.]

55. Totanus calidris (184).
[Basilan, ♀, May: iris bright brick-red.]
The occurrence of the Redshank in the Philippines is thus established.

56. Nycticorax manillensis (198).
[Basilan, ♂, May. Iris golden-yellow; orbital region yellow-green; bill black; basal half of mandible yellow; legs light yellowish; the front of tarsi and the upper surface of tect olivaceous brown.]
6. List of the Mammals, Reptiles, and Batrachians sent by Mr. Everett from the Philippine Islands. By Dr. A. Günther, F.R.S., F.Z.S., Keeper of the Zoological Department, British Museum.

[Received December 9, 1878.]

(Plate IV.)

Mr. A. Everett has kindly supplied me with the following notes as regards the localities at which the specimens were collected:

"'Butuan' refers to the immediate vicinity of the mouth of the Butuan river; 'Surigao' to the immediate vicinity of the town of Surigao; 'N. Mindanao' to specimens obtained at one or the other of the two preceding localities, and 'Dinagat' to the long mountainous island of this name situated to the north of Surigao and to the eastward of the island of Panaon. It is a curious fact in regard to Dinagat that, whilst it is inhabited by Deer, Wild Pigs, Viverridae, Galeopithecus, Sciurus, and Tarsius, it possesses no Monkeys, though these abound in the Surigao peninsula. I am informed that the same circumstance holds good for the island of Siargao somewhat to the eastward of Dinagat. Placer is in N.E. Mindanao."

I have considered it useful to add within brackets ( ) other localities within the Philippine archipelago, from which specimens in the British Museum have been previously obtained.

Mammals.

**Macacus philippinensis**, Geoffr.

Surigao and Butuan river. [Negros, Luzon.]

**Galeopithecus philippinensis**, Waterh.

Surigao and Dinagat Island.

Out of thirteen specimens from the latter locality, two only are of a bright rufous colour, the majority being of a brownish slate-colour, varying into grey or brown, with or without small lighter spots. The majority have a white occipital spot more or less distinct, and a few, in addition, a white streak along the forehead.

The specimen from Surigao has a much denser fur than those from Dinagat Island; its colour is a dark brown, and very glossy.

**Pteropus edulis**, Geoffr.

Dinagat Island and island of Rasol near Surigao.

**Pteropus hypomelanus**, Temm.

Surigao and Dinagat Island.

**Pteropus jubatus**, Eschsch.

Dinagat Island, S. Leyte, S. Negros. [Luzon.]
Phyllorhina obscura, Ptrs.
Dinagat Island.

Crocidura luzoniensis, Ptrs.
Cebu. [Luzon, Manilla.]
“This is the animal which I formerly suspected to be a species of Spalax.”—A. E.

Felis minuta, Temm.
Visayan name “Tamaral.”
S. Negros.

Paradoxurus philippinensis, Temm.
North Mindanao. [Manilla, Luzon.]

Macroxyus philippinensis, Waterh.
Placer, N.E. of Mindanao.

Mus everetti, sp. n.
Upper and lateral parts clothed with rather harsh fur, some of the hairs, especially on the sides, being slender, flattened, and channelled spines. The hairs on the hinder part of the back remarkably long and without channelled spines. Hairs of the lower parts shorter and softer than the others. Ears rather short, rounded and naked. Tail almost naked, the hairs between the verticelli being very short. Thumb of fore foot very short, covered with a large convex nail.

Under-fur grey, the shorter hairs brown, the longer black towards the extremity, or black with brown tips. Lower parts dusky grey; feet blackish; tail blackish, with the terminal third white.

The following measurements are taken from the skin:—

<table>
<thead>
<tr>
<th>Measurement</th>
<th>in. lines.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of head and body (♂)</td>
<td>8 6</td>
</tr>
<tr>
<td>“ tail</td>
<td>7 5</td>
</tr>
<tr>
<td>“ fore foot</td>
<td>1 0</td>
</tr>
<tr>
<td>“ hind foot</td>
<td>1 11</td>
</tr>
<tr>
<td>“ a long hair on back</td>
<td>1 8</td>
</tr>
<tr>
<td>“ skull</td>
<td>2 0</td>
</tr>
<tr>
<td>“ series of upper molars</td>
<td>0 4 1/2</td>
</tr>
<tr>
<td>“ first upper molar</td>
<td>0 2</td>
</tr>
<tr>
<td>Distance between incisor and first molar</td>
<td>0 6 2/3</td>
</tr>
</tbody>
</table>

Tortoise.

Cuora amboinensis, Daud.
Dinagat Island. [Laguna del Bay.]

Crocodile.

Crocodilus palustris, Less.
Placer.
Lizards.

**Hydrosaurus cumingi**, Mart.
Placer, Butuan.

**Hydrosaurus nuchalis**, Gthr.
South Negros.

**Senira bicolor**, Gray.
South Negros.

**Euprepes rufescens**, Shaw.
South Negros, North Mindanao.

**Tiliqua multicarinata**, Gray.
Dinagat Island.

**Keneuxia smaragdina**, Less.
Dinagat Island.

**Mocoa cumingi**, Gray.
Dinagat Island.

**Otosaurus cumingi**, Gray.
Dinagat Island.

**Hinulia variegata**, Pts.
Dinagat Island.

**Hinulia acuta**, Pts.
Dinagat Island.

**Gecko verus**, Merr.
South Negros.

**Gecko monarchus**, D. & B.
Placer, Dinagat Island.

**Nycteridium schneideri**, Shaw.
Dinagat Island.

**Cyrtodactylus philippinicus**, Steind.
Dinagat Island.

**Lophura amboinensis**, Schloss.
In specimens from Placer the caudal crest terminates behind abruptly, whilst it gradually diminishes in height in specimens from Dinagat, South Negros, and Surigao.

**Bronchocœla moluccana**, Less.
Dinagat Island.
Draco ornatus, Gray.
Dinagat Island, South Negros. [Luzon.]

Draco bimaculatus, Gthr.
Dinagat Island.

Draco cornutus, Gthr.
Placer.

Draco spilopterus, Wiegm.
South Negros. [Luzon.]

Snakes.

Calamaria gervaisii, D. & B.
South Negros. [Luzon.]

Rhabdosoma modestum, D. & B.
Dinagat Island. [Luzon.]

Typhlogeophis, g. n., Calamar.

Body cylindrical; tail short; head of moderate length, depressed, not wider than the neck. Eye externally not visible. Shields of the upper side of the head normal; nasal, loreal, ante- and post-orbitals absent. Scales smooth, in fifteen series; anal entire; subcaudals paired. Maxillary and palatine teeth equal in length; none grooved.

This remarkable Snake reminds us, by the want of development of the eye and nasal shield, of Calamaria (Typhlocalamus) gracillima, from which it differs in the presence of two frontal shields.

Typhlogeophis brevis, sp. n.

The anterior frontals are rather small, only about one third the size of the posteriors. Vertical small, six-sided, as broad as long, with an obtuse angle in front, and a right angle behind. Occipitals as long as the vertical and frontals together. Four upper labials, of which the two anterior form sutures with the frontals, the third with the supraorbital, and the fourth with the occipital. A large shield in the angle formed by the occipital and last upper labial. Ventrals 154; subcaudals (?)....

Uniform brownish, the lateral scales and the ventral scutes with lighter margins.

A single specimen is in the collection; it is 12 inches long, the head measuring 4½ lines. No label indicating its locality is attached to it; but it comes either from North Mindanao or Dinagat Island. Unfortunately, the extremity of the snout has been allowed to dry and is considerably shrunk; also the tail is somewhat mutilated.

Oligodon modestus, Gthr.
South Negros.
The supposition that this might be a Ceylonese species proves to be incorrect.
ODONTOMUS MÜLLERI.
(=Lycomedon mülleri, D. & B.)
Surigao.

SPILOTES MELANURUS, Schleg.
South Leyte.

DENDROPHIS PHILIPPINENSIS, sp. n. (Plate IV.)
This is the Philippine representative of Dendrophis caudolineata. Scales in thirteen rows, those of the vertebral series a little larger than the others. Eye of moderate size. Loreal longer than high, and pointed behind. The preorbital does not touch the vertical; occipitals obtuse behind; two postoculares. Temporals 2+2+2, the anterior small, the posterior largest. Ten upper labials, the fourth, fifth, and sixth entering the orbit. Ventralis 167, strongly keeled; anal bifid. Greenish olive, with a straight black band commencing in the loreal region, and running backwards along the upper side of the neck, and disappearing at a shorter or greater distance from the head. A black line along the meeting of the outer series of scales and the subcaudal shields runs to the tip of the tail; sometimes it is accompanied by another black line running above and parallel to it. A black line along the meeting edges of the subcaudals.

A single specimen, 40 inches long, was obtained in N. Mindanao; a second specimen, from Cuming's collection, is in the British Museum.

TRAGOPS PRASINUS, Reinw.
North Mindanao.

DIPSAS DENDROPHILA, Reinw.
Butuan.

DIPSAS CYNODON, Cuv.
North Mindanao.

HOLGERRHUM PHILIPPINUM, Gthr.
Placer.

PSAMMODYNASTES PULVERULENTUS, Boie.
Dinagat Island, Placer.

LYCODON AULICUS, L.
Butuan.

[CERBERUS RHYNCHOPS, Schneid.
Placer.

NAJA TRIPUDIANS, L.
North Mindanao, South Leyte.

TRIMEMERUS WAGLERI, Schleg.
Butuan.
ÆNA CROCUTA
Hannart imp

CENA CROCUTA
Trimeresurus flavomaculatus, Gray.

(= Megæra ornata, Gray, = Megæra variegata, Gray.)

Placer.
The ground-colour varies; one specimen is purplish brown, with
darker cross bars, and with a series of salmon-coloured spots along
each side of the belly.

Frogs.

Rana tigrina, Daud.
Surigao. [Laguna del Bay.]

Rana macrodon, Kuhl.
Dinagat Island. [Negros, Laguna del Bay.]

Megalophrys montana, Kuhl.
Dinagat Island.

Iaxalus natator, Gthr.
Dinagat Island.

Polypedates appendiculatus, Gthr.
Dinagat Island.

Rhacophorus pardalis, Gthr.
Dinagat Island.

Platymantis meyeri, Gthr.
Dinagat Island. [Laguna del Bay.]

7. On the Anatomy of Hyæna crocuta (H. maculata). By
Morrison Watson, M.D., and Alfred H. Young,
M.B., of The Owens College, Manchester. Communi-
cated by A. H. Garrod.

[Received November 15, 1878.]

(Plates V., VI.)

The remarkable and unique characters of the generative organs of
Hyæna crocuta, accounts of which have formed the subject matter
of two previous communications to this Society¹, suggested the
advisability of investigating the general anatomical features of this
species with a view to future comparison. In the meantime, as
nothing like a comprehensive or detailed description of the anatomy
of the Spotted Hyæna has hitherto been given, and as that of
other members of the same genus is incomplete and exists only in a
scattered form, we have thought that the record of our observations
on this subject might be of use. That it might prove so we have
endeavoured to ensure by making our descriptions as complete as

possible, supplementing these where it has been deemed expedient by illustrations sketched from recent dissections. Necessarily this course of procedure, especially as applied to the muscles, entails somewhat lengthy accounts. This doubtless, from some points of view, is objectionable; we have preferred to adopt it, however, rather than refer to groups of structures as being "arranged in the usual manner," a system of recording observations which, however satisfactory to the author, frequently renders a paper utterly useless to subsequent workers.

So far as the records of the older writers (notably Herodotus¹, Aristotle², Pliny³, and Ælian⁴) attest, their observations on the genus Hyaena are practically limited to a consideration of the external features and sexual peculiarities—a misconception having existed on this latter point, which has extended to the present time.

Beyond this their writings are almost entirely confined to lengthy accounts of the various superstitions respecting the Hyaena and certain of its individual parts. Of all these a fair summary is to be found in Topsel's collection from the writings of Gesner and others⁵. Here also the hermaphroditic nature of the species is referred to and denied.

Subsequently to this time, as might naturally be expected in the case of so common and familiar a Carnivore, the detailed anatomy of the genus has received more or less attention at the hands of various observers. Except in so far as the osseous system is concerned, however, it is somewhat astonishing to find that the record of their work which constitutes the modern literature concerning Hyaena, refers only (i. e. when the species is definitely stated) to H. striata or to H. brunnea, the Spotted Hyaena having apparently thus far enjoyed almost a total immunity from the scalpel.

We would specially indicate here, as embodying the greater part of what is known regarding the soft parts of the former species, that descriptive accounts of the visceral organs have been given by Reimann⁶, Rudolphi, Daubenton⁷, and Hunter⁸, whilst Meckel⁹ and Cuvier¹⁰, who also seem in the main to have limited their observations to this species, refer not only to the viscera, but also to the muscular arrangements, Meckel further making isolated references to the viscera of H. crocuta. The muscles of H. striata are fully illustrated, in plates 129–142 of Cuvier and Laurillard's 'Myology'¹¹. Respecting H. brunnea, Dr. Murie¹² has contributed a paper on the viscera and female generative organs, and indicated some of the characteristic myological features of the species.

¹ Rawlinson's Herodotus, vol. iii.
² Historia Animalium, vi.
³ Pliny, viii.
⁴ Historia Animalium, i.
⁵ The History of Four-footed Beasts and Serpents, collected out of the writings of Conradus Gesner and other writers, by Ed. Topsel, 1658, p. 339.
⁶ De Hyaena, Berol. 1811.
⁷ Buffon, Histoire Naturelle, tome ix.
⁸ Essays and Observations, edit. by Owen, 1861, vol. ii.
⁹ Anatomie Comparée.
¹⁰ Leçons d'Anat. Comp.
¹¹ Recueil de Planches de Myologie.
The animal from which the following observations have been compiled was a well-developed male. It came into our possession shortly after death, in excellent condition for dissecting-purposes.

**Viscera.**

**Digestive Organs.**

**Tongue.**—The tongue conforms to the Carnivorous type of the organ, being elongated, flattened, and thin. The filiform papillae covering the whole of the dorsal surface and margins are of large size, and present the appearance of small recurved spines. One inch behind the tip these papillae are somewhat modified in form, and are arranged in a clearly defined oval patch. In this region each papilla is situated on a broad conical base, and terminates in a blunt truncated extremity, which contrasts strongly with the sharp recurved appearance of these papillae upon other parts of the organ. This patch is referred to by Owen¹ in his description of the tongue in the genus *Hyæna*, but without particularizing the species. Inter-spersed among the filiform papillae, over the entire surface of the tongue, and almost concealed by them, are numerous minute fungiform papillae of a white colour and devoid of spines. The circumvallate papillae are two in number, of small size. They are situated close to the root of the tongue, one on either side of the middle line. With regard to the number of these structures, our observations agree with those of Meckel² and Rudolphi³, and differ from those of Daubenton⁴, according to whom they are four in number. As, however, the specimen examined by the latter author belonged to the species *H. striata*, this may account for the difference of statement. Meckel does not particularize the species which he examined, though probably it was *H. striata*. Behind the circumvallate papillae, those of the filiform variety are of larger size than elsewhere, and differ in being soft and devoid of the spiny character which distinguishes those placed more anteriorly. The tongue of the Spotted Hyæna, both as regards its form and the arrangement of its papillæ, agrees closely with that of *H. striata* and of *Proteles*. In all of these we recognize the patch of truncated filiform papillæ near the tip; at the same time it is to be observed that this is not a distinctive feature in the anatomy of these animals, a somewhat similar appearance being recognizable in the tongues of certain of the true Felidæ. This patch in *Proteles* corresponds to the anterior third of the tongue; but in both *H. crocuta* and *H. striata* it is confined to the central region of the tip, and does not extend to the margins of the organ. In the Civet, the tongue of which in other respects closely resembles that of *Hyæna*, this patch is absent.

The tonsil is of considerable size, oval in form, and consists of a number of obliquely placed glandular ridges. It closely resembles the

³ Reimann, De Hyæna, Berol. 1811, p. 15.
corresponding organ in *Proteles*. The soft palate is short, and presents no trace of uvula, such being the case likewise in *Proteles*. The oesophagus, as noted by Meckel in the specimen examined by him, is wide and dilatable. Its muscular walls are very thick, as is also the mucous coat, the latter being dense, tough, and thrown into longitudinal rugae.

**Stomach.**—The stomach is short and rounded, and corresponds exactly as regards form with the description given by Daubenton and Murie of that organ in *H. striata* and *H. brunnea* respectively, and by Professor Flower in his observations on *Proteles*. When emptied of its contents, it measures 9 inches in length and 7 inches in greatest breadth. The oesophagus enters the small curvature close to the left extremity; and in consequence the great end or fundus of the stomach is extremely shallow. The greater curvature presents a slight constriction close to the pyloric extemity, similar to that noticed by Prof. Flower in *Proteles*. The walls are thick and muscular, as in *H. brunnea* and *Proteles*. Dr. Murie recognized in the former a central tendon, from which the muscular fibres

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2 Loc. cit.
3 Loc. cit.
5 The stomach of *H. striata* is figured in the 'Erläuterungstafeln zur vergleichenden Anatomie' of C. G. Carus.
radiated somewhat after the manner observed in the gizzard of a bird; and the same appearance is noticeable in our specimen. This tendinous arrangement, however, is confined to the surface of the organ, and does not extend into the wall. Professor Flower, in accordance with differences in appearance of its mucous membrane, describes three distinct portions of the stomach in Proteles; and a similar subdivision may be adopted in describing that of Hyæna crocuta. In the first, or cardiac portion of the organ, the mucous membrane is thrown into well-marked rugæ, which are not arranged in any regular manner, but, uniting at various points with one another, give rise to a convoluted appearance somewhat resembling the gyri of the cerebrum. They are more irregularly disposed at the entrance of the oesophagus than elsewhere, and are here continuous with the longitudinal rugæ of that tube. In respect of the rugose character of this portion of the gastric mucous membrane, H. crocuta differs from Proteles, in the stomach of which these rugæ are absent. Corresponding to the middle third of the stomach, the mucous membrane is thrown into rugæ of larger size than elsewhere. These rugæ lie parallel to the long axis of the organ, and are united here and there by means of smaller transverse folds. Along the great curvature the large longitudinal folds are better marked than on the small curvature of the stomach. The mucous membrane of the duodenal third of the stomach is less rugose than that of any other portion, such rugæ as are present being found in relation to the curvatures of the organ, whilst the anterior and posterior walls of the stomach are quite smooth. Every portion of the gastric mucous membrane in the intervals of the larger rugæ presents a delicate reticulate and glandular appearance. The pyloric orifice is extremely small, and in the specimen examined measured only \( \frac{1}{8} \) of an inch in diameter. The valve is annular in form, and not crescentic as in Proteles. It will be seen from what has been said, that, in respect of the form and character of the stomach, but little difference is observable between the three species of Hyæna when they are compared with one another or with Proteles.

Small Intestine.—This portion of the gut measures 32 feet 6 inches in length. Its diameter is not uniform, but presents a number of constrictions, which are distributed at irregular intervals along its entire course. As a rule it measures about one inch in diameter; but where constrictions occur it does not exceed half an inch. Throughout its course its mucous membrane is covered with villi. The Peyerian patches are eight in number, and vary much in size, the smaller being found towards the commencement of the intestine, whilst the largest, which measured 9 inches in length, was situated toward the lower end of the ileum. It is worthy of note that in Proteles the number of these patches is the same as in H. crocuta. In H. striata, according to Meckel\(^1\), they do not exceed twelve in number.

Great intestine.—The cæcum measures 6 inches in length, and agrees closely as regards its form with that figured by Daubenton in H. striata. In the latter species, according to the author named.

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\(^1\) Loc. cit. p. 706.
it measured 9 inches in length—according to Reimann, 6 inches. In
_H. brunnea_ it is 8½ inches long, whilst in _Proteles_ it is short and
globular, measuring only one inch in length. The large intestine
exclusive of cæcum measures 26½ inches, and is provided with
thick muscular walls. In _H. striata_ the great gut measures 3 feet,
and in _H. brunnea_ 2 feet 6 inches in length, whilst in _Proteles_, ex-
clusive of the cæcum, it measures 14 inches. In connexion with
the lower end of the rectum are two anal glands, which pour
their contents into a pouch situated immediately above the anus. These
glands, which have been previously described, resemble more closely,
both in respect of number and size, the corresponding structures in
_Proteles_ than those of any other species of _Hyæna._

Fig. 2.

Cæcum of _Hyæna crocuta._

The following Table shows the length of the intestines, together
with that of the body, in the different species of _Hyæna_; but it is
right to state, with reference to the latter measurement of _H. crocuta_,
that we have taken it to be the same as in _H. brunnea_, having
unfortunately omitted to ascertain the dimensions of the specimen
examined; the measurements of the other species are those of Daub-
benton, Murie, and Flower respectively.

<table>
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<tr>
<th></th>
<th><em>H. striata</em></th>
<th><em>H. brunnea</em></th>
<th><em>H. crocuta</em></th>
<th><em>Proteles cristatus</em></th>
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<td>ft. in.</td>
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| Length of body from
  nose to anus     | 3 2          | 3 9          | 3 9          | 2 3                 |
| Small intestine  | 23 0         | 26 7         | 32 6         | 9 6                 |
| Great intestine  | 3 9          | 3 3½         | 2 8          | 1 3                 |

From this table it appears that in _H. striata_ the length of the
whole intestine from pylorus to anus is to that of the body as 8 to 1,

in *H. brunnea* as 8 to 1, in *Proteles* as 5 to 1, and in *H. crocuta* as more than 9 to 1. With reference to the relative lengths of the small and great intestines, the table shows that in *H. striata* the length of the small intestine is to that of the great as 6\(\frac{1}{2}\) to 1, in *H. brunnea* as 8\(\frac{1}{2}\) to 1, in *Proteles* as 7\(\frac{3}{2}\) to 1, and in *H. crocuta* as 12\(\frac{1}{2}\) to 1. *H. crocuta* therefore differs from the other species named in the greater length of the small intestine as compared not only with that of the body, but also with that of the great intestine.

**Liver.**—The liver is large. In accordance with Prof. Flower's method of description, we distinguish two hepatic segments, a right and a left, each of which is divided into lobes. The left segment is the smaller, and is divided, by means of a well-marked lateral fissure, into a lateral and a central lobe. Of these the former is much the larger and of an oval form, whilst the latter is triangular, with the apex directed backward. The right segment of the liver, larger than the left, also presents a well-marked lateral fissure, by means of which the right central is cut off from the right lateral lobe. On the visceral aspect of the former is a deep cystic fissure which accommodates the gall-bladder, and divides the central lobe into

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1 Medical Times and Gazette, vol. i. 1872, p. 293.
two parts—a smaller, lying to the left, and a larger irregularly quadri-
lateral mass, which lies to the right of the gall-bladder. The right
hepatic segment, moreover, presents well-marked Spigelian and
caudate lobes. These are quite continuous with each other, and
extend along the posterior margin of the transverse or portal fissure.

The gall-bladder, situated on the right central lobe, is of large
size and regularly pyriform. The cystic duct is 13/4 inch in length,
and unites with the left hepatic duct, which, after a farther course
of half an inch receives the right hepatic duct. The common bile-
duct, formed as described, enters the duodenum along with the duct
of the pancreas.

In respect of the liver, H. crocuta agrees closely with H. striata
and H. brunnea, differing from the former, however, in the absence of
the sharp curvature of the neck of the gall-bladder described by
Daubenton, and referred to by Meckel. The resemblance of this
viscus to that of Proteles is no less striking, the only difference
between them consisting in the more complete separation of the
lobes in H. crocuta than in Proteles.

Pancreas.—Measures one foot in length, and has an average
breadth of one inch. It occupies the usual position.

Spleen.—Elongated and tongue-shaped, measures 46 inches in
length; its borders are very irregular, but without distinct fis-
sures. Its widest portion is 3, and its narrowest 1 inch in breadth.
These measurements correspond closely with those of the organ in
other species of H. striata. The viscus differs from that of Proteles
only in its larger size and in the absence of any oblique fissure on
its outer surface.

Larynx and Respiratory Organs.

Larynx.—The superior aperture of the larynx is guarded by an
epiglottis of large size; its posterior surface is deeply concave, and
its apex uniformly rounded. In respect of its form this structure
resembles much more closely that of the Felidae than of the Canidae,
in the latter of which it is distinctly triangular and almost flat. The
thyroid cartilage is wide, and, as observed by Prof. Flower in Proteles,
destitute of a fissure on its lower margin. It differs from the thyroid
cartilage in both Felidae and Canidae in the much greater projection
of its anterior tubercle. The cricoid cartilage is of the same general
form as in Proteles, differing from the latter, however, inasmuch as
its upper border posteriorly is not prolonged into a median pointed
spine. In consequence of this the arytenoid cartilages extend beyond
the highest point of the cricoid, and are not situated below the level
of its posterior median spine as is the case in Proteles. The false
vocal cords (which, according to Mayer, are absent in H. striata)
are rounded and soft, and are placed very obliquely between the
arytenoid and thyroid cartilages, their anterior extremities being

1 Loc. cit.
3 Prof. Flower, loc. cit.
4 "Cheber den Bau des Organe des Stimme," Nova Acta Acad. Naturae-
Curios. vol. xxiii. 1851, p 694.
placed higher in the laryngeal box than the posterior. They are (as
is the case also in Proteles) separated from the base of the epiglottis
in front and from the arytaenoepiglottidean folds of mucous mem-
brane of each side by a deep sinus, the mucous membrane of
which is smooth and glistening. The space enclosed by the false
cords is oval in form and of such width that the true vocal cords can be
readily seen from above. The latter are much stronger and thicker
than the false cords, and approach more closely to the middle line of
the larynx; between them is the rima glottidis, which is triangular
in form. Judging from Mayer's figure of the larynx of H. striata,
that of H. crocota closely resembles it, differing, however, in the
possession of well-marked false vocal cords, which, according to the
author named, are absent in the former species. At the same time
it is to be observed that Meckel\(^1\) does not deny the presence of both
false and true vocal cords in the larynx of H. striata. Taken as a
whole, the larynx of H. crocota, like that of Proteles, as pointed out
by Prof. Flower, presents a greater resemblance to that organ in the
Felidae than in the Canidae, differing from the former, however, in the
oblique position and diminished prominence of the false vocal cords,
and from both in the greater projection anteriorly of the thyroid
cartilage, as well as in the presence of a sinus which separates the
false cords from the base of the epiglottis and arytaenoe-piglottidean
folds of mucous membrane.

**Thyroid gland.**—Is very small and of an elongated-oval form. It
lies under cover of the sterno-thyroid muscle, and extends on each
side from the middle of the cricoid cartilage down to the sixth
tracheal ring. The two halves are not connected by an isthmus.

**Trachea.**—Is 11 inches in length. It possesses 49 cartilaginous
rings (according to Meckel\(^2\) 53); individual variation may account
for this difference. The rings vary very much in breadth. In the
trachea of H. striata, according to Meckel, there are 45, according
to Reimann\(^3\) and Wolff\(^4\) there are but 36; in Proteles Mr. Flower
counted 36.

**Lungs.**—The right lung is divided into 6 lobes, the left into 3.
In the right lung there are two horizontal fissures, the lower of
which indicates the separation between a basal lobe (which forms
about one half of the lung) and the rest of the organ. The upper or
apical half is divided into four lobes through the intersection of the
upper horizontal by a vertical fissure. Of these, the lower and pos-
terior lobe is almost square, and clearly separated from that above
and below it, whilst the two anterior lobes are scarcely so well
defined by reason of their coalescence towards the root of the organ.
The sixth is the so-called azygos lobe, and lies between the upper
and lower halves of the lung. The left lung is divided into an upper,
a middle, and a lower lobe by means of two horizontal fissures, the
inferior of which separates the lower from the upper half of the lung,
whilst the upper divides the latter into two parts. Of these,
the upper is the larger. On the outer surface of this lobe is a

3 De Hyæna, Berol. 1811, p. 16.
4 De org. vocis, Berol. 1812, p. 10.
vertical fissure, which indicates as it were, a tendency towards the more complete subdivision of the right lung. In respect of the number of pulmonic lobes *H. crocuta* differs from both the other species of *Hyæna*, in each of which the right lung possesses four and the left three. Dr. Murie mentions the presence of two marginal clefts in the upper lobe of the right lung of *H. brunnea*, which would appear to indicate an approach to the arrangement described above in *Hyæna crocuta*. At the same time, the subdivision described by that author of the azygos lobe in the former does not obtain in the latter species. Meckel\(^1\) states that in *H. crocuta* the lungs present


**Fig. 4.**

Lungs of *Hyæna crocuta*, distended and seen from behind.

R. Right lung; the figures 1, 2, 3, 4, 5, and 6 indicate the separate lobes, the latter figure being placed on the so-called azygos lobe. L. Left lung; the figures 1, 2, and 3 indicate its component lobes.
the same number of lobes as in *H. striata*; but this was not the case in our specimen. In *Proteles* the subdivision of the lungs resembles that in *H. striata*, but differs in the presence of two notches in the anterior border of the middle lobe on the left side. In respect, therefore, of the form of the lungs, *H. crocuta* differs more from either of the other species than they do from each other.

**Vascular System.**

*Heart.*—Is short and broad, as in the other species of *Hyæna*. Its cavities present the usual characteristics of the carnivorous heart. The fossa ovalis is clearly defined. There is no trace of a Eustachian valve. The aortic arch gives off two large trunks, of which that to the right is the innominate, which, as in the majority of Carnivora, divides into the right subclavian and right and left carotids. The second branch is the left subclavian. The trunk of the abdominal aorta gives off close to its termination the two external iliac arteries, and after a further course of 1 inch divides into the two internal iliac and caudal arteries. The origin of the external and internal iliac arteries as distinct branches of the abdominal aorta appears to be a somewhat unusual occurrence, so much so that it is mentioned by Prof. Huxley¹ as one of the characteristics of the *Didelphia*. Whether this arrangement occurs in other species of *Hyæna* is not mentioned by those authors who have examined them.

**Urinary and Generative Organs.**

*Kidneys.*—Are situated very far back, the posterior extremity of each lying in the iliac fossa. The surface is smooth, and presents no trace of lobulation. They are globular in form, and much resemble the renal organ in the true Felidae. As in them, a number of arborescent veins ramify upon the surface of the organ. On section, the kidney is seen to be composed of a single large pyramid, provided with a single papilla, and consequently differs in this respect from that of *H. brunnea*, in which, according to Dr. Murie², the cones are eight in number, at least in the cortical portion. In *H. striata*, Hunter³ found a similar arrangement to that described in *H. crocuta*. The remaining portions of the urinary and sexual organs have been described before⁴.

**Brain.**

The brain of *H. crocuta* so closely resembles in all respects that of *Proteles*, of which an excellent description has been given by Prof. Flower⁵, that we have thought it unnecessary to enter into any lengthened description of this organ. At the same time, having regard to his observation that the brain of the *Hyæna* has not hitherto

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² Essays and Observations, by Owen, vol. ii.
Fig. 5.

Brain of *Hyæna crocuta*, two thirds natural size. Upper surface. 

Fig. 6.

Brain of *Hyæna crocuta*, lateral view. 
*F*, sylvian fissure; other letters as in fig. 5.
been figured, and in view of the probable wants of subsequent investigators, we have thought it right to add the accompanying drawings. An examination of these, and comparison of them with Prof. Flower's figures of the brain of Proteles, will show that, except in respect of size, and the absence of a distinct fissure in that convolution which bounds the Sylvian fissure posteriorly, the description and comparative remarks of that anatomist apply equally to the brain of H. crocuta and to that of Proteles. The hemispheres of the brain measured each 3½ inches in length; and the greatest breadth of the two together was 2½ inches.

**Myology**

To avoid the necessity of constant references in making comparisons of the muscles of the Spotted Hyæna, we wish it to be understood that, unless otherwise stated, the observations regarding H. striata and Cat have their source in Meckel's 'Anatomic Comprehensive,' those relating to the Dog in Douglas's 'Myographie Comparative,' whilst the notes respecting H. brunnea are derived from Dr. Murie's paper previously quoted, and those in connexion with the Civet from a paper by Macalister and partly from our own dissections.

**Muscles of the Head and Neck.**

The *platysma myoides* consists of a strong broad sheet of muscular fibres, extending from the anterior half of the neck, covering the masseter and part of the mandible, and blending in front with the deeper muscles in the neighbourhood of the mouth.

Inasmuch as the region of the face was unfortunately somewhat damaged prior to our dissection, we are unable to give so accurate an account of its muscles as we would wish. They appeared however, to be strongly developed, and to consist of the following:—*orbicularis oris*, the external fibres of which take an attachment to the margin of the lateral nasal cartilage; *orbicularis palpebrarum*, which surrounds the eye, and has a bony attachment to the superior maxillary bone.

A *zygomaticus* runs from the temporal fascia in front of the ear to the angle of the mouth. There is also a strong *levator labii superioris et alae nasi* and a smaller *levator anguli oris*. *Buccinator* is thin.

An *occipito-frontalis* is attached posteriorly to the temporal fascia in front of the ear, whilst anteriorly its fibres blend with those of the *orbicularis palpebrarum*.

**Temporal.—** This muscle, which possesses the ordinary attachments, is almost characteristic of the genus by reason of its great magnitude. In *H. brunnea* Murie speaks of it as enormous even for a Carnivore. As in *H. striata* and *H. brunnea*, so here the superficial fibres are with difficulty separable from the masseter.

1 See Plates V. and VI
The masseter is also very large; its attachments are as usual in Carnivores. Dr. Murie states that in *H. brunnea* "the masseter is clearly divisible into two layers, notwithstanding Meckel's assertion that this is less marked in the Hyæna than in the Cat." *H. crocuta* bears out the assertion of Meckel.

Of the two pterygoid muscles the internal is by far the largest. Arising from the external surface of the pterygoid bone, it is inserted into the ramus of the mandible, as also into its angular process.

The external pterygoid arises immediately above the internal, and passes to the neck of the lower jaw. Compared with the internal pterygoid, to which, by reason of an upward direction of its fibres, it is apparently antagonistic, this muscle is very small. Meckel notes a similar condition of the pterygoid in Carnivora generally.

The superficial muscles of the external ear are as follows:—zygomatico-auricularis from the zygoma to base of concha; temporo-auricularis externus, the origin of which is blended with the posterior belly of the occipito-frontalis just in front of the ear, inserted into the anterior margin of the conchal cartilage; temporo-auricularis internus from the temporal fascia immediately above zygoma to the inner side of concha.

*Cervico-auricularis* (superficial), narrow and riband-like from the ligamentum nuchae to back of concha. Deep *cervico-auricularis* arises broad and fleshy from the temporal fascia close to the spine of occiput. It is inserted into the projecting part of conchal cartilage.

There are also well-marked *sterno-auriculares* (internal and external), and, in addition, certain intrinsic muscles, of which the best-marked are a vertical muscle of the concha running on the dorsum towards the tip, and two transverse muscles.

*Sterno-mastoid* arises in common with its fellow, to which it remains united for a little distance in front of the sternum. It divides at once into two parts, of which the larger and internal decussates with the corresponding fibres of the opposite muscle as far forward as the larynx, and is finally inserted into the base of the mastoid process; whilst the smaller and more external part runs forward to end in the deep cervical fascia, and through it is attached to the occiput. This double character of the sterno-mastoid is remarked in *H. striata* and *H. brunnea* by Meckel and Murie respectively. It is also figured in the 'Recueil' (pl. 137) of Cuvier and Laurillard.

In Civet there is a cleido-mastoid entirely separate from the sterno-mastoid.

*Digastric*, as usual from the temporal bone, passes to the middle third of the inferior border of the lower jaw.

The *sterno-hyoid* and *sterno-thyroid* muscles arise close together from the thoracic surface of the sternum; quite separate they pass forwards, and have their usual insertions. A *thyro-hyoid* exists, and has the ordinary attachments; the *crico-thyroidus* is well marked. The *omo-hyoid* is absent, as in the Cat, Dog, Civet, and apparently in the majority of Carnivores. Meckel, however, affirms its existence as a small muscle in *H. striata*; it is not referred to by Murie in *H. brunnea*. 
The mylo-hyoid extends from the inner surface of the mandible (where its attachment reaches from the anterior margin of the ramus to about two inches from the symphysis) to the hyoid bone posteriorly, and in front of this to a median raphe common to it and its fellow.

Genio-hyoid and genio-hyoglossus muscles, arising from the symphysis of the lower jaw, have their usual insertions. The hyoglossus is also normal in its connexions.

Styloglossus, usually strong in Carnivores, is in H. crocuta very large. It arises from the cranial end of the stylo-hyal bone, and passes to the side of the tongue. Wide in the Civet, it arises from the middle of the stylo-hyal.

The stylo-pharyngeus, also very strong, is from the stylo-hyal and tympano-hyal bones.

There is no stylo-hyoid. Meckel states that this muscle, which is ordinarily wanting in Carnivores, is present in H. striata, Cat, Dog, and Genet; Macalister found it in the Civet.

Scaleni.—Of these there are but two, both of which are situated behind (dorsad) the brachial plexus; consequently the scalenus anterior must be regarded as wanting.

The scalenus medius passes from the transverse processes of the fifth, sixth, and seventh cervical vertebrae to the first rib. S. posticus is from the fifth cervical vertebra to the fourth and fifth ribs.

The scalene muscles in H. crocuta are therefore similar in arrangement to those of H. striata and Dog, as described by Meckel. Douglas, however, avers the existence of three scalenes in the latter animal, thus agreeing with H. brunnea, in which, according to Murie, a s. anterior exists along with the medius and posticus; such is also the condition which obtains in the Civet.

The rectus capitis anterior major, from the transverse processes of the second to the sixth cervical vertebrae, to the basiocciput is but indistinctly separated from the rectus capitis anterior minor. The latter muscle springs from the arch of the atlas, and lies under cover of the major.

Longus colli occupies the cervical and anterior dorsal regions. Its fibres extend between the transverse processes and bodies of the various vertebrae over which it passes, with the exception of the axis, and terminate anteriorly at the arch of the atlas. These muscles do not differ materially in the Carnivora.

Splenius arises from the whole length of middle line of the neck, first two dorsal spines, articular processes of last five cervical and first dorsal vertebrae; it has its insertion solely into the outer half of the transverse ridge of the occiput. There is therefore no splenius colli present. This condition is usual in Carnivores. Douglas, however, notes a cervical attachment of splenius in the Dog.

Complexus.—This muscle forms an enormous fleshy mass in the region of the neck. It arises from the last five cervical articular processes and from the anterior two dorsal spines. Insertion is into occiput beneath splenius. There is no division into complexus and digastric, such as Meckel notes in H. striata.
Complexus tertius.—A series of strong fleshy bundles extends between the articular processes of the posterior cervical vertebrae; continued forwards as a separate muscular band, the fibres pass to the transverse process of the atlas, forming the muscle so-named. Murie describes a similar structure in H. brunnea, and regards it as corresponding to the complexus tertius in Hyrax.

The homological significance of this muscle appears, however, to have received varied interpretations by different anatomists, e.g. Mivart and Murie, recording their observations on the Myology of Hyrax capensis, write that "Meckel describes it as the transversalis cervicis; but this," they proceed to say, "it cannot be, as the transversalis cervicis is always the continuation into the neck of the longissimus dorsi, whereas our muscle lies distinctly internal to such continuation;" they further state that the true transversalis cervicis is the cervicalis ascendens of Meckel.

Whilst agreeing with the view of Mivart and Murie as to the nature of the muscle under consideration, and regarding it as a complexus tertius, we must take exception to their exposition of Meckel's views. We do not believe that Meckel described the muscle under any name, certainly in no case as forming solely the transversalis cervicis; neither does he confound the cervicalis ascendens with the transversalis cervicis.

The posterior recti and obliqui have their usual attachments. Obliquus inferior is comparatively very large. The rectus capitis posticus major consists of two parts, superficial and deep; such is also the case in the Dog, Bear, and Civet. Rectus capitis lateralis is inseparable from the superior oblique.

Spinalis colli extends from the first dorsal and last five cervical spines to the spine of the axis; there is no semispinalis.

The cervical intertransversales, arranged in pairs, are exceedingly large and strong.

Muscles of the Back, Thorax, and Abdomen.

The panniculus carnosus in H. crocuta, as in Carnivores generally, forms an extensive muscular sheet, specially strong on the lateral aspects of the trunk, and extending more or less over the dorsal and ventral regions. It arises from the fascia over the latissimus dorsi, and posteriorly from that covering the thigh. There is, however, no femoral attachment. The fibres converge towards the axilla and join the latissimus about four inches above its humeral attachment.

Trapezius is small. It arises from the spines of the seven anterior dorsal vertebrae and from the ligamentum nuchae opposite the last two cervical spines. Its insertion is into the whole length of the scapula. This represents the posterior part of the trapezius of Meckel in H. striata, his anterior portion being our levator humeri.

The latissimus dorsi takes origin from the posterior eleven dorsal spines and from the lumbar aponeurosis; it has no costal attachment. Joined by the panniculus, it is inserted along with the teres

major into the shaft of humerns at the junction of its upper and middle thirds. It agrees closely with Meckel's description of this muscle in *H. striata*, and also with what exists in *H. brunnea* and Civet. As in them, it also gives off a *dorsi epitrochlearis*.

The *rhomboideus* is a single muscle. It arises from the ligamentum nuchæ corresponding to the last two cervical vertebrae, and also from the anterior four dorsal spines. Insertion is into the superior costa, as well as about an inch of the anterior costa, of the scapula.

It has no occipital attachment such as Meckel found in *H. striata*, in this respect agreeing with *Viverra* and, according to Douglas, with the Dog.

Superior and inferior *serrati postici* are not combined as in *H. brunnea*; though almost continuous, they are distinguishable by the different direction of their fibres. The *superior* is from the seven anterior dorsal spines, its costal attachment extending from the fourth to the eleventh ribs. *Inferior serratus* is from the lumbar aponeurosis to the four posterior ribs.

*Erector spinae* is subdivided as usual. The *sacro-lumbalis* small, is inserted into the last four ribs; it is prolonged forwards, however, to the first rib by a *musculus accessorius*. There is no cervical continuation in the form of a *cervicalis ascendens*.

The *longissimus dorsi*, smaller than the *spinalis dorsi*, is attached by fleshy bundles to the ten anterior dorsal transverse processes, and by tendinous slips to the corresponding ribs. An enormous *transversalis cervicis* is continued into the neck. It arises from the posterior four cervical and anterior four dorsal articular processes, receiving in addition accessory bundles from the third, fourth, fifth, and sixth dorsal spines; it is inserted into the transverse processes of the last five cervical vertebrae. The *trachelo-mastoid* is absent.

*Spinalis dorsi*, the innermost and largest subdivision of the *erector*, is inserted into the spines of the anterior dorsal and last two cervical vertebrae.

Apparently these muscles are similarly arranged in *H. striata* and *H. brunnea*. In these animals the unusual nature of the relative sizes of the dorsal muscles, the one to the other, is noted by Meckel and Murie respectively. As Dr. Murie puts it, “the *serrati postici* usually small, are here large; the *sacro-lumbalis* and *longissimus dorsi*, on the contrary, are comparatively small, although in themselves of no mean bulk; but the *spinalis dorsi* obtains by far the largest dimensions, and is indeed a very powerful muscle of enormous magnitude.” In the main these remarks are equally applicable to *H. crocuta*.

In the Civet Macalister records a *cervicalis ascendens* and also a *trachelo-mastoid*.

The *multifidus spinae* extends as far back as the seventh caudal vertebra. *Rotatores spinae* are large; the *interspinales* are also well marked.

*Levatores costarum*, with the usual attachments, are very strong; their fibres are quite continuous with those of the external intercostal muscles.
Serratus magnus arises from the transverse processes of the five posterior cervical and first dorsal vertebrae, and by seven costal slips from the eight anterior ribs, excluding the first. It is inserted into the vertebral border and part of the ventral surface of the scapula. The muscle is similarly arranged in H. striata. In the Civet the cervical part is limited to four vertebrae; and in the Dog the costal attachment is less by one digitation.

The intercostal series of muscles are normal.

Triangularis sterni strong and well marked. It takes origin from all the pieces of the sternum except the first, and passes to the cartilages of the second to the sixth ribs inclusive. A separate muscular band arises from the side of the eighth sternal segment, and runs transversely to the posterior margin of the seventh costal cartilage; though distinct from the triangularis and interposed between it and the intercostal muscles, it can only be regarded as an aberrant slip of that muscle.

The diaphragm has the ordinary attachments. It possesses no special aperture for the passage of the vena cava, that vessel passing with the aorta behind the crura.

Of the abdominal muscles the external oblique is from the last eleven ribs to its usual insertion. The internal oblique is easily separable from the transversalis.

Rectus abdominis, from the posterior extremity of the symphysis pubes, is inserted into the seven anterior costal cartilages, close to the sternum. The prolongation of the rectus to the first rib is usual in Carnivores. As in H. brunnea, there is no pyramidalis; this muscle is also absent in H. striata. There is but a single supracostalis; it extends from the cartilage of first rib to the aponeurotic insertion of the rectus opposite the third and fourth costal cartilages. Two such muscles are noted in H. brunnea, whilst the Dog agrees with H. crocuta in possessing only one ("musculus in summò thoracis situ" of Douglas).

Coccygeus is attached to the roots of the transverse processes of the first three coccygeal vertebrae and to the ischial spine.

The remaining muscles of the region, i.e. those in relation to the generative organs and rectum, are described in a previous communication.

The tail is supplied with a levator caudae, which arises from articular processes of the last three lumbar vertebrae, and is reinforced by muscular slips from the laminae of the caudal vertebrae, into the spines of which it is inserted by means of delicate tendons.

The depressor caudae, from the bodies of sacral and coccygeal vertebrae, receives also a special muscular slip from the pelvic aspect of the ilium. Its insertion is by narrow tendons into the bodies of the caudal vertebrae.

Laterales caudae are constituted by the intertransversales of the caudal region.

Muscles of the Fore Limbs.

Pectoralis major, from the whole length of the sternum, and ex-
tending forwards for about one inch from a mesial raphe in the neck, this muscle is inserted into the whole length of the shaft of the humerus, from the bicipital groove down to the elbow. The fibres are easily separable into a superficial and a deep stratum, thus corresponding closely to the arrangement in *H. striata*.

In the Civet the pectoralis major, as in the Dog, consists of three strata, whilst its insertion is much more limited than in *H. crocuta*. 

**Pectoralis minor** wanting, as in Carnivores generally!

**Deltoid** consists of two parts—one, narrow, from the tip of acromion, and a second, wider, from the fascia covering the infraspinatus; they are inserted together into the deltoid ridge of the humerus. The so-called clavicular portion of the deltoid we describe with the *levator humeri*; but including this element, the deltoid of *H. crocuta* is evidently the same as Meckel describes in *H. striata*, and agrees with what we find in *Viverra*. Douglas describes the deltoid in the Dog as we do in *H. crocuta*, the acromial and scapular portions, however, not being so easily separable.

**Levator humeri proprius** (Douglas) arises by two heads—one, thin, from the anterior half of the neck, dorsal mesial line, and a second, riband-like in character, from the mastoid process. The heads unite in front of the shoulder-joint; and the resulting belly is inserted into the lower end of the shaft of the humerus, in front of the biceps.

This corresponds to the *cephalo-humeral* described by Murie in *H. brunnea*, whilst by Meckel it is in *H. striata* regarded as a portion of the double trapezius.

The **subscapularis**, from the venter scapulae (except so much as affords attachment to the serratus magnums) to the smaller humeral tuberosity. *Infraspinatus* and *supraspinatus* are both strong and well developed; they, as well as the *subscapularis*, present no deviation from the usual arrangement.

**Teres minor** is small, but is distinct from the *infraspinatus*, as in Civet and Dog.

A *levator scapulae* (trachelo-acromial) arises from the inferior border of the transverse process of the atlas, and runs to the acromial process of the scapula. The same arrangement is mentioned by Meckel in *H. striata* and *Viverra*, and by Douglas in the Dog.

**Teres major** is from the upper half of the posterior margin of the scapula. Its insertion unites with that of *latissimus dorsi*, as in Civet.

The **biceps** is single-headed, attached above to the upper border of the glenoid cavity, and below to the inner borders of both radius and ulna. In respect of origin it agrees with *H. striata* and Dog. In the Civet the biceps is coracoid in origin, and entirely radial at its insertion.

**Brachialis anticus**, from almost the whole length of the posterior surface of the shaft of humerus, winds round the outer side of the lower half of that bone, and is inserted into the upper two inches of the internal border of the ulna. The arrangement is essentially the same in the Civet and Dog.

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The *coraco-brachialis* is a *c. brevis* (Wood). It springs from the upper border of glenoid cavity, and passes to the shaft of the humerus just above the insertion of the latisimus. Such, according to Wood¹, is also the arrangement in the Dog and Cat; and so have we found it in the Civet. In other of the Carnivora, *e. g.* Bears, the coraco-brachialis exists as a double muscle, corresponding to the long and short varieties of Wood.

The *triceps* possesses four distinct heads. Of these the scapular, very large, springs from nearly the whole length of the axillary costa of scapula. The second and third arise from the upper third of the humeral shaft, and are separated by the origin of *brachialis anticus*. The fourth head is a small muscular bundle from the olecranon-fossa and adjoining part of the shaft of humerus. These heads have a common insertion into the olecranon process of ulna.

In the Civet the muscle is similarly constituted; the long head, however, is more limited at its scapular attachment.

*Supinator longus* is absent; a tendinous vestige exists and apparently represents it. According to Meckel it is also wanting in *H. striata*; whilst Douglas records its absence in the Dog. In the Civet, however, it exists, comparatively small and feeble, but quite distinct.

The *extensores carpi radiales longior et brevior* arise conjointly from the outer condylloid ridge of humerus. Fused for some distance the two muscles are inseparable; the respective fibres, however, terminate on two separate tendons, which are inserted into the metaepiphalpals of index and middle digits. The muscular fibres at the origin are similarly interblended in the Civet and Dog, whilst in *H. striata* Meckel describes the muscles as distinct throughout, the tendons being united by a transverse band.

*Extensor communis digitorum*, from the outer condyle and intermuscular fascia, terminates in the usual manner, passing to the four outer toes.

There is an *extensor carpi ulnaris*, from the external condyle to the base of metacarpal of little digit.

A small *supinator brevis* passes from the orbicular and external lateral ligaments to the radius anteriorly, reaching just below the elbow.

A double *extensor minimi digiti* springs from the outer humeral condyle; its tendons pass to the two outermost digits (*annularis* and *minimus*). The same obtains in *H. striata*. In the Civet the muscle terminates by three tendons, which are distributed to the three outer toes; whilst, according to Douglas, in the Dog there is but a single tendon of insertion, this being confined to the fourth digit (*annularis*).

The *extensor primi internodii* is wanting or is quite inseparable from the *extensor ossis metapucle pollicis*. The latter arises from the whole length of internal surface of ulna and adjoining interosseous membrane, and also slightly from the upper end of the radius. It is inserted into the base of rudimentary pollex. Such also is the arrangement in the Dog, Civet, and *H. striata*.

An *extensor indicis* passes from the middle of the external border

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of ulna to the index finger, there joining the common extensor tendon in the usual manner. Meckel notes an extensor indicis in *H. striata*, but says it is distributed to the third finger.

In the Civet a conjoined *extensor secundi et indicis* is found.

The *pronator radii teres*, from internal condyle of humerus to junction of upper and middle thirds of radius, is slender; it does not differ from that of *H. striata*. In the Civet, on the contrary, the muscle is particularly strong, and extends down to the lower end of the radius.

In *H. crocata*, the smallness and comparative feebleness of the round pronator is compensated by an extensive *pronator quadratus*, which is attached to the whole length of the bones of forearm. Large also in *H. striata*, Dog, and Cat, it is limited in Civet to the lower third of the forearm.

The *flexor carpi radialis* arises from the inner condyle, and is inserted into the base of the second metacarpal bone. In the Civet there is an additional inferior attachment to the base of the first metacarpal.

*Palmaris longus* is quite distinct from the inner condyle, and terminates in a strong palmar fascia. Meckel states that in *H. striata* this muscle is intimately blended with the superficial flexor of the digits. According to Douglas, it is entirely wanting in the Dog. In the Civet, on the other hand, somewhat remarkably, it forms a double muscle from end to end.

*Flexor carpi ulnaris*, from the internal condyle of humerus to the pisiform bone, is prolonged also to the outermost metacarpal. So also in *H. striata* and Civet; in the latter animal an olecranoid origin likewise exists.

*Flexores digitorum.*—The superficial and the deep form one large irregular muscular mass. This arises from the internal humeral condyle, and also from the bones of forearm—one slip taking origin from the upper extremities of both radius and ulna, while a second comes from the whole length of the posterior border of ulna. Below the middle of the forearm the muscle divides into two parts, a superficial and a deep.

The superficial (*perforatus*) is distributed by means of separate tendons to the four outer toes, each tendon ending at the middle phalanx of its respective digit, and giving passage to the corresponding deep flexor tendon in the usual manner.

The deeper part of the muscle (*perforans*) ends in a single broad tendon which divides into four, and so is distributed to the same four toes as the superficial tendons, perforating these latter, and reaching the terminal phalanges of the digits. This complication of the flexors of the digits appears to be common in the Carnivora. A particularly interesting modification, however, exists in the Civet, in which animal the distribution of the perforatus (*i.e.* the superficial part of the common flexor mass as in *H. crocata*) is limited to the three middle digits, no tendon passing to the outermost. The latter, however, possesses a special little muscle which arises from the

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1 Mivart and Murie describe a similar muscle in *Hyrax capensis* (P. Z. S. 1865, p. 341), and designate it *"flexor brevis manus."

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pisiform bone and from the annular ligament; the fibres terminate on a tendon which, after being pierced by the deep flexor tendon of the fifth digit, is inserted into the second phalanx of that digit, and consequently represents its superficial flexor tendon. A similar but smaller muscular slip runs to the fourth toe, and joins the superficial flexor tendon.

Somewhat analogous is the condition elaborately described by Meckel in *H. striata*—the palmar accessory slips, however, not being confined to the two outer digits as in the Civet, but running to all four, each tendon of the superficial flexor thus receiving an additional slip. In *H. striata*, it is to be noted, the accessory slips are altogether tendinous, apparently springing simply as offsets from the expansion of palmaris longus. They do not possess the muscular portions so well marked in the case of the Civet.

There is no representative in *H. crocuta* of the flexor longus pollicis described by Meckel as existing in *H. striata*.

Lumbricales are four in number. All arise from the palmar surface of the common deep flexor tendon, and pass to be attached to the deeper aspect of the superficial flexor tendons. The nature of this peculiar attachment of the lumbricales is apparently the same in *H. striata*, and is to be found figured in Cuvier and Laurillard's *Recueil*, pl. 141, fig. 3.

In the hand, the pollex, as in *H. striata*, is deprived of any special muscles; the little finger is furnished with an abductor minimi digiti; this, from the pisiform bone, joins the extensor-expansion on dorsal aspect of first phalanx of fifth digit. This muscle also exists in the Civet. According to Douglas it is wanting in the Dog. In this latter animal Douglas avers the presence of a small flexor and an opponens of the pollex.

The interossei muscles are strong and well developed, their arrangement being very similar in Carnivora generally. In *H. crocuta* a deep set comprises eight fleshy bundles arranged in pairs, two to each metacarpal, situated rather on the palmar aspect of these; they arise from their proximal ends, and pass to the sides of the bases of the first phalanges, reaching as far as the extensor-tendon.

In addition to these paired muscles are two single ones (palmar interossei). These arise together from the bases of the third and fourth metacarpals. They are distributed to the middle and outermost digits respectively.

**Muscles of the Hind Limbs.**

In Carnivores generally the gluteus maximus (externus) is more or less divisible into two parts—this, as observed by Meckel, being especially well marked in *H. striata*.

In *H. crocuta* a similar disposition holds good—the anterior part of the muscle, thin and flat, springing from the spines of the posterior sacral vertebrae, and passing to the fascia lata, whilst the posterior moiety, forming a perfectly distinct elongated and fusiform bundle, springs from the transverse processes of the three anterior caudal
vertebrae and terminates by a tendon which, blending with the fascia lata immediately above the knee-joint, is continuous with the biceps femoris.

The gluteus medius, as usual, exceeds in bulk the so-called maximus. It arises from the external surface of the iliac bone and from the fascia covering the muscle, and is inserted into the outer surface of the great trochanter of the femur.

Perfectly distinct, the gluteus minimus arises behind the last-mentioned muscle from the gluteal surface of the ilium and from the dorsum acetabuli. Its insertion is into the antero-external border of the great trochanter. The muscle is partially divisible into two, the posterior fibres passing to their insertion on a deeper plane than the anterior.

A fourth gluteus (gluteus quartus) arises from the anterior border of the acetabulum over the reflected tendon of the rectus femoris, and is inserted into the middle of the anterior intertrochanteric line. This muscle appears to have been first described by Douglas in the Dog, under the name of "musculus parvus in articulatione femoris situs." Its existence in H. striata is noted by Meckel, and in the Civet by Macalister ("gluteus quintus") and ourselves.

The pyriformis has origin from the middle third of the ventral surface of the sacrum, and, running quite distinct and separate, is inserted into the great trochanter. Meckel found it in H. striata, but notes its absence in the Bear. It exists as a distinct muscle in the Civet.

Obturator internus, which arises as usual, after emerging from the pelvic cavity, is accompanied to its termination by two well-marked and strong gemelli. The common insertion is into the trochanteric fossa.

The obturator externus arises from the obturator-membrane and its bony boundary. It is also inserted into the trochanteric fossa of the femur.

Quadratus femoris is from the outer border of the ischial tuberosity to the posterior border of the great trochanter.

The above five muscles are similarly arranged in the Carnivora generally.

Of the hamstring-muscles the semimembranosus is quite inseparable from the adductor magnus, in the description of which it is therefore included. To a more or less marked degree this union of the muscles is, according to Meckel, usual in Carnivores. He states, however, that in the Hyæna, Bear, Raccoon, and Coati the semimembranosus exists as a distinct muscle. We have also found it quite separate throughout in Viverra, though in this animal Macalister states the contrary to be the case. This latter observer further notes its separate character in the Tayra.

The semitendinosus arises from the ischial tuberosity, and is inserted into the internal surface of the shaft of the tibia near its superior extremity. Meckel found the insertion of this muscle to be lower in H. striata than is the case in H. crocuta; whilst in the Cynoids and Aretoïds it is still lower down than in the Hyæna.
In the absence of a caudal origin the semitendinosus in *H. crocuta* differs from that of *Viverra*.

The *biceps*, strong and bulky, springs from the tuberosity of the ischium. The anterior two thirds of its fibres terminate on the ligamentous structure on the outer side of the knee, whilst the remaining third ends on a tendinous band which reaches down to the os calcis.

In the Civet the arrangement is very similar.

*Tensor fasciae femoris*, from the anterior half of the lower border of the ilium, is inserted into the fascia lata about the middle of the outer side of the thigh. Douglas describes this muscle in the Dog as being double-headed.

The *sartorius* takes origin from the anterior spine of the ilium; and whilst one set of fibres pass obliquely to the upper end of the tibia as usual, a second set run straight down superficial to the rectus femoris, and joins this latter low down, forming an additional element in the common extensor.

The two parts so described are united simply by membrane, they themselves forming distinct muscular bundles. The muscle may be regarded, therefore, as a double sartorius, or the outer fibres as forming a *superficial rectus* or fifth extensor, such as was first described by Douglas in the Dog under the name of "extensor tibiae primus cani proprius." In many Carnivorous animals the two bundles are united and continuous, a single muscle therefore resulting, viz. the sartorius. In the Civet such is the case, though Macalister in his specimen found it double.

The *gracilis* has a broad aponeurotic origin from the posterior part of the symphysis pubis, and also from the anterior portion of the pubic arch. It is inserted into the internal surface of the shaft of the tibia at its upper part. Exactly the same arrangement is found in the Civet and also in *H. striata*.

The *pectineus* is from the ilio-pectineal line to the middle of the linea aspera of the femur.

In the Civet this muscle is large and double at its insertion, which, however, does not extend below the middle of the shaft of femur. In the Dog, whilst the pectineus is single, according to Meckel its insertion reaches down to the internal condyle.

*Adductor magnus* arises from the pubic arch, for two inches in front of the ischial tuberosity. The fibres form a comparatively long and narrow muscle, which, bifurcating low down, is inserted partly into the line leading to the internal condyle of the femur, and also by a distinct but narrow tendon into the internal tuberosity of the tibia. This latter probably represents the insertion of the semimembranosus, which in *H. crocuta* must be regarded as coalesced with the great adductor. In this respect, as stated before, *H. crocuta* conforms to the Carnivorous type, but differs from *H. striata*, Bear, Raccoon, Coati, Civet, and Tayra.

*Adductor brevis*, of considerable magnitude, forms the remaining and greater part of the adductor mass. It takes origin from the body of the pubis and from the anterior half of the pubic arch, and
is inserted into the whole length of the linea aspera, as well as into the internal of its lower bifurcations.

Rectus femoris is tolerably well developed. It originates partly from the anterior (inferior) spinous process of the ilium, and also by a well-marked reflected tendon from the dorsum acetabuli. In the Civet the two heads exist as usual, whilst in H. striata Meckel found that the two heads of origin were not distinct. The muscle terminates in the usual manner.

The vasti muscles, as in H. striata, are hardly separable. They form a large muscular mass which arises from the upper half of the shaft of the femur, and, with the rectus femoris and the straight fibres of the sartorius, are inserted into the anterior tubercle of the tibia.

Crureus is absent or is not to be differentiated from the vasti.

In the Civet there is a much more strongly marked distinction between these deeper heads of the quadriceps extensor.

Gastrocnemius, well developed, arises by two heads as usual; its insertion below is into the os calcis.

The soleus is wanting. In this respect H. crocuta agrees with H. striata and with the Dog and Cat¹, but contrasts strongly with the Civet, in which the soleus exists as a separate muscle throughout. It is also present in the Bear.

Plantaris.—This arises along with, but internal to the external head of origin of the gastrocnemius. Its tendon joins that of the latter muscle low down, close to the os calcis, and is inserted with it. The plantaris-tendon is not continued into the sole, either as the plantar fascia or as the flexor brevis digitorum. In the Civet the plantaris is comparatively large, and its tendon does not end at the os calcis, but, expanding somewhat, runs over the tuberosity of that bone to become continuous with the flexor brevis digitorum. Meckel notes a similar prolongation of the muscle into the foot in H. striata.

Poplitæus is from the external femoral condyle. Its insertion is into the posterior surface of the tibia above the oblique line, and further, extending halfway down the shaft. It is similarly arranged in H. striata and the Civet.

The tibialis posticus, as usual in Carnivores, is small but normal. Very thin and slender in H. crocuta, it arises below the popliteus from the middle third of the postero-internal border of the tibia. Its tendon is inserted into the scaphoid and entocuneiform bones.

The long flexor of the toes (perforans), representing the conjoined flexor longus hallucis and flexor longus digitorum of human anatomy, arises by two heads, of which the internal (flexor longus digitorum) is small and springs from the head of the fibula and intermuscular septa separating it from neighbouring muscles. The external head (flexor longus hallucis) is much larger; it arises from the superior extremity and upper half of the shaft of the fibula, from a corresponding extent of tibia, and from the interosseous membrane. Each of these heads terminates on a distinct tendon, which, passing through a separate sheath in the annular ligament, unite in the sole of the foot.

¹ Chauveau’s ‘Comparative Anatomy,’ translated by Fleming, p. 309.
to form a single broad tendon from which four slips are derived; these, after perforating the superficial flexor-tendons, are inserted into the terminal phalanges of the toes.

This fusion or junction of the tendons of the flexors hallucis and digitorum exists in *H. striata*, the Dog, and Cat, and also in the Civet.

The *flexor brevis digitorum* (*perforatus*) in *H. crocuta* is confined to the sole of the foot, and is represented solely by tendon, a muscular belly being entirely wanting. This tendinous structure is attached posteriorly to the os calcis, and anteriorly divides into four slips, which, splitting for the passage of the corresponding deep flexor tendons, terminate on the sides of the second phalanges of their respective toes. Quite different is the arrangement in *H. striata*, in which the flexor brevis digitorum is described by Meckel as a prolongation of the tendon of the plantaris, receiving additional muscular fibres in the sole from the fourth metatarsal bone. The Civet presents a similar disposition, the additional muscular fibres being, however, derived from the os calcis. In the Cat a distinct muscular belly exists, springing from the tendon of the plantaris.

*Musculus accessorius.*—This muscle exists in *H. crocuta*, exceedingly small and slender. About one inch in length, it stretches from the front of the os calcis to join the tendon of the long flexor on its outer side. Meckel does not note its presence in *H. striata*, whilst Douglas avers its absence in the Dog. Chauveau, however, speaks of its existence as a small undeveloped muscle in both the Dog and Cat. It exists well marked in *Viverra*.

*Lumbricales* are three in number, as in the fore foot. They all spring from the tendons of the long flexor, and join those of the short. Their arrangement is as follows.—The first lumbrical arises from the superficial aspect of the deep tendon before its subdivision, and passes to the slip of the flexor brevis which is distributed to the third toe; the second arises below the first, but joins the same tendon of the flexor brevis; whilst the third arises from the point of bifurcation of the deep tendons going to the two outer toes, and is inserted into the tendon of the flexor brevis to the fourth toe.

*(Note.—In speaking numerically of the respective toes, we include the rudimentary hallux.)*

The *interossei* of the hind foot constitute a set of small muscular bundles, two to each toe, excluding the hallux. They all spring from the plantar aspect of the proximal extremities of the metatarsal bones, and pass upon either side of these bones to their distal ends, where they are inserted partly into the sesamoid bones and also into the extensor-tendons of the same toe; as pointed out by Meckel, they exercise principally the function of flexors.

*Extensor longus digitorum* is, as usual, in Carnivores femoral in origin, springing from the outer surface of the external condyle. Its tendon passes, along with that of the tibialis anticus, beneath the annular ligament, and gives off three slips, which are distributed to the second, third, and fourth toes, none passing to the little or outer

toe; in this respect it differs from those in the Civet and Dog. According to Meckel, in *H. striata* this muscle divides into two distinct bellies, and gives off five tendons. In the Civet the muscle is undivided.

An extensor *hallucis* does not exist as a separate muscle, a slip from the tibialis anticus being its only representative.

*Tibialis anticus* arises from the external surface of the upper third of the tibia; halfway down the leg the muscle divides into two, each division terminating on a separate tendon; of these the one (*tibialis anticus*) is inserted into the entocuneiform bone, whilst the other (*extensor *hallucis*) goes to the metatarsal of rudimentary great toe.

There is no separate extensor *hallucis proprius*, such as exists in the Civet or Dog.

*Extensor brevis digitorum*, from the os calcis, terminates by three tendons, which pass to the second, third, and fourth toes. The same obtains in *H. striata*. In the Civet the muscle is distributed to the four inner toes, whilst in the Dog it is to the four outer.

*Peronaei* are two in number. Of these the *longus* arises as in *H. striata*, Bear, Coati, &c., from the external condyle of the femur; it has also an additional origin from the external tibial tuberosity. Insertion is solely into base of fifth metatarsal bone, as in *H. striata*. In the Civet it is fibular in origin, and its tendon of insertion, after giving a slip to the fifth metatarsal, is continued to the first.

The *peronaeus brevis* arises below the longus from the middle two thirds of shaft of fibula, and terminates in two tendons, one of which passes on the dorsal aspect of the outer toe and joins the expansion of extensor-tendon, whilst the second is inserted into the base of the metatarsal bone of the same toe.

In *H. striata* the first tendon joins the extensor of the fourth toe. In the Dog the insertion is as in *H. crocuta*. In the Civet, and in the Bear also, a third *peronaeus* exists ("*peronaeus quinti," Macalister) which, as observed by Meckel, may represent the *peronaeus tertius*. It joins the extensor-tendon of the fifth toe over the first phalanx.

The tendency towards the formation of a third *peronaeus* is well evidenced by the double insertion of the *peronaeus brevis* in the Dog, and the still better marked division inferiorly in *H. crocuta*. Comparing these with the Civet or Bear, a progressive and more complete differentiation obtains, up to the formation of entirely separate muscles.

**Concluding Remarks.**

Having now described at some length the anatomy of *H. crocuta*, it may be well to add a few words by way of comparison of the structure of this with that of the other species which most closely resemble it. The arrangement of the muscular system of *H. crocuta*, so far as one can judge from an inspection of the plates of Cuvier and Laurillard, and from a perusal of the somewhat fragmentary notes which have been published with reference to other species, appears to be very similar to that of *H. striata* and *H. brunnea*, and
to differ in several important particulars from that of the Viverridae, as well of the true Felidae. The enormous development of the muscles of the neck and fore quarters, together with minor points already referred to, serve at once to associate *H. crocuta* with the other species of the same genus, and to separate it from the remaining groups of the Æluroidea. Unfortunately, so far as we can ascertain, the myology of *Proteles* has not yet been worked out; but if we may base any conclusion regarding its muscular system upon the external configuration of the animal, that system will not differ materially from what we find in *Hyæna*.

A good description of the brain of other species of *Hyæna* is still a desideratum. With the exception of Prof. Flower’s observation that the brain of *Proteles* resembles that of a *Hyæna* (species unknown) in the Museum of the Royal College of Surgeons, we possess no reliable information regarding the arrangement of the cerebral convolutions in the latter genus. So far as the information derived from a comparison of the brain of *H. crocuta* with that of *Proteles* goes, it shows that these two species are closely allied to one another, and that, as pointed out by Prof. Flower in *Proteles*, so also in *H. crocuta*, the brain occupies an intermediate position between that of the true Cats, in which the convolutions are slightly more complex, and that of the Viverrids, in which they are slightly less so. The vascular system of the Spotted *Hyæna* does not present any remarkable deviation from that of the Carnivora in general, except the mode of origin of the iliac arteries. In respect of the relative lengths of the small and large intestines, this species seems to deviate from the true Cats, in which, according to Meckel, these stand in the relation of 5 to 1, and to approach the Viverrids, in which the small is to the large intestine as 12 or 15 to 1, more than do the other species of the genus. The measurement of the comparative lengths of the small and large intestines, correlatives as these are of well-defined physiological processes, appears to us to be more important in determining the affinities of closely allied species than that of the relative length of the intestine and body of the animal, the latter varying much in accordance with the habits and mode of life, whilst the food may remain the same.

The hyenoid form of larynx is well marked in *H. crocuta*, and serves to distinguish it, together with its congeners, from the other groups of the Carnivora. So far the structure of *H. crocuta* agrees closely with what we find in other species of the genus. But when we come to the consideration of the reproductive organs we meet with an element of classification which, diverging as these organs do so strikingly from the Carnivora and even Mammalian type, would, taken *per se*, justify us in establishing a separate genus for the reception of *H. crocuta*. The unnecessary multiplication of genera appears to us, however, to be open to objection, as tending to defeat the chief object of classification; and therefore, in view of the close resemblance which otherwise exists between *H. crocuta* and other species of the genus, we think it advisable to retain for it the old generic title. And while we thus express ourselves, it may not be out
of place to remark that the occurrence of this divergence from the usual type, so far as its female organs are concerned, in an animal which in all other respects so closely resembles its fellows, may well serve to demonstrate the uncertainty of any scientific classification founded on any thing short of the consideration of the entire structure of any animal. Had the comparative anatomist examined only the female organs of *H. crocuta*, there can be little doubt that he would have established a separate genus, if not a family, for the reception of the animal to which they belonged. The necessity for such a course, however, is, as already pointed out, obviated by the more complete examination of the structural details of the animal.

Lastly, it might be of interest to speculate as to how in the course of evolution of three species so closely allied as the three species of *Hyena*, two of these should have conformed to the normal mammalian type in every particular, whilst the third diverged so remarkably from that type in respect of the structural configuration of a single group of organs. Such speculations, however, do not come within the scope of a paper devoted exclusively to a record of facts.

**EXPLANATION OF PLATES V. & VI.**

Plate V. Right side of *Hyena crocuta*, to show the superficial layer of muscles; drawn from the recent dissection:—*G.mx.*, gluteus maximus, its two parts; *G.md.*, gluteus medius; *B.f.*, biceps femoris; *T.v.f.*, tensor vaginae femoris; *Sa.*, sartorius, "its vertical fibres forming a superficial rectus;" *P.c.*, panniculus carnosus; *Tr.*, trapezius; *P.*, platysma; *L.d.*, latissimus dorsi; *P.m.*, pectoralis major; *T.*, triceps; *L.h.*, levator humeri; *L.s.*, levator scapulae; *D.*, deltoid.

Plate VI. Deeper muscles, on right side of *H. crocuta*: *G.mx.*, gluteus maximus reflected; *G.min.¹*, gluteus minimus, its two portions; *G.min.²*, insertion of the anterior fibres of gluteus minimus; *B.f.*, biceps femoris, reflected; *G.q.*, gluteus quartus; *Sa.*, sartorius; *R.f.*, rectus femoris; *O.i.*, obturator internus and gemelli; *Q.f.*, quadratus femoris; *A.b.*, adductor brevis; *A.m.+s.m.*, adductor magnus+semimembranosus; *V.e.*, vastus externus, "hooked back;" *P.*, plantaris; *Ga.*, gastrocnemius; *F.l.d.*, flexor longus digitorum; *P.l.*, peroneus longus; *P.b.*, peroneus brevis; *E.l.d.*, extensor longus digitorum; *T.a.+E.l.h.*, tibia-lis anticus+extensor longus hallucis; *E.o.*, external oblique; *R.a.*, rectus abdominis; *P.c.*, panniculus carnosus, cut; *L.d.*, latissimus dorsi; *D.c.*, dorsi epistrochlearis; *T.*, triceps; *T.m.*, teres major; *S.m. ser-ratus magnus; *Tr.*, trapezius, cut; *S.c.¹*, *S.c.²*, scaleni; *T.c.*, transversalis cervicis, "its anterior slip;" *S.p.*, splenius; *L.s.*, levator scapulae; *L.h.*, levator humeri; *B.a.*, brachialis anticus; *E.c.r.b.*, extensor carpi radialis brevior, "and origin of longior;" *E.c.d.*, extensor communis digitorum; *E.o.m.*, extensor ossis metacarpi pollicis; *E md.*, extensor minimi digitii; *E.c.u.*, extensor carpi ulnaris; *F.c.u.*, flexor carpi ulnaris; *D.*, deltoid.
February 4, 1879.

Dr. A. Günther, F.R.S., V.P., in the Chair.

The Secretary made the following report on the additions to the Society's Menagerie during January 1879:—

The total number of registered additions to the Society's Menagerie during the month of January was 83, of which 2 were by birth, 43 by presentation, 25 by purchase, 9 received in exchange, and 4 received on deposit. The total number of departures during the same period, by death and removals, was 96.

The most noticeable additions during the month were:—

1. A Bar-winged Rail (Rallina pectiolata, Hartlaub), from the Fiji Islands, purchased of the “Museum Godeffroy” of Hamburg, January 6th, new to the collection.

2. A young male Giraffe (Camelopardalis giraffa), received on deposit from Mr. Rice, January 27th, and intended to be purchased if it appear to be perfectly healthy. The recent death of one of the two males of this animal has rendered this proposed acquisition desirable.

Mr. Sclater read the following extract from a letter received from Prof. J. Reinhardt, F.M.Z.S., dated Zoological Museum, Copenhagen, August 2, 1876:—

"There is living at present in the Zoological Gardens of this place a Curassow which seems to deserve some attention.

"It is a ‘Mitua,’ agreeing with M. tuberosa in possessing a crest of elongated straight feathers, which can be erected quite as in this species; but the beak is differently shaped, and more like that of M. tomentosa. It is, however, its colouring which exhibits the chief interest, the belly being pure white, and the tail-feathers broadly tipped with the same colour.

"I never saw such a bird before; and I have failed to find any indication of it in the literature known to me. At first I was inclined to suppose that the bird in question might be, perhaps, the female of M. tuberosa; but this suggestion implies that the sexual difference in this case is exactly the contrary to the general rule in the family. It also seems to be a well-established fact that the sexes are alike in the genus Mitua; and you yourself have given the weight of your high authority to this statement. Nor does it seem likely that the bird can be the immature or young Mitua tuberosa. I have at least never heard of a change of the colour of the abdomen, as a bird advances in age, from white to rufous in any of the Cracidae. Moreover, as Natterer has collected such a large number of specimens of Curassows (and particularly not less than thirty-four of the two well-known species of Mitua), such a change could scarcely have escaped this most acute observer if it really
took place in these birds. Again, the bird does not seem to be a young one.

"The Mitua in question, was presented by a patron of our garden, and is there named 'Mitua brasiliensis.'"

Mr. Sclater stated that the bird in question, having recently died, had been presented to the Zoological Museum of Copenhagen, and that Prof. Reinhardt had forwarded it to him for examination. Mr. Sclater then proceeded to remark on the specimen, and stated that he quite agreed with Prof. Reinhardt that it must be considered as the representative of a new and distinct species, which Prof. Reinhardt had proposed to call Mitua salvini.

Prof. Reinhardt had ascertained the sex by dissection to be female; but the male would probably scarcely differ. The dimensions were nearly those of M. tomentosa; and the species should stand next to that species in Mr. Sclater's arrangement (Trans. Zool. Soc. vol. ix. p. 284), with the following differential characters:

*Nigra purpureo nitens; ventre ino et caudae apice albis; pilei plumis elongatis, sicut in M. tuberosa jacentibus; loris et capitis lateribus dense plumosis; rostro sicut in M. tomentosa formato sed pavo longiore et minus alto, tota rubro; pedibus rubris: long. tota circ. 2:10, aëre 15, caudæ 12:5, tarsi 4:7.

Obs. Sp. ventre albo satis distincta, quoad rostrum ad M. tomentosam, sed quoad cristam magis ad M. tuberosam appropinquans.

Mr. R. Bowdler Sharpe exhibited a series of Bulwer's Pheasants (*Lobiophasis bulweri*) from the Lawas river, N.W. Borneo, collected by Mr. W. H. Treacher, Acting Governor of Labuan. The series represented every stage of plumage of this Pheasant, and conclusively proved that *L. castaneicaudatus*, Sharpe, was the immature male of *L. bulweri*.

The following papers were read:


[Received December 9, 1878.]

Prof. Newton having most kindly placed in my hands for dissection three specimens of *Opisthocomus cristatus* preserved in spirit, I am able to add a few details to the accounts which have already appeared on the structure of this peculiar bird.

In his valuable paper in this Society's "Proceedings" 1, "On the Classification and Distribution of the Alceoromorphæ and Hetero-


2 P. Z. S. 1868, p. 294.
morphæ," Professor Huxley describes in detail the skeleton of *Opisthocomus*, concluding, as the result of his study of the bird, that it should constitute a group (the Heteromorphæ) by itself, which sprang direct from the main stem of Carinate descent, later than the Tinamomorphæ, Turnicomorphæ and Charadriomorphæ, but before the Gallinaceous birds, Sand-Grouse, and Pigeons were developed.

Since then, in our 'Transactions'¹, Mr. J. B. Perrin has published a myological account of the species, in which he, however, compares it with few other birds. One of Mr. Perrin's figures² very excellently represents the form and situation of the immense crop, as

Fig. 1.

Trachea of *Opisthocomus* (front view).

well as the situation, in the unfleshed bird, of the expanded margin of the short carina sterni, from which an accidental error made by Nitzsch, who evidently had an imperfect skin to work upon, may be corrected. Nitzsch, in his 'Pterylography,' figures (and the

² Loc. cit. pl. lxiii. fig. 3.
drawing is reproduced in Mr. Perrin's memoir), the outline of the furcula and sternum, and does it as if the bird were not peculiar in the pectoral region. But as the crop occupies almost all the upper part of the breast, and by its magnitude distorts the furcula and sternum, the outline is quite incorrect. What is more, there is in the bird itself an oval area, about .75 inch long from above downwards, and .25 inch in breadth, of dense naked skin, covering the surface of the expanded upper cutaneous surface of the carina sterni. This is omitted in the drawing. The area surrounding this is unfeathered, although I find well-developed plumes in the middle line above it,

Fig. 2.

![Trachea of Opisthocomus (back view).](image)

and no trace of any longitudinal median space of any kind over the surface of the crop or neck.

*Opisthocomus* is one of those birds in which the pterylosis is not so decisive of its affinities as in many cases, the reason being that so great an amount of the unfeathered spaces is protected by semi-plumes. May not these semi-plumes in many instances be degenerated feathers? This question has never been decided, so far as I am aware.

To our knowledge of the osteology of the Hoatzin I have no fresh
facts to add. I may, however, mention that it is only in the Crocidae, among allied birds, that the vomer runs so far forward in the palate at the same time that it is tumified at its anterior extremity. In *Ortalida albiventris* this is most strikingly the case.

The alimentary canal has been so fully described by L’Herminier¹, that it is quite unnecessary for me to enter into detail with reference to it.

Johannes Müller² has noted one or two points concerning the windpipe. Figs. 1 and 2 (pp. 110, 111) represent its anterior and posterior aspects. The lowermost four tracheal rings are consolidated together, and the first pair of bronchial semirings with them, to form a box-like three-way piece, the pessulus posteriorly running up to join the middle of the penultimate ring. The second pair of bronchial semirings does not articulate with the first, they in all respects resembling those nearer the lungs.

It is possible that what is above considered to be the first pair of bronchial semirings may be the last tracheal ring. That there is a small notch interrupting the continuity of the inferior mid-anterior margin of the tube formed by the consolidated rings, and that the ring above the lowest segment of the consolidated tube is incomplete behind, are, however, facts in favour of the former view.

Among the Galline the only genera which at all approach *Opisthocomus*, as far as the lower larynx is concerned, are those of the Megapodiidae.

The two carotid arteries of *Opisthocomus*, where they meet in the front of the neck, become bound together much more intimately than in most birds, although at the part where it is impossible to dissect away the one vessel from the other, a cross section proves that the two tubes are still quite separate.

Myologically, the great gluteus (tensor fasciae of my earlier papers) completely covers the biceps cruris superficially. The fifth gluteus, which runs from the ilium a short distance behind the acetabulum, and covers with its triangular tendon the trochanter of the femur, is present, but small. The semitendinosus and its accessorius are both large, as are the femoro-caudal and its accessorius. The myological formula³, as far as these muscles are concerned, is therefore ABXY.

The ambiens muscle is present and small; but its slender tendon, in every case but one of the six knees I have examined, is lost upon the capsule of the front of the knee. In the one instance it traversed the fibrous tissues of the quadratus-tendon, as in other birds where it is present, to join the digital flexors in the back of the leg. A similar imperfection in the development of the ambiens is sometimes found in *Sula bassana*, *Stringops habroptilus*, and in the species of the genus *Eiduncnemus*. The obturator internus is triangular in shape, as in the Gallinæ.

In the deep tendons of the foot, the flexor hallucis longus sends a

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³ Vide P. Z. S. 1874, p. 111.
strong vinculum downwards to that of the flexor digitorum profundus before it runs on to supply the hallux itself. The determination of this point the late Prof. C. J. Sundevall much desired, as in the only specimen he had the opportunity of examining, and that imperfectly, the apparent absence of the vinculum favoured its Passerine affinities. As, however, is stated above, the vinculum is present and large in the individuals dissected by myself.

In the upper limb, the great pectoral muscle is much reduced at its furcanular and manubrial origins, over which the crop is placed. It is thicker lower down. The fibres of the second pectoral descend as far as the lower margin of the sternum; and there is a small third pectoral covered by it, as in all Gallinæ, although in *Opisthocomus* it is reduced in size. The biceps humeri muscle sends a peculiarly large fasciculus to the tendon of the tensor patagii longus, which reaches it opposite the middle of the patagium. This slip I never find developed in the Cracidæ; but it is present in the closely allied Megapodidæ, and in all the other Gallinaceous birds.

The above-mentioned myological facts throw some light on the affinities of *Opisthocomus*. The presence of two carotid arteries, an ambiens muscle, an accessory femoro-caudal, and a deep plantar vinculum place its non-passerine nature beyond a doubt. Adding the tufted oil-gland and the inch-long colic ceca, the bird could only be related to the Tinamidæ, Gallinæ, or Rallidæ, from which it will be remembered the Cuculidæ differ in that they lack the oil-gland tuft, and the Musophagidæ in that they have no colic ceca. *Opisthocomus*, being holorhinal, can have nothing to do with the Charadriiform birds. In the Rallidæ there is only a single posterior notch on each side of the carina sterni, at the same time that a crop is never developed. These features, when correlated with the peculiarities of the palate, remove them from the necessity of further consideration.

*Opisthocomus* must therefore, from what has been just shown, be a Gallinaceous bird, or form a group by itself. As there is no Gallinaceous bird without a direct articulation between the pterygoid bones and the basisphenoidal rostrum, it is hardly possible to include the Hoatzin along with them; and yet it resembles them most closely, as it does the Cuculidæ, in the length of its colic ceca and the number of its rectrices. It is not far removed from the Musophagidæ as well. All these facts can be expressed as follows:

1 Vide P.Z.S. 1875, p. 341.
2 Methodi Naturalis Avium dispomendarum Tentamen. Stockholm, 1873, p. 156.
3 Vide P.Z.S. 1876, pp. 195, 199.
4 P.Z.S. 1873, p. 33.
This diagram indicates that the Galliform ancestor, besides giving rise to the at this moment irrelevant Rallidæ and Psittaci, varied also in a strictly Gallinaceous direction, the ancestor of *Opisthocomus* leaving the parent stem very shortly before the true Gallinæ first appeared, and at about the same time as the independent pedigree of the Cuculidæ and Musophagidæ commenced. That the Musophagidæ and the Cuculidæ are very closely related to the Gallinæ is proved by facts brought forward by me in an earlier paper; and the anatomy of the Hoatzin seems to still further favour this hypothesis, by showing that there exists a bird which helps to fill the gaps between them.


[Received December 11, 1878.]

(Plates VII. & VIII.)

Although the hopes entertained some twenty years ago of establishing the whole of the Indian Phasianidæ as permanent denizens in our aviaries have been disappointed, and some of the species

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1 P. Z. S. 1874, p. 121.  
1. Egg of Argus Giganteus
2. Polyplectron Chinquis
3. Cercornis Temmincki
4. Satyra
5. Crossoptilon Mantchuricum
originally introduced have become almost extinct in Europe, we have nevertheless succeeded of late years in breeding two or three other more recently acquired species, concerning which I have a few remarks to offer to the Society, principally as an introduction to the valuable notes which our head keeper, Mr. Benjamin Misselbrook, who has for many years had the breeding Gallinaceous birds under his care, has at my request drawn up upon this subject.

1. The Argus Pheasant (Argus giganteus).

The first birds of this species possessed by the Society were two cocks, presented by Mr. J. G. Fanshawe, F.Z.S., in May 1872. Mr. Fanshawe informs me that these birds were sent to him by Mr. Arthur N. Birch, F.Z.S., late Colonial Secretary at Singapore, where Argus Pheasants are frequently brought to market alive. The birds are caught by the natives in springs in the jungles, tied up in palm-leaves, so as to be prevented from knocking themselves about, and brought to market alive, the weather being so hot that the birds cannot be conveyed when dead, so as to be useful for food. Thus obtained they are frequently placed in aviaries, where they soon become tame, and are killed when they are required for the table. It was from some of the tame stocks in the aviaries that Mr. Fanshawe's birds were derived.

In July 1873 Sir Harry Ord, Governor of the Straits Settlements, presented us with two hen Argus Pheasants, probably derived from the same source; and we thus became possessed of two perfect pairs of this bird. Before the commencement of the last breeding-season we had lost one of our cock birds; but there still remained in the Gardens, besides the other cock and the two hens above mentioned, a third hen, received on deposit in 1873. I subjoin Mr. Misselbrook's report on the breeding of these birds during the season of 1878.


This season there were four adult examples of the Argus Pheasant in the Gardens, one cock and three hens. The hens were placed in adjoining compartments, and the cock shifted from one to the other about every alternate day.

Hen number one laid two eggs, one on March the 7th and one on March the 9th. As she did not seem inclined to sit herself, I placed these eggs under a bantam hen. After thirty days, no young birds appearing, the eggs were taken away, when one of them was found to contain a dead bird, and the other was addled.

Hen number two laid two eggs, one on May 27th, the other on May 29th. These eggs were also put under a bantam hen; and after twenty-four days' sitting two birds were hatched. Both these did very well for five weeks, when they were attacked with worm in the windpipe; and both, unfortunately, died.

\footnote{1 The Impeyan (Lophophorus impeyanus) has not bred with us since 1871, and has, I believe, likewise failed on the Continent. The Crossoptilon (Crossoptilon mantchuricum) and the Cheer (Phasianus wallchii) have both become scarce; and others (e.g. Ph. ammunition and Certhornis sylvra) seem to have been altogether lost.}
Hen number three laid two eggs. These were put under a hen; and one bird was hatched, the other egg being addled. This bird also lived for five weeks, and then died.

Hen number two laid a second sitting of two eggs. These she sat upon herself; but both were addled.

Hen number one laid a second sitting of two eggs, and began to sit on them on July 9th. On the 2nd of August two birds were hatched. This shows the time of incubation to be twenty-four days. The male took no part in the incubation.

I am glad to say that I have succeeded in rearing these two birds up to the present time, and that both are doing well, and are, I hope, out of danger, as they are now nearly three months old. I find the habits of these birds as near as possible those of the Peacock Pheasant (*Polyplectron*). The faculty of flying begins very early, the young being able after four or five days to mount a high perch, and so to roost under the large wings of the parent bird. The difference in the sex of the young birds is shown by the males being much larger than the females, and also of a brighter colour.

As will be seen by these notes, the three hens have laid altogether ten eggs. Two have laid four each, and one bird two eggs. Five eggs were bad; and five birds were hatched, of which three died, and the other two are now living in the Gardens.

I am glad to be able to add that the two young Argus Pheasants hatched last year are still thriving, and show every prospect of being likely to attain maturity. This is the more gratifying, as none of the continental gardens or amateurs, I believe, have yet succeeded in breeding this bird. M. Vekemans, of Antwerp, who has been so successful with most of the Phasianidae, writes me that though he has succeeded in hatching the eggs, he has never been able to rear the young birds.

I exhibit a skin of a chick of the Argus Pheasant (Plate VII.) which was hatched in our gardens in July last, and died when about thirty-five days old; also some eggs of this species.

The egg (Plate VIII. fig. 1) is of a rich coffee-colour, finely punctured throughout, with a darker blotch at the large end. It measures about 2.6 by 1.9 inches.

2. THE PEACOCK PHEASANT (*Polyplectron chinquis*).

Males of this species were introduced into our gardens in 1857; but no females were received until 1864. The birds paired and began to breed in 1866, and have continued to do so nearly every year until the present time.

Unlike most of the Phasianidae in captivity, the Polyplectrons pair, and it is not practicable to keep one male for several hens. Mr. Misselbrook has furnished me with the following notes on the reproduction of this species.


The Polyplectrons pair and begin to breed in the second year of
their age. The hen lays two eggs only at a sitting, and begins to
sit at once; but if the first two eggs are removed and placed under
a bantam hen for hatching, in about a month or six weeks she lays
two more eggs. These second two I have usually allowed her to sit
on herself. The time of her sitting is twenty-one days.

In the laying of two eggs only at a sitting the Peacock Pheasant
resembles the Argus.

The young Polyleptrons are not so strong as the young of the
Argus: the young of the Argus are able to mount a high perch in
a few days; but the young Polyleptrons are not able to do so until
they are a month or six weeks old.

The male Polyleptron takes no part in sitting or charge of the
young birds.

It is difficult to distinguish the sex of the young Polyleptrons
until they are six or seven months old; by that time the males are
seen to be a little larger than the females. They are also a little
lighter in colour, and have a lighter-coloured eye.

The egg of the \textit{Polyleptron chinquis} (Plate VIII. fig. 2) is more
like those of the true Pheasants, being of a uniform pale stone-
 colour, and measuring about 2\, 0 inches by 1\, 45.

3. The Temminck's Tragopan (\textit{Ceriornis temmincki}).

Males of this Tragopan were acquired in 1864 and 1866; and in
1867 we acquired our first female. The first young birds were
hatched in May 1869. The following are our head keeper's notes
on the mode of incubation.


The old birds begin to lay early in April, and lay seven or eight
eggs; they make their nest, if possible, off the ground. I therefore
used always to place an open box for the hens to lay in, which box
they readily take to, and, after laying the usual complement of eggs,
begin to sit and hatch out young birds. The male bird at times
takes a share in sitting on the eggs. The period of incubation is
twenty-eight days.

The young birds are not so strong as the young Argus, and they
are not able to fly until they are four or five weeks old. At that
time they will mount a perch along with the parent bird, and, if
allowed, would roost outside along with the old bird for the night.

The egg of \textit{Ceriornis temmincki} (Plate VIII. fig. 3) is of a clear
buff-colour freckled with reddish spots, and measures 2\, 05 inches by
about 1\, 6.

4. The Horned Tragopan (\textit{Ceriornis satyra}).

Of this species we received our first specimens from the Babu
Rajendra Mullick in 1863\textsuperscript{1}. They bred the same year, and again in
1865, after which we, unfortunately, lost most of our stock.

\textsuperscript{1} See P. Z. S. 1863, p. 104.
In 1876, July 24th, a pair of these birds were presented to the Society by H.R.H. the Prince of Wales. The female died; but another female (received in exchange, July 17, 1877) laid three eggs in April 1878. These eggs were placed under a common Hen; and two young birds were hatched, which are now living in the gardens.

Mr. Misselbrook reports that the period of incubation in C. satyra is the same as in the other species, viz. twenty-eight days, and remarks that he has never seen the male of this species take part in the sitting. Otherwise its habits are similar to those of C. temmincki. He adds that all Tragopans, both young and old, are great grass-eaters, and are also fond of dried fruits, such as currants, raisins, &c., and all kinds of wild berries, such as hawthorn-berries, privet-berries, and ripe elder-berries.

The egg of C. satyra (Plate VIII. fig. 4) resembles that of C. temmincki, but is considerably larger, measuring nearly 2·7 inches by 1·6.

5. The Mantchurian Crossoptilon (Crossoptilon mantchuricum).

We received our first examples of this fine bird in July 1866\(^1\). They were both males; but females were obtained from the Jardin d'Acclimatation of Paris later in the same year. They bred in 1867 and 1868, but have not thriven with us since that period.

Mr. Misselbrook has supplied me with the following notes on this species:

"The males and females of the Crossoptilon are the same in colour and appearance when young, and it is not easy to distinguish the sexes. In the adult birds the males are recognizable from being furnished with a small blunt spur, whereas the females have none.

"The hens lay from twelve to sixteen eggs each at a sitting, the time of incubation being about twenty-eight or thirty days. I say twenty-eight or thirty days, as I have known the time to vary one or two days in the time of sitting.

"I have not seen the males take any part in the incubation.

"The great peculiarity in the young of these birds being their exceeding tameness; there is not the least shyness about them, they being more like the domesticated chicken."

The egg of the Crossoptilon (Plate VIII. fig. 5) is of a uniform pale stone-colour, and measures about 2·3 inches by 1·7.

EXPLANATION OF THE PLATES.

Plate VII.

Chick (male) of Argus giganteus, from an example which died on 25th August, 1878.

Plate VIII.

Fig. 1. Egg of Argus giganteus.
2. Egg of Polyplectron chinquiss.
3. Egg of Ceriornis temmincki.
5. Egg of Crossoptilon mantchuricum.

\(^1\) See P. Z. S. 1866, p. 418.

[Received December 17, 1878.]

Some few months ago, Mr. Charles Darwin very kindly forwarded to me two pretty little silken nests of a Spider of the family Salticides, formed on the upper surface of the leaves of, apparently, some shrub or herbaceous plant, and received a short time previously from Herr Fritz Müller of Blumenau, Sta. Catherina, Brazil. More recently, in answer to a letter written to him by myself, asking for information about the maker of these little nests, Herr Müller has most obligingly and promptly sent me two more, together with several of the Spiders by which they are constructed. All the Spiders are females, and all, excepting one, immature. The nests are remarkable from their form, and from the exactly similar size and shape of all the four that have come under my notice; they also appear to be, as Herr Müller tells me, invariably formed on the midrib of the upper side of the leaf. The accompanying figure (p. 120) will give a good idea of this curious little three-entranced domicile.

There is nothing particularly remarkable in the appearance of the Spider. It is, however, interesting in respect of the generic details of its structure; for although it bears a strong affinity to several European genera of Salticides (Menemerus, Sim., Marpessa, C. L. Koch, Hyetia, Sim., and Icius ejusd.), I am unable to get it satisfactorily into any of them; I have therefore characterized a new genus for its reception.

Herr Müller tells me that he finds the nests of this Spider on the leaves of various plants.

Fam. Salticides.

Fritzia, g. n.

Cephalothorax longer than broad, the length being about half as much again as the breadth; upper surface perfectly flat; depth moderate; hinder slope short and very abrupt. Ocular area rectangular, considerably broader than long (the length being no more than half the breadth), and scarcely more than one third the length of the cephalothorax.

Eyes of foremost row very unequal in size, separated by rather considerable intervals, those of middle row nearer to the foremost than to the hinder row.

Legs short, moderate in strength, relative length apparently 1, 4, 2, 3, the actual difference between 1, 4 and 2, 3 respectively being very small; those of first pair much the strongest. Spines beneath metatarsi and tibiae of first and second pairs; those of first pair long and strong.

Abdomen short oval, and of a somewhat flattened form.
Fritzia muelleri, sp. n.

Length of the adult female 1 2 line.

Cephalothorax deep blackish brown, the ocular area being black; it has a narrow submarginal line of white hairs; and its whole upper surface is thinly clothed with similar hairs.

Fig. 1. Spider enlarged. a. Natural length of Spider.
2. Ditto, in profile, without legs or palpi.
3. Leaf of plant with nest on midrib (natural size).

Falces small, set rather back beneath the fore margin of the cephalothorax, nearly vertical, and of a dark-brown hue.

Maxilla and labium dull brownish, tipped with a paler colour.
**Sternum** oval, pointed behind, and similar in colour to the cephalothorax.

**Legs** pale dull yellowish, the femora being dark brown, and the tibiae, metatarsi, and tarsi marked with brown, giving them a somewhat annulated appearance; beneath the terminal claws is a small claw-tuft.

The **palpi** are short, and of a more uniform pale-yellowish colour, clothed with, among others, some pale scale-like hairs above; while the digital joints have numerous longer, blackish ones beneath.

**Abdomen** short-oval, and of dark maroon-brown colour, thinly clothed with short, pale grey, or whitish, rather shining, somewhat squamose hairs; an indistinct pale stripe runs obliquely from just beneath each side of the fore extremity to, or towards, the spinners; the central longitudinal line is broadly blackish, but not very distinctly defined; and there are, on its hinder part, some very indistinct paler, sharply angular lines in a longitudinal series; on the underside is a broad, longitudinal, central blackish baud, somewhat narrowing to the spinners.

**Hab.** Blumenau, Sta. Catherina, Brazil. On the leaves of various herbaceous plants, in little three-entranced, white, silken nests.


—I. **Quadrumana.** By W. Ottley, M.B., F.R.C.S., Demonstrator of Anatomy at University College, London.

[Received January 1, 1879.]

During the last six months I have been enabled, by the kind permission of Mr. Garrod, to examine the attachment of the eye-muscles to the sclerotic in a large number of the Mammalia. In some orders my observations have been as yet too few to enable me to generalize from them; but in the Quadrumana, where there has been a larger amount of material at my disposal, the variations in these muscles appear to be sufficiently well marked and characteristic to deserve a short record.

As a preliminary, I may state that, from the observations of Profs. Donders, Helmholtz, and others, it has been established that in man the six muscles are combined in the following manner:—

In turning the eye up, the superior rectus and inferior oblique act; in turning it down, the inferior rectus and superior oblique; directly inwards, the internal rectus; directly outwards, the external rectus.

In any intermediate position three muscles are used, thus:—

In turning the eye up and in, the superior and internal recti and inferior oblique; in turning it up and out, the superior and external recti and the inferior oblique; and so for the other movements.
The action of the individual muscles may be thus stated:—

The superior rectus (3) turns the eye up and in,
internal rectus (3) " in,
external rectus (6) " out,
superior oblique (4) " down and out,
inferior oblique (3) " up and out;

the numbers indicating the nerves which supply them.

It is also believed that a very slight rotation of the eye round an antero-posterior axis (the visual axis) does normally occur (Donders, Ann. d'Oculistique, 1877).

On examining the eye of a fish it is at once evident that the muscles here cannot have the same action as in the human eye. It is seen that here the superior oblique, which has no pulley, must be com-
bined, not with the inferior, but with the superior rectus; and the same disposition is found in all the Reptiles and Birds that I have examined. Not only so, but in some Mammalia, particularly those in which the eyes are placed at the side of the head, as in the Rodents and others, the muscles must be combined as they are in the fish or bird.

Professor Struthers, in a paper on the action of the oblique muscles (Monthly J. of Med. Science, Oct. 1849), has already drawn attention to the differences in the direction of these muscles which are found in the Mammalia, and has pointed out that the more the eyes are directed outwards, the more does the angle which the superior oblique makes with the visual axis tend to become acute.

The accompanying diagrams will explain this change in the angle.

Fig. 1 represents the visual axes V A V A' parallel as in man; S O S O' the direction of the superior oblique; the angle S c A is obtuse. In fig. 2 the axes are divergent, as in the Rabbit; the letters correspond; the angle S c A is acute. It will be noticed also that SO SO' are directed to the front of the eye instead of to the back. This forward position of the superior oblique muscle, however, as will be presently shown, is not peculiar to those animals in which the eyes diverge.

Among the Quadrupedal I have examined the attachment of the eye-muscles in the following genera and species:—

Fam. Simiidae.—Simia satyrus.
Fam. Cercopithecidæ.—Semnopithecus leucopyræus, Cercopithecus callitrichus, C. albigerarius, Cercocebus fuliginosus, Macacus indus, Cynocephalus penicillatus, Cynocephalus porcorius.
Fam. Cebidæ.—Ateles alter and A. melanochir, Mycetes senilicus, Cebus capucinus, C. hypoleucus, Nyctipithecus felinus, Saimaris sciurea.
Fam. Hapalidæ.—Hapale penicillata, Midas rosalia.
And in the Lemures, fam. Lemuridæ, Lemur, sp. ?; fam. Nycticebidae, Nycticebus tardigradus.

In the human eye my observations agree with Sappey’s description rather than with that of Henle; and I therefore give the measurements to be found in Sappey’s ‘ Anatomic Descriptive,’ and a diagram, to serve as a standard of reference.

The superior rectus is inserted $\frac{9}{25}$ inch from corneal edge. It is curved; and its outer is further from the cornea than is its inner edge.

The inferior rectus at a distance of $\frac{2}{25}$. (It is also oblique like the superior.)

The external rectus $\frac{7}{25}$.

The internal or median rectus $\frac{5}{25}$ to $\frac{6}{25}$.

The superior oblique $\frac{1}{25}$ (I should rather say $\frac{9}{25}$) from the optic nerve.

The inferior oblique $\frac{3}{25}$ from the nerve-entrance. The line of its insertion, if prolonged, would meet the optic nerve.

Neither of these authors refers to the curvature of the line of insertion of the superior oblique.

In Simia satyrus it will be seen that the attachments resemble
those described already, with the exception that the recti are placed further forwards.

The superior, inferior, and external recti are \( \frac{5}{2^{\frac{1}{2}}} \) from the corneal edge. The median is rather nearer, \( \frac{4}{2^{\frac{1}{4}}} \) inch.

Fig. 3.

Fig. 4.

Fig. 3. A diagram of the attachments of the superior oblique, inferior oblique, and external rectus in the human eye, from the outer side.

Fig. 4. A diagram of the insertions of the superior and inferior oblique in the human eye, from behind: α, optic nerve.

The superior oblique is curved, but generally parallel to the optic nerve; anterior border \( \frac{16}{2^{0}} \) from cornea, posterior \( \frac{6}{2^{0}} \) from optic nerve.

Fig. 5.

Fig. 6.

Fig. 5. A diagram of the attachments in Simia satyrus, from the outer side.

Fig. 6. From behind, to show the relative positions of the obliqui and the optic-nerve entrance.

The inferior oblique is higher at its inner extremity, which is \( \frac{5}{2^{\frac{1}{5}}} \) from the optic nerve.

The optic-nerve entrance is \( \frac{3}{4} \) inch nearer the inner than the outer edge of the cornea.
There is no choanoid muscle; and the obliquity of the inferior oblique is remarkable.

In all the Cercopithecidae, as, indeed, in all the Old-World Monkeys below the Simiiidae, there is a representative of the choanoid muscle, in the shape of a larger or smaller muscular slip, inserted between the superior and inferior oblique. In Semnopithecus leucoprymnus this slip was very small, the fibres were fatty degenerated, and no strie were perceptible; but, at the same time, the atrophied remains were distinctly recognizable. In Cercopithecus callitrichus the muscle was even less distinct; there was nothing but a thin fibrous sheet, quite isolated from the capsule enclosing the sclerotic, it is true, and with an insertion corresponding to that of the choanoid slip in other members of this group; but microscopically no muscular fibres were found, only vessels and fibrous tissue remained.

In C. albigularis the slip was larger and contained distinctly striated muscular fibre, as also in Cercopithecus fuliginosus. In Macacus innuus and Cynocephalus porcarius this muscular band was larger and very evident.

The differences between these members of the group with respect to the other muscles were slight. In all, the outer borders of the superior and inferior recti were posterior to the inner borders, while the median rectus was slightly nearer to the cornea than the external (as a rule).

In all, the anterior edge of the superior oblique was more distant from the cornea than was the posterior from the optic nerve, while the inferior oblique remained near the back of the eye. The optic-nerve entrance was always internal to the visual axis.

In the Cebidae and Hapalidae we have an important difference. The choanoid slip is entirely absent; even in the Marmosets I could

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1 This muscle, very seldom absent in the Mammalia, arises on the outer side of the optic nerve, is inserted into the sclerotic behind the recti, and is supplied by the sixth nerve; but its size and its attachment to the sclerotic vary much.
find no trace of it; but the superior oblique has now moved forward so as to be inserted close behind the superior rectus; while the inferior oblique still remains near the optic nerve, which still enters on the inner side of the fundus, though in *Hapale penicillata* it is only $\frac{1}{3}$ inch nearer to the inner than to the outer border of the cornea.

Fig. 8 is a diagram, seen from above, of the attachments of the superior oblique and superior rectus in *Mycetes seniculus.*

Fig. 9. Ditto in *Hapale penicillata.*

In the Cebidae the rectus and obliquus are inserted almost at right angles with one another (in *Cebus* the superior oblique is quite at right angles to the superior rectus); while in *Hapale penicillata* and *Midas rosalia* the superior rectus is so oblique as to approach

Fig. 10.

A diagram, from above, of the eye of a Lemur; indicates the relations of the choanoid, superior oblique, and superior rectus.

The direction of the superior oblique; in these also the external rectus is very convex forwards.

There is no tapetum in any of the Quadrumana that have been examined.
In the Lemures the choanoid appears again as a distinctly muscular slip with the same relative attachment.

The superior oblique keeps its anterior position, the posterior border being nearly twice as far from the optic nerve as the anterior is from the cornea.

The inferior oblique has also moved forwards, so that in Nycticebus its posterior border is $\frac{5}{16}$ from the optic nerve, while its anterior is $\frac{5}{16}$ from the cornea. (In the Cebidae it is often five times nearer to the optic nerve than it is to the cornea.)

In Lemur some fibres of the superior oblique are inserted in front of the superior rectus (so' in diagram).

The optic nerve is considerably to the inner side of the fundus.

In Nycticebus there is a further peculiarity in the superior oblique, in that it pierces the tendon of the superior rectus near its inner border to be inserted behind it.

**Fig. 11.**

A diagram, from the outer side, of the eye of Nycticebus; shows that the inferior oblique has moved further forwards.

The following summary therefore appears to be true:

- a. In the higher Quadrumana the muscles closely resemble the human muscles in their attachments, and, as was already known, there is no choanoid muscle.
- b. In the Cercopithecidae, besides other points of difference, there is always some representative of the choanoid. It is interesting to observe that in the higher families the muscle which may be supposed to be ceasing to be useful becomes degenerated and, at last, almost unrecognizable.
- c. In the Cebidae no trace of choanoid remains, but the superior oblique has moved forwards.
- d. In the Hapalidæ the superior oblique has moved still further forwards, and changed its relation to the superior rectus, while the optic nerve has also moved outwards.
- e. In the Lemuridæ the choanoid is again distinctly present, but the superior oblique has a different relation to the superior rectus, and either pierces it or is attached partly in front of it, while the inferior oblique is also moved forwards.
I may add that in a Bat \((Pteropus medius)\) I found the superior oblique to have a relation like that in the Lemur to the superior rectus, but the inferior oblique was close up to the corneal limit.

It may be also proper to state that these variations in the muscular attachments do not appear to depend in any definite manner on alterations in the position of the orbit. M. Broca, in the ‘Revue d'Anthropologie,’ 1877, p. 356, gives a table of the obliquity of the orbit in members of the Quadrumana, this obliquity being determined by measuring the angle between the base-line of the skull (in his series the base-line chosen is the plane of the foramen magnum) and the axis of the orbit. This axis is a line passing outwards and forwards from the optic foramen through the centre of the orbital aperture. From this direction of the axis it will be seen \((a)\) that it does not correspond with the visual axis, \((b)\) that its obliquity is made up of an obliquity to the median plane of the head and of an obliquity to the horizontal base-line of the skull.

As instances of the great varieties found in this angle, he gives the mean angle in Orang as \(45^\circ\,62\), \(Cercopithecus 28^\circ\,43\), \(Cebus 22^\circ\,3\), \(Myctes 67^\circ\,17\), Lemurs \(41^\circ\,05\).

It seems possible that a comparison of the angles between the two visual axes when the eyes are at rest, would be more likely to afford some explanation of the meaning of the gradual change in the relative position of the eye-muscles; and the direction of these axes it appears at present to be impossible accurately to ascertain.

5. On some Birds transmitted from the Samoan Islands by the Rev. T. Powell. By Osbert Salvin, M.A., F.R.S.

[Received January 6, 1879.]

The collection, which contained specimens of the following five species of birds, was placed in my hands by Mr. Sclater, because there were two Petrels amongst them, a family of birds to which I have lately paid considerable attention. The skins were obtained by the Rev. Thomas Powell, of Faletili, Upolu, Samoan Islands, during a visit to the islands of Tutuila and Manoa, the two easternmost islands of the group, and transmitted to Mr. Sclater, with a request that he would have them named. This I have endeavoured to do, but have only succeeded in finding names for three of the five species, the other two being apparently undescribed:—

1. **Pinarolestes powelli**, sp. nov.

\(Saturate brunneus, alis et cauda nigricantioribus; abdomen rufescenti-brunneo; rectricibus tribus utringue extimus albo terminalis; rostro et pedibus plumbeo-cornenis. Long. tot. 7'0, alæ 3'1, caudæ 3'2, tarsi 0'9, rostri a rictu 1'1.\)

_Hab._ Tutuila, Samoan Islands (T. Powell).

_Obs._ Sp. _P. vitiensi_ affinis, sed major, alis et cauda saturatius brunneis.
This bird, for which I have been unable to find a name, belongs to the small section of this genus the members of which have white tips to the lateral tail-feathers. It certainly comes nearest the Fijian P. vitiensis, with the British-Museum specimens of which I have compared it. P. heinii is another allied species, but is still smaller than P. vitiensis, besides differing in other respects (cf. Sharpe, Cat. B.iii. p. 293 et seq.). Dr. Finsch and Mr. Sharpe, both of whom are conversant with the members of this genus, on examining this skin pronounced it to belong to an undescribed species. No Pinarolestes has hitherto been recorded from the Samoan Islands.

The type of this species, which I propose to dedicate to its discoverer, has been deposited in the British Museum.

Mr. Powell's letter gives the following account of this species:—

"Vernac. name, 'Sugaolevas' (Sá-ngá-o-le-vás). A small agile bird. Length 7" from the point of the beak to the tip of the tail, wings rather longer than the body. Tail long, spreading. Feathers of the head, back, wings, and tail brownish black; the three outer tail-feathers on each side tipped with white; throat, breast, and belly brownish slate; sides brownish. Head large; feathers of the head erect. Appearance fierce; voice harsh. Beak long, strong; and slightly notched at the tip, furnished with bristles at the base; nostrils near the base, round, slanting backwards; gape wide. Tongue cartilaginous at the tip. Tarsi about 1" long. Toes, inner and outer nearly of a length, shorter than the middle, the hinder one of which is rather longer and stronger than the front one. Grasp strong.

"Habits. This bird flies round and round persons coming into its vicinity, keeping up a continual harsh cry, which the natives call scolding; it nevertheless keeps well out of arm’s length, and dodges well. A native fired twenty times, and failed to get a specimen."

2. Halcyon sacra.

*Halcyon sacra* (Gm.); Sharpe, Mon. Alced. p. 223, pl. 85.

*Hab.* Tutuila, Samoan Islands (T. Powell).

The specimen sent agrees accurately with the central figure in Mr. Sharpe's plate, which was drawn from a specimen said to have come from Tongataboo. Mr. Sharpe unites the birds from the Fiji, Friendly, and Samoan islands; and I follow him in so doing; but should the Samoan bird prove distinct, the name it should bear is *Halcyon pealii*, Finsch & Hartl. Orn. Centralpolyn. p. 38, it being the *Dacelo coronata*, Peale (nec Müller).

3. Anous ceruleus.


*Hab.* Tutuila, Samoan Islands (T. Powell).

The full synonymy of this species is given in Mr. Sharpe's Notes on Birds from the Ellice Islands (l. c.). Mr. Powell gives the total length as 10 inches, and the expanse of the wings as 20 inches. The native name in Samoa is “Laia.” He says the bird is abundant in some parts of Tutuila.
4. Fregetta moestissima, sp. n.

Omnino fuliginoso-nigrescens, alis et cauda nigricantioribus; alis longissimis, cauda valde furcata; rectricibus latissimis; tarsis elongatis; digitis fere aequalibus, phalangibus proximis complanatis. Long. tota 9·5, alae 9·1, cauda rectr. med. 3·2, lat. 4·2, tarsi 1·9, dig. med. cum ungue 1·3, rostri a rictu 0·9.

Hab. Samoan Islands (T. Powell).

Obs. Species F. melanogastra congenerica, sed ab omnibus vestitu unicolori nigrescente distinguendia.

In the 'Proceedings' of last year (P. Z. S. 1877, p. 722) Dr. Finsch described a Petrel under the name of Procellaria albogularis from the Fiji Islands, which is evidently a near ally of the present bird. This bird, however, differs in having the chin, belly, and upper tail-coverts white, and in some other respects. Of Dr. Finsch's bird I have before me a specimen obtained in Aneiteum, New Hebrides, as long ago as January 1860, I believe by the late John Macgillivray. Curiously enough, it bears the MS. name albogularis, selected for it by Dr. Finsch seventeen years subsequently. The native name given in Aneiteum to this bird is 'Nichitterin,' as the label records.

A similar specimen is in the British Museum, and another in the Leyden Museum. In both places the birds are referred to Procellaria tropica, Gould; and all references to P. tropica from the Pacific Ocean apply to it. But Fregetta albogularis is considerably larger than P. tropica, and has a more deeply forked tail than that bird, besides the tail-feathers themselves being much wider. It is doubtful whether P. tropica, the original specimens of which were obtained by Mr. Gould himself in the Atlantic Ocean, is really separable from F. melanogastra. Mr. Sharpe has already united them under the former name (Trans.-Venus Exp. Birds, p. 30.) The following references relate to Dr. Finsch's Procellaria albogularis:

Fregetta tropica, Coues, Pr. Ac. Phil. 1864, p. 85 (? partim).
"Procellaria torquata, Macgill.,” G. R. Gray, Hand-list, iii. p. 104 (nec Macgill!).
Thalassidroma albogularis, Macgill. MS.
Oceanites tropica, Sharpe, Trans.-Venus Exp. p. 30 (partim).

The native name of Fregetta moestissima in Samoa is Seu-ta-peau; and of its habits Mr. Powell says:—“They often float on the sea in great numbers. They inhabit all the islands of the group, but are most abundant on Manua. They sleep in holes under the trunks of trees at an elevation of 2500 feet, whence they are taken with dogs, which scent them. They are easily extracted from their holes.”
5. *Puffinus obscurus*.

*Proccellaria obscura*, Gm. Syst. Nat. i. p. 559.


*Hab. Manua, Samoan Islands (T. Powell).*

Native name "Taio,"—Taiko.

Mr. Powell says that these birds are found in the mountains of Manua in holes, as in the case of the Seu-ta-pan (i.e. *F. maestissima*). The natives are very fond of them, and catch and consume great numbers, hunting them with dogs. He gives the dimensions of the specimen sent as follows.—Length 12.6 inches from the tip of the bill to the tip of the tail; bill 1.3; tail 3.3; middle and outer toe 1.8; inner toe 1.5; tarsus 1.6 (black on the outer side, bluish black on the inner); expanse from tip to tip of wings 2 feet 2 inches.

6. On the Use of the generic Name *Gouldia* in Zoology.

By W. H. Dall, Smithsonian Institution.

[Received January 7, 1879.]

Until within a few days I have never been able to point to the exact place where the late Prof. C. B. Adams described his genus *Gouldia*; and most foreign naturalists have supposed that its first appearance was in Jay’s Catalogue of Shells of January 1850. According to Marshall’s continuation of the ‘Nomenclator Zoologicus,’ a genus *Gouldia* (Trochilidae) was proposed by “Ch. Bonaparte in Paris Acad. 1850,” while another authority places the date of the description in 1849. On this account Mr. Guppy of Trinidad, W. I., proposed to substitute Crassinella for the molluscan *Gouldia* of C. B. Adams. I believe this name has somewhere been used by T. A. Conrad for some fossil allied to *Astarte*; but I have not been able to find the reference yet. It is, however, of no consequence, since, even had *Gouldia*, C. B. Ad., been untenable, there are several synonyms which are prior to Crassinella, Guppy, for that genus.

I am glad to be able to state definitely, at last, the place of description and date of *Gouldia*, C. B. Ad., and to establish it on a permanent footing, especially as the eminent naturalist from whom it was named was one to whom I owe a lasting debt of gratitude and affection for the almost paternal kindness with which he forwarded my first attempts at the study of natural history.

The story is most briefly told in a few paragraphs of synon-

ymical references.

**Genus Gouldia, C. B. Adams.**


*Gouldia*, C. B. Ad. (in) Cat. of Genera and Species of recent
Shells in the Coll. of C. B. Adams, etc.¹ p. 29, note, Jan. 1847 (with the same two species as types); Pan. Sh. p. 275, 1852 (G. pacifica). Jay, Catal. of Shells, Jan. 1850; ibid. 1851. Not Gouldin, Bon. 1849-50 (Aves).


?Eriphylopsis, Meek, Pal. Upper Missouri, p. 125, 1876 (E. gregaria).


Mr. Gabb’s Eriphyla was described under the idea that certain characters of the hinge were constant, which an examination of a series of a recent species of Gouldia (G. mactracea, Linsley) has shown to be variable; and the same is probably true of Meek’s Eriphylopsis, in which the specimen examined had the teeth reversed, as regards the right and left valves, as compared with the recent species. Such reversals occur in nearly all bivalves in individual cases, and, unless confirmed by the testimony of a large series, can hardly be held to have any systematic value.

It would seem, therefore, that the genus Gouldia of Bonaparte requires a new name; but, with Mr. Guppy’s example as a warning, I shall leave that to the ornithologists to settle.

It may be remarked, however, that another genus of Trochilidae, Halia, Mulsant and Verreaux (Mém. Cherbourg Soc. Sc. Nat. xii. 1866), is preoccupied by Risso (Eur. Mém. 1826) for a valid genus of mollusks. It may also be questioned whether Doryfera, Gould, P. Z. S. 1847, has the right to exist simultaneously with Doryphora (Illiger, 1811, and Kütz. 1844). Moreover Glauces (Bruch, Cab. Journ. 1853, Laridae) was used for a mollusk by Forster in 1800, and Gnathodon (Jardine, Ann. Nat. Hist. xvi. 1848, Columbidae) was used by Gray for a mollusk in 1825.


7. A few Notes upon Four Species of Lemurs, specimens of which were brought alive to England in 1878². By George A. Shaw.

[Received January 9, 1879.]

(Plate IX.)

1. The Ring-tailed Lemur³.

As far as my experience of seven years goes, these Lemurs are found only in the south and south-western borders of the Betsileo province of Madagascar. This province is about 150 miles in length, by 50 or 60 in width, and is situated on the central tableland, about 100 to 250 miles south of Antananarivo, the capital of Madagascar.

¹ Middleburg, Vt., Justus Cobb, 1847, 8vo, pp. 32. The preface is dated January 1847.
² [See above, p. 2.—P. L. S.]
³ [Lemur catta, Linn.—P. L. S.]
CHIROGALEUS MILII.
A forest extends along the whole eastern side of this province, fringing the tableland, and covering all the slopes down into the lowland bordering the sea; but nowhere in these forests have the Ring-tailed Lemurs been found. Their habitat in the south and south-west is among the rocks, over which they can easily travel, where it is impossible for the people, although bare-footed, to follow. An examination of their hands will show that they are preeminently adapted for this kind of locomotion. The palms are long, smooth, level, and leather-like; and enable the animal to find a firm footing on the slippery wet rocks, very much on the same principle as that which assists the fly to walk up a pane of glass. The thumbs on the hinder hands are very much smaller in proportion than in the Lemurs inhabiting the forests, which depend upon their grasping-power for their means of progression. These spring from tree to tree, and rarely if ever touch the ground, except in search of water.

Hence the Ring-tailed Lemurs are an exception to the general habits of the Lemuridae, in that they are not arboreal. There are very few trees near their district; and those which do grow there are very stunted and bushy.

These Lemurs are provided with two long canine teeth or fangs in the upper jaw, those of the male being considerably longer than those of the female. These they use to take away the outer coating of the fruit of the prickly pear, which is full of fine spines, and constitutes their chief article of winter food, and which grows abundantly in the crevices and around the foot of the rocks. Their summer food consists of different kinds of wild figs and bananas. Their fangs are doubtless used as weapons of self-defence, although when fighting I have noticed that they depend a great deal upon their hands, with which they scratch and strike. I have seen the male put a dog larger than itself to the rout in this way.

They are very easily tamed, and in captivity will eat almost any kind of fruit, but do not like meat in any form. By a little care, they can be induced to feed upon cooked rice, upon which they thrive. In their natural state, they do not drink, as is proved not only from the native accounts, but also by the fact that for the first month or two after being caught, and while living on bananas, they do not drink. It is curious that all the species of Lemurs living on the west, including the two kinds of white Lemurs, appear to subsist without water; whilst all those on the east invariably drink at their meals.

2. The Broad-nosed Lemur. 

This one was caught and chained up last January. It came from the higher-level forests on the eastern side of the Betsileo, among the bamboos, on which it appears in a great measure to subsist. Its teeth are different from those of any other kind of Lemur with which I am acquainted. It has the few sharp outwardly inclined teeth in the lower jaw in the front common to all Lemurs, and which they use

1 [Hapalemur simus, Gray, P. Z. S. 1870, p. 828, pl. lli.—P. L. S.]
as scrapers, and not to bite with. Besides these, nearly all its teeth are serrated cutting-teeth, and are arranged, not in opposition, but so as mutually to intersect. In this respect it is admirably accommodated to suit the country in which it lives, as with the greatest facility it can bite off the young shoots of the bamboo, and mince up a whole handful of grass blades and stalks at once, each bite cutting clean, like a pair of scissors. Like very many grass-eating animals, it seems to feed nearly all day long. For several months I had this one chained on the lawn; and it scarcely ceased gathering the grass within its reach, and eating it, from morning till evening. It is also unlike other Lemurs in its dislike of fruit. I have tempted it with very many different kinds of berries and fruits growing in the forest; but it would not touch any of them. It is very fond of cooked meat, and also of sugar-cane; and it was owing to its desire for sugar that it has been coaxed to eat cooked rice, which is now its staple food. It is furnished with a remarkably broad pad on each of the hinder thumbs, by means of which it is enabled to grasp firmly even the smoothest surfaces. Unlike most other Lemurs, its head is very round, although the female has a somewhat more pointed snout than the specimen now in the Society’s Gardens. Its cry is very peculiar, at times resembling the quack of a duck, at other times loud and piercing. Its tail is long, but not very bushy.

3. The Brown Mouse-Lemur. (Plate IX.).

This small and highly interesting animal was caught in November 1877, since which time it has lived in a small box, and has been allowed a little exercise about the room each night. It is nocturnal in its habits; and its food consists of fruits and possibly honey: of this there is abundance in the forests on the eastern side of Betsileo, from the lower parts of which the animal was brought. The specimen is full-grown, about seven or eight inches in length; has a pointed snout and very prominent eyes, large ears, and round rat-like tail, which is not prehensile. It is of a brownish-grey colour, approaching to white on the underparts. Its four legs are almost equal in length, thus rendering it difficult for this Lemur to leap any considerable distance, as the majority of species can. It runs on all fours, but sits up to eat, holding its food in the fore hands. I fancy that in the winter months in its natural state it hibernates, because in the beginning of last winter (that is in June), after several nights’ good exercise, during which time it had the opportunity of eating as much banana as it chose to take, I was astonished in the evening, on opening its box, to find it still asleep, and quite cold to the touch. At first I thought it was dead; but by holding it near to a fire and rubbing it, it gradually awoke, and when thoroughly warmed appeared none the worse in health. This happened two or three times, and without any apparent cause, as there was no ill health, nor was the weather particularly cold. From this fact, and from the sudden and unnatural enlargement of the

1 My notes with these particulars have not yet arrived.

2 [This seems to be Chirogaleus mili, Geoffr.—P. L. S.]
tail, which unfortunately still continues, I presume, had it been in its native forest, it would under the same circumstances have slept through the winter. It makes a nest of leaves or dry grass, by carefully scooping a hollow big enough to contain itself, and then, after getting in, covering itself with the loose leaves or grass. The native tradition also confirms my opinion with regard to its hibernation. They say that it hides in the hollow trees in the winter.

It appears to be a very uncommon animal, even in Madagascar, as this is the only specimen I have been able to obtain, although I kept a man in the forest for two months seeking for one after I had obtained this one. Of course, the fact of their sleeping all day and only feeding at night adds to the difficulty of catching them.

It was easily tamed, and proved very affectionate; comes when called by name, and enjoys being fondled and rubbed.

4. The Dwarf Lemur.

This is another species of nocturnal animal, and is the most diminutive Lemur with which I have become acquainted. They inhabit a belt of forest-land stretching from the eastern forest into the heart of Betsileo, a few miles north of Fianarantsoa, where they are tolerably abundant. They live on the tops of the highest trees, choosing invariably the smallest branches, where they collect a quantity of dried leaves, and make what from below looks like a bird's nest. So close is the resemblance, that it requires good eyes to distinguish the one from the other.

Their food consists of fruit and insects and most probably honey. I have frequently seen them catching the flies that have entered their cage for the honey; and I have supplied them with moths and butterflies, which they have devoured with avidity.

They are extremely shy and wild. Although I have had between thirty and forty caged at different times, I have never succeeded in taming one. They are also very quarrelsome, and fight very fiercely, uttering a most piercing penetrating sound, somewhat resembling a very shrill whistle.

The teeth are very minute, but exceedingly sharp; and when they bite they hold so tenaciously that it requires a good shake and knock to make them let go. These Lemurs can leap better than No. 3; but still their usual mode of progression is on all fours; and when running up any branches which they can grasp with their hands, they are very nimble indeed, very much more so than when on the ground. They are very strong in their hind legs and hands. I have often seen them swing themselves down from their perch holding by the hind hands, grasp their food in the two fore hands, and then gradually draw themselves back again into their former position on the perch. In this they are assisted by the tail only as a balance and not as an additional grasping-member. And although the tail is of considerable assistance when stretching out from one branch to another, by being partly twisted round the branch, it is certainly not prehensile in the same sense as some monkeys' tails are.

1 [Microcebus smithii (Gray).—P. L. S.]
Their eyes are large and brilliant, their ears large, and their hands beautifully perfect, with ordinary-sized nails on each finger, except the second of the hind hands, which is furnished with the long scratching-claw.

They bring forth two, and sometimes three at a birth; but I have had none breed in captivity.

8. Descriptions of new Asiatic Diurnal Lepidoptera.
By F. Moore, F.Z.S.
[Received January 14, 1879.]

**Danaiss persimilis**, n. sp.

Nearest allied to *D. exprompta*, Butler (the Ceylon form of *D. juventa*), but is much smaller in size. The markings are similar; but those from the base of the wings are very much more attenuated and shorter, and the discal spots also smaller, the markings on the hind wing being more attenuated than those in *D. grammica*.

Expanse 2½ inches.

*Hab.* Petchaburree, Bankok District, Siam (April 12, 1875).
In coll. R. Meldola and F. Moore.

**Nymphalinæ.**

**Neptis camboja**, n. sp.

*Male.* Upperside—fore wing with a pale ferruginous broad longitudinal band from the base to beyond the cell, a broad oblique subapical and a constricted lower band; also two very narrow indistinct ferruginous marginal lines: hind wing with a broad ferruginous transverse discal, and narrow slightly curved submarginal band; also a single very narrow and indistinct ferruginous marginal line. Underside pale yellowish ferruginous; bands as above, but indistinctly defined.

Expanse 1½ inch.

*Hab.* Cambodia (Mouhot). In coll. N. C. Tuely, Esq.

Allied to *N. dindinga*, Butler, from Malacca. Also allied to *N. heliodore*, Fabr., from Siam (the type specimen of which is in the Banksian cabinet in the British Museum), but differs above on the fore wing in the discoidal streak not extending over the median vein, and in the submarginal band on the hind wing being narrower. On the underside these differences also occur, and the dark interspace between the bands on the hind wing is also narrower.

**Neptis sinuata**, n. sp.

Allied to *N. hordonia*, Stoll. Differs on the upperside in the bands having deeply sinuated borders. Underside also paler; the strigæ less prominent, and disposed in more blotchy patches.

Expanse, ♂ 1⅖, ♀ 1⅖ inch.

Vanessa haronica, n. sp.

Differs from the Indian \( V. \) charonia, Drury, in the blue band on the fore wing being continuous and broader. On the hind wing the band crosses the middle, is straight, and has no black spots within it, but has a parallel outer row of small black spots.

Expanse, \( \sigma 2\frac{2}{3}, \varphi 3 \) inches.

\( Hab. \) Ceylon. In coll. F. M. Mackwood and F. Moore.

Adolias annamita, n. sp.

Differs from \( A. \) evelina, Stoll, pl. 28. f. 2, in both sexes being more falcated in the fore wing, in having a longitudinal white costal patch immediately before the apex, and in the female having, both above and beneath, the discal space of the fore wing broadly greyish white, sparsely irrorated with green scales, and leaving only a distinct marginal border; the hind wing also pale-speckled along the discal border of the dark base.

Expanse, \( \sigma 3, \varphi 3\frac{2}{3} \) inches.

\( Hab. \) Cochin China. In coll. H. Druce.

Nemeobiinæ.

Abisara prunosa, n. sp.

Differs from the Malacca species (\( A. \) kausambi, Feld.) in the male having more prominent darker bands on the fore wing and prominent black spots on the hind wing. The female differs also in its paler colour, and uniformly pale transverse discal bands without any trace of white at their costal end.

Expanse 1\( \frac{1}{2} \) to 1\( \frac{3}{8} \) inch.

\( Hab. \) Ceylon. In coll. F. Moore.

Lycænidæ.

Spalgis, n. g.

Allied to Gerydus (Symethus, Horsf.). Male with fore wing more trigonal, the costa straighter, the third subcostal branch bifid, the fifth branch starting from end of cell: the hind wing is also more trigonal in male, and the exterior margin is even in both sexes. Antennæ short, club thickish.

Spalgis epius.


Curetis dentata, n. sp.

\( Male. \) Fore wing slightly concave, but not scalloped out on exterior margin; red patch very broad, with a dentate black mark at the end of the cell, and its outer border sinuous: hind wing convex and slightly sinuous on its exterior margin, with the red broadly diffused; outer border narrow; the basal streak and abdominal border dusky black.
Female with fuliginous brown borders and white discal patch; the dentate mark on fore wing distinct.

Expanse 1\(\frac{5}{8}\) inch.

_Hab._ Deyra Doon, N.W. India (G. Austen). In coll. F. Moore.

Distinguished from _C. bulis_, Doubleday and Hewitson (Gen. D. Lep. pl. 75. f. 5), in the fore wing not being falcate, and in the exterior margin of the hind wing not being angular in the middle.

_Curetis discalis_, n. sp.

_Male_. Distinguished above by the bright red of the fore wing being confined to a narrow elongated patch, and that on the hind wing also confined to a small oblong lunular discal patch, which is slightly dentate on the middle of its inner border: fore wing somewhat short and truncate.

Expanse 1\(\frac{5}{8}\) inch.

_Hab._ Nepal (General Ramsay); Darjiling (Atkinson). In coll. F. Moore and Dr. Staudinger.

_Anops stigmata_, n. sp.

_Male_. Fore wing short, apex not falcate, exterior margin slightly scalloped, the bright red patch broad and sinuous on its apical border: hind wing quite convex and even along exterior margin, with a well-defined black outer border and prominent black longitudinal narrow median basal brand or streak; the abdominal border dusky.

Expanse 1\(\frac{5}{8}\) inch.

_Hab._ Moulmein, Burmah. In coll. F. Moore.

Has most resemblance to the male of _C. thetys_ in the contour of the wings.

_Polyommatus pseuderos_, n. sp.

_Male_. Upperside smalt-blue, with somewhat broad greyish-black maculated exterior borders; cilia with a blackish inner line. Underside pale ochreous-grey: fore wing with a white-circled black dot in middle of the cell, a streak at its end, a discal series of six spots, and a marginal row of less-distinct black spots bordered inwardly by a pale ochreous-red and black lunule: hind wing speckled with green and black at the base; a transverse subbasal series of four white-circled black spots, a curved discal series of seven similar spots, a paler streak at the end of the cell, a very prominent row of marginal spots bordered by an inner ochreous-red and black lunule, and an intervening short longitudinal discal white dash; cilia white.

_Female_. Upperside brown, with a submarginal series of small ochreous-red lunular spots. Underside darker-coloured than male; markings the same.

Expanse, ♂ 1\(\frac{4}{10}\), ♀ 1\(\frac{3}{6}\) inch.

_Hab._ Sind valley, Kashmir (Atkinson). In coll. Dr. Staudinger.

Allied to _P. eros_; differing above in having the outer margins more decidedly maculated with greyish-black, and in the fore wing beneath having no spots at the base; the discal row of spots also are disposed
in a more linear series; and the ochreous red borders to the marginal spots are less dentated with black on their inner border.

**Polyommatus limbatus, n. sp.**

*Male.* Upperside lilac-blue; cilia white, with an inner black line: fore wing with a very narrow exterior marginal black band: hind wing with a very narrow marginal black line and a few minute speckles at apex. Underside white, with slender dusky markings, as in *P. puspa*.

Expanse $\frac{12}{10}$ inch.


Diffs from *P. dilectus* in its more pointed fore wing, darker colour, and more prominent marginal line.

**Polyommatus transpectus, n. sp.**

*Male.* Upperside blue; both wings with a broad outer marginal black band, broadest at apex of fore wing; the band on the hind wing maculated. Underside white, with indistinct slender dusky markings disposed as in *P. puspa*; the costal spot only prominent and visible above.

Expanse $1\frac{3}{8}$ inch.

*Hab.* Khasia hills, E. Bengal. In coll. F. Moore.

**Polyommatus alcocaeruleus, n. sp.**

*Male and Female.* Upperside pale clear blue, discal area of fore wing and apical area of hind wing white: fore wing with a broad outer marginal black band terminating in a point at the posterior angle in the male, but not reaching the angle in the female: hind wing with a narrow marginal black line and a series of small indistinct spots, the latter still less apparent in the female; cilia white, with an inner bordered line adjoining band on fore wing. Underside white, with small and slender black markings disposed similar to those in *P. puspa*, but without the lunular line encompassing the marginal spots.

Expanse, $\varphi$ 1$\frac{3}{8}$ inch.


**Polyommatus dilectus, n. sp.**

*Male.* Upperside pale lilac-blue, with a very slender marginal black line; discal area of fore wing and apical area of hind wing slightly whitish; cilia white. Underside white, with small slender indistinct blackish markings disposed as in *P. puspa*.

*Female* similar to *P. puspa*, but paler above, the exterior dusky-brown band on fore wing of less breadth, and the blue extending to posterior margin: hind wing bluer, less dusky anteriorly, with a marginal row of indistinct dusky spots.

Expanse 1 to $1\frac{3}{4}$ inch.

*Hab.* Nepal; Sikkim; N. Cachar. In coll. F. Moore.
**Aphnaeus lunulifera, n. sp.**

Upperside dark greyish-blue, the borders dark brown: fore wing with a small ochreous red lunule beyond end of the cell; hind wing with a dark ochreous red anal lobe, containing two prominent black silver-streaked spots. Underside pale ochreous-brown, the bands and spots defined only by prominent black lines and silver-streaked centres; anal lobe bright vermilion, the black silvered-streaked spots prominent.

Expanse 1 2/10 inch.

*Hab.* Darjiling (Atkinson). In coll. Dr. Staudinger.

Differs from *A. ictis*, Hewits. Exot. Butt. pl. 25. figs. 8 & 9, above in having a dissimilar-shaped subapical mark. Underside also of a different colour. *A. elima*, Moore, also differs from this in being paler-coloured above, of a deeper colour beneath, in having the markings nearly obsolete, and in the absence of the red patch on anal lobe.

**Deudorix Lazulina, n. sp.**

*Male.* Upperside dull dark lazuline-blue, outer borders black, abdominal margin grey, anal lobe black. Underside brownish grey: fore wing crossed by a discal band of two narrow white lunular lines, and a short streak at end of the cell; hind wing crossed by similar irregular bands, the discal bent upward to middle of anal margin; a black spot bordered above with ochreous at anal angle, and another beyond.

*Female* purple-grey above, ochreous-grey beneath; marked as in male.

Expanse 1 3/4 inch.


**Deudorix Schistacea, n. sp.**

*Male.* Upperside dark slaty-blue: underside buff-grey; both wings crossed by a narrow discal band of two white lunular lines, and a cell streak; a black anal spot bordered above with white and another beyond bordered with ochreous.

*Female* purple-blue, borders slightly purple-brown.

Expanse 1 3/8 inch.

*Hab.* Calcutta (Atkinson and Farr). In coll. F. Moore and Dr. Staudinger.

Allied to *D. varuna*. May be distinguished by the blue colour of the male pervading the entire surface of the upperside.

**Deudorix Grisea, n. sp.**

*Male.* Upperside dull greyish blue, outer border dusky back. Underside dull lavender-grey; both wings crossed by a broad darker band bordered by a pale lunular line, and a cell-streak; anal spots black, the outer ochreous-bordered above.
Female pale greyish blue above, border dusky brown.  Expanse, $\xi$ $1\frac{1}{2}$, $\varphi$ $1\frac{1}{6}$ inch.

Allied to D. schistacea.

**Deudorix rectivitta**, n. sp.

**Male.** Upperside dark dusky blue, borders black.  Underside pale vinous brownish buff; both wings crossed by a straight narrow tapering dark-brown pale-outer-bordered band, a paler cell-streak, and an indistinct brownish submarginal fascia; the band on hind wing bent and zigzag above anal angle; a small black anal and sub-anal spot speckled ochreous and white, a few speckles also between them.

Expanse $1\frac{1}{2}$ inch.


Nearest allied to D. nissa, Kollar, from N.W. Himalayas.

**Deudorix lankana**, n. sp.

**Female.** Upperside pale violet-brown, marginal line black; cilia pale ferruginous; anal lobe ferruginous; tail black; cilia at anal angle and beyond tail white.  Underside pale ferruginous, the margin darker; crossed by a narrow ferruginous-brown discal band; a black spot at anal lobe and a speckled spot beyond, both of which and the end of the band are bordered with white speckles.  Legs blackish, banded with white.

Expanse $1\frac{1}{2}$ inch.

Hab. Ceylon (Kottawah forest near Galle). In coll. Capt. Wade.

**Amblypodia naradoides**, n. sp.

**Male.** Upperside dark violet purple-brown, with a broad dusky-black marginal band; anal lobe and tail chestnut-brown, the angle white-speckled.  Underside dark purple-brown; transverse band, speckled marks on basal area, and a submarginal series of speckled spots black, the latter and anal angle white-speckled.

**Female.** Upperside dark brown; fore wing with the lower basal and discal area smalt-blue.  Underside pale brownish grey, transverse line and speckled markings black; anal angle ferruginous.

Expanse, $\xi$ $1\frac{3}{4}$, $\varphi$ $1\frac{1}{2}$ inch.


A much darker insect than the Javan species A. narada, Horsf.

**Amblypodia darana**, n. sp.

Differs from A. naradoides in being larger, the upperside of the male of a deeper violet-blue, the marginal band narrower; anal lobe red only in the middle, its margin and the tail black.  Underside purple chestnut-brown; speckled markings black, the marginal series white-speckled.

**Female.** Pale violet-brown above.  Underside similar.

Expanse, $\xi$ $1\frac{9}{10}$, $\varphi$ $2\frac{1}{2}$ inches.

Surendra¹, Moore.

Surendra latimargo, n. sp.
Near to S. vivarna (Amblypodia vivarna, Horsf. Catal. Lep. E. I. C. 1829, p. 99), from Java. Differs in being smaller, with slightly shorter wings, the hind wing less convex at the anterior angle and outer margin; the upperside of male has a much broader brown outer border, and the hind wing has scarcely any blue on the disk. The underside is purplish fawn-colour, the outer transverse sinuous line darker, and the inner zigzag line with less white border. The female differs also in being of a dark vinous brown above, with a slightly paler discal area on fore wing, and of a dark fawn-colour beneath.

Expanse, ♂ 1 2/10, ♀ 1 4/10 inch.

Surendra discalis, n. sp.
This also differs from S. vivarna in having a broader border in the male. The wings are of the same shape as in S. latimargo. The female above is ochreous-brown slightly violet-tinted, with a prominent pale ochreous discal area. Underside greyish basally, ochreous brown externally, with dark sinuous markings.

Expanse, ♂ ♀ 1 3/10 inch.

Pierine.

Catophaga pseudolalage, n. sp.
Allied to C. lalage, Doubleday, Gen. D. Lep. pl. 6. f. 3.

Male. Differing on the fore wing in the black apical band, the discal and cell-spot being smaller—the hind wing having but a slight black linear tip to the upper veins.

Female marked like the male of C. lalage (Durvasa, Moore, P. Z. S. 1857, pl. 44. f. 6), some specimens having the black discal and cell-spot on fore wing confluent and extending in a continuous band down the upper part of cell. Underside of both sexes dull ochreous, palest in male; apex of fore wing and the hind wing brown-speckled, the latter with darker brown zigzag speckled fasciae.

Expanse, ♂ ♀ 2 1/4 inches.

Catophaga lankapura, n. sp.

Male. Differs above in the fore wing being less black at the apex, and the hind wing having but a few indistinctly scattered black scales at end of the veins. Underside bright deep yellow.

¹ Type, S. quercetorum (Amblypodia quercetorum, Moore, Catal. Lep. E. I. C. i. p. 42, pl. 1 a. fig. 7.).
Female. Similar above and beneath, excepting that the black curved band on fore wing is twice the width, and the hind wing having a submarginal macular fascia composed of black scales.

Expanse, ♂ 2\(\frac{4}{8}\) ♀ 2\(\frac{3}{8}\) inches.


Distinguished from the allied Ceylon species C. galene, Felder, Nov. Reise, p. 165, by the bright yellow colour of the underside.

Appias taprobana, n. sp.

Diffsers from typical specimens of A. hippo, Cram. Pap. Exot. ii. pl. 195, f. B, C, from Sumatra, in its smaller size; the male having a darker and somewhat broader well-defined dentate marginal band above, the underside having the prominent apical spot and the hind wing of darker yellow, the band being quite as broad, the costal vein narrowly and the subcostal broadly speckled with dark brown.

Female. Above with broad well defined sinuous borders, the disk of fore wing and basal area of hind wing broadly whitish, similar to the female of A. vacans; underside as in male.

Expanse 2\(\frac{2}{8}\) inches.


Papilionæ.

Papilio casyapa, n. sp.

From Himalayan specimens of P. panope, Linn. (Cram. Pap. Exot. iv. pl. 295. f. E, F), this differs in the male being of a darker purple brown, and the female darkest-coloured on the fore wing basally between the veins. The fore wings in both sexes have a third or inner discal series of speckled dentate marks on both upper and undersides, these being most prominent in the female; hind wing with well-defined and broad markings.

Expanse 4\(\frac{1}{4}\) inches.

Hab. Calcutta district (Russell and Farr.). In coll. F. Moore.

Papilio lankeswara, n. sp.

Distinguished from P. panope and P. clytia by its much paler colour, the fore wing having the veins broadly and the outer border pale coffee-brown, the basal interspaces between the veins only being dusky black; the marginal spots are very small, the upper series being obsolete in the male and indistinct in the female; hind wing with the discal dentate marks less distinct, shorter and widely separated from the submarginal narrow dentate lunules, marginal lunules broadest in the male.

Expanse 4 inches.


This is certainly not P. lacedæmon, Fabr. It does not agree either with the description or with Donovan’s figure.
Hesperide.

Gomalia, n. g.

Wings short: fore wing with the costa slightly arched at the base, apex acute, exterior margin oblique, posterior angle slightly convex, costal vein short; subcostal vein five-branched, first, second, and third arising before end of the cell, fourth and fifth from its end; upper discocellular angled, lower oblique, upper radial from angle of upper discocellular, lower radial from its end; median vein three-branched, middle branch from near end of the cell; submedian vein nearly straight: hind wing lobed and angled near base of costal margin, apex and exterior margin very convex; costal vein extending to near apex, subcostal vein two-branched, one radial; median vein three-branched. Body short, thorax stout; palpi thickly pilose; antennae short, with a thick very blunt club; legs moderately long, squamous.

Gomalia albofasciata, n. sp.

Upperside dark greyish brown: fore wing with a black transverse basal and a discal band, a small white streak at end of the cell, two lunular spots on the disk and three contiguous spots obliquely before the apex: hind wing with a broad white median transverse band. Underside paler, white markings as above. Palpi white beneath.

Expans 2 in.

A single specimen captured between Kirrinde and Werewille beyond Hambantotte, on the S.E. coast.


By Dr. A. Günther, F.Z.S.

[Received February 4, 1879.]
(Plate X.)

The British Museum has lately received from the vicinity of Medellin, Columbian Confederation, through Mr. J. K. Salmon, the skin of a Rodent, which, though evidently taken from a specimen not fully adult and not in perfect condition, represents characters so well marked that it cannot fail to be recognized by the following notes. It is the type of a distinct genus in the family of Octodontidae.

Thrinacodus, g. n.

Legs of moderate length; toes four in front and five behind; claws small. Eyes small; ears broad, short, with long sparse hairs round the margin; nose hairy, except on a narrow stripe in the median line, which is naked. Tail very long, finely verticillated, but rather densely covered with short stiffish hairs. Fur soft, dense and long. Facial portion of the skull short; incisive foramina short, but extending into the maxillaries. Molar teeth extremely broad, the anterior in the upper jaw nearly meeting in the middle line, and
interrupting the continuity of the bony palate. Each of the two anterior upper molars with two pairs of enamel folds, those of each pair meeting interiorly and forming a kind of fork. Enamel folds of the anterior lower molar more irregular; the second with three folds, the two anterior forming a loop.

Dentition of *Thrinacodus albicauda*.

**Thrinacodus albicauda.** (Plate X.)

Fur along the back of uniform softness and length, the longest hairs being about an inch long; lower parts covered with shorter, but likewise soft and dense fur. Bright reddish-brown above, the longest hairs being black towards the extremity; roots of the hairs grey. Lower parts white. Basal half of the tail like the back, terminal half white, with a greyish tinge towards the extremity.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Millim.</th>
</tr>
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<tbody>
<tr>
<td>Length of head and body</td>
<td>150</td>
</tr>
<tr>
<td>Length of tail</td>
<td>255</td>
</tr>
<tr>
<td>Length of sole of fore foot</td>
<td>20</td>
</tr>
<tr>
<td>Distance between heel and extremity of middle toe</td>
<td>38</td>
</tr>
<tr>
<td>Length of skull</td>
<td>40</td>
</tr>
<tr>
<td>Distance between the incisor and first molar</td>
<td>8</td>
</tr>
<tr>
<td>Length of first upper molar</td>
<td>4.5</td>
</tr>
<tr>
<td>Width of first upper molar</td>
<td>4</td>
</tr>
</tbody>
</table>

February 18, 1879.

Prof. W. H. Flower, LLD., F.R.S., President, in the Chair.

The Secretary exhibited, on behalf of the Rev. F. O. Morris, an example of *Bombyx quercus* with the antennae malformed, being much smaller than the ordinary size.

Mr. Sclater laid before the Meeting an example of a Hummingbird obtained at Guajango, in Northern Peru, by Messrs. Stolzmann

1 Only the two front molars above and below have been preserved; the third, which was still in an undeveloped condition, is lost. But it is not likely that in the adult dentition the breadth of the molars would be diminished.
and Jelski, and forwarded to Mr. Sclater for examination by M. L. Taczanowski, of Warsaw, C.M.Z.S.

Mr. Sclater stated that, after careful examination and consultation with Mr. Gould and Mr. Salvin, he had come to the conclusion that this bird must be referred to a new species, which he proposed to characterize as follows:—

**Thaumasius**¹ Taczanowski, sp. nov.

*Supra metallice viridis, in capite cupreo lavatus, plumis subtus cinereis; alis fuscis, tectricibus dorso concoloribus; cauda æquali, supra dorso concolori, versus apicem cupreo tincta, subtus fusca, versus apicem cupreo-virescente; corpore subtus albo, lateraliter et in crissu præcipue pallido cinereo perfuso; gutture tuto punctis minutis, cordiformibus, nitentii-viridibus obtecto; rostro fortii, paulum incurvo: long. tota 4'0, alæ 2'6, caudæ 1'5, rostri a rict. lin. dir. 0'9.

*Hab.* Guajungo, prov. Cajamarca, Peru.


Mr. Sclater exhibited a living Amphisbaenian lately received by the Society from Monte Video, which appeared to be referable to *Amphisbaena darwini*, D. & B.

The following papers were read:

1. Note on the *Pachycephala icteroides* of Peale, with Description of a supposed new Species. By E. L. Layard, C.M.G., F.Z.S.

The acquisition of the part of the ‘Proceedings’ of the Society for March and April of 1878, has put me in possession of the remarks of Mr. W. A. Forbes on *Pachycephala icteroides*, Peale, from Samoa (page 351), and has induced me to reconsider my opinion on that species given P. Z. S. 1876, p. 494. Unfortunately I can only do this from memory, as the Part (No. 3, of 1876) containing that page is wanting from my series.

In general terms, I believe I said "I doubt the occurrence of *P. icteroides*, Peale, in Samoa." To this belief I was led by Drs. Finsch and Hartlaub including it as a Fijian species in their ‘Fauna Centralpolyneisn’ in the “Einleitung” of which (page xxxiv) *P. icteroides* is given as from the “Viti-Gruppe,” and from Viti Levu in particular. The bird I identified with *P. icteroides* is found on Ovalau, and as certainly is not found in Samoa. With *P. graeffii*, Hartlaub, I at first confounded it (P. Z. S. 1875, p. 433), believing that another bird, that I afterwards named *P. intermedia*, was

¹ *Thaumasius* nomen ex *thaumatis*, admiratione dignus, derivatum, "Thaumasis," nee "Thaumatis" melius scribatur.
P. vitiensis. The acquisition of the true P. graeffi set me right; and I then settled that the bird was P. icteroides, never dreaming that a bird so far from uncommon could have escaped the notice of Drs. Graeffe and Finsch, and that there could be a third new species in Fiji, as I now see it to be.

I did not sufficiently consider the diagnosis given by Drs. Finsch and Hartlaub, which omits entirely the jet-black head possessed by my bird. Now also I have the advantage of reference to the original description and figures by Peale (Cass. Un.-St. Expl. Exp. (1858), p. 161. pl. x. fig. 3), thanks to the Smithsonian Institution; and I at once recall my observations.

What P. icteroides is I know not, unless it be the young of P. flavifrons (Peale). This Fijian bird is apparently undescribed; and as it has escaped notice up to this moment, I shall name it, if new,

PACHYCEPHALA NEGLECTA, n. sp.

♂. Above, back obscure darkish green, with a small patch of yellow on the immediate rump; head shining jet-black, all but the throat and chin, and a very small spot (not always present) between the eye and the nostril, which is of the light brilliant yellow of the whole of the underparts. In some specimens, a few straggling black feathers on the lower part of the throat, encroaching on each side of the chest, seem to point to the formation of a narrow black collar across the chest, such as is found in my P. intermedia. Wing-primaries edged more or less broadly with greenish grey (tail-feathers tipped with the same); secondaries broadly edged and tipped with pale yellow. The yellow of the underparts is a little darker than in P. flavifrons, agreeing, as far as my memory serves, with P. intermedia, of which I unfortunately have not retained a specimen, but is far less deep (orange-tinted) than in P. graeffi or P. torquata, Layard. Length 6" 6"; wing 3" 9"; tail 2" 10"; tarsus 13"; bill (to gape) 12". Bill black; legs bluish; iris dark brown.

Hab. Ovalau, Fijis.

This species differs entirely from P. flavifrons, Peale, in which the colour of the back is cinereous, with the faintest tinge of green, the head being of the same colour; on the latter the spot on forehead is far larger and is united over the bill; the wing-primaries are only most narrowly edged with grey; and the whole form is slighter. I give the dimensions of P. flavifrons for comparison. Length 6"; wing 3" 3"; tail 2" 6"; tarsus 10½"; bill (to gape) 10½".

Of the female of P. neglecta I unfortunately know nothing; but a very young male just showing a trace of yellow below, is of a palish chocolate-brown above throughout, tinged with green; below it is of a warm deep cinnamon-brown, with here and there a yellow feather. This is so like a female P. vitiensis, that I suspect it is also the livery of the female P. neglecta, nob.

On Viti Levu P. neglecta is replaced by the narrow-collared species, P. intermedia, nobis; P. torquata, nob., is confined, I think, to Taviani; P. graeffi, F. & H., to Vanua Levu; and P. vitiensis, G. R. Gray, to Kandavu.
I have six specimens of *P. neglecta*, all males, in various phases of plumage, all from Ovalau—and five of *P. flavifrons*, male, female, and young, of both sexes.

2 Description of four new Species of *Chameleon* from Madagascar. By Dr. A. Günther, F.Z.S., Keeper of the Zoological Department, British Museum.

[Received January 25, 1879.]

(Plates XI.–XIII.)

The Trustees of the British Museum have recently obtained by purchase a small number of animals collected in the neighbourhood of Antananarivo, the capital of Madagascar, a locality from which we should scarcely have expected to receive many novelties. However, singularly enough, the five Chameleons sent in this collection prove to represent four species which appear to have escaped the notice of previous collectors.

**Chameleon malthe, sp. nov.** (Plate XI.)

Snout (of the adult male) produced into a flat obtuse horn of moderate length, grooved above and below, and covered with large tubercles. Occipital region rather flat, angular but not pointed behind, on each side with a broad flap, the two flaps being continuous behind the occiput. Dorsal crest low, formed by short pointed tubercles unequal in size. No gular or ventral median series of tubercles. The round flat tubercles on the occiput and the occipital flaps are unequal in size, but none very large, most nearly granular. Along each side of the throat and on the limbs larger granules may be seen scattered among the small ones; but these larger granules are almost wanting on the side of the body. Heel without spur or prominence. Greenish yellow, with white upper lip, with a black band running from the eye along each occipital ridge; the portion of the neck which is covered by the occipital flaps deep black.

A single adult male, 9 inches long, the tail measuring exactly one half.

**Chameleon brevicornis, sp. nov.** (Plate XII. fig. A.)

Allied to *C. cucullatus* and *C. monachus*, but with the superciliary ridge continued to the end of the occiput.

The snout of the male is produced into a very short flat protuberance, concave above; the raised canthus rostralis passing uninterruptedly into the superciliary ridge, which is continued to the occiput. Upper surface of the occipital region flat, without prominent median crest. Occiput behind angular and pointed, but not produced into a spine; on each side a broad flap, the two flaps being nearly entirely separated from each other by a deep notch.
CHAMELEON MALTHE.
A. CHAMAELON BREVICORNIS.
B. CHAMAELON GULARIS.
CHAMÆLEON GLOBIFER.
Dorsal crest very low; anterior part of the throat and the abdomen with a very low crest, formed by a double series of short conical tubercles. The occipital flaps are covered by large flat rounded scutes, much larger than those of the temple, which is crossed by an indistinct raised ridge running parallel to the occipital ridge. Sides of the throat with very indistinct longitudinal wrinkles. Body and limbs finely granular, with scattered somewhat larger tubercles. Heel without prominence. Greyish or yellowish; occipital flaps whitish; snout blackish.

A single male, 9\(\frac{3}{4}\) inches long, of which the tail takes 6 inches.

**Chamaeleon gularis**, sp. nov. (Plate XII. fig. B.)

Allied to *C. brevicornis*.

Snout of the female not produced. The raised canthus rostralis passes uninterruptedly into the superciliary and occipital ridge, and is covered with a series of enlarged prominent reddish tubercles. Upper surface of the occipital region flat, without prominent median crest. Occiput pointed behind, but not produced into a spine; on each side a broad flap, the two flaps being separated from each other by a deep notch. Dorsal crest very low; anterior part of the throat with some isolated pointed tubercles in the median line; abdomen with a low median crest. The basal portion of the occipital flap covered with small flat tubercles, the marginal half with larger ones, of which two or three are conspicuous by their very large size. Temple crossed by a raised curved ridge. Sides of the throat with two or three longitudinal wrinkles, the bottom of which is extremely finely granular, and which are separated by rows of larger tubercles. Sides of the body and legs with numerous very conspicuous larger tubercles between the smaller ones. Heel without prominence. Yellowish, sides of the body and snout black; canthus rostralis purplish red.

A single adult female, 8\(\frac{3}{4}\) inches long, of which the tail takes 4\(\frac{1}{2}\) inches.

**Chamaeleon globifer**, sp. nov. (Plate XIII.)

Allied to *C. parsonii* and *C. pardalis*.

Each canthus rostralis terminates (in the male) in an erect globular protuberance in front; behind, it passes uninterruptedly into the superciliary and lateral occipital ridge; the occipital region being flat (without projecting median ridge), slanting from behind forwards, and with an obtusely rounded margin behind. No occipital flap. The spinous processes of the vertebral column form a crest, which, however, shows no denticulation, and but an indistinct serration immediately behind the head. Throat and abdomen without median crest. The sides of the body are uniformly finely granular; but the dorsal crest is covered with larger quadrangular scutes arranged in vertical series, some of which descend into the fine granulation of the side of the body. The legs, loins, and sides of the throat with numerous round flat tubercles interspersed between the fine granules; also the skin of the cheek is similarly covered. Temple very rough with
series of prominent oblong tubercles. Heel without prominence. Very dark-coloured, a more or less distinct small white spot on the middle of the side; each toe generally with a narrow white ring.

Two males, 10 inches long, the tail measuring exactly one half.

3. Descriptions of new Species of Rhopalocera from Central and South America. By F. DuCane Godman, F.Z.S., and Osbert Salvin, F.R.S.

[Received January 29, 1879.]

(Plate XIV.)

The following descriptions are all taken from specimens in our collection; they relate to species many of which have long remained unnamed; to these we have added descriptions of some recent acquisitions. Figures of all the Central-American species will shortly be published.

Eutresis hyspa.

♂. Exp. 3-9 in. Allied to E. hyperia, D. & H. (Gen. Diurn. Lep. i. p. 112, Suppl. Pl. f. 2); but the primaries are diaphanous where in E. hyperia they are fulvous; the secondaries also are almost diaphanous, the inner edge of the dark margin, especially near the anal angle, the spot at the end of the cell, and the nervules alone being fulvous. To E. theope (nob. P. Z. S. 1877, p. 60) it is more nearly allied, differing chiefly in the broader margin of the secondaries and the greater restriction of the fulvous on those wings.

Hab. Ecuador, Jorge, Guadalquiza (Buckley).

Athesis demylus.

♂. Exp. 3 in. Nearly allied to Dirceenna dercylidas, Hew. (Trans. Ent. Soc. ser. 3. ii. p. 248, pl. 16. f. 4), of which it is a more southern race. The transverse markings of the primaries are very narrow, the whole of the wing being diaphanous with the exception of the dark margins, the remains of the transverse bands being represented by the dark nervules. The transverse band of the secondaries is narrower, as well as the outer margin.

Hab. Southern Ecuador.

We have two male specimens of this species which were sent from the confines of Ecuador and Peru some years ago. We have hesitated to describe it before being convinced of the constancy of its differential characters.

Melinæa hicetas.

♂. Exp. 3-4 in. Allied to M. maelus (Hew. Ex. Lep., Mechanites, t. 3. f. 6), but differing in the absence of yellow in the cross band of the primaries, this portion of the wing being of the same colour as the base. The apex is black, enclosing three yellowish
NEW AMERICAN BUTTERFLIES.
tawny spots, the secondaries are crossed by a median and a submarginal bands, which are divided by the tawny submedian branches; these bands in some specimens are almost confluent.

_Hab._ Yquitos, Upper Amazon (Whitely).

This is one of the numerous forms of _M. maelus_ found in the Upper Amazon and Lower Napo. Having six specimens from these countries all closely resembling one another, we think it necessary that this form should bear a name.

**Melinæa cydon.**

♂. Exp. 3-3 in. Allied to _M. pardalis_ (Bates, Trans. Linn. Soc. xxxii. p. 552), but differing in the absence of the yellow cross belt of the primaries, the only yellow markings on the wing being restricted to a subapical series of three spots. The tawny brown markings of both wings are rather more clearly defined than in _M. pardalis_; and the central black cross bar of the secondaries is generally distinct from the black outer margin.

_Hab._ Tabatinga (Bates); Pebas (Hauwzwell); Yquitos (Whitely).

This is the race alluded to by Mr. Bates under his description of _M. pardalis_. At that time he did not seem to have considered it sufficiently distinct to separate it; but since then additional examples have come to hand, which point to the conclusion that this race is as well-defined as _M. pardalis_ itself. The same degree of local differentiation is to be seen in Ceratinia tigrina as compared with _C. fluonia_. In Heliconius pardalinus a similar state of things is to be found.

**Eresia latias.** (Plate XIV. fig. 1.)

Exp. 2 in. Allied to _E. Carme_ (Doubl. and Hew.), differing in the arrangement of the spots of the primaries: a large patch of fulvous occupies the apex of the wing, between which and the inner margin lies a larger oval patch, its axis parallel to the outer margin; beyond the cell is a small fulvous spot, obsolete in some specimens. Beneath the colour-pattern is much as in _E. Carme_; but the fulvous base of the primaries extends interruptedly almost to the outer margin, but does not include the spots in the apex. In _E. Carme_ there are distinct spots near the anal angle.

_Hab._ Frontino, Columbia (T. K. Salmon).

**Adelpha hypsenor.** (Plate XIV. fig. 2.)

Exp. 2-9 in. Allied to _A. lara_ (Hewitson), but differing on the upperside in having the transverse extra-cellular band on the primaries white, instead of red; this white band is divided by dark nervules, and on its outer edge especially, where it approaches the outer margin, is tinged with fulvous. Beneath, the band of the primaries is white instead of pink as in _A. lara_, and the basal half of the secondaries is yellower.

_Hab._ Frontino, Columbia (T. K. Salmon).

**Pyrrhopyla rufinucha.**

Exp. 2-4 in. Body bluish black; palpi black; a rufous spot at the
back of the head, and one on the thorax beneath; the outer margin of secondaries narrowly red.

_Hab._ Bolivia (Buckley).

_Obs._ Differs from _T. hygieia_ and all its allies in having a red nuchal patch.

**Pyrrhopyga ærata.** (Plate XIV. fig. 3.)

Exp. 3 in. Body greenish black, abdomen with six rufous bands on either side: wings bronzyl-green; secondaries rather darker, with a discocellular and three adjoining spots rufous. Beneath, both wings bronzyl green, three spots forming a patch in the middle of the secondaries rufous.

_Hab._ Pueblo Viejo, Sierra Nevada de Santa Marta (Simons).

_Obs._ Apparently allied to _T. hygieia_, but differing considerably both in colour and markings. We have but a single specimen of this fine species, one of Mr. Simons's recent discoveries.

**Pyrrhopyga rufifpectus.**

Exp. 2.5 in. Body greenish black, head and palpi black, a rufous patch on the thorax beneath; wings as in _T. hygieia_.

_Hab._ Ecuador, Rio Topo (Buckley).

_Obs._ Differs from _T. hygieia_ in having black palpi and a rufous patch on the thorax beneath.

**Pyrrhopyga variegaticeps.**

Exp. 2.4 in. Body black, head between the eyes with three indistinct white bars, wings rich metallic blue, darker on the secondaries towards the outer margin and anal angle. 'Cilia of the outer margin of secondaries red.

_Hab._ Costa Rica (Rogers).

_Obs._ Allied to _T. hygieia_ (Feld. Reise Nov. Lepid. iii. p. 506, t. 70. f. 1); differing in the white markings of the head; the palpi are black instead of red, and the red outer margin of the secondaries narrower.

**Pyrrhopyga minthe.** (Plate XIV. fig. 4.)

Exp. 2.6 in. Allied to _T. pityusa_, Hew. (Exot Butt. Pyrrh. ii. f. 11); but differs in the proximal band of the primaries being obsolete and the apical spot being wholly absent; the dark line which crosses the secondaries from the middle of the costa in the direction of the anal angle is much narrower in the present species.

_Hab._ Rio Topo, Ecuador (Buckley).

**Pyrrhopyga eupheme.** (Plate XIV. fig. 5.)

Exp. 2.4 in. Wings black; primaries crossed through the middle from the subcostal to the submedian nervures by a reddish yellow band; in the apex is an oval yellow trifid spot, between which and the the band is a similar bifid spot; the secondaries are considerably produced at the anal angle, and are crossed by two obsolete bluish
bands. Beneath, primaries as above, secondaries crossed with three blue-grey bands, the submarginal one being somewhat broken.

_Hab._ Cosnipata, Peru (Whitely); Apolobamba, Bolivia (Pearce).

_Obs._ Allied to _P. iphinos_, Latr.; differing chiefly in the more elongated hind wings, the narrower cross band of the primaries, and the greater breadth of the blue-grey bands of the secondaries beneath.

**Pyrrhopyga malis.** (Plate XIV. fig. 6.)

Exp. 2-5 in. Body and wings black; primaries with a central red band crossing the cell from the subcostal to the submedian nervure; two obsolete bluish bands parallel to the outer margin of the secondaries. Beneath, the lower third of the red band of the primaries is yellow; three greyish-blue obsolete bands cross the secondaries—one near the base, one through the middle, and one parallel to the outer margin.

_Hab._ Frontino, Antioquia (Salmon).

_Obs._ Allied to _P. nurseia_, Swain., but differs in having the secondaries beneath crossed with obsolete blue-grey bands, instead of the whole inner area of the wing being nearly uniformly of that colour.

**Pyrrhopyga erythrosticta.**

Allied to _P. maculosa_, Hew. (Tamyris agathon, Feld. Reise Nov. Lep. iii. t. 70. f. 2, 3). Differing in being browner, in having a rufous spot on the primaries in the angle between the median and submedian nervures, and in the narrower black margin to the secondaries beneath.

_Hab._ Chontales, Nicaragua (Belt); Veragua (Arcé).

_Obs._ Certainly a close ally of _P. maculosa_; but all our specimens show the above differences are constant.

**Myscelus belti.**

♂. Exp. 2-2 in. Allied to _M. epimachia_ H.-S. (Hew. Exot. Butt. Pyrrhopyga, iv. f. 26, 27), but rather deeper in colour above, and there are no white marks on the cilia of the secondaries. Beneath, the whole of the base of the primaries inside the inner hyaline spot is yellow, the black transverse band being absent, the inner black band of the secondaries is also absent, there being merely an obsolete black spot between the median and submedian nervures. In the female the secondary wings above are almost uniform rusty brown; beneath, the base of both wings is yellow, that of the secondaries including a few black spots: there are no black bands on the wings; but the distal half is uniform black.

_Hab._ Chontales, Nicaragua (Belt & Janson); Polochic valley, Guatemala (Hague).

_Obs._ In the late Mr. Belt’s collection several specimens of this species occur. Its nearest ally is no doubt _M. epimachia_ as represented by Hewitson; but the differences pointed out above seem associated with its distinct habitat, and thus the species requires separation. We have long had a single Guatemalan example in our collection,
but have always considered that the differences observable required the confirmation of a larger series of specimens, such as we now possess.

**Erycides pyres.**

Exp. 2·8 in. Allied to *E. urania* (Doubl. and Hew.); but both wings suffused with a shining green gloss not seen in the Mexican species; the green markings of the wings are in all cases brighter; the submarginal band of spots on the secondaries are much closer together than in *E. urania.*

*Hab.* Haiti, Porto Rico.

**Erycides scython.**

Exp. 2·4 in. Uniform dark greenish above and beneath; cilia of outer margin of both wings white, at the anal angle of secondaries rufous.

*Hab.* Paraguay (*Keith Johnson*).

*Obs.* Allied to *E. palemon*, Cram., but differs in the absence of the red spots in the centre of the costa of the primaries; and the palpi are black instead of being red.

**Entheus matho.**

♂. Exp. 2·2 in. Allied to *F. peleus* (Linn.). The orange spot between the two cross bands of the primaries, instead of joining the proximal one as in *E. peleus*, lies close to the inner edge but does not join the band which crosses the apex; there is a large oval yellow spot close to the abdominal margin of the secondaries not seen at all in *E. peleus*.

*Hab.* Choctum, Guatemala (*Hague*); Chontales, Nicaragua (*Belt*).

**Hesperia polites.** (Plate XIV. fig. 7.)

Exp. 2·6 in. Above dark brown; a yellow band common to both wings passes from the end of the cell to between the first and second median branches of the secondaries, and is cut into three by the nervures on the primaries, and into four on the secondaries; a row of seven nearly equal small spots follows the curve of the apex of the primaries, from between the second and third median branches to the costa. Beneath the same as above, except that the band on the secondaries is larger and paler in colour.

*Hab.* Frontino, Antioquia (*Salmon*).

**Hesperia sacrator.** (Plate XIV. fig. 8.)

Exp. 2·5 in. Above uniform dull brown. Beneath a broad yellow band crosses the primaries through the cell, and then passes on to the secondaries beyond the cell, and, extending nearly to the outer margin, tapers towards the anal angle. Where this band meets the brown of the basal portion of the secondaries are four white spots.

*Hab.* Frontino, Antioquia (*Salmon*).
NEW BUTTERFLIES FROM DUKE OF YORK GROUP.
Hesperia aurifer.

Exp. 2·1 in. Above brownish black; two spots at the end of the cell, and a row of eight running more or less parallel from the inner margin to the costa, diaphanous, that between the first and second median branches being the largest. Beneath rich dark brown, the central portion of primaries black; the spots of the primaries as above; a row of seven golden spots across the secondaries, one at the end of the cell, six in a linear series beyond it; cilia of secondaries alternately black and white.

Hab. Irazu, Costa Rica (Rogers).

Hesperia saptine.

Exp. 2·2 in. Upperside deep brown, a large semidiaphanous yellow spot, divided into five by the nervules, crosses the middle of the wing from the costa nearly to the anal angle, the inner edge of this spot is deeply sinuated; apical margin of secondaries narrowly bordered with yellow. Beneath rich dark brown, the band of the primaries as above, apex enclosing three dark spots pinkish brown; outer margin, costal region, and a band crossing the wing from the middle of the abdominal margin towards the apex dark brown; the rest, including the apex, pinkish brown. Antennæ brown above and yellow beneath.

Hab. Irazu, Costa Rica (Rogers).

Hesperia syrna.

Exp. 2·3 in. Upper surface dark brown, paler towards the apices of the primaries; the cell of the primaries, except the proximal end, a large trifid spot with deeply sinuated inner edge cut by the first and second median branches, a small trifid spot near the costa between the end of the cell and the apex, and three small spots between the apex and the cell of the secondaries semidiaphanous yellow. Beneath exactly as above; antennæ wholly brown.

Hab. Irazu, Costa Rica (Rogers).

EXPLANATION OF PLATE XIV.

Fig. 1. Eresia laenis, p. 151.  
4. —— minthe, p. 152.  
Fig. 5. Pyrrhopyga eupheme, p. 152.  
8. —— sacrator, p. 154.


[Received January 29, 1879.]

(Plate XV.)

In the Proceedings of the Society for 1877 (page 139), we had the pleasure of describing the collection of Lepidoptera formed by the Rev. G. Brown in the neighbourhood of Duke-of-York Island. We now
bring before the Society the results of an examination of a second collection from the same source. Mr. Brown has carefully noted the island on which each specimen was obtained; so that we are enabled, to a considerable extent, to remedy a defect in our former communication. The whole of the present collection was formed on the large islands of New Britain and New Ireland, the majority of the specimens coming from the latter, a large portion of the collection from the former having met with a mishap. As we hope Mr. Brown will continue his explorations in this very promising field, it is perhaps premature to investigate in detail the difference between the butterfly faunas of the two islands. We may, however, say that there are indications of considerable differences between them. The total number of species sent us by Mr. Brown from these two islands now amounts to 60; there still remain several described by Dr. Boisduval from New Ireland which have not yet come to hand.

New Ireland.

New Ireland.

New Ireland.

Several specimens, agreeing accurately with N.-American examples. On the range of this species see Mr. Distant's paper (Trans. Ent. Soc. 1877, p. 93), where he uses Cramer's name *D. archippus* for it.

New Ireland.

Mr. Brown sends us a female specimen which, besides the characteristic sexual differences, is paler than the male and has the spots on the under surface rather larger.

New Britain.

A female specimen, which, except as regards the sexual distinctions, resembles the male.

New Britain.

Several examples of both sexes; they differ slightly from Ceram specimens in having all the spots on the underside smaller, and in having but a single submarginal row at the apex of the primaries.

7. *Euplœa erimas*. (Plate XV. fig. 1.)

New Ireland.

An asterisk prefixed to a name denotes that the species was included in our former paper.
   New Britain.

   New Britain.
   The examples sent have all the spots on the underside smaller
   than specimens thus named in the British Museum.

    New Ireland.
    Several specimens, all exactly alike.

    New Ireland.

    New Ireland.

    New Ireland.

    New Ireland.

    New Ireland.
    Male specimens now sent agree with Moluccan examples of C.
    arsinoë.

    New Ireland.
    Two damaged specimens doubtfully referable to this species; they
    differ in having the marginal band on the underside of the secondaries
    narrower than specimens from Mysol and Waigiou.

    New Ireland.
    Two very dark-coloured specimens of this variable species.

    New Ireland.

    New Ireland.

20. Diadema bolina (Linn.).
    New Ireland.
    Agrees with specimens from New Guinea.

    New Ireland.
    With additional male specimens Mr. Brown has also sent females.
These differ from the male in having the wings above dark brown instead of bluish black; the lighter blue bands of the upper surface are wanting; beneath, the irregular light band which crosses the secondaries in the male is also absent.

New Ireland.

23. *Cyrestis adæmon*, sp. n. (Plate XV. fig. 2.)
♂ Exp. 2'5 in. Allied to *C. mænalis* (Erichs. Nova Acta Ac. Nat. Cur. xvi. Suppl. p. 402, t. 50. f. 3), but differs in having the common white transverse band of both wings more clearly defined and the central dark line included within it almost obsolete; the transverse white bands near the base of the wings are much less clearly defined, as are also the white markings in the broad dark margin of the secondaries.
New Ireland.

24. *Minetra sylvia* (Cram.).
New Ireland.
Several examples sent by Mr. Brown in this collection are doubtless referable to this species, differing in no respect from Amboyna examples. It does not, therefore, bear out our anticipation of its being a new species.

New Ireland.

26. *Neptis venilia* (Linn.).
New Ireland.

New Ireland.

**Lycænidae.**

28. *Amblypodia*, sp. ?
We have received only one specimen of this *Amblypodia*, which seems closely allied to *A. araxes* (Feld. Voy. Nov. Lep. ii. p. 224, t. 29. f. 3-5).
New Ireland.

29. *Lycæna*, sp. ?
Allied to *P. hylas* of Cramer, but darker blue above.
New Ireland.

30. *Lycæna*, sp. ?
Allied to *P. elpis*, Godt., but appears to be a distinct species.
New Ireland.

New Ireland.

New Ireland.

Male specimens now sent by Mr. Brown have the blue of the upper surface distributed just as in *S. excellens* (Butler), which makes it doubtful that the latter species is really distinct.

There are two other species of *Lycaenidae* in the collection which we are not yet able to determine; few of the specimens sent by Mr. Brown belonging to this family are in a sufficiently perfect state to render their determination satisfactory.

33. *Terias xanthomeleena*, n. sp.


New Ireland.

♂. Exp. 2 in. Allied to *T. candida* of Cramer; the yellow of the upper surface is of a paler sulphur-colour; the black border on the outer margin is narrower; on the costa of the primaries and abdominal margin of the secondaries it is broader. In the female the basal third of the primaries and the base and abdominal half of the secondaries, as well as the outer margin of both wings, are smoky brown.

*Obs.* Additional specimens of both sexes of this *Terias* sent by Mr. Brown confirm the differences between it and *T. candida*, to which we drew attention in our former paper.

34. *Terias hebridina*, Butl.

New Ireland.


New Britain.


New Ireland.

37. *Pieris eurygania*. (Plate XV. figs. 5, 6.)


New Ireland.

38. *Pieris madetes*. (Plate XV. figs. 3, 4.)


New Ireland.


New Ireland.

40. *Papilio eurypylus*, Linn.

New Ireland.


New Ireland.


44. *Papilio albinus*, Wall. Trans. Linn. Soc. xxv. t. 5. f. 4. New Ireland.


Hesperidæ.


EXPLANATION OF PLATE XV.

Fig. 1. Upper and underside of *Euplcea Erinias*, ♂, p. 156.
2. Upper and underside of *Cyrestes adæmon*, p. 158.
3. Upperside of *Pieris madetes*, ♀, p. 159.
4. Underside of *Pieris madetes*, ♀, p. 159.
5. Upperside of *Pieris eurygania*, ♀, p. 159.
6. Underside of *Pieris eurygania*, ♀, p. 159.


[Received January 29, 1879.]

In this series are twenty-two species, most of which are either identical with or allied to forms occurring in New Guinea and the adjacent islands. The specimens are all of them in the collection of the British Museum.

Agaristidæ.

Agarista tyrianthina, n. sp.

Primaries purplish black; a large and nearly pyriform white spot (its apex pointing towards the costal margin) across the basal portion of the median branches; apical fringe white; secondaries black, shot with brilliant purplish blue; a large patch of white occupying the whole central area from abdominal margin to subcostal vein; apical fringe white; body blackish, with orange anus; thorax shot with blue; a white line behind the eyes. Under surface nearly the same as above. Expanse of wings 2 inches.

Most nearly allied to *A. privata* of Walker, from Ceram, but dif-
fering in its more rounded primaries, the bright purple-shot colouring of the wings, the large white patch on the secondaries, the form of the single white spot of the primaries, with other slighter differences.

**Ophthalmis lacea,** Cramer, Pap. Exot. pl. 228. fig. B.

**Lithosiidæ.**

**Hyspa eusemioides,** Felder, Reise der Nov., Lep. iv. pl. cvi. fig. 1, ♀.

There are three pairs of this species in the collection. The males (as usual in this genus) have the anterior wings more produced at apex than the females; the white belt on these wings also varies considerably in form and width.

**Hyspa leuconeura, n. sp.**

Allied to *H. doryca* of Boisduval. Anterior wings greyish brown, sericeous, with all the veins white; a nearly circular white spot in the centre, cut by the median vein and its second and third branches; base ochraceous upon the veins, a bright ochreous basal spot connected with a black spot, beyond which is an angulated series of transverse black spots: secondaries white, with a broad, internally bisinuated, blackish outer border, confluent with a much narrower blackish abdominal border: body ochreous, the back of head, the collar, and tegulae distinctly orange; palpi, antennæ, a small spot on each shoulder, and a series of triangular spots down the centre of the abdomen black. Wings below dull blackish or smoky brown, the primaries with a central white spot and a cream-coloured spot at the base; secondaries with a very broad white patch from the internal nervure to the first subcostal branch: body below ochreous; legs, with the exception of the coxae, blackish; venter with a row of five blackish spots on each side. Expanse of wing 2 inches 2 to 4 lines.

Two males and a female.

In the earlier collection of Lepidoptera from Duke-of-York Island there was a single much rubbed and dwarfed example of this species (noted in P. Z. S. 1877, p. 149, as allied to *H. intacta*). Two of the examples in the series now sent are in very fair condition, proving the species to be most nearly allied to *H. doryca*, but darker in coloration, with white veins and a rounded instead of a comet-like spot on the fore wings, and with no black spots on the prothorax.

**Damalis alciphron,** Cramer, Pap. Exot. ii. pl. 133. fig. E.

A single strongly marked female of this widely distributed species, which, since the publication of my revision of the Hypsiniæ, we have received from the Andamans and New Guinea.

**Agape leonina, n. sp.**

Like *A. analis*, Walker (*Agape cyanopyrga*, Felder, Nov. Lep. iv. pl. cvi. fig. 4), excepting that the abdomen has all the segments

bright ochreous, with lateral black cuneiform anterior borders, the second, third, and sometimes the fourth of which unite in the middle of the dorsal line so as to form transverse belts. Expanse of wings 2 inches 3 lines.

Five examples.

The anal segment in A. analis and A. chloropyga is blue-black. Of these two species, the first occurs in Ceram and Amboina, and the second at Port Macquarie (New S. Wales).

Neochera eugenia, Cramer, Pap. Exot. pl. 398. fig. M.

The examples from New Ireland vary slightly in the inward diffusion of the blue-black border of the posterior wings, the whole interno-median area in some specimens being streaked with blue and grey.

Cleis posticalis, Guérin, Voy. Coquille, p. 286, pl. 18. fig. 5.

One female.

Cleis lunigera, n. sp.

Allied to C. arctata. Chocolate-brown, wings above with a faint purplish gloss; primaries with a large semicircular orange patch, almost crossing the wing in an oblique direction beyond the middle; secondaries generally with a squamose indication of an orange submarginal belt: wings below blacker than above, brilliantly shot with purple; primaries with a more golden-orange semicircular patch; secondaries with a broad submarginal orange belt, not reaching the apex; body below orange. Expanse of wings 1 inch 3 lines.

Four specimens, hardly differing in pattern.

Nyctemeridae.

Nyctemera baulus, Boisduval, Voy. de l’Astrolabe, p. 200, n. 5.

Four examples. The type was obtained at Bourou; there is also a specimen in the collection of the British Museum from Ternate.

Deilemera artemis.


Occurs also in New Guinea and Ceram.

Euschemidae.

Mniocera, n. gen.

Allied to Craspedosis and, less closely, to Bursada; from both it differs in its long slender palpi and extremely finely pectinated slenderer antennae: in Craspedosis, as in this genus, the antennae are rather ciliated than pectinated. Type Celerena cineta, Walk.

Mniocera cinereascens, n. sp.

Blue-black: primaries with three shining silver-grey abbreviated bands across the internobasal area; a rounded white spot with a

1 Always referred to the Bombycites, but in point of fact belonging to the Geometritae.
diffused silver-grey border immediately beyond the cell: secondaries with two parallel transverse silver-grey bands across the basal area; two rather narrower bands of the same colour from the anal angle to the second median branch, where they unite into a single greyish-bordered white spot, the latter again united with the costal border by a looped grey line; a grey spot close to apex; border greyish, fringe varied with white; thorax streaked and spotted with grey; abdomen with grey basal segment and a broad central orange belt. Under surface blue-black; white spot of the anterior wings slightly smaller than above, no grey markings; posterior wings with a rounded grey spot at the origin of the median branches, and two grey bands across the basal area; venter with an orange belt. Expanse of wings 1 inch 6–7 lines.

This species is very distinct from *M. cineta*. The only form in the genus *Bursada* which seems at all to approach it or *M. cineta* in character is *B. basistriga* from Mysol; but even in this form the structure of the antennae disproves any close affinity.

*Celerena funebris* of Felder is a third species of *Mniocera*.

**Tigridoptera interrupta**, n. sp.

Pale cyanous, the primaries with two and the secondaries with three ochraceous divergent longitudinal streaks: primaries crossed to beyond the cell by five parallel subangulated series of more or less confluent black spots, the last series interrupted by the ochreous streaks; two submarginal series of oval black spots, both series interrupted in the centre, and the outer one also at apex and external angle; secondaries with the ochreous streaks extending to the outer margin; a black stripe across the basal area; a large black spot at the end of the cell; two subangulated parallel stripes across the middle, both interrupted by the ochreous streaks; a submarginal series of black spots, also interrupted by the ochreous streaks; a single marginal black spot close to the apex: thorax greyish, spotted with black, abdomen ochreous. Wings below greyish, with black spots on the discocellulares, forming part of a blackish stripe which crosses the wings; a second similar but more arched stripe across the disk; a large white patch at centre of external area on all the wings; anterior wings with the apex white; pectoris grey; venter ochreous. Expanse of wings 2 inches 9 lines.

Allied to the Australian *T. matutinata* of Walker, but differing in the interruption of the series of black spots of the upper surface, the much greater size of these spots, the absence of the ochreous outer border or the ochreous costal border in the primaries, and below in the presence of the two blackish stripes, the external area uniform in tint with the remainder of the ground-colour, but interrupted by large white patches.

**Saturniidae.**

**Coscinocera**, n. gen.

Allied to *Argicina* and *Attacus*; general pattern and coloration of the latter, but the posterior wings with a long tail, as in the former;
differing from both genera in its enormous sieve-like antennæ. Type *Attacus hercules*, Misk.

**Coscinocera ophale**, n. sp.¹

Ferruginous; wings crossed near the base by a rusty whitish stripe, oblique, bisinuated and angulated upon the median vein in the anterior wings, and nearly straight in the posterior wings; a second stripe of the same colour across the external third, parallel to the outer border, and slightly incurved towards the costa of anterior wings, bounded internally by a dark ferruginous or mahogany-brown stripe; outer border dull ochraceous brown; a large ocellus closing each discoidal cell, the centre formed by a white-edged triangular hyaline spot, with broad black-edged dull ochraceous iris: primaries with the ocellus elongated and subtriangular; apical area pinky white, bordered and longitudinally streaked with lake-red: secondaries with the ocellus almost circular: head and collar testaceous, the latter partially bordered behind with white; base of abdomen white. Wings below much paler and of a sordid clay-colour, brownish towards the outer border, which is testaceous; stripe across the basal area obsolete; discal stripe more distinct and whiter than above, with dark brown internal border; ocelli rather smaller than above, and with less vivid black margin: fore wings with the apical area less distinctly clouded with white; hind wings white at the base, the abdominal and external areas broadly, but not abruptly, darker than the fore wings: body testaceous, coxae tufted with white hair; venter with lateral white line and transverse preanal white belt. Expanse of wing 9 inches 7 lines.

This species may be distinguished from *C. hercules*, Miskin (Trans. Ent. Soc. 1876, p. 7), by the redder and not black-bordered pale stripes of the upper surface, the ochraceous irides to the ocelli, and the more vivid instead of paler discal stripe of the under surface. Comparison with the Australian species will probably reveal other differences which are not apparent in Mr. Miskin's description.

**Cossidae.**


A single example of what seems to be a slight variety of this Indian species; unfortunately the type of *Z. signata* is much discoloured and somewhat worn. When more specimens are obtained from both localities, it will be possible to determine whether or not the differences which do exist are constant; they are principally confined to the costal border of the fore wings.

**Ophiderideæ.**


A worn, but unusually dark example of this form.

¹ The type is unfortunately somewhat damaged, and has only the commencement of the tails. A rather larger example received since the reading of this paper has tails 3 inches 9 lines in length, and less spatulate in character than the species of *Argœnus*. 
OMMATOPHORIDÆ.


The female agrees with Cramer's figure; the males have much yellower bands and spots.

CYDIMONIHIDÆ.

Nyctalemon patroclus, Clerck, Icon. pl. 37. fig. 1.

A series of both sexes.

Alcides (née Alcides¹) aurora, Salvin & Godman, P. Z. S. 1877, p. 150, pl. xxiii. figs. 5, 6.

Several specimens. (New Britain.)

MICRONIHIDÆ².

Strophidia urapterina, n. sp.

Nearly allied to S. astheniata from Borneo, but constantly differing in its smaller size, the streaky stripe nearest to the external border on the fore wings almost obliterated, and the costal border only dotted with black opposite to the transverse bands, not striated, the black border of the hind wings continued to the end of the caudal process: markings below much less distinct. Expanse of wings 2 inches 4 lines.

An example from Malacca agrees with the above in size, but differs in marking precisely as do typical specimens of S. astheniata.

In the former consignment from Mr. Brown there was only a single example of the above; and therefore it was provisionally regarded as a variety of Guénée's species.

Strophidia bifasciata, n. sp.

Allied to S. phantasmah of Felder (Reise der Nov., Lep. iv. pl. cxxxviii. fig. 40); but the costal and external borders of primaries and the submarginal band of secondaries dark olive-brown, shading externally into black; fore wings also with two central parallel straight pale olive-brown bands, the inner one of which is continued across the hind wings to the anal angle: under surface white, the costal border of the fore wings and the transverse bands obsolete, other markings paler. Expanse of wings 2 inches 7 lines.

¹ Alcides is a genus of Coleoptera characterized in 1826; it ought to be abolished, as being too close to Hübner's genus Alcides (1816). Confusion has already arisen in consequence of Walker having quoted the name Alcides (sic) orontiaria, published by Hübner in his 'Sammlung exotischer Schmetterlinge,' previous to the appearance of the 'Verzeichniss,' in which the diagnosis of the genus first saw the light. It may be a question whether Alcides should not be preferred to the name accompanying the diagnosis; but Dr. Felder has retained the latter appellation.

² The genus Micronia must be restricted to M. striataria, pontiata, convexaria, and their allies, M. striataria being regarded as the type: S. candata is the type of Strophidia, Hübner.
Strophidia clarissima, n. sp.

Allied to S. pannata of Felder (Reise der Nov., Lep. iv. pl. cxviii. fig. 89). Snow-white, with black fringe; primaries with a broad subcostal stripe, and the outer border smoky brown, costal area from the margin to the edge of the stripe mottled with black; secondaries with a rather broad and regular blackish submarginal band from the apex to the second median branch, two large rounded black spots touching the outer margin on the median interspaces, a subanal transverse black dash; back of head and upper margin of palpi black; antennæ greyish brown; wings below white; fore wings with the costal margin, a subcostal spot just beyond the cell, the apex, and the external border greyish brown; hind wings with a broad triangular patch of blackish between the anal angle and the third median branch, continued beyond this branch as a submarginal greyish brown band, which runs in a straight line to the apex. Expanse of wings 2 inches 3 lines.

One example of this beautiful species.


[Received January 30, 1879]

(Plate XVI.).

In their paper on Australian birds in the Linnean Society's Transactions for 1828 (vol. xv. p. 74), Messrs. Vigors and Horsfield established a genus Nanodes, of which the Psittacus discolor of Shaw¹ was made the type, and full generic characters were given. Besides Nanodes discolor, three other species (those now generally known as Melopsittacus undulatus, Euphema pulchella and Platycercus venustus) were included in the genus, which was considered by its authors to be allied to Pezoporus and Platycercus, and as connecting these Australian forms with the South-American Psittacarae (= Conurus auct.). Nanodes having been already used by Schönberr for a genus of Rynchophorous Coleoptera², Lesson³ substituted for this name that of Lathamus, including under that head four other species (one a Euphema, one a Cyanorhamphus, and two Trichoglossi, as now understood), remarking that Swainson "a parfaitement établi ses caractères" in his 'Zoological Illustrations,'⁴ where, however, E. pulchella is considered the type of the genus⁵. As will be seen from

¹ White's Voyage, pl. 263 (1790). For the synonymy of the species, see Finseh, Papag. ii. p. 863.
³ Traité d'Orn. p. 205 (1831).
⁴ 2nd series, vol. i. part 5, no. 21 (1820).
⁵ Swainson, however, in his 'Classification of Birds' (vol. ii. p. 304, 1837), makes Lathamus a member of his "subfamily Platycercina," in which he also includes Coracopsis, Pezoporus, Platycercus, and Calopsitta, with the remark that it is a "subtypical" form.
STRUCTURE OF LATHAMUS.
the species associated with it, all these authors were evidently puzzled by the characters of this peculiar little Parrakeet; and the same seems to have been the case with all subsequent naturalists who have treated of it. The majority, however, seem to have considered that it had Trichoglossine affinities.

Thus Bonaparte included *Lathamus* as “dernier des Trichoglossiens;” and Gould, likewise acknowledging the validity of the genus, places it amongst the *Trichoglossidae*. He says:—“Having had ample opportunities of observing the bird in a state of nature, I concur in the propriety of separating it into a distinct genus; in its whole economy it is most closely allied to the *Trichoglossi*, and in no degree related to the *Euphema*” (Handb. B. Austr. ii. p. 89). Dr. Finsch, in his great work on Parrots, after a careful examination of its peculiarities, came to the conclusion that these were not sufficient to justify its separation as a distinct genus, and included it as a *Trichoglossus*. More lately, the same position (i. e. that of a member of the family *Trichoglossidae*) has been assigned to it by Gray, Selater, Wallace, and others. On the other hand, Sundevall in his *Tentamen* placed it in his fourth family “Platyercini,” remarking, “Hæc species, plerumque cum sp. Trichoglossinis (Ps. concinno &c.) consociata, vera tamen est species Platyercina, maxillâ inferiori tumida, &c., *Euphema* maxime affinis.” In his paper on the anatomy of the Parrots, Prof. Garrod shows that *Lathamus* differs from *Lorius* and its allies in having a superficial left carotid, a feature common to it and *Platyercus*, *Psophotus*, &c., from which, however, it differs in the possession of a furcula. He further says:—“It may at first sight seem very heretical to remove *Lathamus* from the Loriinae, the brush-tongue being considered characteristic of that subfamily. To the unbiased student, however, the brush-tongue is a character not more important than several of those that have been above considered. . . . The character of the papillae is somewhat different in *Lathamus* from what it is in *Lorius*, they being blunter and shorter in the former genus than in the latter.”

Having undertaken at Prof. Garrod’s suggestion an investigation of the pterylosis of the Parrots, the results of which I hope to communicate to this Society at no distant date, *Lathamus* was one of the first forms I examined; and I at once saw that its pterylosis confirmed the relationship of this form to the *Platyercine* already insisted on by Sundevall and Garrod. From this I was led to an examination of some other parts of its structure; and I propose to lay the

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2 Pap. ii. p. 863 (1868).
6 Methodi Naturalis Avium disponendarum Tentamen, p. 71 (1872).
7 P. Z. S. 1874, p. 586.
8 M. Blanchard, indeed, says (Compt. Rend. 1857, xliv. p. 521) that *Lathamus* has no furcula; but this bone is present, though small and weak, in the mens I have seen: cf. also Owen, Cat. Ost. Ser. R. O. S. i. p. 273 (1853).
results of my inquiries before the Society to-night, in order to establish the view that *Lathamus* must be removed from the brush-tongued *Trichoglossinae*, with which it has been so generally associated, and must be considered a (no doubt aberrant) member of the Platyceine group.

The pterylosis of this form having first struck my attention, I will describe this in the first instance, the more so as, as far as I know, no description of this part of the structure of the bird in question has yet been published. I may perhaps anticipate part of my paper on the pterylosis of the *Psittaci* in general, and point out briefly the general characters of the distribution of the feathering in these birds, so as to enable the reader without any further trouble to appreciate the points of distinction in this respect between *Lathamus* and the other species with which I have compared it.

As will be evident from the figures (Pl. XVI. figs. 1-6), the tracts of contour-feathers in a Parrot may be arranged as follows:—

On the upper surface of the body, continuous in front with the feathering of the top and sides of the head, is a long narrow tract, the “superior tract,” which divides behind in the interscapular region in a fork-like manner, forming the “scapular fork.” Behind this, occupying the hinder part of the back and pelvis, is another, more or less Y-shaped tract, with the “handle” (which is usually short) of the fork placed close to the posterior extremity of the trunk, whilst the more lengthy “arms” of the Y are more anterior, and run in, in front, between the corresponding ones of the “scapular fork,” usually becoming very feebly feathered in so doing. This tract may be called the “dorso-lumbar” fork. Scattered more irregularly and diffusely over the sides of the pelvis, and external to the last-named tract, is the “lumbar feathering,” which passes posteriorly on each side into the narrower but more distinct “femoral tracts.” These are continued onto the legs as far as the tarsi as the “crural tracts,” clothing the legs in a trouser-like way. On the inferior surface, on each side, is a continuous tract, running from the upper part of the neck (where it may or may not unite with its fellow of the opposite side), over the breast and abdomen, to the anus. This “inferior tract,” besides one or two small branches running towards the humerus and patagium (the first and second “humeral tracts”), gives off, at about the commencement of the sternum, a more or less separate and well-marked external branch, the “outer pectoral” tract, which runs down more or less parallel to the main part of the inferior tract for a little way, but ceases before the thighs.

Amongst the various species of *Psittaci* I have examined, well-marked differences in some of these tracts occur, more particularly in the arrangement of the “dorso-lumbar fork,” and the greater or lesser development of a distinct “outer pectoral” branch to the inferior tract.

In *Lathamus discolor* (Pl. XVI. figs. 1, 2), the inferior tract of each side starts from about the angle of the jaw, and does not unite with its fellow. On the sternum it is about eight or nine feathers broad at
the widest part, the feathering being rather strong and not close. As in most Parrots, there are two humeral tracts. The space on the carina sterni between the inferior tracts of the two sides is not wide. There is a well-marked outer pectoral tract, about 1 inch long, distinguished by its rather stronger and closer feathering. It is quite separate from the main part of the inferior tract, the space between the two tracts being about as broad as the latter tract itself. The outer pectoral has the appearance of being somewhat dilated at its free end, owing to the presence of a few irregularly placed and small feathers lying to the outside of its termination. The main part of the inferior tract is rather narrow, with its rows of four and five feathers each separated by rather considerable spaces.

The scapular fork is rather long, the tracts being narrow and moderately strongly feathered.

The dorso-lumbar fork is elongated; each arm is of nearly the same strength and breadth throughout, beginning a little outside the scapular fork, with the part inside the arms of the latter represented only (as usual in the Psittaci) by one or two rows of small feathers, placed singly or in pairs. Each arm is composed of about fourteen rows of feathers (counting to the junction with its fellow), the rows being four feathers wide, rather close together, and of about the same width as the space between the tracts. There is some tendency in some of the anterior rows towards a dilatation of the tract, one or two of the rows being five feathers wide. In the more anterior parts of each arm, the most internal feather of each row is often placed in front of and at an angle with the other feathers composing it, and so comes to stand between two rows of three feathers each; so that at first each tract looks as if made up of rows of three (or four) feathers alternating with single feathers. This tendency to a 3.1.3 arrangement, however, disappears in the the more posterior parts of the tracts, the four feathers of each row there standing in a direct line with one another. The two arms unite to form the "handle" at about three quarters their entire length; after the junction the tract narrows rather rapidly towards the tail. The dorso-lumbar fork is throughout quite distinct from the lumbar feathering, which is very weak and diffuse.

In all the truly Platycercine forms that I have examined—namely Platycercus eximius and pennantii, Psophotus haematogaster (four specimens) and P. haematotnus, Pyrrhulopsis splendens and P. personata, Cyanorhamphus auriceps and C. nova-zealandiae—the disposition of the outer pectoral tract and dorso-lumbar fork resembles essentially that of Lathamus. In all the outer pectoral is a distinct, more closely feathered, and rather narrowish tract, clearly separated throughout from the main part. In Cyanorhamphus this tract is distinctly hook-like, dilated at the end. In all the same length, and uniformity in strength and width, of the arms of the dorso-lumbar

1 I. e. excluding Aprosmiticus, Polyteles, Euphema, Pezoporus, &c.
2 In Ps. pennantii, and in the two species of Pyrrhulopsis I counted fourteen, in C. auriceps thirteen, in Ps. haematotnus thirteen, and in Ps. haematogaster eleven rows of feathers in the arms of this tract to their junction.
tract is observable, the inclosed space being of about the same width as either of the tracts inclosing it, no tendency to a dilatation of the arms at their junction (though there is some in front) being present, and the rows of feathers in front having a more or less clear 3.1.3 arrangement. The lumbar feathering is always very weak; so that the boundaries of the dorso-lumbar fork are very clearly defined. *Lathamus*, however, differs from the above-mentioned forms a little by its longer and not so widely divericated scapular fork, and by the greater breadth of its inferior tract on the sternum, thereby causing a corresponding diminution in the breadth of the carinal space. The general agreement, however, of the pterylosis in the two types will, I think, at once be evident from the figure of *Lathamus* (Pl. XVI. figs. 1, 2), and that of *Platycercus pennantii* (Pl. XVI. figs. 3, 4), which I have represented next to it for the sake of comparison.

If now we turn to the *Trichoglossinae*¹ (See Pl. XVI. figs. 5, 6), in which so many naturalists have included *Lathamus*, we shall find important and well-marked differences in the two tracts mentioned above, though the general character of the pterylosis remains the same in all². The outer pectoral tract is never so narrow and distinct here as it is in *Lathamus* and its allies; it is usually almost triangular in shape, and so tolerably broad, shorter, and not so divergent, the interspace between it and the main tract being much narrower, and frequently with a few scattered feathers in it uniting the two tracts together. The inferior tract on the breast is always much broader, and the carinal space narrower.

Still better-marked characters between the two groups are to be seen in the disposition of the dorso-lumbar fork. This in all the *Trichoglossinae* is extremely weak in front, the tracts not getting at all strongly feathered till some way (in *T. concinnus* ½ inch) from the ends of the scapular fork. Each arm is much shorter (in all the forms I count about eight rows of feathers to the junction), wider and more diffusely feathered than in the *Platycercinae*, and becomes dilated and more strongly feathered towards its junction with its fellow, which takes place further from the tail than in the other group. The united tract is strongly feathered and rather broad at first, but narrows rapidly again towards the tail. Figs. 5 and 6, Pl. XVI. represent the pterylosis of *Trichoglossus concinnus* (a bird a little larger than the "Swift Parrakeet"), and show the differences between the two groups, which, if somewhat slight, are nevertheless easily appreciable after a little study, and are as well marked as any others I have as yet observed in the pterylosis of this order.

Several points in the external characters of *Lathamus* show that

¹ Of these I have examined the pterylosis in *Eos rubra*, *Trichoglossi ornatus*, *hymatodes*, *swainsoni*, *concinnus* (two specimens), and *pusillus*, and *Coryphilus fringillaceus*.

² I have as yet been unable to confirm Nitzsch's observation (Pterylogr. Eng. edit. p. 100) that in *Lorius garrulus* and *L. domicella* the inferior tracts are continuous over the lower surface of the neck.
Fig. 1. Head of *Lathamus discolor.*
Fig. 2. Foot of ditto.
Fig. 3. Head of *Psephotus haematogaster.*
Fig. 4. Foot of ditto.
Fig. 5. Head of *Trichoglossus concinnus.*
Fig. 6. Foot of ditto.
it has in fact no particular relationship to the *Trichoglossinae*. The shape of the upper mandible, with a small but distinct tooth, is obviously (see fig. 1, p. 171) much nearer to that of *Psephotus* (fig. 3) than it is to that of a Lory (fig. 5). The same story is told still more plainly by its maxilla, which has none of the laterally compressed, elongate, and pointed form characteristic of the Lories, and which induced Sundeavall to divide all Parrots into two groups “Psittaci proprii” and “Psittaci orthognathi,” the latter including only the Lories and *Nestor*, and characterized by having the “maxilla inferior recta, angusta, altitudine longior.” In *Lathamus* the maxilla is short and deep, with a broad and rounded anterior margin. These differences will be seen by a glance at figures 5 and 1, representing the heads of a *Trichoglossus* (concinnus) and of *Lathamus*.

In all the *Trichoglossinae* I have examined, the cere is rather narrow from before backwards, the anterior margin only sinuate, and the nostrils elongated and ovate, with their long axis directed forwards and *inwards*, and so somewhat *transversely* to the direction of the beak (fig. 5, p. 171). This is very evident in the living birds, and is also to be made out in skins. In *Lathamus*, however, and the *Platycercinae* generally, the cere is much larger, with the anterior border on each side nearly semicircular; and the nostrils are oval and directed *upwards*, more nearly parallel with the culmen (see figs. 1 and 3).

In the small size of the nude orbital ring *Lathamus* agrees with the *Platycercinae* rather than with the Lories, in which it is of fair size and rather conspicuous in the living birds.

In the shape of the wings, no doubt, *Lathamus* is somewhat aberrant, and nearer the Lories than the *Platycerci*. This is, however, so obviously an adaptive modification, due to the swift flight and arboreal habits of both these birds as compared with the more ground-loving mode of life of the *Platycerci*, that no stress can be laid on it as a taxonomic character. The *rounded* end of the wing-feathers, however, of *Lathamus* still point to its Platycercine affinities. Its feet, too, though not typically Platycercine, differ from those of the *Trichoglossinae* (cf. figs. 2 and 6, p. 171) by their more elongated and slender tarsi and toes, with the latter not so much flattened and fitted for grasping branches, &c., as are those of the Lories, and with the claws not so strong and longer, particularly that on the third digit. In both these points more resemblance to the Platycerci is shown (cf. fig. 4, p. 171, foot of *Psephotus haematogaster*), though the different modes of life have here again induced a certain amount of change from the form observed in the truly terrestrial Platycerci.

A thorough study of the osteology of the Parrots has yet to be

1 Mr. Gould says (‘Handb. B. Austr.’ ii. p. 89):—“In its actions and manners it is closely allied to the *Trichoglossi*, but differs from them in some few particulars, which are more perceptible in captivity than in a state of nature. It has neither the musky smell nor the jumping motions of the *Trichoglossi*. I have never observed it alight on the ground, or elsewhere than among the branches.”
made; and till that is done it is perhaps somewhat premature to generalize. Nevertheless, having examined somewhat carefully a considerable number of the skeletons of the two groups with which *Lathamus* has been generally associated, I have, I believe, been able to detect certain differences which will help us in referring the bird at present under discussion to its proper place.

First, as regards the skull. This, in all the *Trichoglossinae*, is remarkable for its somewhat depressed form and the lateral compression and elongation of the upper and lower jaws, the mandible when deprived of its horny sheath showing even more clearly the peculiar shape of the lower jaw in these birds, first pointed out by Sundevall and already alluded to above (Pl. XVI. fig. 7). In the *Platyceci* the skull is less depressed above and much shorter in proportion, and the mandible is not pointed, but has its symphysial portion wide, deep from above downwards and somewhat truncated. The same is the case in *Lathamus* (Pl. XVI. fig. 8).

In the Lories the lengthening of the beak has led to a similar elongation in the anterior limb of the palatine bones, so that this part is as long as, or longer than, the posterior one; and the latter is considerably shorter than the pterygoids. In the *Platyceci* the anterior part of the palatines is not so elongated; but, on the contrary, the posterior limb is somewhat lengthened, and, in fact, nearly as long as the pterygoids. Here, again, *Lathamus* agrees more with the *Platyceci*.

In the Lories (Pl. XVI. fig. 9, *Eos rubra*) the anteorbital processes are much larger and better-developed than in the *Platyceci*, where the hinder margin of these parts, as seen from above, is not very far from being on a level with the cranio-rostral suture, and so causes the orbits to take up a larger part of the surface of the skull (in a view from above) than in the other group. The same is the case in *Lathamus*¹ (Pl. XVI. fig. 10).

The retention of the furcula is no doubt associated with the rapidity of flight of this bird, whilst in the more slowly moving *Platyceci* it has disappeared almost entirely. As we already know from M. Blanchard's researches (Ann. Sci. Nat. Zool. xi. pp. 84–85, 1859), but little assistance as regards classification can be gained in this group from a study of the sternum.

The pelvis, however, has been of more use to me.

In the Lories this is always elongated and narrow in proportion, the preacetabular part being particularly elongated, and the iliac fossae on each side for the attachment of the gluteal muscles being deeper and more extensive. In the *Platyceci* and *Lathamus* the

¹ Bonaparte (Compt. Rend. xlv. p. 536, 1857), following Owen (Cat. Osteol. Series R. C. S. 1853, p. 279, no. 1451), says that in *Lathamus* the orbit is completed below by the junction of the lacrymal with the "mastoid." This is certainly not the case in a skull lent to me by Professor Garrod, and, if true, would be an anomaly for any member of either of the above-mentioned groups. In the specimen referred to in the Museum of the College of Surgeons (no. 1451) it appeared to me on examination that there was in reality no bony union between the two bones, which were connected simply by ligament.
pelvis is wider, the preacetabular part much shorter, and the iliac fossa shallower and smaller. These differences will be visible from the figures which I exhibit (Pl. XVI. figs. 11, 12), in which are shown respectively the pelvis of *Lathamus* and of *Lorius tricolor*.

As regards internal anatomy, little can be said of any important characters, except the difference in the disposition of the carotid arteries in the two groups, first pointed out by Prof. Garrod, and already mentioned above. The nature of the tongue in *Lathamus* requires reexamination, as also does the coloration of the eyes, this presenting very marked characteristics in all those *Trichoglossinae* I have been able to examine alive (of the genera *Lorius*, *Eos*, *Chalco-psitta*, and *Trichoglossus*), and being quite unlike that prevalent in the *Platycerci* and most other Parrots.

In coloration *Lathamus* is no doubt aberrant, but is no more clearly related, as far as I can see, to one group rather than the other. The external rectrices being blue is perhaps a hint of its Platycercine relations.

To conclude, the more important characters of *Lathamus*, *i.e.* pterylosis and superficial left carotid, beak, nostrils, cere, feet, skull, and pelvis, all point to a near relationship to *Psephotus*, *Platycercus*, and allied genera. The abnormal tufted tongue, the retention of the furcula, and the sharp pointed wings may be regarded as adaptations to its tree- and flower-loving modes of life, and not as due to any consanguinity with the *Trichoglossinae*. *Lathamus* may be a more or less modified remnant of a group that branched off from the common stock with the progenitors of the more typical *Platycerci*, and of which all the others have become extinct (perhaps due to the competition with the more specialized *Trichoglossinae*); or it may be a member of the Platycercine group that has become specialized to modes of life like those of the true Lories and Lorikeets, and so has come to resemble them in some few superficial particulars.

EXPLANATION OF PLATE XVI.

Figs. 1, 2. Back and side views of *Lathamus discolor*, showing pterylosis.
3, 4. The same of *Platycercus pennantii*.
5, 6. The same of *Trichoglossus concinnus*.
7. Mandible, deprived of horny sheath, of *Eos rubra*.
8. The same of *Lathamus discolor*.
9. Skull, seen from above, of *Eos rubra*.
10. The same of *Lathamus discolor*.
11. Pelvis of *Lorius tricolor*.
12. The same of *Lathamus discolor*. 

[Received February 4, 1879.]

The British Museum has recently acquired a skin of Heliodilus soumagnii from Mr. Higgins, of 22 Bloomsbury Street. This very interesting specimen, which I now exhibit, was obtained in the neighbourhood of Antananarivo, and formed part of the same small consignment as the new Dromæocercus, which also lies upon the table. The genus Heliodilus is of very great interest to ornithologists, as having formed the subject of an important communication by Prof. Alphonse Milne-Edwards to the French Academy (‘Comptes Rendus,’ Dec. 1877); and I have had great pleasure in receiving such a desideratum for our national collection, which gives me the opportunity of comparing together Strix, Phodilus, and Heliodilus.

In my ‘Catalogue of Birds’ (vol. ii. p. 289) I separated the Strigidae as a separate family from the Bubonidae, and included in the first-named family the Barn-Owls and the Phodili, reserving every other Owl for the family Bubonidae, which, of course, greatly predominates in number. I take the present opportunity of acknowledging an oversight, which was unintentional on my part; and that was, not to have mentioned in the ‘Catalogue’ that the institution of these two principal groups was derived from Messrs. Salvin’s notes, as published in Professor Newton’s edition of Yarrell’s British Birds—a fact that should have been stated at the time.

In a previous communication made by Professor Alphonse Milne-Edwards to the French Academy of Sciences on Dec. 17, 1877, he shows that in the form of its sternum and in other peculiarities of the skeleton, Phodilus is one of the Bubonidae, and suggests that it comes near Surnium. It is curious that every author has placed the genus near the Barn-Owls, to which the form of the facial disk and the red plumage somewhat assimilate it. On reexamining our specimen of Phodilus, I also perceive that an important external character, the serration of the inner edge of the middle claw, is wanting; and thereby further evidence is afforded of the correctness of Prof. Milne-Edwards’s remarks. From the shape of its nostril, ear-conch, and facial disk, the genus Phodilus appears to be nearly allied to Scops.

The new genus Heliodilus looks at first sight very much like Phodilus, as the typical species H. soumagnii is a red bird of the general aspect of the Bay Owl (Phodilus badius). On a more careful examination, however, the bird will be found to possess the serrated claw of a Barn-Owl; and this, with the careful description of the osteology given by Professor Milne-Edwards, conclusively shows that the family of the Barn-Owls, reduced to a single genus Strix by the abduction of its time-honoured ally Phodilus, ought to be compensated for the loss by the addition of the still more remarkable Heliodilus.
In external appearance Heliodilus is very similar to Strix, but has the toes almost perfectly bare, without any of the hairs which are found on the feet of a Barn-Owl. A more important difference is exhibited in the shape of the wings in the two genera, which may be thus diagnosed:

a. Wings very long, surpassing the end of the tail. 

b. Wings shorter and much more concave, falling short of the tail by as much as the length of the outer toe and claw.

Heliodilus.

The following is a description of the specimen in the British Museum:

Genus Heliodilus.


(Dec.) ........................................ H. soumagnii.

Range. Confined to Madagascar.

Heliodilus soumagnii.


Adult. General colour above bright cinnamon-rufous, slightly varied with scantly distributed blackish spots, very small, of an arrow-head shape, and varying in number from two to five, the sub-terminal one alone being distinct; head and mantle a little more closely spotted than the rest of the upper surface, with the exception of the inner greater coverts and inner secondaries; wings cinnamon-rufous, with faintly indicated black bars on some of the greater coverts; the quills are regularly banded with black on their inner webs; tail light cinnamon-rufous, crossed with narrow and incomplete black bars, of which six can be noted, without including a triangular black spot near the end of the tail; a complete ruff of deep-cinnamon feathers, with buffy-white bases to the feathers; facial disk deep vinaceous, lighter on the lower margin, where the feathers are fulvescent on their bases; entire under surface of body light cinnamon, uniform, with the exception of small dusky spots on the fore neck and chest, with here and there a spot on the flanks and under wing-coverts, which are deep cinnamon; quills pale cinnamon below, with bars of black on the inner webs; leg-feathers deep cinnamon-rufous, extending down the entire hind leg, and becoming more and more scanty on the fore part of the tarsus just above the toes; bill ivory white, the lower mandible yellower. Total length 12.8 inches, culmen 1.45, wing 8.5, tail 4.1, tarsus 2.1.

February 4, 1879 (continued).

Mr. R. Bowdler Sharpe. Exhibition of, and remarks upon, a series of Bulwer's Pheasants (Lobiophasis bulweri) from the Lawas river, N.W. Borneo .............................................. 109


5. On some Birds transmitted from the Samoan Islands by the Rev. T. Powell. By Osbert Salvin, M.A., F.R.S. ............................................................... 128

6. On the Use of the generic Name Gouldia in Zoology. By W. H. Dall, Smithsonian Institution .......................................................... 131

7. A few Notes upon Four Species of Lemurs, specimens of which were brought alive to England in 1878. By George A. Shaw. (Plate IX.) .................................................. 132


9. On a new Rodent from Medellin. By Dr. A. Günther, F.R.S., F.Z.S. (Plate X.) ............................ 144

February 18, 1879.

Rev. F. O. Morris. Exhibition of an example of Bombyx quercus, with malformed antennæ 145

Mr. Sclater. Exhibition and description of a new Humming-bird, Thaumasius tuczanowskii, from Guajango, Northern Peru ................................................................. 145

Mr. Sclater. Exhibition of a living Amphisbaenian from Monte Video ........................................... 146

1. Note on the Pachycephala icteroides of Peale, with Description of a supposed new Species. By E. L. Layard, C.M.G., F.Z.S. ......................................................... 146

2. Description of four new Species of Chamaeleon from Madagascar. By Dr. A. Günther, F.R.S., F.Z.S., Keeper of the Zoological Department, British Museum. (Plates XI.–XIII.) ............................................. 148

3. Descriptions of new Species of Rhopalocera from Central and South America. By F. DuCane Godman, F.Z.S., and Osbert Salvin, F.R.S. (Plate XIV.) ......................................... 150


LIST OF PLATES.

1879.

PART I.

Plate | Page
-----|-----
I.   | New Japanese Crustacea ........................................ 18
II.  | Dendrophis philippinensis ....................................... 74
III. | Anatomy of Hydnum crocuta ..................................... 79
IV.  | Argus giganteus, j pull. ........................................ 114
VII. | Eggs of:—fig. 1. Argus giganteus; fig. 2. Polypeletron chinquis; fig. 3. Ceriornia tenimineki; fig. 4. C. satyr; fig. 5. Crossoptilon mantchuricum ........................................ 114
IX.  | Chirogaleus milii .................................................. 132
X.   | Thrinacodus albicauda ........................................... 144
XI.  | Chameleon malthe .................................................. 148
XII. | Fig. A. Chamelecon brevicornis; fig. B. C. gularis ............. 148
XIII.| Chamelecon globifer .............................................. 150
XIV. | New American Butterflies ....................................... 155
XV.  | New Butterflies from Duke-of-York Group ...................... 155
XVI. | Structure of Lathamns ........................................... 166

NOTICE.

According to present arrangements the 'Proceedings' are issued in four parts, as follows:—

Part I. containing papers read in January and February, on June 1st.
II.   „ „ „ March and April, on August 1st.
III.  „ „ „ May and June, on October 1st.
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LIST OF CONTENTS.

PART II.—1879.

February 18, 1879.


11. On a Collection of Mollusca from Japan. By Edgar A. Smith, F.Z.S., Zoological Department, British Museum. (Plates XIX., XX.) .............................................. 181

March 4, 1879.

The Secretary. Report on the additions to the Society’s Menagerie in February 1879 .... 218

Mr. Sclater. Exhibition of, and remarks upon, two rare Fruit-Pigeons ....................... 218

Mr. L. M. D’Albertis, C.M.Z.S. Exhibition of some new and rare birds from the Fly River, New Guinea ................................................................. 218

Prof. Newton. Exhibition of, and remarks upon, a specimen of Sylvia nisoria belonging to Mr. John Robinson ................................................................. 219


2. On Collections of Birds from Kina Balu Mountain, in North-western Borneo. By R. Bowdler Sharpe, F.L.S., F.Z.S., Senior Assistant, Department of Zoology, British Museum. (Plate XXXIII.) ................................................. 245


Contents continued on page 3 of wrapper.
8. On a second Species of *Dromaeocercus* from Madagascar.


[Received February 4, 1879.]

In the same collection as the *Heliodilus*, described in the preceding paper, there were several specimens of a Feather-tailed Warbler belonging to the genus *Dromaeocercus*, instituted by me in January 1877 *. On comparing the birds recently sent with the type of *Dromaeocercus brunneus*, it is evident that they belong to a different species, for which I propose the name of *Dromaeocercus seebohmi*, after my friend Mr. Seebohm, who is now associated with me in the 'Catalogue of Birds.' Of this he is about to prepare the volume on the Thrushes and Warblers, with which two groups he has shown already such a good acquaintance.

**Dromaeocercus seebohmi**, sp. n.

*D. similis* D. brunneo et ejusdem forma, sed corpore supra maculato nec concolori, plumis brunneis medialiter obscurioribus et guttura albo, brunneo striato, distinguendus.

General colour above dark brown with edges of lighter brown, producing a mottled appearance, the rump and upper tail-coverts more uniform; tail-feathers rufous-brown with stiffened black shafts, the feathers loose-webbed, as is usual in this genus; wing-coverts and quills blackish brown, margined with lighter brown; lores whitish; ear-coverts and sides of neck ashy brown; under surface of body dull white, shaded with ashy brown on the sides of the breast; sides of body and under tail-coverts rather more fulvous-brown; fore neck with small but distinct spots of dusky brown, the sides of the body more largely and distinctly streaked; under wing-coverts ashy brown, the edge of the wing white; quills dull brown below, fulvous along the edge of the inner web. Total length 5·9 inches, culmen 0·4, wing 1·95, tail 3·1, tarsus 0·7.

**Hab.** Neighbourhood of Antananarivo, Madagascar.

Some of the specimens exhibit less mottling on the back than others; but it is always more or less strongly characterized, as also is the light-coloured throat, which has the stripes more distinctly indicated in some specimens than in others. Since describing the original specimen of *Dromaeocercus brunneus*, I have seen several others collected by the late Mr. Crossley; and with some of these, in Mr. Seebohm's cabinet, I have compared the series of the new species.

1 P. Z. S. 1877, p. 22, pl. ii. fig. 2.

[Received February 4, 1879.]

(Plate XVII.)

1. Chiromachéris coronata, n. sp. (Plate XVII.)

Head black encircled by yellow feathers forming a coronet; back, tail-, and wing-coverts silky black; wings and tail brownish black, paler internally; throat and breast black; abdomen and under tail-coverts grey with a whitish spot in the centre of each feather, but this can only be seen by separating the feathers; under wing-coverts white with yellow edges; bill on the upperside black, paler underneath; feet yellow.

Total length 3½ inches, bill 4½ lines, wing 2 inches 3 lines, tail 1 inch.


The present bird is the seventh of this interesting genus, and cannot be confounded with any of the other species. The single specimen, from which the figure is taken, is a fine male, and came in a large collection of birds sent from Bogota.

2. Lampornis violicauda, var.?

Upper surface purplish black, lighter on the rump; tail-coverts and central tail-feathers black; lateral tail-feathers metallic purple, with the tip and external edge of each feather dark blue; chin and breast black, with a line of lustrous purplish black feathers commencing at the angle of the bill and passing down the sides of the neck; abdomen black in the centre, paler on the sides, with a line of white feathers on each side as in L. violicauda; under tail-coverts purplish black; bill and feet black.

Total length 4 inches 2 lines, bill 9 lines, wing 2 inches 6 lines, tail 1 inch 5 lines.


I have only one male specimen of this bird. It is closely allied to L. violicauda, from which it differs chiefly in its colour. Possibly it may be a melanism of that species.
CHIROMACHÆRIS CORONATA.
10. On the Identity of *Trigla pectioloptera* and *T. hirundo*.

By Francis Day, F.Z.S.

[Received February 17, 1879.]

(Plate XVIII.)

While at the Westminster Aquarium in the month of October last year, my attention was drawn to some small but beautiful Gurnards that had recently been obtained from Southend. The colours on the inner side of their pectoral fins did not coincide with that shown in any British example; and the presence of a large, black, oval blotch, covered with light blue spots, seemed to render it probable that they might be the "Little Gurnard" (*Trigla pectioloptera*)—a species which neither Yarrell nor Couch were so fortunate as to obtain. I therefore asked Mr. Carrington, the naturalist to that establishment, to preserve any examples that died, in order that I might have the opportunity of ascertaining, first, if they belonged to the species I supposed, and, secondly, if such specimens were or were not the young of another form. I have now to record my thanks to Mr. Carrington for six excellent examples of the "Little Gurnard" (varying from 2'0 to 9'8 inches in length), which, so far as I am aware, has not previously been recorded from the waters of Great Britain, although a fish two inches in length has been reported to have been captured in Ireland, but, as I shall presently show, was either wrongly identified or erroneously described.

This fish has been recorded in several works (Cuv. & Val. iv. p. 47; Thompson, P.Z.S. 1837, p. 61; Yarrell, Brit. Fishes, i. p. 49; Demid. Voy. Russ. mér. iii. p. 375; Guichen. Explor. Algér. Poiss. p. 39; Günther, Catal. ii. p. 203; Couch, Brit. Fishes, ii. p. 36, pl. lxx. f. 2?). Some of the authors have personally examined specimens; others have copied their descriptions from previous writers; but all coincide in the statement that it has not been taken upwards of 4 inches in length.

I do not propose giving a detailed account of the species, as such may be found in Cuv. & Val. To what is there recorded I will, however, add that it has ten cecal appendages, and that the number of spined plates along the bases of the dorsal fins is from 25 to 26 on either side, a not uncommon number in the species of this genus.

At 5½ inches in length the various spinate projections on the head, shoulder, and along the bases of the dorsal fins become more blunted, the colours on the body are not so vivid, while the oval black blotch with blue spots on the inner side of the pectoral fin is more decidedly blue, covered with white spots. If an example, coloured as in *T. hirundo* of the same size is placed alongside, scarcely any differences are perceptible; the number of spinate elevations along the bases of the dorsal fins, of the fin-rays, of the rows of scales, and the proportions of the various parts of the body are the same.

1 Yarrell gave a figure of this fish in his second edition from a French drawing.
I have found, however, 10 caecal appendages in *T. pectioloptera*, whereas in Cuv. and Val. *T. hirundo* is said only to possess 8. But on reexamining this point, I find my examples of the latter fish also have 10; consequently this feature may be subject to individual variations. Until I possess more examples I shall be unable to ascertain the number of vertebrae, or make detailed investigations as to the sexes.

The air-vessel in the various species of this genus afford excellent characters for discrimination; so I have been careful in ascertaining what its appearance is like in *T. pectioloptera*. At 5½ inches it is oval, with two short projections anteriorly, one on either side, and behind them laterally is a short tube, which does not extend backwards along the outer side of the air-vessel more than one fourth of its length. In another example of the same dimensions these lateral prolongations extended backwards about one half of the length of the air-vessel on either side; and in my largest example (9·8 inches in length) they nearly reach its posterior extremity.

Among the British species of *Trigla* destitute of elongated fin-rays (such as *T. obscura* Linn.), three have the lateral line armed or roughened, viz. *T. lineata*, Ray, *T. gurnardus*, Linn., *T. cuculus*, Bloch; but as the lateral line is smooth in *T. pectioloptera*, any immediate relationship between these forms is excluded. Those with the lateral line smooth are *T. pini*, Bloch, and *T. lyra*, Linn., in neither of which, according to Cuv. & Val., has the air-vessel any lateral process; but in the third, *T. hirundo*, Bloch, we find a lateral process on either side extending backwards as is seen in *T. pectioloptera*.

It is evident that in the "Little Gurnard" these processes augment in extent with the age of the fish; but I have not seen them reaching round the posterior extremity of the air-vessel, as I have found them doing in large examples of *T. hirundo*; I have, however, found them two thirds of the length of the air-vessel in examples¹ about 6 inches in length. I have not seen any very young specimens of *T. hirundo*; neither do I know of their having been recorded, unless in the form of *T. pectioloptera*.

In the very young, these fishes appear to be unsociable, keeping near the bottom of the water and spreading out their pectoral fins so that they appear like beautiful blue butterflies with white and light-blue spots on either wing. As they increase in size the dimensions of the spotted portion of the fin decrease; and in some cases it seems to disappear. In *T. hirundo*, on the contrary, the inner side of the pectoral fin is blue, with transverse black bands in its whole extent. Curiously, one of the examples on the table, upwards of 9 inches in length, has one pectoral fin coloured as in *T. hirundo*, whereas the other shows unmistakable evidence of the remains of the immature spot. As a rule, fins with the large spot are only banded on their outer two thirds; while fins destitute of spots are banded in their whole extent.

P.S. Since the foregoing was written I have seen, in the collection of the British Museum, several examples of the young of *T. hirundo* having the vivid colours of *T. pectioloptera*, seven being from Weymouth; while the following specimens still have traces, to a greater

¹ All these various sizes are present on the table.
SHELLS OF JAPAN
SHELLS OF JAPAN.
or lesser extent, of the dark pectoral blotch covered with light spots:—
one, 12½ inches long, from the Propontis; another, 9½ inches long,
from Dalmatia; a third, of the same size, from Naples; and a fourth,
7½ inches in length, from Sicily.

As no structural difference is observable between *T. pecti
optera* and *T. hirundo*, except such as may be due to age, I think we are
justified in considering the former the immature of the latter; while
the immature colours may be continued (although less decidedly) to
the adult age, this difference being restricted to the inner side of
the pectoral fin.

Whether Thompson’s specimen was *T. hirundo* or *T. lineata* is open
to grave doubt. He says:—“10 dorsal spines . . . . lateral lines
spinous;” and as to colours, “I have little doubt that when recent it
would in colour have corresponded. So I conclude it did not cor-
respond when he received it from Mr. Ball, who obtained the single
example, 2 inches in length, from among some sprats captured at
Youghal, in Ireland. A *Trigla* possessing ten dorsal spines and a
spinous lateral line is unlikely to be *T. pecti
optera*, which has
nine dorsal spines and a smooth lateral line.

**EXPLANATION OF PLATE XVIII.**

*Trigla hirundo*, from a specimen in the author’s collection obtained near
Southend: *a*. Stomach and cecal appendages; *b*. Air-bladder; *c*. Pectoral fin
(inner side).

11. On a Collection of Mollusca from Japan. **By Edgar A. Smith, F.Z.S., Zoological Department, British Museum.**

[Received January 28, 1879.]

(Plates XIX., XX.)

A large collection of Japanese Mollusca, containing very many
new and most interesting forms, has been presented to the British
Museum by Dr. J. Gwyn Jeffreys, F.R.S., with his wonted
liberality. It is a most valuable addition to the series of species
from the same region which was placed in the national collection a
few years ago by the same gentleman. That series, of which a
brief account of the Gastropoda only appeared in the ‘Annals and
Magazine of Natural History’ for 1875, was dredged by Capt. H. C.
St. John, of H.M.S. ‘Sylvia.’ The specimens now to be considered
were derived from the same source; and the highest praise must
be accorded to Capt. St. John for the excellent manner in which
they have been collected and preserved. Most of them are from the
region of the Goto islands; and to save the continual repetition of
the longitude, latitude, and depths of the various stations, a list of
them with consecutive numbers is appended below; so that for the
locality of each species only the number of the station will be quoted.
List of the Stations.

Station 1. Goto Islands in the Korean Channel, 33° 19' N. lat., 129° 7' E. long.; 50 fathoms.

Station 2. East of Goto Islands, 32° 43' N. lat., 129° 28' E. long.; 58 fathoms.

Station 3. West of Goto Islands, 33° 10' N. lat., 128° 51' E. long.; 54 fathoms.

Station 4. Low-water mark, Goto Islands.

Station 5. Ojica Bay, Goto Islands, 33° 12½' N. lat., 129° 5' E. long.; 10 fathoms.

Station 6. Ibid. On rocks at low water.

Station 7. Goto Islands, 32° 49' N. lat., 128° 54' E. long.; 36 fathoms.

Station 8. Ukushima, Goto Islands, 33° 15½' N. lat., 129° 5' E. long.; 11 fathoms.

Station 8*. Ibid. 33° 16' N. lat., 120° 4' E. long. Among rocks at low water.


Station 10. East of Goto Islands, 33° 4' N. lat., 129° 18' E. long.; 23 fathoms.

Station 11. West of Goto Islands, 33° 2½' N. lat., 128° 48½' E. long.; 22 fathoms.


Station 13. East of Goto Islands, 32° 47' N. lat., 129° 5' E. long.; 46 fathoms.

Station 14. East of Goto Islands, 32° 48½' N. lat., 129° 6' E. long.; 47 fathoms.

Station 15. East of Goto Islands, 33° 15' N. lat., 129° 18' E. long.; 40 fathoms.

Station 16. West of Goto Islands, 33° 8' N. lat., 128° 46' E. long.; 60 fathoms.

Station 17. West of Goto Islands, 33° 14' N. lat., 128° 55' E. long.; 40 fathoms.

Station 18. East coast of Kii, south of Niphon.


Station 22. Inland sea between Shikoku and Niphon, 34° 31' N. lat., 133° 40' E. long.; 22 fathoms.

Station 23. Channel between the east end of Shikoku island and the Kii peninsula, 33° 52' N. lat., 135° 4' E. long.; 30 fathoms.

Station 24. Gulf of Yedo, 35° 24' N. lat., 139° 43' E. long.; 10½ fathoms.

Station 25. South of Niphon, 34° 12' N. lat., 136° 28' E. long.; 56 fathoms.
Station 26. West of Nagasaki, 32° 43' N. lat., 129° 28' E. long.; 40-58 fathoms.
Station 27. North of Kiushiu, 33° 56' N. lat., 130° 27' E. long.; 30 fathoms.
Station 28. Satsuma Bay, south Kiushiu.
Station 29. South of Korea, 34° 8' N. lat., 126° 24' E. long.; 24 fathoms.
Station 30. South of Korea, 33° 42' N. lat., 127° 40' E. long.; 51 fathoms.
Station 31. South of Korea, 34° 30' N. lat., 125° 44' E. long.; 20 fathoms.
Station 32. South of Korea, 34° 19' N. lat., 124° 57' E. long.; 12 fathoms.

Gastropoda.

1. Terebra evoluta, Deshayes.

_Terebra evoluta_, Deshayes, P. Z. S. 1859, p. 292; Reeve, Conch. Icon. xii. f. 55.

_Hab._ Station 8.

Like the specimens which were mentioned by me in the 'Annals and Magazine of Natural History' 1875, these also from the Goto Islands are much smaller than the type, which seems to be of very unusual dimensions. The Goto specimens differ from the type and the others from Matoza Harbour in having a much narrower sulcus at the upper part of the whorls, from which circumstance the infrasutural band is broader. The colouring and sculpture are the same.

2. _Terebra gotoensis_. (Plate XIX. figs. 1-1 a.)

Shell subulate, pale brown or fawn-colour, with a white band spotted with brown at the upper part of the whorls, and with a white narrow zone round the middle of the last whorl: volutions 16; the two apical ones white, smooth, subglobose, the rest almost flat, only very faintly constricted towards the upper part, where they are unequally divided by a transverse shallow groove, longitudinally ribbed and very finely striated, the striae being inconspicuous to the naked eye and scarcely developed at all on the ribs; the latter are but little raised, arcuate, and divided at the upper part by the spiral furrow, and number about 24 on the penultimate whorl; costae on the last volution obsolete at the periphery: columella white, oblique at the base, straightish at the upper part; canal short, recurved, oblique.

Length 25 millims., diameter 5.

_Variety._ Shell more slender, similarly sculptured; spots on infrasutural band dark brown; rest of surface purplish brown, variegated with white patches. Length 29 millims.; breadth 4\(\frac{3}{4}\). (Fig. 1 a.)

_Hab._ Station 1. Var., Japan.

The brown spots on the white zone at the top of the whorls are somewhat distant from one another, of a transversely oblong sub-quadrate form. Below these are other less conspicuous spots placed
under them, so that the upper series might be said to be subdivided by the spiral furrow which separates them. The general tone of the shell is light brown or fawn; but a few of the upper whorls are of a more or less lilac tint. The variety, from its slenderness and different coloration, appears at first sight almost specifically distinct; its sculpturing, however, is of precisely the same character as that of the typical form. The painting of *T. alveolata*, Hinds, resembles that of this species very much; but its sculpture is a great deal coarser.

3. **Terebra Jeffreysii.** (Plate XIX. fig. 2.)

Shell subulate, dirty yellowish, dotted and streaked with light brown. Whorls 13 to 14; the two nuclear ones proportionally very large, globose, white, shining; the rest flat, bearing numerous oblique, but little raised fine costæ (about 20 on a whorl), and spirally striated, the stria cutting through the riblets and giving them a nodulous appearance: the striae number about five on a whorl; of these the two uppermost are twice as far apart as the three following, and consequently the spaces between them are wider and more conspicuous; the ends of the costæ cut off by the two uppermost striae are prominently nodulous, and form two distinct series of granules, whereof the upper are more elongate than the lower. The body-whorl is but very faintly angled at the middle; the costæ upon it terminate abruptly at that part, and are only continued to the base in a very obsolete manner; thus the lower half of the whorl is comparatively smooth to the upper portion, and the spiral or concentric striae are also less pronounced than those above. The aperture is small, light brown, and exhibits traces of one or two pale narrow zones. The canal is short, oblique, and slightly recurved: the columella is straight or nearly so in the middle and oblique at the base, and covered with a thin, shining, whitish callosity.

Length 25 millim., diam. 5.

_Hab._ Stations 20 and 21.

This species is remarkable on account of the unusually large size of the nuclear whorls. The colour is rather indistinct, as most of the specimens are more or less coated with a cretaceous deposit; however, it appears to be luteous or dirty yellow, dotted with light brown between the two series of nodules, and streaked with the same colour beneath, and the body-whorl has a pale zone at the middle.


*Terebra torquata*, Adams & Reeves, Voy. Samarang, p. 30, pl. 10. fig. 13; Reeve, Conch. Icon. vol. xii. fig. 69.

_Hab._ Station 14. China Sea (*A. Adams)._  
This species must not be confounded with *T. fenestrata*, Hinds. The latter is very similarly sculptured, but lacks the variegated painting of *T. torquata*.

5. **Terebra textilis**, Hinds.

*Terebra textilis*, Hinds, P. Z. S. 1843, p. 156; id. Voy. Sulphur,
p. 34; id. Sowerby's Thesaur. Con. vol. i. pl. 44. fig. 73; Reeve, Conch. Icon. vol. xii. fig. 130.

_Hab._ Station 18. Philippines (Cuming); Straits of Macassar (Hinds); Ovalau, Fiji Islands (Macgillivray in Brit. Mus.).

6. _Terebra subtentilis._ (Plate XIX. fig. 3.)

Shell subulate, entirely white: whorls probably about 22, the few apical ones being broken off; they are a little convex, finely ribbed, and spirally grooved; costæ about 20 on a whorl, arcuate, constricted a little below their upper extremities by a spiral furrow, which in the interstices between the ribs is comparatively deeply pitted; transverse striæ rather deep, more or less obsolete on the costæ, about ten in number on a whorl, whereof three are above the pitted sulcus, and the rest below it; the ribs on the last whorl are arcuate above and flexuous at the base, to which they attain; the lower part of the whorl is also transversely sulcate like the upper portion; columella covered with a distinct callosity; canal short, rather broad and recurved.

Length 37 millims., diam. 6.

_Hab._ Station 21.

This species to a certain extent has the characters of _T. textilis_, Hinds. From it, however, it may be known by its more convex and broader whorls, its greater size, and the more numerous spiral sulci or striæ, which in this species are present on the infrasutural band as well as below the pitted groove, whilst in _T. textilis_ they only exist on the latter portion of the whorls, leaving the upper part plain, with the exception of the cut-off terminations of the costæ. These striæ are of different magnitudes, so that the interstices also vary in size and also in their degree of elevation. The sculpture of _T. polygyrata_, Desh., is similar in character, but much finer. That, too, is a coloured species and smaller.

7. _Terebra tantilla_, Smith. (Plate XIX. fig. 4.)


_Myurella pumilio_, Smith, l. c. p. 269.


The specimens described under the name of _T. tantilla_ were in bad, faded condition; and hence it was that the third band on the body-whorl escaped observation. I am now convinced of the identity of _P. tantilla_ and _T. pumilio._

8. _Terebra albozonata_, Smith. (Plate XIX. fig. 5.)


_Hab._ Station 27. Matoza Harbour (l. c.).

It is satisfactory to have obtained a second, although young, example of this species agreeing perfectly with the type.

I take this opportunity of changing the name of a species of


Shell fusiform, pale horn-colour, with a white band round the middle of the whorls, brownish at their upper part: whorls 10; first three convex, the rest strongly keeled above the suture; beneath this keel they are concavely sloping, prominently carinated at the middle, the carina being white and bearing small close-set nodules; beneath and above this series of nodules the whorls are ornamented with three or four spiral thread-like liræ and oblique lines of growth; last whorl whitish at the lower extremity, with a brownish somewhat indistinctly defined band around the middle, and encircled with about 15 liræ below the white carina; mouth and canal occupying rather less than half the entire length of the shell; slit in the labrum small, situated at the termination of the prominent white keel; canal narrow, produced, and a little recurved.

Length 17 millims., diam. 5.

*Hab.* Stations 1 and 21. "Torres Straits" (Hombron & Jacquinot).

Although in some respects like the Californian *P. gemmata*, Hinds, nevertheless, on comparison with that species, the present one appears sufficiently distinct for specific rank. It has a less slender spire and is strongly carinated beneath the suture, whilst *P. gemmata* is described by Hinds as having two small keels parallel with the suture; and Reeve ("Conchologia Iconica," i. sp. 83) refers to these keels as "two very distinct elevated lines." A second, rather deep sinus is situated in the outer lip, about halfway between the suture and the caudal extremity. This character is not referred to by Hombron & Jacquinot; but if the labrum of their single specimen were broken (and this is very possible, judging from the figure of it), of course the slit would not be present. The name *fusca* has been employed earlier for a species in this family by C. B. Adams; but as that belongs to a different section, I think it unadvisable to alter the name of the present.

10. **Pleurotoma marmorata**, Lamarck.

*Pleurotoma marmorata*, Kiener, Coq. Viv. pl. 6. fig. 11; Reeve, Conch. Icon. vol. i. fig. 21; jun. =*Pl. hastula*, Reeve, l. c. fig. 139.

*Hab.* Station 21.

Other localities are:—the Straits of Malacca; Shanghai; Ticao, Philippines; and Ovalau, Fiji Islands.

11. **Pleurotoma vertebrata**, Smith. (Plate XIX. figs. 6–6 a.)

*Hab.* Stations 21 and 27.

The description of this species in the 'Annals and Magazine of Natural History,' 1875, vol. xv. p. 416, was based upon specimens
from the Persian Gulf (fig. 6). The Japanese examples (fig. 6a) differ in a slight measure: they are a trifle narrower, have a very slightly more elongated canal; and the apex is brown instead of pale violet as in the typical form. In sculpture and colouring they are identical.

12. Pleurotoma niponica. (Plate XIX. fig. 7.)

Shell shortly fusiform, light brown; whorls $6\frac{1}{2}$; nucleus consisting of $1\frac{1}{2}$, rather large, globose, glassy shining; the four whorls following strongly keeled around the middle, concave above, with two or three fine spiral lirae, and also concave below the carina, margined at the upper and lower boundaries by a fine thread-like lira, abruptly or flexuously elevatedly striated above the carina, and obliquely, but in an opposite direction, beneath it; the last whorl encircled beneath the principal keel by about ten lirae, whereof the uppermost is the stonest, the rest gradually becoming finer towards the base; the interstices between them crossed by elevated striae or lines of increment. Aperture small, brownish, occupying about three sevenths of the entire length of the shell; slit situated in the concavity above the principal carination; columella a little convex or prominent in the middle, and oblique below it; canal short, scarcely recurved.

Length 7 millims., width $2\frac{1}{3}$.

Hab. Station 21.

This pretty shell is recognizable by the strong central keel to the whorls, which are excavated above and below, and the raised striae on the upper portion are obliquely flexuous towards the right, whilst those below the carina are obliquely straight and inclined to the left.

13. Pleurotoma difficilis. (Plate XIX. fig. 8.)

Shell shortly fusiform, brownish horn-colour. Whorls nearly flat, strongly keeled a little below the middle, and above at the suture, with one or two thread-like spiral lirae in the spaces between these two carinae and between the subcentral one and the suture below it; lines of growth moderately distinct, raised, flexuous, and more or less oblique; nucleus (or the three apical whorls) smooth, glassy, shining, convex; the fourth also convex and coarsely obliquely costate; last whorl encircled by about ten coarsish lirae, whereof the three uppermost are equal in size to the submedian carina of the upper whorls, which falls just above them on this solution; the interstices between them coarsely striated by the lines of growth. Aperture small, occupying three sevenths of the entire length; columella brown, coated with a smooth enamel, oblique below the middle; slit above the submedian liration; canal short, very little recurved. Operculum ovate, pointed at the base; nucleus apical.

Length 7 millims., width $2\frac{1}{3}$.

Hab. Stations 21 and 27.

Of this species there are two specimens in the collection. In both there are two fine thread-like lirae in the interstice between the upper and submedian keels on the last two whorls; but the upper one gradually becomes obsolete on ascending the spire. The upper of the
two fine liræ in the inframedian space also gradually disappears or attenuates on the upper whorls.

14. Pleurotoma triforcata. (Plate XIX. fig. 9.)

Shell shortly fusiform, of a uniform pale brown or luteous tint. Whorls 9, the first globular, glassy, rather large, the rest encircled with three distinct keels: the uppermost is just beneath the suture; the median one (the most prominent of all) is situate in the middle of the whorls, and the lowermost a little above the lower suture: the interstices between the carinations are finely latticed with spiral thread-like liræ and raised incremental lines; the former are about three or four in number in each of the interstitial spaces, and the latter very arcuate between the central and uppermost keel, and very oblique beneath the former: the body-whorl has about twelve additional carinae or liræ, whereof the four uppermost are stouter and further apart than those beneath. Columella a little oblique and arcuate above the middle, more sloping below; labrum thin, very much produced in the middle, widely and deeply notched between the terminations of the uppermost and principal keels; canal short, recurved.

Length 14 millims., diam. 4½.

Hab. Station 1.

This is another species belonging to the same section of the genus Pleurotoma as the three preceding. They are all sculptured with the same character of ornamentation; yet in detail it is very distinct, and they also show good differences in the nuclear whors.

15. Pleurotoma patruelis, Smith. (Plate XIX. fig. 10.)


Hab. Gulf of Yedo, 10½ fathoms.

The specimen from the above locality agrees precisely with the type in colour and sculpture, but it is rather more robust. It is 26½ millims. long, and 8 broad. When describing this species I was unable to give any account of the labrum, as, unfortunately, it was broken away in the only specimen at hand. In the perfect shell it is thin, prominent in the middle, and broadly sinuated at the upper part in the concavity of the whorl. Columella a little oblique, covered with a callosity, thickest towards the base. Operculum sub-ovate, concentric, nucleus subcentral, but rather towards the inner or columellar side (fig. 10 a).

16. Pleurotoma consimilis. (Plate XIX. fig. 11.)

Shell ovately fusiform, turreted, pale fleshy brown. Whors 8; the first globular, glassy, smooth, the rest concave above, angled at the middle and a little concave below the angle, longitudinally flexuously obsoletely plicated; plicae obsoletely nodulous above at the suture, bearing larger nodules at the angle and two smaller ones beneath it; nodules connected by spiral liræ between the plicae, which are coarser than other intermediate fine spiral lirations; the last whorl encircled
by about fourteen of these transverse lines, whereof nearly all, with the exception of a few at the base, are more or less granular on the plicae. Aperture equaling about two fifths of the entire length of the shell, light brown; fissure in the lip, below the suture, and above the nodulous angle, broad and moderately deep; labrum thin, prominent in the middle, with a very shallow sinuation near the base, smooth and not lirate within; columella callous at the base; canal very short. Operculum elongate, rather acuminate at both ends; nucleus terminal.

Length 18 1/2 millims., diam. 6 1/2.

Hab. Station 29. Also China Seas (Mus. Cuming).

The style of sculpture of this species is considerably like that of *P. metcalfei*, Angas. However, the whorls are fewer, the nuclear one being larger, the last proportionally broader. The few lirations within the lip of that species are wanting in the present one; and the tubercles around the middle of the whorls are less oblong than in *P. metcalfei*.

17. **Drillia peradmirabilis.** (Plate XIX. fig. 12.)

Shell robustly fusiform, whitish or yellowish white, stained with brown beneath the suture, and obscurely banded with the same colour about the middle of the last whorl, spotted and dotted with a lighter tint irregularly over the rest of the surface, but leaving a plain white zone at the angulation of the whorls and a second just above the median brown one on the last whorl; apex white. Volutions 8 1/2; one and a half nuclear smooth, globose; the rest conceavely sloping above, then obtusely angled about the middle, rounded, and much contracted beneath, obliquely plicated and spirally lirated; plicae rounded, oblique, but little elevated, more or less obsolete at the upper part. Transverse lirae most beautifully and finely granulated, separated by deep-cut striae of different sizes, those in the concavity of the whorls subequal and finer than those beneath, which, again, are not all of uniform tenuity; on the penultimate whorl they number about 20, and on the last as many as 55; those around the lower part of the last whorl are pretty regularly alternately larger and small, the latter being the more granulous. The bodywhorl is contracted at the lower part, and is destitute of the plicae on about a third of its extent near the lip. Aperture together with the canal a little less than half the length of the shell, brownish within, with a single white central zone, and a white patch parallel with the margins of the lip, corresponding to a stout exterior submarginal varix, and stained with dark brown between this and the thin prettily crenulated edge of the labrum, which is curved and very shallowly sinuated towards the base, and finely sulcated within, but at the edges; sinus deep, at the suture; columella a little oblique and tortuous, whitish, without markings or callosity, only furnished with a small whitish tripartite tubercle at the upper part, just a little below the sinus, and connected with the suture by a thin callus.

Length 23 millims., diam. 7 1/2.

Hab. Stations 1 and 32.
The example of this most wonderfully sculptured species from the latter locality is a little darker in colour than the other. The marking on the upper part of the whorls and the bands on last volution are of a dull purplish brown.

18. Drillia nagasakiensis. (Plate XIX. fig. 13.)

Shell elongate, turreted, luteous. Whorls 9: two apical brown, smooth, convex; the rest keeled above at the suture, somewhat excavated beneath the carina, then convex at the sides, which contract inwards towards the base; they are closely ribbed and transversely grooved; the costæ are rounded, oblique, sixteen on the penultimate volution, and do not quite attain to the suture, but become obsolete in the sloping concavity above; the spiral ridges between the sulci number eight on the penultimate whorl; of these the three uppermost are very fine and situated in the concavity above, the rest are much coarser and subnodulous on the costæ; the latter are attenuated inferiorly on the last volution, and become obsolete a little below the middle; one of them near the tip is considerably enlarged in the form of a varix; the spiral sulcation also extends over the entire surface. Aperture rather small, occupying a third of the entire length, light brown within; labrum thin, much produced and arcuated at the middle, broadly and deeply notched a little below the suture, and with a second shallow sinuation near the base; columella suberect, smooth, coated with a thin callosity, terminating above at the sinus in the form of a tubercle; canal short, broad, but little recurved.

Length 17 millims., diam. 5.

Hab. Station 26.

This species has much the appearance of P. pyramidula of Reeve (Con. Icon. fig. 260). The whorls, however, are more convex at the sides and broader, and the lip is different. The costæ are less numerous on the upper whorls than on the lower one, and they gradually become finer as the shell increases, so that those on the last volution are more slender than those on the upper part of the spire.

19. Drillia longispira. (Plate XIX. fig. 14.)

Shell slender, fusiform, whitish, banded with brown between the costæ; zones two in number on the upper whorl—one a little below the upper suture, and the other at the base. Whorls 10, the two first smooth, convex, the rest somewhat excavated above, obtusely angled at the middle, obliquely costate and spirally striated; ribs about six on a whorl, oblique, subnodose at the middle, attenuating at both extremities and not reaching to the upper suture; transverse striae rather coarse, minutely decussated by the flexuous lines of growth; last whorl with a third brown zone below the middle. Aperture whitish within, ornamented with the three exterior bands, occupying about four elevenths of the entire length of the shell; sinus deep, situated in the upper part of the lip, which is thin, has a second shallow sinuation near the base, and is much produced and
arcuate in outline in the middle; columella straightish, but a trifle oblique, covered with a thin callosity terminating in a tubercle at its junction with the upper extremity of the labrum; canal short, recurved.

Length 16\(\frac{\text{1}}{\text{2}}\) millims., diam. 4\(\frac{\text{1}}{\text{2}}\).

Hab. Station 13.

This slender species is well characterized by the brown hands, which are interrupted by the oblique ribs. The spiral striation is rather coarse.

20. **Drilla japonica**, Lischke. (Plate XIX. fig. 15.)

*Drilla japonica*, Lischke, Japanische Meeres-Conch. i. p. 32.

Hab. Station 27. Nagasaki (*Lischke*).

The number of whorls is rather underestimated by Lischke, whose two specimens were mutilated at the apex, and had but six remaining volutions. The two examples in the present collection have eleven each, whereof the two nuclear ones are brown, smooth, and shining; the rest are a little constricted at the upper part, and then rather convex. Both of these shells and also a third in the Cumingian Collection display two or three transverse series of more or less distinct whitish granules; a little below the middle of the last whorl they form an ill-defined band terminating in the white spot near the base of the labrum, which at this point has a second shallow sinus.

21. **Drillia obliquata**, Reeve, var.

*Pleurotoma obliquata*, Rve. Conch. Icon. i. fig. 262.

Hab. Station 21. —? (*Reeve*); Ceylon and Singapore (*Mus. Cuming*); var. from Persian Gulf (*Colonel Pelly*).

The single shell of this species is not full-grown, and differs from the normal form in having a series of white dots on the ribs, in place of the band round the middle of the whorls. In describing this species, Reeve omitted to notice the presence of a transverse row of minute white dots situated on the costae a little below the middle of the body-whorl, the end or cauda of which is encircled by about five oblique liræ; columella smooth, very slightly oblique, covered with a callosity terminating in a large tubercle at the upper end of the labrum, and aiding in forming the large rounded sinus; labrum thin at the edge, with a large swollen varix some distance behind, and with a second slight emargination near the base.

22. **Drillia subobliquata**. (Plate XIX. fig. 16.)

Shell acuminately ovate, light brown, with a narrow white zone a little below the middle of the whorls, and a second, less distinct and subinterrupted one a little below the middle of the body-whorl: whorls 9, two nuclear smooth, convex, white, the rest concave at top, thin, convex at the sides, obliquely costated and finely transversely lirated; costæ rather fine, 14 on the penultimate whorl, subnodose a little above the middle, where the concavity of the whorl commences, attenuated at the upper extremity, and becoming obsolete about the middle of the body-whorl; the spiral liræ are not conspicuous, rather
far apart, and are not found in the excavation at the upper part of
the volutions: aperture small, occupying rather more than a third of
the entire length; sinus deep, inferior sinuation very shallow; canal
very wide, not recurved; columella covered with a pale brownish
callocity, tuberculated at the upper extremity.
Length 18 millims., diam. 6.

_Hab._ Station 15.

This species is closely affined to _P. obliquata_, Reeve. It differs
in being more slender, has a narrower concave portion at the top of
the whorls, and consequently longer rounded sides; the costae are
more numerous and less produced inferiorly on the last volution; and
the surface, with the exception of the upper or depressed part of the
whorls, is ornamented with fine subdistant lirulae, which in _obliquata_
are altogether wanting; the basal canal, too, is broader, and the la-
brum has not the large swollen varix behind it which is characteristic
of Reeve's species.

23. _Drillia candens._ (Plate XIX. fig. 17.)

Shell shortly subfusiform, entirely white, shining, subpellucid: whorls 8, two nuclear ones large, globose, smooth, the rest rather
bulging towards the lower part, and a little constricted above, ob-
liquely ribbed and striated by the lines of growth; costae stouter on the upper whorls than on the last, on which they are obsolete at the
middle; they are very oblique and flexuous; the lower part of the
body-whorl is sculptured with fine oblique grooves, which by degrees
are less distinct on the upper portion; sinus very wide and deep, inferior
sinus slight; columella but little oblique, sinuous, covered with a
white shining enamel, with a small tubercle at the upper extremity;
canal broad, very short, and not recurved.
Length 12 millims., diam. 4\(\frac{1}{2}\).

_Hab._ Stations 1 and 15.

This is a very pretty species, of a diaphanous white tint, a little
more opaque just beneath the suture. Besides the fine lines of growth,
other striae in a transverse direction, and equally fine, can be dis-
covered in parts under a powerful lens. For such a small shell the
sinus is remarkably large and deep; the apical whorls, too, are pro-
portionally large.

24. _Drillia raricostata._ (Plate XIX. fig. 18.)

Shell elongate, shining, horny brown: whorls 8, two apical trans-
versely keeled and angled round the middle; the rest concavely
excavated above, convex below, coarsely obliquely plicated, and some-
what margined beneath the suture; plica abruptly terminating at
the concavity, eight on a whorl, very oblique, gradually shorter on as-
cending the spire, so that the upper rather acute ends fall about the
middle of the whorls; costae on last whorl obsolete at the base, which
is obliquely grooved: aperture very small, about one third as long
as the whole shell; sinus deep, inferior sinuation shallow; labrum
thin, curved and prominent, with a swollen varix some distance be-
hind the margin; columella scarcely oblique, but slightly sinuous,
covered with a callosity, tuberculated above at the suture; canal very short and a little recurved.

Length 10 millims., diam. 3½.

Hab. Station 26.

This species is remarkable for the abrupt and acute termination of costæ above.

25. **Drillia intermaculata.** (Plate XIX. fig. 19.)

Shell shortly fusiform, shining, subpellucid, white, with two transverse series of brownish-yellow dots between the ribs on the upper whorls and four on the last. Whorls 7, two nuclear ones simple, smooth, convex, the others concave at the upper part and convexish beneath, ornamented with oblique rounded costæ, which become obsolete above, not attaining to the suture, twelve in number on a whorl; those on the body-whorl less strongly developed, especially near the labrum, and not extending downwards below the middle. Aperture occupying about two fifths of the entire length; sinus deep, lower sinuation slight; columella arcuate, with a tubercle at the suture; canal very short, wide, and not recurved.

Length 10½ millims., diam. 3½.

Hab. Station 31.

The painting of this pretty shell is very characteristic; the uppermost series of dots is situated between the ribs just about where they become obsolete, the second row at the middle of the body-whorl, and the two following at equal distances below.

26. **Drillia humilis.** (Plate XIX. fig. 20.)

Shell fusiformly ovate, chocolate-brown at the base of the whorls and lighter above, indistinctly banded with white round their middle, the band being most conspicuous on the ribs, which are also white at their upper extremities. Whorls 8; two apical smooth, convex, rather large, the rest considerably excavated above and rather bulgingly convex inferiorly and obliquely ribbed; costæ nine in number on the penultimate whorl, subobsolete in the concavity at the upper part of the whorl, and again nodulous at the suture; last whorl with a transverse series of white dots on the costæ a little below the middle; ribs gradually attenuating downwards, not extending quite to the extreme base; the latter, or cauda, is sculptured with about six oblique fine grooves. Aperture small, brown, white at the sinus and at the termination of the series of dots a little below the middle; sinus large, deep, rounded, in the concavity, lower sinuation slight; lip thin, arcuate, produced, with a large tumid varix at a little distance from the margin; columella a trifile oblique, coated with a smooth brown callus, adjoining the suture in the form of a tubercle; canal very short, broad, and not recurved.

Length 9 millims., diam. 3½.

Hab. Station 5.

This species at a first glance has the appearance of a dwarfed *D. obliquata* (Reeve), but when closely examined proves specifically distinct. It has fewer volutions, whereof the apical ones are propor-

tionally much larger; the form is less robust, and the colouring is different in detail.

27. **Drillia flavonodulosa.** (Plate XIX. fig. 21.)

Shell solid, ovately fusiform, pale fleshy white, banded with yellow on a series of nodules around the lower half of the whorls, stained with reddish brown between the nodules, with a second series of yellow gemmules, with a reddish-brown lira beneath it, situated a little below the middle of the body-whorl. Whorls \( \frac{7}{2} \), apical ones large, the rest undulately carinated above at the suture, then concave, coarsely ribbed and spirally lirate; two of the liræ (in all six in number) are vastly stouter than the rest, and on crossing the ribs form two distinct series of nodules around the lower part of the whorls; the other liræ above and below these are fine and thread-like; beneath the sutural wavy keel on the last whorl are three fine liræ; then follow nine of the coarse nodulous ones; and around the basal extremity or cauda, which is brownish, are about six finer ones. Aperture small, a little more than one third the entire length of the specimen; labrum not thickened, rather deeply situated in the concavity at the upper part of the whorl; columella smooth, a trifle oblique, very slightly tortuous, covered with a moderately thick livid enamel; canal very short.

Length 9\( \frac{1}{2} \) millims., width 3.

*Hab.* Station 22.

This is a solid species, peculiarly coloured, and readily known by the coarse granules. It belongs to the same group as *P. inconstans*, another Japanese form described by me in the Ann. & Mag. Nat. Hist. in 1875.

28. **Drillia fortillirata.** (Plate XIX. fig. 22.)

Shell elongated, horny or dirty white, stained with brown or purplish brown at the extremity of the last whorl. Whorls 12, a little convex, rather coarsely clathrated by longitudinal costæ and transverse ridges; costæ a little oblique, rounded, ten or eleven on a whorl; spiral liræ very prominent, compressedly subnodulous on crossing the ribs, undulating or festooned, five or six in number, whereof the uppermost (which borders the suture) is especially developed; last whorl concave below the middle, at which point the ribs terminate, and encircled by about nine fine thread-like liræ. Aperture small, brownish within, equalling about two sevenths of the entire length of the shell; labrum thickened by the last costa, lirate internally, with a small sinus a little below the suture; columella coated with a thin brown callosity, obliquely sinuous, smooth, without liræ or granules; canal short, oblique, faintly recurved, broadish.

Length 14 millims., width \( 3\frac{1}{2} \).

*Hab.* Stations 21 and 14.

The liræ within the lip may not be a character of much specific value, as they are only observable in one of the four specimens before me.
29. Drillia subauriformis. (Plate XIX. fig. 23.)

Shell elongate, narrow, yellowish white, banded at the suture with purplish brown, and the lower half of the body-whorl of the same colour. Whorls 10; the two or three apical ones smooth, convex; the rest convex, sometimes exhibiting a slight angulation at a little distance from the top, obliquely costate and spirally lirate; costæ about fourteen on a whorl, rounded, varying somewhat in thickness in different specimens; lirate also subject to variation in number and stoutness, usually five or six in number, but sometimes as many as eight; on crossing the costae they are a little thickened, producing a somewhat granulous effect; on the last whorl there are from eighteen to twenty lirate, whereof those around the base are smooth and simple, as they do not cross the riblets, which terminate a little below the middle of the whorl. Aperture varying in length in proportion to that of the entire shell, sometimes occupying a little more and in other specimens a trifle less than one third of it; labrum stained with brown, thickened exteriorly, denticulated or lirate within, and widely sinuated just below the suture; columella transversely lirate (this character is only apparent in quite adult shells, and then not obviously); canal short, narrow.

Length $9\frac{1}{2}$ millims., diam. $2\frac{2}{3}$. Larger specimens are $12\frac{1}{2}$ long and $3\frac{1}{2}$ broad.

Hab. Station 21.

This species has for its nearest ally Defrancia tecta, Dunker. It is, however, more elongate, and apparently, judging from Dunker's description and figure, differently coloured. The small and larger forms of this species agree in all respects with the exception of size.

30. Drillia texta, Dunker.


Hab. Station 22.

Little can be added to the excellent diagnosis of this species given by Dunker. The number of whorls in the specimen which I consider belongs to this species, from the above locality, is eight. The two nuclear are glassy, smooth, and convex; the rest are convex, with a slight tendency to angulation or shouldering at the upper part. Besides the colouring noticed by Dunker, the whorls are stained beneath the suture with light brown, in which respect it agrees with the preceding species (subauriformis), and in fact might almost be considered an extreme variety of it.

31. Drillia gracilenta, var., Reeve. (Plate XIX. fig. 24.)

Pleurotoma gracilenta, Reeve, Conch. Icon. sp. 114.
Var. = P. contracta, Reeve, l. c. sp. 116.
Var. = P. fusoides, Reeve, l. c. fig. 349.

Shell narrow, subfusiform, elongate, whitish, banded at the suture and around the middle and base of the last whorl with orange-red. Whorls 7, the first two smooth, very convex, shining; the rest
longitudinally and a trifle obliquely costate and transversely lirate, sloping at the upper part and a little convex below; the costæ on the upper whorls are coarser and fewer than on the body-whorl, which has about twenty, attenuated below, and not quite attaining to the base: the spiral liræ are four in number on the upper whorl, two principal ones with a smaller one between them around the middle, and the fourth below at the suture; on the body-whorl they number about sixteen. The entire surface under the microscope is seen to be minutely cancelled by the lines of growth and excessively slender spiral striae. Aperture narrow, almost half the length of the shell, white within; lip thin at the edge, thickened both interiorly and without, and blotched with orange-red on both sides, the spots being the terminations of the transverse bands, without teeth or liræ; columella smooth, almost rectilinear, but inclining a little obliquely; sinus well defined, semicircular, situated in the labrum close to the suture.

Length 8 millims., width 2½.

_Hab._ Station 18. Philippine Islands (Cuming).

The specimen above described resembles almost exactly the variety _contracta_, the figure of which in the ' _Conchologia Iconica_ ' is not at all good, the whorls being much too angular and the spiral line scarcely traceable.

32. Defrancia gracilispira. (Plate XIX. fig. 25.)

Shell slender, fusiform, dirty yellowish, faintly banded with livid brown between the costæ near the top of the whorls, and stained with the same colour from the middle of the last whorl downwards. Whorls 12; three nuclear convex, minutely reticulated with raised obliquely crossing lines; the rest very convex, with a slight concavity, sculptured with distinct arcuate short raised lines beneath the suture, also bearing slender oblique costellæ (13 on the penultimate whorl), which are crossed by transverse liræ; these are four to six on the upper whorl, nodulous on the riblets; nodules compressed, subacute; last whorl convex above, slender below the middle; at this point the costellæ are becoming obsolete; and thence downwards the whorl is transversely obliquely lirate; the liræ are simple, subequal, and rather close together. Aperture narrow, occupying about four elevenths of the entire length; labrum imperfect, probably incrassated as in the European _D. gracilis_ of Montagu; sinus at the suture; columella obliquely tortus; canal rather long, narrow, somewhat recurved.

_Hab._ Station 27.

The slender form, the delicate riblets, the shallow excavation at the upper part of the volutions, and their convexity are the principal distinctive characters of this interesting shell. It belongs to the genus _Defrancia_ as restricted by Jeffreys for species with the sinus in the suture and with the apical whorls minutely reticulated.

33. Daphnella? fuscobalteata. (Plate XIX. fig. 26.)

Shell ovately fusiform, yellowish, pale violet or lilac towards the
apex, banded with light brown, one band at the top of the whorls
darker than the rest. Whorls 9? (apex broken), obliquely sloping
at the upper part, and slightly convex at the sides, strengthened
with longitudinal suberect rounded costæ, whereof there are 12 on
the penultimate whorl and about 16 on the last (those towards the
labrum being finer), gradually vanishing a little below the middle;
between the more slender ribs there are a few fine intermediate ones,
but this may only be an individual peculiarity; the whorls are also
transversely lirate; liræ of different thicknesses, numerous, raised
equally between and upon the costæ, fewer and coarser upon the
upper whorls, and about 30 on the body-whorl. Aperture rather
narrow, less than half the length of the shell, exhibiting the same
banded colours as the exterior; labrum thickened within and ex-
teriorly, thin at the extreme edge, smooth interiorly; sinus small at
the suture; columella simple, obliquely flexuous; canal a trifle ob-
lisque and slightly recurved.
Length 12 millims., width 3½.
Hab. Station 21.
This species belongs to a section of Pleurotoma which includes
saturata, Reeve, subula, Reeve, albibalteata, Reeve, and a few others.

34. Daphnella? subzonata. (Plate XIX. fig. 27.)
Shell elongate, dull lightish brown, more or less distinctly banded
at the middle of the whorls, with opaque white lines interrupted
by dark brown dots or short lines; sometimes marked with opaque
white streaks just beneath the suture, and with a second less apparent
transverse band around the lower part of the last volution. Whorls
11; apical ones minutely reticulated; the rest convex, divided by an
oblique suture, longitudinally costate, and transversely closely
lirate; costæ rounded, a little oblique, 16 on the penultimate, and
fewer on the preceding whorls; spiral liræ equally elevated on and
between the ribs, about 12 on the penultimate, and, like the costæ,
gradually fewer on the upper whorls; the entire surface micro-
scopically reticulated. Aperture rather broad, somewhat of the
same colour as the exterior, but a little clouded; lip arcuate, moder-
ately thickened, with a small sinus at the suture, smooth within;
columella suberect, a little oblique at the lower end, smooth; canal
rather wide, short, but very little recurved.
Length 17 millims., width 5.
Hab. Station 27.
Allied to Pleurotoma albibalteata, Reeve, but narrower, with less-
swollen whors, of a different colour, and with the characters of the
aperture and lip not agreeing.

Pleurotoma saturata, Reeve. Con. Icon. vol. i. sp. 213.
Hab. Station 27. Corrigidor, Philippines (Cuming).
This specimen is a little lighter in colour than the type. The
whors in all examples are somewhat convex and have a narrow fur-
row just beneath the raised margin at the top; they are 9 in
number, the three apical ones being very much rounded and minute
tly reticulated by raised lines, oblique in opposite directions. This
oblique reticulation is found in Defrancia as limited by Jeffrey
(Brit. Conch. iv. p. 361), and also in Daphnella of Hinds.

36. Daphnella fragilis, Reeve, var.
Pleurotoma fragilis, Reeve, Con. Icon. sp. 179.
Var. = P. lymneiformis, Rve. Con. Icon. sp. 325.
Non P. lymneiformis, Kiener, Coq. Viv. p. 62, pl. 22. fig. 3.
Hab. Philippine Is. (Reeve).
The Japanese specimen is much smaller than the type of this
species, having a length of only 10 millims. However, in form and
sculpture the differences are but very trifling. Its spire is certainly
less acutely conical, and the reticulation of the surface proportionally
coarser, in these respects approaching Daphnella interrupta of Pease
the gradation from one species to the other is so subtle, that I fail at
present to perceive any other differences except of size, stoutness of
the spire, and the solidity of the labrum in interrupta.

37. Mangilia robusticostata. (Plate XIX. fig. 28.)
Shell ovately fusiform, light brown, whitish at the base of the
body-whorl and labrum. Whorls 6; the apical one and half
the succeeding forming the nucleus, globose, large, smooth; the
rest turreted, angulated at the upper part at a short distance from
the suture, beneath the angulation, which is rounded, sloping inward,
so that they are much narrower at the lower part than at the angle,
obliquely costate, and striated by the incremental lines; costae
very thick (12 on the penultimate whorl), subacute at their edge,
and almost adjacent to one another at their bases, thinner and at
times sublamellar at the upper extremities, and very obliquely
flexuous from the angle downwards; on the last solution they gra-
dually become obsolete below the middle. Aperture small, livid
brown within, except near the lip, where it is whitish; labrum thin
at the extreme edge, strengthened exteriorly by the last well-developed
costa, which is white with a single livid-brown spot a little below
the middle; sinus scarcely discernible; columella smooth, slightly
oblique, subrectilinear, covered with a thin callosity which unites at
the upper extremity with the termination of the labrum; canal
very short.
Length 6½ millims., width 2½.
Hab. Japan.
This species, like the British M. septangularis, exhibits but a very
small sinuation in the labrum.

38. Lachesis japonica, A. Adams. (Plate XX. fig. 29.)
v. p. 411.
Hab. Station 2. "Off Mino-Sima, 63 fps." (A. Ad.).
The largest specimen of this species in the Museum is 12 millims.
long and 4 broad. Adams describes the colour as fuscous. The only fresh specimen that I have seen is of a dirty transparent white tint, blotched with light brown at intervals beneath the suture, and indistinctly banded with the same colour a little below the middle of the last whorl, leaving a light zone above it which is visible within the aperture. The cancellation of the surface is composed of about 20 longitudinal areolate costæ on the penultimate, crossed by six transverse liræ, rather finer than the costæ, on crossing which they are very prettily nodulous; this cancellation extends over the greater portion of the body-whorl; and the ribs not being produced quite to the extremity, the cauda is only transversely grooved or lirate. The lip is somewhat thickened exteriorly, thin and crenulate at the margin, areolate and very faintly sinuated near the suture, and furnished within with about 10 short fine liræ at a little distance from the extreme edge. Columella whitish, only slightly flexuous, and a trifle oblique, covered with a thin smooth callosity which abruptly limits the clathrated surface of the whorl. Adams remarks that "the spire is as long again as the aperture." This is apparently a slight exaggeration, since in the most elongated specimen in the collection it only occupies \( \frac{7}{12} \) of the entire length.

39. Murex sobrinus, A. Adams. (Plate XX. fig. 30.)


Shell subclavately fusiform, whitish, with two reddish-brown bands interrupted by whitish costæ; one, the broader of them, rather below the middle of the upper whorls, and the other beneath the convexity of the last. Whorls 7; the two apical smooth, rounded; the rest convex, subangulated above, trivariose, tricostate between the varices and spirally lirated; liræ about eight on a whorl, those on the upper part finer than the inferior ones, which are compressedly nodulous on crossing the costæ and varices; the latter bear a single, shortish, upward-directed spine at the subangulation of the volutions; the upper whorls seem to be pretty constantly destitute of spines; the last whorl has a second shorter spine on the varices a little below the middle of the convex part, and two still smaller ones somewhat lower down, those on the antepenultimate varix falling opposite the lower end of the oval aperture, and those on the last a short distance below it on the right; lower part of the last whorl, with the exception of the end of the cauda, obliquely, finely, and rather rugosely lirate. Aperture roundly ovate, bluish white, two-banded; peritreme thin, produced; canal stained with brown behind, long, slender, a little oblique, very much closed, rather more than half as long as the entire shell. Operculum (fig. 3 a) reddish brown, composed of coarse concentric layers; nucleus nearly terminal.

Length 36 millims., diam. 11; aperture 7 long, and 4\( \frac{1}{2} \) broad.

*Hab.* Stations 3 and 30. "Satanomosaki, 55 fathoms; Goto, 48 fathoms; Kuro-Sima, 29 fathoms" (A. Adams).

This appears to be a species which does not attain to a large size, and is remarkable for the fewness and smallness of the spines. Of the spiral liræ three are generally more prominent than the rest.
40. Murex (Phyllonotus) falcatus, Sowerby.

_Hab._ Stations 9 and 17.

For synonymy and distribution of this species consult Lischke’s ‘Japonische Meeres-Conchylien,’ ii. p. 30.

41. Murex (Cerastoma) emarginatus, Sowerby.

_Murex emarginatus_, Couch. Illust. figs. 98–100; Reeve, Conch. Icon. iii. f. i.

_Hab._ Stations 4 and 11. Kiusiu (Lischke).

The operculum is subpyriform, having the nucleus at the outer side at a short distance from the lower or smaller extremity. On the lower surface it has a smooth thickening along the outer edge, and the marks of muscular attachment consist of a few narrow concentric layers placed obliquely crossways. It is of a reddish-brown colour, paler at the outer margin.

42. Murex (Cerastoma) rorifluus, Adams & Reeve.

_Murex rorifluus_, Ad. & Reeve, Voy. Samarang, p. 38, pl. viii. f. 2 a, 2 b.


_Hab._ Station 4. Bay of Talienwhan, N. China (Crosse); Tsaulian (A. Adams, P. Z. S. 1862, p. 373); Nagasaki (Lischke). Korean archipelago (Samarang).

Crosse refers to the similarity of his species to _M. rorifluus_. The type of the latter is now in the Museum, and appears to me a very worn specimen of the same species described as _monachus_.

The specimen figured by Crosse is in bad condition and does not truly represent the usual character of the colour of Japanese specimens. In these the ground-colour is a dark chocolate-brown, which is interrupted by narrow transverse whitish lines, two in number on the upper whorls, and varying from four to eight on the last; they are a trifle elevated, especially upon the varices. The latter vary in number, sometimes being four on a whorl and sometimes five. All the eleven specimens from the Goto Islands are smaller than those from Talienwhan, and rather narrower. Owing to the bad state of the shells, Crosse was not enabled to notify the presence of a very short tooth-like projection near the base of the labrum. It is very small, but still is constant in all perfect shells. The operculum is almost precisely the same as that of the preceding species.

43. Murex (Muricidea) cirrosus, var., Hinds.

_Murex cirrosus_, Hinds, P. Z. S. 1843, p. 128; Voy. Sulphur, 3. p. 9, pl. 3. f. 17, 18; Reeve, Conch. Icon. i. fig. 138.

_Hab._ Station 2. Straits of Macassar (Hinds); Andaman Islands (Capt. Wilmer).

The single specimen obtained by Capt. St. John off the coast of the Goto Islands is remarkable for the manner in which the transverse liræ at the upper part of the whorl are produced at the varices
into an upturned and curved hollow hook. Its canal too, like some examples from the Andaman Islands described by me (P. Z. S. 1878), is rather elongate, and directed to the left, or in an opposite direction to that of the type. Notwithstanding these differences, and a few other slight ones, I feel convinced that they all belong to one and the same species.

44. Murex (Ocinebra) fimbriatulatum, A. Adams. (Plate XX. fig. 31.)

_Trophon fimbriatulum_, A. Adams, P. Z. S. 1862, p. 375.

Shell turgidly subfusiform, turreted, fawn or light reddish, with a narrow interrupted brown band a little above the middle of the last whorl and almost obsolete above, and dark brown at the apex. Whorls 7, the two apical smooth, the rest sloping at the upper part and rather convex beneath, longitudinally nodosely plicated and spirally ridged; costæ or plicæ attenuated at the top of the whorls, rounded, about eleven on a whorl; on the last subnodose at the upper part or shoulder, attenuated and becoming obsolete inferiorly; spiral liræ about nine in number on the upper volutions, whereof the upper three or four on the slope are finer than those beneath, which appear at intervals to be somewhat imbricated scaled; last whorl rather suddenly contracted below the middle, with about twenty-eight transverse liræ, the interstices being moderately deep. Aperture ovate, pale pinkish or flesh-colour within; labrum thin and crenulated at the margin, strengthened with a strong imbricated exterior varix, extending downwards almost to the extremity of the cauda; columella arcuate, pale rose; canal closed, as long as the aperture, curved to the right, slightly retroverted and brown at the tip.

Length 19 millims., diam. 7½.

_Hab._ Station 15.

Like _Murex japonicus_ of Dunker, this species is remarkable for the absence of varices, with the exception of the postlabral one, in which respect it calls to mind certain species of _Tritonium_—for example, _T. strangei_, A. Adams and Angas; but in that and other allied species the canal is not closed.

45. Trophon, sp.

_Hab._ Station 21.

This shell, I believe, is the young state of an undescribed species. It is subpyriform, white, purple at the apex, longitudinally plicate, and very beautifully spirally lirate, the liræ being most prettily imbricated scaled. The aperture, together with the canal, occupies two thirds of the entire length (10 millims.).

46. Urosalpinx innotabilis. (Plate XX. fig. 32.)

Shell ovately or shortly fusiform, whitish, with two transverse somewhat interrupted brown lines on the last whorl, the upper one of which is visible on the upper volutions. Whorls 9; two apical smooth, convex; the rest turreted, concave at the upper part, then
rather strongly angulated at the middle; beneath with convex outlines, but sloping or contracted inwards, thus being narrower at the base than at the angle, stoutly plicate and coarsely spirally ridged; plicæ or costæ about nine on a whorl, equal in width to the interstices between them, becoming thinner or more or less obsolete in the concavity, on the last whorl attenuated below and produced to the extremity; transverse liræ stout, four or five beneath the angulation, prominent on the ribs, and the same number above the carination, rather finer than the preceding, about twenty in number on the body-whorl; the interstices between are deep, about as broad as the ridges, all of which are finely and somewhat closely imbricately scaled. Aperture half the length of the shell, white within, exhibiting about six tubercles near the labrum; columella smooth, covered with a thin white callosity, only a trifle oblique, tortuous below the middle; canal short, reflexed.

Length 20 millims., diam. 10.

Operculum with a lateral subterminal nucleus exteriorly.

Hab. Station 27.

This species is a close relation of Trophon pânae, Crosse, and Trophon hanleyi, Angas, which two species, judging from the shells alone, might conveniently be placed in Stimpson's genus Urosalpinx; but the operculum of both is fusoid, although not quite typical, and the odontophores have not been examined; therefore I prefer locating them provisionally in the genus Fusus. Murex calcareus, Dunker (Moll. Jap. p. 5, pl. 1. f. 2), also approaches this species very closely.

47. Fusus nodosoplicatus, Dunker.

Fusus nodosoplicatus, Dunker, Novitates Conchologicæ, Abtheil. ii. p. 99, pl. 33. f. 3, 4; Lischke, Japan. Meer.-Conch. ii. pl. 3. f. 6, variety.

Hab. Station 8*. Nagasaki (Lischke).

48. Fusus perplexus, A. Adams.


F. inconstans, Lischke, Japan. Meeres-Conch. i. pl. 2. f. 1–6, part ii. pl. 3. f. 1–5; Schacko, Jahrbücher der deutsch. malak. Gesellschaft, 1874, p. 115, pl. 6. f. 1–1 d (radula).

Hab. Stations 9 and 10.

I have no doubt of the identity of Lischke’s shell with this species, for specimens of it in the Cumingian collection, probably received by Cuming from A. Adams, answer exactly the description in the ‘Japan. Meeres-Conchylia.’

49. Fusus nigrirostratus. (Plate XX. fig. 33.)

Shell fusiform, brownish, much streaked with very dark brown or black, especially between the plications, with white transverse liræ upon them; rostrum of the last whorl purplish black. Whorls 9, obliquely tabulated and a little concave above, then acutely angu-
lated, contracted to the base, longitudinally plicate, and prominently spirally ridged; plicae suberect, becoming obsolete above the angulation, ten on the penultimate whorl; transverse lirae of different thicknesses, two around the middle and one at the lower suture of the whorls specially prominent, forming acute compressed transverse nodules upon the costa; about fourteen on the upper whorls, all subgranose through being crossed by deep strike of growth; on the body-whorl there is a fourth especially prominent lira falling within the aperture, just beneath the upper extremity of the labrum. Aperture bluish or purplish within, with the dark streaks of the exterior showing through, together with the canal equal to half the length of the shell; columella arcuate and whitish or livid above, oblique and purplish black below the middle; canal oblique, of moderate length, only a trifle reflexed.

Length 50 millims., diam. 17

_Hab._ Station 29.

The epidermis of this interesting form is of a brown colour, longitudinally, finely, and exceedingly closely lamellated, bearing upon the transverse lirae minute acute productions somewhat resembling short hairs.

50. _Fusus niponicus._ (Plate XX. fig. 34.)

Shell fusiform, brownish white or sordid yellowish, stained at the upper part of the whorls with brown, and ornamented with a narrow zone of the same colour around the middle of the last whorl. Whorls 7, apical one smooth, mamillar, the rest longitudinally plicated and transversely ridged, sloping above, and then very convex; plicae or ribs oblique, not much elevated, attenuated and faint at the upper ends, eleven in number on the last whorl, attenuating and vanishing just below the middle or convex portion. Transverse lirae numerous; most of them (about eleven on the penultimate whorl) are very fine, thread-like, and simple; but two or three stouter than the preceding, and situated at some distance apart at the middle portion of the whorls, on crossing the plicae are elevated into compressed and transversely elongated tubercles; suture prettily wavy, margined with the thickened upper edge of the volutions; last contracted below the middle, and produced into an elongated cauda, which is obliquely and rather closely and finely lirate; the transverse ridges, which become tubercular, number about six or seven on this volution, three of them being more conspicuous than the others. Aperture with the canal equal to about four sevenths of the whole length, whitish within; columella smooth, thinly enamelled, tortuous; canal elongate, narrow, oblique.

Length 22 millims., width 7.

_Hab._ Station 25.

The two specimens of this delicately sculptured species do not, I imagine, represent the ultimate size to which in all probability it attains. The coloured bands are not very conspicuous; and the entire surface is sculptured by the lines of growth, those immediately beneath the suture being arcuate and especially observable.
51. Fusus simplex. (Plate XX. fig. 35.)

Shell fusiform, white, clothed with a smooth greyish-olive epidermis. Whorls sloping and slightly concave at the upper part, bulging beneath and contracted at the base, carinate margin above the suture, obliquely nodosely plicate and spirally lirate; plicae or costae eight or nine on the upper whorls, rounded, large, almost obsolete at the upper part; spiral lirae about six in number on a whorl, whereof three around the lower portion are the stoutest; besides these lirae, at times a few fine thread-like lirulae are present in the interstices. Last whorl with the costae not extending below the middle, lirate throughout, the lirae on the rostrum being very fine and close together. Aperture suboval, together with the canal equal in length to the spire above it; columella arcuate above, tortuous beneath; canal shorter than the aperture and a little recurved.

Length 18 millims., diam. 5½.

Hab. Station 29.

The shell above described may possibly not be of adult growth. It consists of but seven whorls, which is a small number for a species of true Fusus. However, I cannot identify it as the young state of any described species. It is remarkable for the absence of colouring of any kind and the shortness of the canal. The thickened margin of the whorls is rather oblique and scarcely undulating, as the longitudinal plicae are somewhat obsolete at the lower part as well as above.

52. Fusus coreanicus. (Plate XX. fig. 36.)

Shell fusiform, dirty diluted flesh-colour, streaked with dark brown upon the costae. Whorls 7½-8; nucleus consisting of one and a half to two whorls, smooth, globose; remaining volutions sloping and a trifle excavated above, margined at the suture, somewhat angular at the middle, a little convex beneath and much contracted at the base, longitudinally costate and transversely ridged; costae or plicae only slightly prominent, but little oblique, twelve in number on the penultimate whorl; spiral lirae close-set, pretty regularly alternately fine and coarser, about twelve on a whorl, whereof three or four around the lower half are larger than the rest and subnodulous on the ribs; the latter become obsolete about the middle of the body-whorl, which is rather suddenly contracted just below that point, and produced into a short oblique rostrum. Aperture ovate, fuscous within, with the canal occupying only five elevenths of the entire length; columella smooth, arcuate above, very oblique inferiorly; canal short, slightly retroverted.

Length 22 millims., diam. 8.

Hab. Station 29.

This species is remarkable for the brevity of the canal and the style of colouring. The dark stripes always appear to fall upon the ribs, and they are somewhat interrupted by the stoutest of the transverse lirae, which are rather nodulous and dirty whitish. The thickened margin at the top of the whorls is also pale.
53. *Fusus pachyrhaphe*. (Plate XX. figs. 37, 37a.)

Shell shortly fusiform, biconical, dull light brown, pale at the angulation of the whorls. Whorls 8, of which the two apical are smooth and convex; the rest slopingly excavated above, rather sharply angled at the middle, and flattish beneath, longitudinally plicate and spirally grooved and ridged; plicae eight or nine on a whorl, attenuating in the concavity, and again becoming more developed upon a thickening at the upper margin of the whorls consisting of two prominent lines; the transverse ridges are all beautifully inbricate squamous through the elevated undulating lines of growth; two or three beneath the angle stouter than the rest and subnodulous upon the plicae; on the penultimate whorl there are about from eight to nine, and on the last about twenty-two, generally alternately fine and coarser; the costae attenuate inferiorly and extend almost to the extremity. Aperture elongate, more or less tinged within with fleshy brown, with the canal being rather longer than the spire, armed with about six short line, which do not attain to the crenulated margin of the lip; columella livid pinkish, straightish above, and oblique below the middle; canal short and recurved.

Length 21 millims., diam. 9. Length of aperture and canal 12. A smaller specimen is 16 long, 6 broad, and the aperture has a length of 8 millims. (Fig. 37a.)

**Hab.** Stations 8 and 27.

The largest specimen from the latter locality differs from the rest in having one plication less on a whorl, and the aperture proportionally longer. In all other respects it agrees; and I feel convinced that they all belong to one and the same species. It belongs to the same section of *Fusus* as *F. imbricatus*, Smith, from New Caledonia.


*Buccinum cassidariformis*, Reeve, Conch. Icon. iii. fig. 11; Lischke, Jap. Meer.-Conch. i. p. 38, pl. 4. f. 1–10 (as *Siphonalia*).

**Hab.** Stations 5 and 17.

The operculum of *Siphonalia* is described by A. Adams as fusoid. In this species it is not of the typical form, as the nucleus, instead of being terminal, is situated within the outer margin at the distance of three millimetres from the lower or narrowed extremity.

55. *Siphonalia spadicea*, Reeve. (Plate XX. fig. 38.)

*Buccinum fusoides*, Reeve, Conch. Icon. iii. pl. 9. f. 64.

*Buccinum spadiceum*, Reeve, l. c. (Errata).


**Hab.** Stations 25 and 32, and Port Hamilton, 10 fathoms, 34° 32' N. lat., 127° 15' E. long. "Mino-Sima 63 fathoms" (A. Ad.).

The specimen described by Reeve is somewhat worn and the colouring faded. In fresh examples, besides the brownish irregular blotching, chiefly between the plications, there are certain of the
spiral ridges, subequidistantly placed, of a rich reddish-brown colour. The operculum is typically fusoid, having a terminal nucleus, and differing in this respect from that of *S. cassidariaformis*, thus showing how variable and unreliable the operculum is as a divisional character.

56. *Euthria ferrea*, Reeve. (Plate XX. figs. 39, 39a.)

*Buccinum ferreum*, Reeve, Conch. Icon. iii. 1847, p. 102.


The type of this species is in a worn condition, and entirely destitute of the olivaceous epidermis exhibited by fresh specimens. However, there is not a shadow of doubt that it is identical with the shell described by Dunker as *Fusus viridulus*. It is a species subject to considerable variation in form, some examples being considerably more robust than others. Its operculum is typically fusoid, with an apical nucleus.

57. *Tritonidea subrubiginosa*. (Plate XX. fig. 40.)

Shell ovate, dark brown, with a luteous band around the middle of the last whorl, which is also partly seen upon the upper whorls just above the suture; tip of the body-whorl luteous. *Volutions* 6½, the one and a half at the apex smooth; the rest very convex, obliquely plicated and spirally ridged; plicae or costæ large, swollen, broader than the interstices, ten in number on the penultimate whorl; transverse liræ four or five on a whorl, with finer intermediate ones, a trifle thickened upon the plicae; the latter become obsolete upon the last whorl about the periphery. It is encircled throughout by spiral ridges, some of which at the basal extremity and between the strong ones above are very fine. Aperture occupying rather less than half the entire length, livid blue within; labrum thickened exteriorly with a large tumid varix, thin and crenulated at the margin, armed within with about eight liræ, which are thickest at the end towards the lip; columella covered with a thin callus, arcuate above, with a somewhat dentiform prominence at the middle, and one or two tubercles close to it, and another small elongate one above close to the termination of the outer lip; canal oblique.

Length 17 millims., diam. 7.

*Hab.* Station 8°.

This interesting little shell might, at first glance, be mistaken for a diminutive form of *Buccinum rubiginosum*, Reeve. It is, however, distinguished by fewer whorls, whereof the nuclear ones are actually larger than those of *T. rubiginosa*, and also by difference of coloration and the shorter aperture. The operculum is fusoid, with the nucleus terminal.
58. **Columbella scripta**, Lamarck.

*Columbella versicolor*, Sowerby, Thesaurus, f. 41-46; Reeves; Conch. Icon. f. 51a, b.
*Columbella bidentata*, Menke, Moll. Novae Hollandiae, p. 23; Sowb. Thes. f. 53, 54; Reeves, f. 205.

*Hab.* Station 8°.

This species has a wide geographical range, having been recorded from the Philippine Islands, North and South Australia, Annaa Island, and New Caledonia.

59. **Columbella sagena**, Reeve.

*Columbella sagena*, Reeve, Conch. Icon. fig. 162; Lischke, Jap. Meeres-Conch. i. p. 58, iii. p. 34, pl. 2. f. 5-7.

*Hab.* Stations 8° and 18.

The variation of this species has been already remarked upon by Lischke. The epidermis, which is generally for the most part worn off when the shell arrives at maturity, is of a dull olivaceous colour and finely lamellated, the lamellae being perpendicular and close together.

60. **Columbella undata**, Duclos.

*Columbella undata*, Duclos, Monograph, pl. 4. f. 4; Kiener, pl. 9. f. 1, pl. 12. f. 3; Lischke, iii. pl. 2. f. 1-4.

*Hab.* Stations 8° and 29.

61. **Columbella misera**, Sowerby.

*Columbella misera*, Sowerby, Thesaurus, fig. 111; Reeves, Conch. Icon. fig. 68; Lischke, i. p. 59, ii. p. 48, iii. p. 35, pl. 2. f. 10, 11.

*Hab.* Station 8°. Nagasaki (Lischke); Sandwich Islands (Pease and Martens).

The number of costae in this species is considerably variable, there being in some specimens fifteen on the last whorl, whilst in others there are but ten. A pretty constant character of the painting consists of the upper half of the whorls being unspotted, and the costae on that portion opaque snow-white.

62. **Columbella (Atilia) lischkei**. (Plate XX. fig. 41.)

Shell fusiform, narrow, dirty white, blotched at intervals with olive-brown. Whorls 8; two apical smooth, globose, rather large, the one or two following longitudinally strongly costate; ribs thick, with a thin vitreous upper margin; the remaining volutions a trifle convex, smooth, with minute striations or lines of growth; the last suddenly contracted below the middle, where it is obtusely angulated, sculptured at the caudal extremity with about eight narrow oblique sulci or striae. Aperture small, indistinctly quadrangular, occupying rather more than one third of the entire length; outer lip with a
broad swollen varix externally, thin at the margin, armed within with about six subtubercular ritations; columella very little oblique above, slightly convex, more inclined below the middle, invested with a very thin callous deposit, united above to the outer lip and not obscuring the oblique sulci around the caudal end of the whorl; canal distinct, faintly reflexed.

Length 11 millims., diam. 3½.

Station 27.

Compared with *C. alabastrum*, Reeve, its nearest ally, this species is more elongated, has more numerous and shorter whorls, and is differently coloured. The brown maculations extend from suture to suture, and gradually increase in size as the whorls enlarge. On the base of the last whorl there are a few longitudinal streaks of the same colour.

63. **Columbella (Atilia) niveomarginata.** (Plate XX. fig. 42.)

Shell elongate, greyish white, with an opaque white band spotted with brown at the top of the whorls, and a narrower one around the middle of the last whorl, the rest of the surface being marked with opaque white in an irregularly closely reticulating manner. Volutions 8–9; the apical ones smooth, the one or two succeeding longitudinally costate, the rest almost flat, separated by a deep suture, so that the spire appears somewhat turreted; body-whorl transversely sulcate below the middle. Aperture small, occupying rather more than two fifths of the whole length of the shell, whitish within; labrum with an exterior varicose thickening and five or six small tubercles within, of which the uppermost is the largest; the margin near the upper extremity is faintly sinuated; columella subereect above, oblique below the middle, where there is a small notch or oblique groove, coated with a callosity with a thickened margin; canal short, recurved.

Length 11 millims., diam. 3½.

Station 8.

The brown markings upon the opaque white zone at the upper margin of the whorls are small and in the form of somewhat irregular oblique short lines or stripes, some of them here and there being more like a blotch or irregular spot. The band at the middle of the last whorl is only half as broad as that above; and the spotting upon it is also paler and closer. Only a single specimen was obtained.

64. **Columbella (Atilia), sp.**

Station 1 and 30.

The two specimens of this species, which, I believe, is undescribed, are both of immature growth. They consist of eight whorls, whereof the three uppermost are glassy and faintly tinged with violet. The rest are flattish, smooth, of a transparent white colour, painted with close longitudinal olive-brown lines, interrupted by two broad trans-
verse bands of the same colour spotted with white, one above and the other below the suture. The body-whorl has a third similar band near the middle, and is obliquely finely grooved at the base. The banding upon the specimen from station 30 is less definite, and the form of the shell, too, is rather more slender.

Length 12 millims., diam. 5.

65. COLUMBELLA (ZAFRA) SUBVITREA. (Plate XX. fig. 43.)

Shell fusiformly ovate, subpellucid, white, with a thin indistinct brown line interrupted by the costae around the lower part of the whorls, and a transparent pellucid zone at the top, with a second band or series of short flames just below the middle of the last whorl, which is stained with brown at the extremity. Whorls 7, the first two convex, smooth, the following two or three and a half almost flat and likewise smooth, the rest strongly costate; costae about eleven on a whorl, rounded, a little oblique, and more or less arcuate, narrowed and subobsolete at the upper extremity, disappearing a little below the middle of the body-whorl, the lower extremity or cauda of which is transversely and a little obliquely sculptured with five or six striae, whereof the two or three uppermost are wider apart than the rest. Aperture narrow, occupying rather less than half the shell's entire length; labrum thin, faintly and broadly emarginate, or sinuata just beneath the suture, smooth within; columella a little oblique, tinged with brown, a little convex or swollen at the middle, covered with a thin callosity with a defined margin, which unites at the upper extremity with the termination of the outer lip; basal canal short, rather deep, and in a slight measure recurving.

Length 4 millims., width 1\(\frac{1}{2}\).

Hab. Station 25.

The genus Zafra is described by A. Adams in the 'Annals and Magazine of Natural History,' 1860, vol. vi. p. 331. He considers that it belongs to the Turridae or Pleurotomidæ. In his description he does not state whether the labrum bears internal liræ or denticles. I have examined a specimen of the typical species, and I do not discover their presence. The absence of these denticles appears to be the only character which distinguishes this group from the genus Seminella of Pease ('American Journal of Conchology,' 1867, vol. iii. pp. 233 & 234). In size and style of sculpture the species of the latter genus answers to the description of Zafra; and I am inclined notwithstanding that their lips are toothed within, to include them in that genus. It is possible that Z. mitriformis and Z. subvitrea in the very adult state at times may exhibit denticles.

The latter species differs from the former in being narrow, differently coloured, and having the costæ obsolete on all except the last two and a half whorls. Anachis zonata, Gould (\(\equiv\)Zafra mitriformis), and Anachis virginea of the same author, also should be classed with Zafra.
66. **Columbella (Amycla) varians**, Dunker. (Plate XX. figs. 44–44b.)


**Hab.** Stations 5, 7, 8*, 10, 11, and 28.

This remarkably variable species is but poorly figured in Dunker’s work. The illustration above cited represents the spire much more obtuse at the apex than is usual. The operculum is purplurroid. The following measurements will show how variable is the size of different specimens:

- Length 13 millims., diam. $5\frac{1}{2}$
  - 11 " " 5
  - 10 " " 4
  - 11\frac{1}{2} " " 4

67. **Nassa (Alectrion) glans**, Linn.

*Nassa glans*, Kiener, Coq. Viv. pl. 15. f. 52; Reeve, Con. Icon. fig. 5.

**Hab.** Station 7. Philippine Islands and Australia are other localities.

The operculum of the single specimen of this species is of a bright vinous red colour, of an elongate subtrigonal form, the angles being rounded and the margins simple. The shell itself differs from the ordinary form of the species in having a less elongated spire, and the body-whorl less inflated and encircled with only eight red lines instead of nine.

68. **Nassa (Zeuxis) siquijorensis**, A. Adams. (Plate XX. figs. 45, 45 a.)


**Hab.** Station 19. Tsaulian, Tomo, Seto-Uchi (Adams), Philippine Islands (Cuming).

The costae in the Japanese specimen are fewer than in the originally described examples. In the latter the penultimate whorl has about 32 upon it, whilst the same volute in the former has but 22 to 24; in one specimen, however, there is the normal number. The largest example is 28 millims. long and 12 wide. The operculum (fig. 45a) is rather elongate, brown, serrated along the outer margin and also on the inner edge for a short distance from the nucleus.

69. **Nassa (Zeuxis) varicifera**, A. Adams, var.


**Hab.** Station 31. Tsaulian (Ad.).

Only a single non-adult specimen was dredged at the above spot. It is most beautifully sculptured with very fine costae, which
are coarsest on the upper whorls, gradually becoming finer on the penultimate, and then nearly obsolete on the last. Notwithstanding this difference from the types, in which the ribs become thicker from the upper part downwards, its more slender form, more convex whorls, and more turreted spire, I believe this shell to be a delicately sculptured form of this species; for the colouring and the peculiar varies are of precisely the same character. The operculum is coarsely serrated along the outer margin.

70. NASSA (Niotha) stigmaria, A. Adams.

Natha stigmaria, A. Adams, P. Z. S. 1851, p. 96; Reeve, Con.
Icon. fig. 42.

N. densigranata, A. Ad., Reeve, fig. 181.

Hab. Station 10. Philippine Islands (Cuming), Ooshima (Capt. St. John), Andaman Islands (Capt. Wilmer).

This species is subject to considerable variation in size. The type figured by Reeve is the largest specimen I have seen, being 20 millims. long and 10½ broad. Another, the type of densigranata, has a length of 12 millims. and a breadth of 6½.

71. NASSA (Hima) festiva, Powis.

Nassa festiva, Powis, Reeve, Conch. Icon. fig. 117.


Hab. Station 8°. Other localities recorded are Decima, Nagasaki, and Hakodadi.

The home first assigned to this species, namely Panama and St. Helena, is only one of the numerous errors occurring in the Cumingian Collection. If this had not occurred, Dunker would never have redescribed the species.

72. NASSA (Hima) fraterculus, Dunker.


Hab. Stations 5 and 8°. Other localities are Decima, Ousima, Hakodadi, Tatiyama, Simoda, Nagasaki, and O-Sima.

One specimen differs from the rest in having fine transverse brown lines on the raised ridges between the grooves, and not in the latter as is usual. Another one is black with a single median narrow yellow zone.

73. NASSA (Hima) tenuis, Smith.


N. japonica, Lischke, Jap. M.-Conch. iii. p. 37, pl. 2. f. 20–23.

?? N. japonica, A. Ad. P. Z. S. 1851, p. 110.

Hab. Station 21.

The type of Adams's species described from the Cumingian Collection is not to be found. On this account, and considering that
Adams's description is far too brief and vague for identification of the species, I am induced to retain the name tenuis imposed upon it by myself in the Annals of 1875.

74. NASSA (HIMA) ACRIDIDENDATA. (Plate XX. fig. 46.)

Shell ovate, acuminated above, thick, reddish brown with a white zone round the middle of the upper whorls and two on the last, and again pale at the extremity. Volutions 7; two embryonal smooth, mamillar, convex; the rest a little convex, divided by a deep and almost channelled suture, ornamented with longitudinal ribs (18 on the penultimate whorl) and transverse liræ, which are granuliferous upon the costæ; they are usually four in number upon the upper whorls; but in some instances a fifth finer one is observed just beneath the suture; on the last whorl there are nine or ten granulous ones, then about five simple oblique ridges on the extremity or short cauda, whereof the uppermost is the stoutest and carineform. Aperture small, ovate, whitish, with three dark brown bands within, one central, one superior, and the other at the basal extremity corresponding to the exterior banding of the whorl; labrum with an exterior varix, and armed within at a little distance from the extreme edge with 5-6 denticles, whereof one, the fourth from the base, is conspicuously larger than the rest and rather acute, and the one or two above that are more or less obsolete; columella much arcuated, coated with a small thin callus, thickened at its edge, bearing at the upper part a liræform tubercle and four or five smaller ones beneath it.

Length 10 millims., diam. 4½.

Hab. Stations 5 and 8.

This species is painted very much in the same manner as N. tenuis. It differs, however, from that species in the smaller number of the whorls, in form, and the character of the aperture and its armature. Twelve specimens were examined.

75. NASSA (HIMA) LUTEOLA. (Plate XX. fig. 47.)

Shell small, elongate, yellow: whorls 6; the two unclear globose, the rest convex, costate, and transversely lirate; costæ twenty in number on the penultimate volution, a little oblique; liræ nodulous on the ribs, four to five on the upper whorls, six on the penultimate, and about eleven on the last, the cauda of which is grooved. Aperture small, ovate, yellow; lip exteriorly variced, thin at the margin, and lirate within; columella considerably arched, covered with a callosity, bearing a tubercle above and exhibiting traces of another below.

Length 7 millims., diam. 3½.

Hab. Station 7.

This little shell, of which there is but one in the collection, is chiefly characterized by its diminutive proportions and the uniformity of coloration. The tuberculation upon the columella is hardly definable, and probably has been absorbed by the little Payurus inhabiting the shell.
76. Coralliophila jeffreysi. (Plate XX. fig. 48.)

Shell shortly fusiform, reddish brown, transverse ridges, especially at the middle of the whorls, white; whorls probably 8; the six that are left acutely angular at the middle, spirally deeply sulcated, leaving very prominent ridges between the sulci, longitudinally obsoletely plicate; the lirae are six in number on the penultimate whorl, the third from the base being the most prominent, forming the angles, acutely produced on crossing the plicate, and closely, rather coarsely imbricately scaled; last whorl encircled with sixteen lirae, with the scales on some of the lower ones remarkably thickened and prominent, terminated with a large prominent sealed ridge. Aperture bluish within, with the canal equal to the spire, internally finely lirate; canal short, very oblique and recurved; columella straightish at the upper part.

Length 20 millims., diam. 10.

Hab. Station 22.

This species is much of the same type as Murex lamellosus of Philippi. It differs from it, however, in colour, the deeper sulci, and the greater angulation of the whorls.

The location of it in the genus Coralliophila is only provisional. The sculpture is just of the character which frequently obtains in many species of that genus; but the brownish red colour is unusual.

77. Purpura bronni, Dunker.


Hab. Station 4. Nagasaki and Decima (Lischke and Dkr.); Tatiyama (A. Adams).

78. Purpura alveolata, Reeve.

Purpura alveolata, Con. Icon. iii. fig. 60; Smith, Ann. & Mag. Nat. Hist. 1875, vol. xv.

P. clavigeru, Küster, Con. Cab. pl. 31a. f. 1; Lischke, Jap. Meer.-Conch. i. p. 54; pl. 5. f. 12-14, part ii. p. 39.

Hab. Station 4. Nagasaki (Lischke).

The habitat "Panama," originally assigned to this species, is evidently incorrect.

79. Sistrum undatum, Chemnitz.

Murex margariticola, Broderip, P. Z. S. 1832, p. 177; Reeve, Con. Icon. iii. f. 178.

Var. = Ricinula fiscellum, Reeve (not Murex fiscellum, Chemnitz), Con. Icon. iii. f. 28.

Hab. Station 4.

This species is very widely distributed. It has been recorded from Lord Hood's island and New Caledonia, besides Japan; and in the British Museum there are specimens from Swan River, Port Essington (Jukes), Andaman Islands (Captain Wilmer), Singapore
(Dr. Livesay), and Louisiade archipelago (Macgillivray, Voyage of 'Rattlesnake').

80. Mitra (Costellaria) subtruncata, Sowerby.

Mitra subtruncata, Sowerby, Thesaurus Con. iv. pl. 360. f. 405, sp. 468.

Hab. Ooshima harbour, 8 fathoms, on a bottom of sandy mud and broken shells.

Mr. Sowerby remarks that in sculpture this species resembles M. obeliscus. Judging from his figure and the specimens which I believe to belong to this form, this statement requires some qualification. To a certain extent there is some similarity; but the costellæ in M. obeliscus are finer and more numerous, and the spiral sulci between them much deeper than in M. subtruncata. The ribs, too, in the former are subgranulous at the points where the spiral lirae between the sulci come into contact with them, whilst in the latter they are smooth and regular. The columella has five plaits, M. obeliscus only four.

81. Mitra (Costellaria) fusco-apicata. (Plate XX. fig. 49.)


Shell fusiform, whitish, stained with brown at the apex, obscurely banded with bluish ash a little below the top of the whorls, and spotted irregularly with brown in the same part, generally between the costæ; lower half of the last whorl cinereous brown. Whorls 10, one to two apical ones smooth, globose, the rest almost flat at the sides, scarcely tuberculated, longitudinally ribbed and spirally sulcated between the costæ; the latter are about 17 in number on the penultimate whorl, a little arcuate and oblique, about half as broad as the interspaces between them; spiral sulci interrupted by the costæ, five on the upper whorls, moderately deep, subequidistant: the ribs on the body-whorl alternate at the base, and at this part are cut across by the oblique transverse grooves, producing nodules upon them; one of the ridges between the sulci, which is in a line or continuous with the uppermost fold on the columella, is conspicuous, being a little thicker than the rest. Aperture generally internally lirate, small, narrow, with a white band within a little above the middle, and two interrupted brown zones, one above and the other below the white one; columella with a callus near the extremity of the labrum, with four folds, the two uppermost grooved so as to appear duplex; canal recurved.

Length 24 millims., diam. 7; aperture 9 long, 2 wide.


This species is closely allied to M. subuensis, Ad. and Rve., with which I formerly confounded it; it differs in having a non-turreted spire, finer spiral sculpture, a shorter aperture, and the colour, too, a little different. The bluish-ash zone at the upper part of the whorls in some specimens is almost entirely wanting, so that the
shell is divided into two parts, the upper, with the exception of
the brown apex, being white or bluish white, and the lower ashy
brown.

82. *Mitra* (Costellaria) *collinsoni*, A. Adams.  (Plate XX.
fig. 50.)

1864, vol. vii. p. 200; Sowerby, Thes. Conch. figs. 621, 622 (merely
p. 425.

Hab. Station 9. Also *Kino-o-Sima* (A. Ad.), Ooshima and Matoza
(Capt. St. John).

This species has four plicæ on the columella, and not three as
stated by Adams. In the white zone which occupies the lower half
of the whorls there is a brown line interrupted by the costellæ, in
this respect agreeing with *M. bronni*, Dunker, which is known to
me only by the description, from which it appears to be a stouter
shell.

83. *Mitra* (Costellaria) *gotoensis*.  (Plate XX. fig. 51.)

Shell like the preceding species (*M. collinsoni*); but with thicker
costæ and consequently narrower interstices, white, stained with light
purplish brown at the inferior margin of the upper whorls, and with
the lower half of the last of the same colour; apex also stained with
brown: whorls 9, a trifle convex; costæ 18 on a whorl, slightly
areolate; interstices transversely sulcate; sulci six to seven on the
penultimate whorl, and about sixteen on the last; columella qua-
druplicate; aperture small, internally lirate, white at the margin of
the lip.

Length 13½ millims., diam. 4; length of aperture 5.

Hab. Station 7.

84. *Mitra* (Pusia) *æmula*.  (Plate XX. fig. 52.)

Shell fusiformly ovate, blackish brown, with a narrow yellow line
round the middle of the whorls, and yellow at the upper margin,
and a second line on the last whorl rather below the middle; clothed
with an olive epidermis obscuring the colouring: whorls 8, slightly
convex, with stoutish longitudinal costæ, about fourteen in number
on the penultimate volution, attenuated and obsolete just before the
five oblique stoutish lineæ encircling the cauda; interstices smooth,
about as broad as the ribs. Aperture small, dark brown, with two
yellow transverse lines, lirate far within; columella armed with four
plicæ and a slight callus at the upper extremity.

Length 12 millims., diam 4½; length of aperture 5½.

Hab. Station 7.

This species is allied to *M. analogica*, Reeve, but differs in the
length of the spire and aperture, width and position of the yellow
zones, and the continuation of the ribs upon the body-whorl.
85. Mitra (Pusia) inermis, Reeve. (Plate XX. figs. 53, 53a.)

Mitra (Pusia) inermis, Reeve, Con. Icon. ii. sp. 279; Sowerby’s Thea. Conch. fig. 600 (vile!).

Hab. Station 5. Island of Luzon (Cuming).

A single specimen (fig. 53a), which I consider a variety of this species, differs from the type (fig. 53) in being nearly black, with the white zone less well defined, but marked in the same manner with short black and brown lines upon the ribs. Reeve does not mention the sculpture between the costæ: it consists of well impressed lines or sulci, six in number on the upper whorls and eleven or twelve on the last, besides some strong oblique grooves at the extreme base; the liræ between the latter, of which one is especially prominent, are spotted with white. The figure in the Con. Icon. represents the spire much too turreted and the whorls too flat. The copy of Reeve’s figure in Sowerby’s Thesaurus is simply as bad as possible.

86. Cancellaria japonica. (Plate XX. fig. 54.)

Shell ovate, pyramidal, white, thickish: whorls 7, convex, divided by a deep suture, longitudinally ribbed and spirally lirate; costæ rounded, oblique, about 13 on a whorl, rather broader than the interstices; transverse liræ prominent, six or seven on the penultimate whorl and twelve on the last: aperture small, occupying about three eighths of the entire length; columella with two small central oblique plaits.

Length 12 millims., diam. 5.

Hab. Station 1.

This species is remarkable on account of its elongated form and the absence of colour. The only specimen is not in very good condition, and the liræ, which are usually met with in the aperture of species of Cancellaria, are not present, and possibly have been broken away with the front part of the labrum, which is incomplete.

87. Oliva (Olivella) consobrina, Lischke.

Oliva (Olivella) consobrina, Lischke, Japon. Meer.-Conch. ii. p. 62, pl. 5. f. 10, 11.


Hab. Stations 7 and 22. Nagasaki (Lischke).

These three species are very closely related; and it is somewhat doubtful if they are really distinct. If they prove to be so, the name fulgurata will take precedence of the other two by many years. This species was quoted by me in the ‘Annals and Magazine of Natural History’ under the name of O. fulgurata.

88. Oliva (Olivella) spreta, Gould. (Plate XX. fig. 55.)

Olivella spreta, Gould, Otia, p. 127.

Shell small, elongate-ovate, pale livid luteous, with light brown indistinct zigzag undulating longitudinal lines: whorls 4½-5, the
upper ones with straight or even faintly concave outlines, pale at the upper margin, and of a uniform yellowish brown on the rest of the surface; suture deeply channelled; last whorl large, longitudinally streaked with very fine and close white lines (only visible under a lens); columella covered with a thin pellucid callus, with three or four oblique plicae at the base; basal callous band pale luteous, white at the upper edge, with a brown line just beneath, and bordered inferiorly by the uppermost of the basal oblique plicae, which is also brown; edge of the canal brown.

Length 6½ millims., diam. 3 ; aperture 4 long.

Hab. Station 14.

The markings of these little shells, of which there are five, are rather indistinct to the naked eye. The longitudinal pale-brown lines are undulating, or partake of a zigzag disposition. They agree very well with Gould’s brief description, and most likely are rightly assigned to his species, of which the Museum already possessed a single colourless example determined by Dr. P. P. Carpenter.

89. Ancillaria inornata. (Plate XX. fig. 56.)

Shell elongate, acuminate ovate, white, faintly tinged with yellow above the sutural line: whorls 4, coated with a thin enamel; spire moderately acute at the apex, with slightly convex outlines; last whorl indistinctly transversely striated with two narrow oblique sulci on the lower part, whereof the upper is the deeper and borders the basal balteus; the extremity of the whorl deeply sulcated, with three or four oblique plicae between the sulcations. Aperture occupying rather more than half the whole length; basal notch broad, shallow.

Length 8 millims., diam. 3.

Hab. Japan.

EXPLANATION OF PLATES XIX. & XX.

Fig. 1, 1a. Terebra goniopsis, p. 183.
2. Terebra jeffreysii, p. 184.
3. — subtextilis, p. 185.
4. — tantilla, p. 185.
5. — altizonata, p. 185.
6, 6a. Pleurotoma vertebrata, p. 186.
9. — tripolurata, p. 188.
10. — patricia, p. 188.
11. — consimilis, p. 188.
15. — niponica, p. 191.
17. — condens, p. 192.
18. — raricostata, p. 192.
22. — fortifortata, p. 194.

Fig. 24. Drillia gracilenta, p. 195.
27. — ? subzonata, p. 197.
29. Lachesis japonica, p. 198.
30. Murc sp. subrinus, p. 199.
31. Murc (Oceinbra) fendriatatus, p. 201.
32. Urosaprinx innominatus, p. 201.
34. — niponicus, p. 203.
35. — simplex, p. 204.
36. — coregonius, p. 204.
37, 37a. — pacificus, p. 205.
38. Siphonalia spadicea, p. 205.
40. Tritonidea subrubiginosa, p. 206.
41. Columbella (Atilia) lischkei, p. 207.
Fig. 42. *Columbella* (Atilia) niveomarginata, p. 208.
43. — (Zafra) subovata, p. 209.
46. — *(Hima)* amentidendata, p. 212.
47. — (——) luteola, p. 212.

Fig. 49. *Mitra* (Costellaria) fuscoapicata, p. 214.
50. — (——) collinsoni, p. 215.
52. — (Pusia) amula, p. 215.
54. *Cancellaria* japonica, p. 216.
55. *Oliva* (Olivella spreza), p. 216.

March 4, 1879.

Prof. W. H. Flower, F.R.S., President, in the Chair.

The Secretary made the following report on the additions to the Society’s Menagerie during February 1879:

The total number of registered additions to the Society’s Menagerie during the month of February was 47, of which 3 were by birth, 20 by presentation, 18 by purchase, 4 were received in exchange, and 2 on deposit. The total number of departures during the same period, by death and removals, was 83.

The most noticeable additions during the month were:


On his return from Natal Mr. Gould was kind enough to bring us the first example of this beautiful Touraco which has been received alive by the Society. The bird was obtained from a person on board the Zanzibar mail-steamer, and is doubtless from Mozambique, or from some part of the East-African coast.

2. A very beautiful Iguanoid Lizard (kindly determined by Dr. Günther as *Crotophylus visilezeni*, Baird and Girard) from New Mexico, presented by Lieut.-Col. Ralph Vivian, F.Z.S., on the 18th February, which has unfortunately died since its receipt by the Society.

Mr. Selater laid before the Meeting examples of two rare Fruit-Pigeons (*Carpophaga van-wicki*, Cassin, and *C. rhodinolema*, Scl.), and pointed out, in reference to some recent remarks by Dr. Finsch on these birds (*antea*, p. 13), that though nearly allied, they were by no means conspecific, *C. rhodinolema* being altogether smaller in size, and having a dark-green back.

Mr. Selater had no doubt that the bird obtained by Mr. Hübner in the Duke-of-York group would turn out to be *C. vanwyckii*, not *C. rhodinolema*.

Mr. L. M. D’Albertis, C.M.Z.S., exhibited some new and rare birds from his recent expedition up the Fly River, New Guinea, amongst which were a series of Paradise-birds, apparently intermediate between *Paradisea apoda* and *P. raggiiana*, and examples of *Cyclopsitta cyanea* cervicalis, *Megacrex inepta*, *Cinclonidae ajax*, and other little-known species.
Prof. Newton, M.A., F.R.S., Vice-President, exhibited (on behalf of Mr. John Robinson, of Trinity Hall, Cambridge) a specimen of *Sylvia nisoria,* remarking:—

"This specimen was formerly the property of Mr. Germany, for many years the highly-respected porter of Queens’ College, who in the course of a long life formed a considerable collection of birds, nearly all obtained by himself in and near Cambridge, and also stuffed by himself. At his death, more than twenty years ago, it passed, with many others of his specimens, into the possession of an old friend of his, Mr. Elijah Tarrant, of whom Mr. John Robinson, an undergraduate of Trinity Hall, bought it about a twelvemonth since. Up to this time no one seems to have known what the bird was, though some ingenious person had hazarded the suggestion that it was a variety of the Nightingale. Soon after, it was seen by Mr. Frederick Bond, F.Z.S., who at once recognized it as *Sylvia nisoria,* and was good enough to advise its being shown to me. It was accordingly brought to me by Mr. Doggett, a bird-stuffer at Cambridge, in whose hands Mr. Robinson had placed it for remounting; and I immediately made all the inquiries I could about it. It appears that it was shot by Germany, a long time before his death, in a garden at a place known as "Paradise," not far from Queens’ College. Tarrant tells me that he remembers seeing it directly after it was mounted, if not before the skin was taken off, and that Germany said he had much difficulty in shooting it, owing to the thick foliage in which the bird kept, being obliged at last to fire when it was so close to him that it was greatly damaged by the shot. Any one who examines the specimen will see that its condition corroborates this last statement, as it has lost a considerable number of feathers from the head, especially near the gape, and several rectrices are wanting. But I see no reason for doubting any particular of the story as told to me. I have satisfied myself that on the part of no one has there been an attempt to make money out of it; and in further confirmation thereof I would call attention to the glass eye which has been inserted into the specimen. This has the iris of a pale yellow, which we know to be the colour in *Sylvia nisoria,* but a colour so uncommon in species of the family that an English bird-stuffer would hardly have thought of using it had he not been prompted by finding an iris of this colour in the bird when fresh. I may add that the specimen, from its plumage, seems to have been a male; and, so far as Tarrant recollects, it was shot in spring or early summer; but as its death took place possibly forty years ago, he cannot be at all certain on this point."

The following papers were read:—

[Received February 8, 1879.]

(Plates XXI. & XXII.)

Les oiseaux compris dans cette liste sont recueillis dans plusieurs localités, peu éloignées entre elles, mais très-différentes sous le rapport des conditions naturelles ; chacune de ces localités est indiquée sous les espèces. Principalement ils ont été collectionnés à :

Pacasmayo, port du département Libertad, province San Pedro. Aux environs il y a des dunes sablonneuses, parsemées de rares buissons isolés, très-touffus. La vallée abonde en jones, dans lesquels séjournent le Cyanotis azare, les rallles et les butorides, etc. En avançant dans la vallée on entre dans les Algarrobes, habités par les Phylomyias tumbezana, Myiarchus semirufus, etc.

Chota, 8000' d'altitude au dessus du niveau de la mer. Département de Cajamarca, province Chota. Aux environs se trouvent principalement des terrains cultivés, et des broussailles dans les vallées.

Montaña de Chuli, à deux leguas de Chota, sur la route de Tacabamba, 9000' d'altitude.

Tambillo, 6° de lat. sud, 5800' d'altitude. Département Cajamarca, province Jaen, district Cujillo. (Le district est indiqué, car plusieurs localités dans cette province portent le même nom, et sont tout-à-fait différentes sous le rapport de la faune et de la flore.) Quoique cette localité est située dans la hauteur indiquée plus haut, M. Stolzmann a poussée ses excursions jusqu'à 8000' d'altitude. La forêt de cette localité est serrane proprement dite. En bas elle se caractérise par l'abondance d'un petit palmier nommé sada, qui est remplacé plus haut par des fougeres arborescentes.

Montaña de Palto, à une legua de Tambillo, sur la route de Pimpingos. Les oiseaux de cette localité ont été recueillis sur la hauteur de 7000 jusqu'à 7500'. Cette forêt est la continuation de celle de Tambillo et présente le même caractère.

Guajánco, dans la vallée du Marañon, à peu près à la même latitude que Tambillo, élevée au dessus du niveau de la mer selon l'ingénieur Werthemann de 800', et selon l'anéroïde de M. Stolzmann 1500'. La vallée est aride et très chaude. La flore porte en grande partie le caractère de celle du littoral, elle est caractérisée par les genres Cactus, Prosopis, Capparis, etc. Guajánco est une colonie, composée de 10 cabanes (département Cajamarca, province Jaen, district Choros). M. Stolzmann a visité seul cette dernière localité.

Chaque espèce de cette liste qui n'a pas été comprise dans nos listes précédentes est marquée d'un astérique devant son numéro ; 56 espèces sont donc nouvelles pour l'exploration de nos voyageurs, et ne se trouvent pas dans leurs listes précédentes, et plusieurs d'entre elles sont nouvelles pour la faune péruvienne.

1 Voyez P.Z S. 1877, pp. 310, 744.
CYCLORHIS CONTRERASI
Family Turdide.

1. Turdus Swainsoni, Cab.; Tacz. P. Z. S. 1874, p. 503.
Une paire de Tambillo les 2 et 14 janvier 1878. Iris brun foncé.

*2. Turdus sp.?

Un jeune oiseau tué à Tambillo le 22 juin 1878. Cette grive a été très-commune dans la vallée du Marañon, mais les oiseaux ont été en pleine mue et mauvais pour la collection.

Une femelle tuée à Tambillo le 5 février 1878, et un jeune oiseau le 15 septembre 1877.
Iris de la femelle est brun grisâtre foncé.
Le jeune a les parties supérieures du corps brunes-olivâtres, d'une nuance comme celle de la femelle; le fond de la gorge, de la poitrine, et du ventre d'un roux grisâtre sale, ondulé de brunâtre.

Deux mâles et une femelle recueillis à Tambillo le 8 janvier et le 12 février 1878, ainsi que deux jeunes dans leur premier plumage pris dans la même localité le 22 novembre 1877, et à Ambagay le 16 mars 1878.
Les deux mâles s'accordent parfaitement dans tous leurs détails avec le mâle de Ropaybamba, qui m'a servi à la description citée, ils présentent les mêmes dimensions, la même couleur noire profonde avec un éclat bleutâtre également prononcé, la même forme de la queue, et l'iris blanc selon l'indication de M. Stolzmann. On trouve cependant des petites différences dans la proportion des rémiges primaires: un de ces mâles a la 4e rémige la plus longue, mais dépassant très peu la 3e, la 2e est un peu plus longue que la 6e.

Dans la femelle la 1e rémige dépasse un peu les grandes couvertures, mais beaucoup moins que dans l'espèce précédente; la différence entre les 3e, 4e, et 5e très petite. La taille, le bec, les pattes et la queue sont comme dans le mâle. La couleur générale des parties supérieures du corps est comme dans la femelle du T. serranus, mais un peu plus claire, avec un lustre soyeux distinctement plus fort; celle du dessous est plus claire, surtout sur le milieu de la poitrine et du ventre, où elle est fauve blanchâtre sale; les subcaudales sont fauves, les subalaires rousse. Le bec est noir; les pattes cornées; l'iris selon l'indication de M. Stolzmann gris-jaunâtre.

Les jeunes dans leur premier plumage sont tout-à-fait différents des jeunes de l'espèce précédente. Toutes les parties supérieures du corps, les ailes et la queue sont d'un noir mat; une tache triangulaire roussie se trouve sur l'extrémité de chaque tectrice alaire, le dessous du corps est d'un roux vif, rayé transversalement de stries noirâtres fines, qui se trouvent sur l'extrémité de toutes les plumes; les côtés du ventre noirâtres; les subalaires rousses tachetées de
noirâtre; le front roussâtre; le dessus de la tête varié de stries roussâtres, très-fines. Le bec noirâtre avec l’extrémité même de la mandibule supérieure jaunâtre. L’autre exemplaire plus jeune que le précédent, à queue longue d’un pouce, a la rayure foncée des parties inférieures plus dense.

Une paire (♂ et ♀) de Tambillo le 11 décembre 1877 et le 8 février 1878. Iris blanc sale dans le mâle, et blanc dans la femelle.
Deux œufs trouvés à Tambillo le 2 janvier 1878 sont de forme ovée, peu allongée, à sommet sensiblement plus gros que la base, les deux extrémités obtus. Le mode de la coloration est comme dans les autres grives: le fond est d’une couleur vert-bleuâtre pâle, varié de nombreuses taches irrégulières d’un gris violâtre pâle, et d’autres superficielles brunes. La surface est assez polie. Dimensions: 24 × 18.5; 27.5 × 19 mill.

Family Troglodytidæ.

*1. Thryothorus sclateri, n. sp.
Supra griseo-rufus, pileo vix rufescentiore; subitus albo nigroque undulatus; genis et lateribus colli albo nigroque variis; supercilii albis nigro maculatis; cauda griseo nigro nigro maculatis; tracto rectrici, fasciis rectricum externarum albis. Rostrum conicum; pedes grisei; iris fusco-brunnea.

Forme voisine du Th. maculipeectus, Lafr., mais parfaitement distincte. Le bec est beaucoup plus long et plus fort, d’une couleur cornée, moins foncée; les pattes plus robustes et un peu plus longues, grises pâles. La couleur du dessus de la tête est roussâtre, beaucoup plus pâle que dans l’espèce citée, passant indistinctement au gris roussâtre des parties supérieures du corps. Tout le dessus est blanc, largement ondule de noirâtre d’une manière irrégulière, à raines foncées presque aussi larges que les blanches; les côtés du ventre légèrement teints de gris roussâtre. Les côtés de la tête variés de noir et de blanc; sur les côtés du ceu se trouve un espace noir parsemé de taches blanches; la bande sourcière est blanche variée de noir. Les rémiges brunes largement bordées de la nuance analogue à celle du dos et légèrement ondules de plus foncé. Les rectrices médianes rayées transversalement de noir et de gris cendré; les raines claires des externes sont blanches, et des suivantes passant graduellement en gris cendré. Subcaudales blanches rayées de noirâtre; subalaires blanchâtres, indistinctement variées de foncé. Iris brun-foncé.

En coloration cette espèce se distingue principalement du Th. maculipepectus par la couleur du dessus de la tête non tranchée de celle du dos, mais se confondant graduellement; par la maculature des parties inférieures presque égale depuis le bec jusqu’aux subcaudales, sans un espace blanc pur au milieu du devant de la gorge, propre à l’espèce citée; par la bande sourcière tachetée et non distinguée des parties voisines par une large raie foncée postoculaire, comme
cela a lieu dans le *T. maculipectus* ; par la présence de l’espace noir maculé de blanc sur les côtes du cou ; par la couleur de la queue et du bas ventre ; les taches de la poitrine sont autres ; moins nombreuses, plus grosses, plus uniformes et moins foncées ; la jambe est revêtue jusqu’au talon de plumes blanches très-rayées transversalement de brun, tandis que dans le *T. maculipectus* cette partie est unicolor analogue à la couleur des côtés du ventre.


Une paire de Guajango, tuée le 18 et le 25 avril 1878.


Une paire de Tambillo le 14 janvier 1878. Iris brun foncé.

**Family Sylviidë.**

*1. Polioptila buffoni*, Scl.

Un mâle de Guajango, tué le 24 avril 1878. Iris brun foncé.


Un mâle et deux femelles, tués à Pacasmayo dans la moitié de juin 1877.

**Family Mniotiltidë.**


Une femelle de Tambillo le 15 novembre 1877.

2. *Dendreca blackburnië* (Gm.) ; Tacz. P. Z. S. 1874, p. 508.

Plusieurs exemplaires de Tambillo, recueillis depuis de 19 novembre 1877, jusqu’au 25 mars 1878.


Une paire de Tambillo, tuée le 27 novembre 1877 et le 28 mars 1878.


Sept exemplaires de Tambillo, recueillis depuis la moitié de novembre 1877, jusqu’à la moitié de janvier 1878. Iris brun foncé.

*5. Basileuterus nigricristatus* (Lafr.).

Un mâle tué le 3 juillet 1877 à Schuccha près de Cutervo, à 7700' d’altitude. Iris brun foncé.


Sept exemplaires de Tambillo, tués en novembre et décembre 1877. Iris brun foncé.

Family Vireonidæ.


*3. Cyclorhitis contrerasi, n. sp. (Plate XXI.)

C. virenticipiti simillimus, sed pileo toto ferrugineo, dorso obscuriore, colore flavo collari minus extenso.

Cet oiseau est très-voisin du C. virenticeps, Scl., il en diffère cependant par le dessus de la tête qui est ferrugineux-foncé en entier et coloré un peu de verdâtre au milieu même. La couleur verte des parties supérieures du corps est distinctement plus foncée que dans l’espèce citée, et le jaune du devant de la gorge moins étendu ; les joues sont verdâtres, ainsi que les côtés du cou et de la poitrine. Le reste des parties inférieures du corps, les ailes et la queue, sont comme dans le C. virenticeps. Le bec est un peu plus long et plus comprimé dans sa partie antérieure ; la mandibule supérieure rougeâtre, l’inférieure plombée à extrémité blanchâtre ; les pattes carnées ; iris orangé.


Une paire tuée à Tambillo le 23 novembre et le 4 décembre 1877. Je suis heureux de pouvoir dédier cette nouvelle espèce à Don Gregorio Contreras de Cutervo, comme témoignage de ma reconnaissance à l’égard du bon accueil fait à nos voyageurs, ce qui a contribué en grande partie aux succès qu’ils ont remportés dans cette intéressante contrée.

Family Hirundinidæ.

Atticora cyanoleuca (V.); Tacz. P. Z. S. 1874, p. 510. Un mâle adulte de Tambillo tué le 23 novembre 1877, et un jeune de Pacasmayo du 14 juin 1877. Iris brun foncé.

Family Cærebidæ.


   Un mâle adulte et un jeune pris le 1 août 1877 à Chota, 8000' d’altitude. Iris brun foncé.

   Un mâle pris dans la montaña de Palto 7500' d’altitude, le 26 décembre 1877, et une femelle de Tambillo tuée le 31 décembre. Iris rouge brunâtre.

   Un jeune mâle de Pacasmayo le 12 juin 1877. Iris brun foncé.

   Une paire de Tambillo du 17 septembre 1877 et du 2 janvier 1878. Un mâle de la montaña de Palto 7400', tué le 26 décembre 1877. Iris brun foncé.
   Les deux mâles adultes ont comme ceux de Chilpes et de Pumamarca la calotte bleue. Dans la femelle le bleu du dessus de la tête est beaucoup plus clair que celui du mâle, passant au cendré foncé à la nuque; le dos est d’un vert plus vif que celui du jeune mâle; le croupion jaune verdâtre; la gorge, les côtés du visage et la poitrine cendrées; le ventre jaune verdâtre; les petites couvertures alaires d’un vert beaucoup plus pur que celui du dos.

   Trois exemplaires de Pacasmayo, tués en juin 1877. Iris brun foncé.

*8. Certhiola sp.?*
   Trois mâles pris à Guajango en avril 1878. Iris brun foncé.
   Ces oiseaux de Guajango diffèrent des oiseaux de Pacasmayo et de Paltaypampa par la taille plus forte (l’aile a 64 mm. de longueur, tandis que ceux de la côte ont seulement 55), mais il s’en distinguent le plus par une grande différence dans la longueur du bec, qui est long de 19 mm. depuis la commissure, tandis qu’il est de 14 mm. dans la *C. peruviana*. La coloration est la même dans les deux; le miroir alaire blanc également développé, seulement la couleur du dos présente une légère nuance verdâtre dans les oiseaux de Guajango.

Family *Tanagridæ.*

*1. Chlorophonia viridis* (V.).
   Une femelle tuée dans la montaña de Palto le 10 décembre 1877.

   Trois mâles et une femelle recueillis à Tambillo dans les premiers jours de juin 1878. Iris brun foncé.

3. **Euphonia minuta**, Cab. ?
Une femelle tuée à Tambillo le 25 juin 1878.

4. **Pipridae melanonota** (V.).
Une paire tuée à Tambillo le 25 décembre 1877 et le 26 juin 1878. M. Stolzmann a trouvé que la poche stomacale dans cet oiseau est rudimentaire, à peine distincte, et en conséquence il est de l'opinion que les *Pipridae* doivent être rangées tout près des *Euphonia*, aux quelles elles ressemblent beaucoup par leurs habitudes.

5. **Divar vassori** (Boiss.).
Nombreux exemplaires des deux sexes et en différents plumages, recueillis à Tambillo entre le 9 septembre 1877 et le 18 mars 1878 ; les jeunes commençaient prendre le plumage parfait en décembre et en janvier. Iris brun foncé.

Sept exemplaires pris à Tambillo entre le 9 septembre 1877 et le 21 juin 1878. Iris brun foncé.
Tous ces oiseaux, ainsi que celui d'Anquimara comparé avec un exemplaire de Bogota, se trouvant au Musée de Varsovie, présentent une différence remarquable dans la nuance des taches vertes. En général toutes les taches des individus péruviens se distinguent par le manque de la nuance bleue, qui est à peine distincte sur le devant de la gorge ; sur les petites couvertures alaires, les bordures des rémiges et des rectrices la nuance bleue est beaucoup plus faible ; tandis que dans l'oiseau de Bogota les taches du devant de la gorge et des petites couvertures alaires sont d'une belle couleur bleue pure, sans nuance verte ; le bleu des bordures des remiges et des rectrices est beaucoup plus fort, et toutes les taches des autres parties du corps sont imprégnées d'une nuance bleue. En général les taches sont plus grandes dans les oiseaux péruviens. M. le comte de Berlepsch a trouvé la même différence en comparant un exemplaire de Tambillo avec les oiseaux de la Nouvelle Grenade et de Venezuela dans sa collection.

7. **Calliste argentea** (Tsch.); Taez. P. Z. S. 1874, p. 514.
Nombreux exemplaires des deux sexes recueillis entre le 2 septembre 1877 et le 18 mars 1878. Mr. Stolzmann a marqué dans tous ces exemplaires, ainsi que M. Jelski dans celui de Paltaypampa l'iris brun foncé; Tschudi dit jaunatre.
La femelle a le dessus de la tête d'un brun grisâtre foncé, dont toutes les plumes sont terminées d'une large bordure jaunâtre, en formant des nombreuses squamules bien distinctes; le dos est d'une belle couleur verte, prenant dans certaines directions de la lumière un éclat doré assez fort, analogue à celui du mâle ; la gorge et les côtés du visage sont de la même nuance jaune ocreuse comme dans le mâle ; la poitrine est grise olivâtre, enduite plus ou moins de jaune verdâtre ; le milieu du ventre est cendré grisâtre, les côtés verts ; les subcaudales grises verdâtres au milieu, largement bordées
de blanc verdâtre. Les ailes et la queue sont noirâtres, avec toutes les plumes largement bordées de vert ; les bordures des remiges primaires sont fines et n'atteignent pas l'extrémité des plumes ; dans quelques-unes, certainement adultes, ces bordures sont plus ou moins bleuâtres ; la page inférieure de la queue est bleuâtre pale. Le bec est d’un noir un peu moins foncé que celui du mâle ; les pattes brunes noirâtres.

Les jeunes des deux sexes ressemblent à la femelle ; après la première mue les mâles prennent leur habit.

8. **Calliste xanthocephala** (Tsch.); Tacz. P. Z. S. 1874, p. 514.

Deux mâles de Tambillo du 10 janvier et du 5 juin 1878. Iris brun foncé.


Une femelle de Tambillo du 7 décembre 1877. Iris brun foncé.


Une femelle de Tambillo tuée le 15 novembre 1877. Iris brun foncé.

11. **Pæciloethraupis lacrymosa** (Dubus); Tacz. P. Z. S. 1874, p. 514.

Un mâle tué à Tambillo le 8 février 1878. Iris brun foncé.


Trois mâles et une femelle de Tambillo tués entre le 1 octobre 1877 et le 20 mars 1878. Iris brun foncé.

Ces oiseaux de Tambillo comparés avec le mâle adulte de Junin présentent des différences assez importantes ; le rouge des parties supérieures du corps est distinctement plus clair dans les premiers ; la différence de la nuance des parties inférieures est encore plus frappante, elle est beaucoup plus claire, et d’une nuance miniaçée, tandis que dans l’oiseau de Junin elle est plus foncé et tirant sur le cinabre ; le tour de l’œil est miniaçé dans les exemplaires de Tambillo et rose dans celui de Junin. Le bec dans tous les individus de Tambillo est un peu plus long, distinctement plus comprimé dans sa partie antérieure, à arête plus prononcée dans toute sa longueur. Les dimensions sont presque les mêmes.

*13. **Pyranga estiva** (Gm.).

Un mâle et une femelle tués à Tambillo le 15 novembre 1877 et le 18 janvier 1878, parfaitement identiques avec les oiseaux de l’Amérique septentrionale. Iris brun foncé.


Un exemplaire à sexe inconnu tué à Tambillo le 25 septembre 1877.
*15. Nemoria inornata, n. sp.

Mas capite supra nuchaeque rufo-castaneis, dorso griseo; subitus fulvus, alis caudaque fuscos-griseis, griseo limbatis. Rostrum cornuum; pedes fusci; iris fusca brunnea.

Fem. mari similis, pileo nuchaeque vicrufescenti lavatis, supercilii et regione postoculare rufescentibus.

Espèce voisine de la N. ornata, Scl. Le mâle a le dessus de la tête, la nuque, et la partie postoculaire des côtés de la tête d’une vive couleur rousse cannelle ; le dos gris foncé ; toutes les parties inférieures ainsi que le devant du visage fauves, plus pâles le long du milieu de l’abdomen. Les ailes sont grises foncées, les remiges primaires finement bordées de grisâtre clair, les bordures des secondaires légèrement verdâtres ; le bord interne de toutes les remiges largement blanchâtre ; les couvertures alaires cendrées foncées, les subalaires fauves. Les rectrices sont de la couleur des remiges, et également bordées de gris. Le bec est corné ; pattes grises foncées ; l’iris brun foncé.

La femelle ressemble au mâle et n’en diffère que par la couleur du dessus de la tête et de la nuque, qui est à peu près comme celle du dos, mais légèrement teinte d’une nuance roussâtre ; un large sourcil commençant à la naissance du bec et fort élargi sur la partie postoculaire roussâtre, se confondant graduellement avec la couleur des parties environnantes.

Un jeune mâle commençant à prendre son habit d’adulte ressemble à la femelle, mais la bande sourcilière est beaucoup plus claire, et la partie postérieure du visage beaucoup plus pâle ; il n’a point de nuance verdâtre sur les bordures des remiges secondaires ; sur la calotte il a déjà un grand nombre de plumes russes, mélangées avec les plus de l’habit précédent.

Le plumage frais des adultes a une nuance olive sur les parties supérieures du corps, et le fauve roussâtre des parties inférieures est plus intense, surtout sur les côtés du corps.

♂. Long. tot. 158, envergure 212, aile 68, queue 62, bec 15, tarse 19 mm. ♀. Long. tot. 147, envergure 194, aile 62, queue 56, bec 13, tarse 19 mm.


Plusieurs exemplaires recueillis à Tambillo entre le 13 novembre 1877 et le 16 janvier 1878. Iris brun foncé.

*17. Buarremon specularis, Salvin, MS.

Deux mâles, une femelle, et un albino recueillis à Tambillo entre le 2 septembre 1877 et le 22 mars 1878, ainsi qu’un mâle de la montaña de Palto à 7500' d’altitude, tué le 26 décembre 1877. Iris brun roussâtre.

Très-voisin du B. latinuchus, Scl., mais différents dans plusieurs détails : la couleur du dos est dans ce dernier schistacee foncée ; il a une moustache foncée bien distincte sur les côtés de la gorge ; l’aile
est plus longue (76 mm. dans le mâle et 74 dans la femelle, dans le B. latinecehus elle est de 71), le bec est un peu moins large.

*18. Chlorospingus castaneicollis, Scl.
Deux femelles tuées à Tambillo le 1 octobre 1877 et le 20 mars 1878. Iris brun foncé.

Trois exemplaires de Tambillo du 15 et le 22 septembre 1877. Iris brun foncé.

*20. Chlorospingus supercilias (Lafr.).
Une femelle tuée à Tambillo le 27 décembre 1877. Iris brun foncé.

21. Saltator albicollis, Vieill.?
Trois exemplaires (♂ ad. et deux jeunes) de Guajango, pris en avril 1878. Iris brun foncé.

Ces oiseaux ne paraissent appartenir à une autre espèce. Ils sont plus petits. Le bec est moins élevé, un peu plus long, à dos moins arqué, noirâtre, avec l'extrémité jaune orangée et une pareille tache à la naissance de la mandibule supérieure. Le dessus du corps est fort tacheté de longues flamèches foncées, grosses sur la poitrine, moins larges sur le ventre et nulles au milieu même de ce dernier; la gorge est toute foncée avec une raie médiane blanchâtre. La femelle est bien adulte, à ailes et queue pâles, et les rectrices médianes et quelques rémiges tertiaries fort usées. Longueur de l'aile de la femelle 91, bec depuis la commissure 20 mm.

Family Fringillideæ.

1. Pheucticus chrysopeplus (Vig.); Tacz. P. Z. S. 1874, p. 519.
Un mâle tué à Tambillo le 8 janvier 1878. Iris brun foncé.

2. Spermophila gutturalis (Licht.); Tacz. P. Z. S. 1874, p. 519.
Plusieurs exemplaires recueillis à Tambillo en janvier 1878. Iris brun foncé.

Un exemplaire de Chota 8100' d'altitude, tué le 24 juillet 1878. Iris brun foncé.

Catamenia rufirostris (Landb.); Tacz. P. Z. S. 1874, p. 521. n. 21.
Une paire de Tambillo, tuée le 31 décembre 1877. Iris brun foncé.
   Un mâle de Tambillo du 24 septembre 1877 et un jeune de Pacasmayo du 14 juin 1877.

   Une femelle de l'Arenal, tuée le 17 décembre 1877.

   Une femelle de Tambillo, tuée le 1 octobre 1877. Iris brun foncé.

*8. Chrysomitris columbianus* (Lafr.).
   Plusieurs exemplaires des deux sexes recueillis à Tambillo depuis le 15 septembre jusqu’au 22 décembre 1877. Iris brun foncé.

*9. Coryphospingus cristatus* (Gm.).
   Deux mâles adultes, une femelle, et un jeune recueillies à Guajango en avril 1878. Iris brun foncé.

Family Icteridæ.

*Caciculus alfredi* (Desm.); Tacz. P. Z. S. 1874, p. 523.
   Un mâle adulte et un jeune tués à Tambillo le 8 et le 18 janvier 1878. Iris de l’adulte brun foncé, et gris brunâtre dans le jeune.

Family Corvidæ.

*Xanthura peruviana* (Gm.); Tacz. P. Z. S. 1874, p. 524.
   Une femelle de la montaña de Palto, et une seconde de l’Arenal, tuée le 17 décembre 1877. Iris jaune.

Family Dendrocolaptidæ.

   Une paire de Pacasmayo du 13 juin 1877. Iris brun foncé. Ces deux individus ont la couleur isabelle beaucoup plus claire que les individus des environs de Lima, récueillis en février.

   Un mâle tué à Pacasmayo le 12 juin 1877. Iris terre de Sienne.

   Une paire (♂ et ♀) du 7 et du 14 décembre 1877, de Tambillo. Iris du mâle gris, de la femelle brun grisâtre.

*4. Synallaxis maranonica*, n. sp.
   Capite et nucha brunescenti-griseis, superciliis pallidioribus vix distinctis; dorso rufescenti-brunneo; subitus grisea, hypochondriis brunescentibus; alis vivide cinnamonomeis, cauda obscurior. Rostri nigricantis mandibula inferior pallida; pedes fusci; iris fusco-brunnea.
   Voisine de la *S. cinrascens*, mais distincte par la couleur du dos.
dessus de la tête et la nuque sont d’une couleur grise brunâtre, à
bande sourcilière grisâtre à peine distincte ; le dos et le croupion
sont d’un roux brunâtre uniforme ; sur les parties inférieures du
corps, ainsi que sur les côtes de la tête s’étend une couleur grise,
 légèrement blanchie au menton, et fort imprégnée de brunâtre sur
les côtes du ventre ; le milieu du ventre est fauve. Les ailes sont
d’un roux cannelé vif ; les rémiges brunes foncées largement bor-
dées de roux, de sorte que l’aile pliée paraît être un peu plus foncée
à l’extrémité que sur le devant ; les subalaires sont rousses claires ;
la queue beaucoup plus foncée que l’aile. La mandibule supérieure
est noircâtre, l’inférieure plus pâle ; les pattes carnées foncées ; iris
brun foncé.

Long. de l’aile ♂ 61 mill., queue 72, bec dep. la commissure 19,
tarse 21.
Deux mâles de Guajango du 20 et du 30 avril 1878.

Un mâle tué à Pacasmayo le 12 juin 1877. Iris terre de Sienne.

*6. Placellodomus frontalii (Licht.).
Quatre exemplaires de Guajango recueillis au commencement
d’avril 1878. Iris gris.

Une femelle de Tambillo du 23 décembre 1877.

Trois exemplaires de Tambillo, recueillis entre le 2 septembre et le
22 décembre 1877, et un mâle de Guajango du 24 avril 1878. Iris
brun foncé.

*9. Xiphocolaptes promeropirhynchus (Less.) ?
Un mâle tué à Tambillo le 17 septembre 1877.
Cet exemplaire diffère beaucoup des oiseaux de Santa Fé de Bogota
et des environs de Medellin, avec lesquels je l’ai comparé. Son
bec est beaucoup plus élevé, plus comprimé, plus ou moins court,
à dos considérablement plus arqué, d’une couleur cornée blanchâtre
claire, et plombé plus foncé près de la naissance. La couleur générale
du plumage plus foncée ; les stries roussâtres du dessus de la tête,
du cou et du devant du dos plus fines ; sur la gorge fauve roussâtre
une suite de taches brunes forme deux raies longitudinales bien dis-
tinctes ; sur le bas de la gorge, la poitrine et les côtés il y a égale-
ment des flammèches roussâtres, mais bordées des deux côtés d’une
ligne noire bien distincte. Le milieu du ventre est largement cou-
vert de plumes fauves roussâtres, dont chacune est variée de deux
rangées de taches noîtrâtres parallèles et distinctement séparées entre
elles, ce qui fait une tacheture bien prononcée. Les subcaudales
sont plus foncées que les plumes précédentes, et également variées de
noir. Le roux du croupion est plus obscure que dans l’espèce citée ;
les ailes et la queue plus foncée. Taille un peu plus forte : aile pliée
152, queue 135, tarse 32, doigt externe sans ongle 28, bec depuis la commissure 52, hauteur du bec vis-à-vis les narines 12 mill.

Son bec est encore plus élevé et plus comprimé que celui du X. albicollis (V.) du Brésil, et beaucoup moins long que le bec du X. major (V.) et X. procerus, Cab.

Il me paraît que c’est une forme bien distincte du X. promeropirhynchus; mais comme je ne possède qu’un individu unique, je me contente à présenter mes remarques, jusqu’à ce que je reçoive un plus grand nombre d’exemplaires.


Un mâle et deux femelles tués à Tambillo entre le 10 septembre 1877 et le 17 janvier 1878. Iris brun foncé.

Family Formicariidæ.

*1. Thamnophilus nævius (Gm.).

Deux mâles de Guajango, pris en avril 1878. Iris brun clair.


Deux mâles et une femelle de Tambilla, recueillis le 16 janvier et le 18 février 1878. Iris brun foncé.


Une femelle de Tambillo du 10 janvier 1878. Iris brun foncé.

Family Tyrannidæ.


Un mâle de Tambillo du 17 juin 1878. Iris brun foncé.


Une femelle du 13 décembre 1877.


Une paire de Chota à 8000' d’altitude, du 1 et du 6 août 1877. Les oiseaux de Huanta et d’Arancococha, indiqués dans la liste citée, appartiennent aussi à cette forme, nouvellement distinguée de celle de la Bolivie. Iris brun foncé.

*4. Ochthœca gratiosa, Scl.

Une femelle de Tambillo du 14 janvier 1878.

M. Stolzmann écrit : "Cet oiseau construit un nid en forme d’une poire oblongue, suspendu sur des lianes verticaux, de sorte que le nid en comprenant les rameaux du liane ressemble à une touffe de mousse, mais il se trahit par la régularité de sa forme. Il est bâti en entier de la mousse, et garni à l’intérieur des plumes de différents oiseaux, parmi lesquelles celles des Trogons étaient les plus nom-
1879.]

**BIRDS FROM NORTHERN PERU.**

breuses. L'ouverture est en bas. Ordinairement il est suspendu à une petite distance du sol, et j'ai trouvé deux situés au-dessus d'un petit ruisseau. Un nid trouvé dans le commencement de février contenant deux petits récemment éclos. L'œuf fourni était trouvé le 28 mai ; comme il était unique, je l'ai laissé dans l'espoir que la femelle pondra plus. Dans deux jours j'ai trouvé le nid par terre, déchiré, et deux œufs couchés à côté. Un était brisé et l'autre intact. En vain j'ai cherché la mère ; le mâle était tué deux jours plus tôt, mais il était gâté. Il ne diffère en rien de la femelle."

L'œuf est blanc jaunâtre, très peu luisant, de forme ovoïde, peu allongé, à deux extrémités obtuses. Longueur 18 sur 13.2 millim. de largeur.

*5. Ochtheeca caloptera* (Scl).


Un mâle et deux femelles de Tambillo recueillis entre le 20 septembre 1877 et le 16 juin 1878. Iris brun foncé.


Un mâle et une femelle recueillie le 22 novembre 1877 et le 20 mars 1878. Iris brun foncé.


Un mâle et deux femelles recueillies à Tambillo le 20 septembre 1877 et le 16 juin 1878. Iris brun foncé.


Une femelle tuée le 14 juillet à Agua blanca (entre San Gregorio et San Miguel), ressemble en tout au mâle et n'en diffère que par une taille un peu plus petite ; longueur de l'aile mesure 130 mm., tandis que dans le mâle elle est de 142.


Un mâle tué à Tambillo le 1 avril 1878. Iris brun foncé.


Deux mâles et une femelle recueillies à Chota, 8000' d'altitude, le 3 et le 15 août. Iris brun foncé.


Une femelle et un jeune de Pacasmayo du 9 et du 14 juin 1877. Iris de la femelle blanc bleunâtre, du jeune brun foncé.


Deux mâles et une femelle de Tambillo du 23 septembre et du 19 novembre 1877. Iris brun foncé.

*13. Leptopogon minor*, n. sp.

*Supra olivaceo-viridis, pileo schistaceo, supercilliis albidis, macula*
auriculari nulla; subtus flavus, gula albida, alis nigrificantibus rufo bifasciatis; secundariis rufescenti marginalis. Rostrum nigrum; pedes nigricates; iris fusco-brunnea.

Le dessus de la tête est d’une couleur ardoise; bande sourcilière blanchâtre, étroite mais distincte; les côtés de la tête sont gris verdâtres sans tache auriculaire foncée. Le dos olive verdâtre; tout le dessous du corps jaune pâle, un peu nuancé de grisâtre sur la poitrine; le devant de la gorge blanchâtre. L’aile est noirâtre, traversée de deux larges bandes roussâtres, composées de taches terminales des grandes couvertures et des dernières moyennes; les remiges primaires finement bordées de jaunâtre, les bordures des secondaires roussâtres et ne commençant qu’à une certaine distance de la naissance; les subalaires jaunâtres. Les rectrices sont noirâtres en dessus et grises en dessous, bordées d’une nuance olivâtre. Le bec est aussi court que dans le L. ophthalmicus, mais beaucoup moins large, noirâtre; les pattes noirâtres. Iris brun foncé.

C’est une forme voisine du L. pecoitotis, mais plus petit et bien distinct par le manque de la tache auriculaire foncée.


Trois exemplaires de Tambillo, pris entre le 13 novembre 1877 et le 2 janvier 1878.


Nombreux exemplaires de Guajango recueillis en avril 1878, et de Pacasmayo pris en juin 1877.


Une femelle de Pacasmayo du 7 juin 1877.

L’œuf trouvé à Tambillo le 2 mars 1877, est d’une forme ovée, assez allongée, à deux bouts considérablement amincis, de sorte que le sommet est très peu moins gros que la base. La couleur est blanche avec une couronne au gros bout, composée de rares points et de petites taches rouges, assez pales; sur le reste de la surface il y a aussi quelques points. La surface est mate, la coque blanche en transparence. Dimensions, 16.3 × 12 mm.

*16. Ornithon imberbe, Sel.

Trois exemplaires de Guajango recueillis en avril 1873. Iris brun foncé.


Trois exemplaires de Tambillo, recueillis en septembre, et un de Chota, 8000' d'altitude du 1 août 1877. Iris brun foncé.

Un œuf trouvé à Tambillo le 1 mars 1878 est blanc jaunâtre, mat, orné d’une quinzaine de mouchetures brunes rougâtres, très-foncées, rangées en une couronne autour du gros bout, outre lesquelles il y a
1879.

**BIRDS FROM NORTHERN PERU.**

 encore un certain nombre de tout petits points beaucoup plus pâles. La coque dans sa transparence est jaune. La forme ovée, obtuse au gros bout et fort amincie au petit. Dimensions, 21·5 sur 16·3 mm.


Six exemplaires de Tambillo, recueillis entre le 11 septembre et le 1er octobre 1877. Iris brun foncé.


Une paire (♂ et ♀) de Pacasmayo du 5 et du 11 juin 1877. Iris brun foncé.


Trois exemplaires de Tambillo du 5 septembre et le 10 octobre 1877. Iris brun foncé.


Plusieurs exemplaires des deux sexes de Pacasmayo, recueillis en juin 1877, et de Guajango, pris en avril 1878.

Tous ces individus des deux localités, également que ceux de Tumbez sont d’une taille considérablement plus petite que les oiseaux des environs de Lima, et présentent une différence dans la coloration de la femelle, qui dans cette forme plus petite est beaucoup plus rouge sur les parties inférieures du corps.


Deux femelles de Tambillo, du 29 septembre 1877 et du 24 mars 1878. Iris des adultes rouge, dans les jeunes brun foncé.

23. *Empidonax minimus* (Baird)?


Deux mâles de Chota, 8000' d’altitude, pris le 30 juillet et le 3 avril 1877.


Cinq exemplaires de Tambillo, pris entre le 17 septembre 1877 et le 6 janvier 1878. Iris brun foncé.


Une femelle de Tambillo du 8 septembre 1877. Iris brun foncé.


Trois mâles et trois femelles de Tambillo, recueillis entre le 15 septembre 1877 et le 24 mars 1878. Iris brun foncé.

Trois mâles tués à Pacasmayo dans la première moitié de juin 1878. Iris brun foncé.


Un mâle de Pacasmayo du 12 juin, et une femelle de Tambillo du 23 septembre 1877. Iris brun foncé. M. Berlepsch a remarqué que les oiseaux de Tambillo sont plus grands que ceux de la Nouvelle Grenade et du Surinam. J’ai comparé plusieurs individus des différentes localités du Pérou avec une paire de Cayenne se trouvant au Musée de Varsovie, et j’ai trouvé la même différence : l’aile dans les péruviens mesure 120–122 mm., tandis que ceux de Cayenne n’ont que 110 mm.; quant à la coloration il n’y a aucune différence.

**Family Cotingide.**

1. Pachyrhamphus albogriseus (Scl.); Tacz. P. Z. S. 1877, p. 327.

Cinq exemplaires en différents plumages de Tambillo et de Guajango, pris en décembre, en janvier, et en avril. Iris brun foncé.


Deux jeunes de Tambillo du 23 juin 1878. Iris brun foncé.

3. Pipreola lubomirskii, n. sp. (Plate XXII.)

Mas *lute viridis*, capite colloque antico nigro-coracinis; abdomine medio, crisso subcaudalibusque luteis; rostro corallino; pedibus nigricantibus; iridibus aurantiacis.

Fem. mari similis, capite dorso concolori; pectore abdominique *flavo striatis*; subcaudalibus *flavis viridi maculatis*; rostro *rubro-brunneo*.

La couleur du mâle est vert de pré; la tête, le devant de la gorge et le milieu du haut de la poitrine sont d’un noir intense Luisant, coupé transversalement en bas, et prolongé de chaque côté en une raie noire séparant le vert des côtés de la poitrine de la couleur jaune jonquille qui occupe le milieu du bas de la poitrine, le milieu de l’abdomen et les subcaudales. Les remiges sont noîrâtres, largement bordées de vert; les rectrices vertes en dessous et grises foncées avec une nuance verdâtre en dessous; les subalaires jaunes, variées de noiratre le long du bord de l’aile; les remiges bordées intérieurement de jaune pâle. Le bec est d’un rouge de corail; les pattes noîrâtres; iris d’un jaune orangé.

La femelle est verte en dessus, d’une nuance un peu moins pure que celle du mâle; les côtés du visage et de la gorge sont d’une couleur verte sale, moins intense que celle des parties environnantes; le milieu du bas de la poitrine et le ventre sont largement striés de jaune; cette dernière couleur devient de plus en plus prédominante en avançant sur la partie postérieure du corps; le milieu des sub-
caudales est vert largement bordé de jaune; les ailes et la queue comme dans le mâle. La mandibule supérieure est brune rougeâtre, l'inférieure d'un rouge sale, moins foncée que la précédente; l'iris et les pattes comme dans le mâle.


Deux mâles et une femelle de Tambillo du 9 septembre 1877 et du 22 mars 1878.

Je dédie cette jolie nouvelle espèce à M. le Prince Ladislas Lubomirski, savant conchyliologiste, comme hommage rendu aux travaux qu'il entreprend pour la mise en ordre des collections conchyliologiques du Musée de Varsovie, et au zèle qu'il ne cesse pas de déployer pour l'accroissement et le développement de cette institution.


Un mâle de la montaña de Palto, du 17 décembre 1877. Iris rouge carminé.

*5. Heliochera rufaxilla, Tsch.
Une femelle de Tambillo, tuée le 18 mars 1878. Iris rouge.

Family Trochilidæ.


Un mâle adulte de Cutervo, s'accordant en tout avec la description dans la Monographie de Mulsant, excepté la taille qui est un peu plus forte (l'aile pliée 75 mill.), bande longitudinale ventrale noire, commençant plus près de la poitrine que dans le O. chimborazi.


Une femelle de Tambillo du 28 novembre 1877. Iris presque noir.

*3. Petasophora cyanotis (Bourc.).

Quatre exemplaires de Tambillo, recueillis en septembre 1877.


Cinque exemplaires recueillis à Tambillo en septembre et en décembre 1877.

5. Acestrura mulsanti (Bourc.); Tacz. P. Z. S. 1874, p. 544.

Une paire de Tambillo du 13 et du 23 septembre.


Cinq mâles recueillis à Tambillo depuis le 11 décembre 1877 jusqu'au 27 mars 1878.
7. Myrtis fanny (Less.).
Un jeune mâle pris sur la montaña de Chule (Chota), 9000' d'altitude.

Une paire de Tambillo du 27 septembre et du 13 décembre 1877.

Cinq exemplaires de Tambillo et de Chota jusqu'à 9000' d'altitude, recueillis depuis le 24 avril 1877 jusqu'à 24 décembre 1878.

Une paire de Chota (8000') et de Tambillo du 30 juillet et du 25 septembre 1877.

11. Adelomyia melanogenys (Fraser).
Plusieurs oiseaux recueillis à Tambillo depuis septembre jusqu'au décembre 1877.

Un jeune mâle de Chota (8000') du 30 juillet 1877.

Plusieurs exemplaires recueillis à Tambillo depuis le 20 septembre 1877 jusqu'au 18 mars 1878.

Les femelles fournies par M. Stolzmann sont différentes de la description dans l'ouvrage de M. Mulsant ; je donne donc leur description. Le vert des parties supérieures du corps est plus clair que dans le mâle, avec un éclat doré repandu partout jusqu'aux rectrices médiales ; la plaque frontale et la bande pectorale moins brillantes et d'une nuance plus pâle ; le violet de la plaque gutturale moins brillant, d'une nuance générale plus rougeâtre et bordée en bas d'une bande cuivrée dorée, distincte dans certaines directions de la lumière. Les plumes vertes abdominales sont entourées d'une bordure griséâtre ; les subcaudales présentent très-peu de vert. Les rectrices externes fortement imprégnées de vert sur leurs deux pages. La queue de la même forme, mais beaucoup plus courte, et à rectrices moins étagées. Le reste comme dans le mâle.

Un jeune mâle ressemble à la femelle ; sa plaque gutturale est plus terne, plus bleuâtre dans certaines directions et moins rouge, la bordure cuivrée plus distincte, les bordures des plumes abdominales d'une teinte roussâtre, les subcaudales roussâtres avec une tache centrale foncée peu prononcée. Les dimensions comme dans la femelle.

♀. Long. tot. 122-123 mm., envergure 148-149, bec depuis les narines 14, aile 60, queue 46, largeur des rectrices externes 8.8.

Un mâle de la montaña de Palto du 17 décembre 1877, et une femelle de Tambillo du 18 janvier 1878.

*15. Leucolia pelzelni, n. sp.

♀. Rostrum subarquatum, dimidia parte corporis sublongius; pilo viridi nitido; corpore supra viridi-subcrepato; cauda subtruncata, vix enarinata, rectricibus viridi-corneis, externis in apice cineresis et macula longitudinali fusca notatis; corpore subtilus albo sericeo; lateribus collis et capitis maculis splendidis viridi-cœruleis ornatis; lateribus epigastrī viridi maculatis; ventris lateribus viridibus; subcaudalibus albis.

Bec très-peu courbé, un peu plus long que la moitié de la longueur du corps, graduellement râtré depuis la base jusque près de l’extrémité, où il est légèrement renflé, puis brusquement râtré en pointe; mandibule noire, mâchoire blanchâtre avec l’extrémité noire. Dessus de la tête revêtu de plumes vertes médiocrement brillantes; tout le dessus du corps d’un vert bronzé à peu près uniforme partout. Queue presque tronquée, à rectrices médianes sensiblement plus courtes que les autres; les externes un peu moins longues que celles de la deuxième paire; les médianes vertes, légèrement bronzées, les autres d’un vert un peu moins brillant; l’externe largement terminée de céndre clair, l’extrémité pareille de la suivante plus petite, et sur la troisième réduite à un mince liséré; sur ces trois rectrices latérales il y a une tache noireâtre située longitudinalement sur la tige près de l’extrémité de la partie verte. La page inférieure de la queue un peu plus pâle que la dorsale; les tiges brunes en dessus, et blanchâtres en dessous. Ailes aussi longues que les rectrices, brunes violâtres. Tout le dessous du corps depuis le bec jusqu’à l’extrémité du ventre blanc soyeux pur; les côtés de la tête et du cou parsemés de plumes squamiformes d’un bleu verdâtre clair, fort luisant; les côtés de l’épigastre variés de taches vertes, en réduisant à la moitié l’espace blanc pur de la poitrine, les côtés mêmes du ventre sont aussi verts; les subcaudales blanches pure. Pattes noireâtres. Iris presque noir.

Long, de l’aile 53 mm., queue 33, bec dans sa partie dénudée 22.

Une femelle de Guajango sur le haut Maranon, tuée le 1er mai 1878.

Cette Leucolie diffère de toutes les congénères par la couleur des plumes brillantes sur les côtés du cou et de la tête, bien distincte du vert des parties supérieures du corps, ainsi que par la forme des taches noires sur les rectrices externes; le blanc est encore plus répandu sur le dessous du corps que dans la L. candida.


Un mâle de Guajango du 12 avril 1878.


Deux mâles de Pacasmayo, pris en Juin 1877.
Family Caprimulgidae.

*1. Nyctibius cornutus (Vieill.).
Une femelle des environs de Tambillo, 7500' d'altitude, tuée le 17 juin 1878. Iris jaune.

*2. Lurocalis nattereri, Temm.
Une femelle de Tambillo du 13 février 1878. Iris presque noir.

3. Nyctidromus albicollis (Gm.); Tacz. P. Z. S. 1877, p. 327.
Une paire de Tambillo, tuée en décembre 1877 et un mâle de Gujango, tué le 11 avril 1878. Iris presque noir.

Family Picidae.

1. Campephilus melanoleucus (Gm.); Tacz. P. Z. S. 1877, p. 546.
Un mâle tué à Guajango le 16 avril 1878. Iris jaune.

Une paire de Tambillo du 19 décembre 1877 et du 5 janvier 1878. Iris brun foncé.

Family Alcedinidae.

Ceryle cabanisi (Tsch.); Tacz. P. Z. S. 1874, p. 547, et 1877, p. 328.
Une femelle de Pacasmayo, tuée le 13 juin 1877. Iris brun foncé.

Family Trogonidae.

Pharomacrus auriceps (Gould).

Calurus pavoninus, Tacz. P. Z. S. 1874, p. 547.
Six exemplaires de Tambillo, tués entre le 7 septembre et le 23 décembre 1877. Iris brun foncé; bec orangé; pattes grises, le dessous des doigts d'un orangé sale.

Family Cuculidae.

Un mâle de Guajango, tué le 14 avril 1878. Iris presque noir.

Une femelle de Tambillo, tuée le 17 septembre 1877. Iris rouge de sang; les parties dénudées autour des yeux de la même couleur rouge dans la moitié supérieure, et grise dans la moitié inférieure. Bec jaune verdâtre, plus vert à la base; les pattes grises plombées.

Une femelle de Guajango, tuée le 20 avril 1878, ressemble complètement au mâle de Lechugal, mais elle est beaucoup plus grande : l'aile est longue de 148 mm., tandis que dans le mâle elle l'est de 135 la queue a 164 de longueur, dans le mâle 140. Le dessus de la tête est dans les deux exemplaires concolore au dos, mais le front est largement cendré. Le bec est noircrère, avec une tache jaunatre au milieu de la face inférieure de la mâchoire. Iris brun foncé ; le tour de l'œil jaune sale.

Family Psittacidæ.

Ara militaris (L.); Tacz. P. Z. S. 1874, p. 549.

Une femelle de Guajango, tuée le 28 avril 1868. Iris orangé à l'extérieur, passant graduellement en brun vers le centre, la pupille même entourée d'un anneau plus clair.

Family Strigidæ.

*1. Scops brasilianus (Gm.).

Une paire de Guajango, tuée le 12 avril et le 2 mai 1878. Iris jaune.

Le mâle a le dessus de la tête brun foncé, à tiges des plumes noires bien dessinées sur le fond brun, et quelques petites taches rousses peu apparentes, entouré d'une large bande sourcilière blanche variée de brun, et de la bande nuchale bien distincte. En général il n'a point de nuance rousse sur les parties inférieures du corps. Dans la femelle la calotte brune est parsemée de nombreuses petites taches rousses, et la teinte générale est colorée de fauve roussâtre.

*2. Pulsatrix torquata (Daud.).

Une femelle de Guajango, tuée le 16 avril 1878. Iris jaune.


Une femelle de Guajango du 25 avril 1878. Iris jaune très-pale.

Family Falconidæ.

1. Asturina magnirostris (Gm.); Tacz. P. Z. S. 1874, p. 552.

Un mâle tué à Tambillo le 7 septembre 1877. Iris jaune ; cire, tour des yeux et pattes orangées.

*2. Urubitinga meridionalis (Lath.).

Une paire de Guajango du 21 avril 1878. Iris brun clair ; cire jaune ; pattes d'un orangé sale.

*3. Accipiter erythrocnemis, Scl.

Une femelle prise à Shanyn le 15 novembre 1877. Iris jaune, ainsi que le tour des yeux ; pattes orangées.


Un jeune oiseau de Guajango, tué le 14 avril 1878. Iris jaune très-pale; pattes jaunes.


Un mâle de Chota 8000' d'altitude, du 30 juillet 1877. Iris brun foncé; cire et pattes orangées.


Quatre exemplaires recueillis à Guajango en avril de 1878, différents entre eux en coloration et sont aussi différents des exemplaires d'Amable-Maria et de Soriano, dont j'ai donné la description dans l'article cité.

Un mâle, probablement très-adulte est d'un cendré bleuâtre foncé, rayé transversalement de blanc sur la poitrine et le ventre, de sorte que les raies blanches sont deux fois plus fines que les cendrées. Les rémiges rayées de noir et sur la page inférieure les intervalles clairs sont blanchâtres, et blanches purs dans la première moitié des plumes. Les rectrices sont noires à deux larges bandes blanches, dont la terminale est fort colorée de cendré. Les subalaires sont cendrées, rayées de blanc; tectrices caudales noires terminées d'une bordure blanche; les subcaudales blanches. Iris blanc; peau nue autour des yeux bleue verdâtre; avec une tache jaune devant l'œil; pattes orangées.

Un autre mâle est semblable au précédent, et n'en diffère que par la couleur des raies abdominales, qui sont roussâtres et s'étendent sur toute la poitrine; les bandes claires caudales sont fort colorées de roussâtre; les sous-caudales rousses; les bordures des sus-caudales cendrées claires.

Les deux jeunes en premier plumage sont aussi différents entre eux, ainsi que de celui qui a été décrit dans l'article cité. Un d'eux n'a les bordures rousses qu'aux ailes, tandis que l'autre les a aussi sur le dos, excepté la partie voisine du cou. Le fond de tout le dessous est dans les deux d'un fauve isabelle, rayé transversalement de brun. Les cotés du visage sont cendrés dans le premier de ces exemplaires, et la gorge isabelle; dans l'autre les cotés du visage ainsi que la gorge sont d'un roux cannelé, rayé de plus foncé sur la gorge. Dans le premier les sus-caudales sont bordées de blanc, dans le deuxième de roux. Iris est blanc dans le premier, et blanc sale dans le dernier.

Family *Ardeidæ.*


Un mâle tué à Tambillo le 18 septembre 1877 s'accorde en tout avec la description, si ce n'est que tout le dessus de la tête est finement rayé de roux; le ventre est gris, teint légèrement de roussâtre. Iris jaune; parties nues du visage jaunes verdâtres.
2. *Butorides virescens* (L.); Tacz. P. Z. S. 1877, p. 746.

Un mâle adulte et un jeune de Pacasmayo, tués en juin 1877.

Iris, tour des yeux et pattes jaunes.

**Family Anatidé.**

*1. Dafila bahamensis* (L.).

Un mâle tué à Tumbez le 2 mai 1877.


Un poussin tout petit de Tumbez. Il est blanc, avec le dessus de la tête, une strie postoculaire, une bande le long du cou et du dos, les ailes et une large raie de chaque côté du dos bruns. La queue composée de rectrices longues, rigides, à barbes rares.

**Family Columbide.**


Un jeune mâle de Guajango du 9 avril 1878. Iris composé de deux anneaux, dont l’externe est blanc sale, l’interne gris foncé.


Un exemplaire de Tambillo.

**Family Cracidé.**


Un mâle, une femelle et un poussin de Tambillo, pris le 4 décembre 1877 et le 10 janvier 1878. Iris rouge-cérisé très-foncé. Bec d’un beau bleu dans sa moitié basale ; le sac guttural jaune pâle ; pattes de couleur chair-rougeâtre. Le poussin en duvet a la tête et le cou roux, avec une grande tache frontale, une large raie le long du milieu de la tête et du cou et une autre raie moins large de chaque côté du dessus de la tête noirs. Le dos brun au milieu, varié de fauve sur les côtés ; ailes brunes, couvertures alaires tachetées de roux ; grandes couvertures et rémiges terminées chacune d’une goutte fauve, dont les premières constituent deux bandes transversales ; queue brune, rectrices terminées d’une bordure rousse. Le devant de la gorge et le haut de la poitrine d’un roux uniforme, de plus en plus pâle en s’approchant du ventre, qui est blanc-jaunâtre uniforme ; duvet de la jambe gris-roussâtre ; subcaudales d’un roux sale.


Un mâle tué à Tambillo le 29 novembre 1877. Iris brun foncé ; sac guttural de la couleur chair avec une faible nuance orangée ; parties nues autour des yeux grises, très-foncées ; paupières plus claires ; pattes d’un rouge framboise, légèrement enfumé.
Family Rallidæ.

*Rallus nigricans*, Vieill.?

Deux jeunes en premier plumage, tués à Pacasmayo en juin 1877. Iris de la couleur terre de Sienne.

Family Charadriidæ.

*Ægialitis vocifera* (L.).

Deux exemplaires de Pacasmayo, tués en juin 1877. Iris brun foncé; tour des yeux vermilion.

Family Podicipitidæ.

*Podiceps major*, Bodd.

Une femelle adulte de Chimbote, tuée en novembre 1875.

Addenda.

*Cyanocorax mystacalis* (Geoff.).

Les œufs recueillis à Tumbez dans le commencement de mars 1877, sont de la même forme que ceux de la pie d'Europe; les uns ont le petit bout fort aigu, les autres l'ont beaucoup plus obtus. La surface peu luisante. Le fond est jaunâtre, très-pâle, varié de nombreuses petites taches irrégulières et de petits points gras pâles, et d'autres bruns, plus ou moins foncés, superficiels; sur quelques-uns ces taches sont plus grosses au gros bout. Sur les œufs à taches plus grandes qu'à l'ordinaire les taches sont beaucoup moins nombreuses. Cette coloration ressemble beaucoup à celle des œufs d'*Ægialitis fluviatilis*. La coque est transparente et jaunâtre. Dimensions: 31·6 x 22·8, 31·4 x 23, 32·3 x 22·3, 33·2 x 23·2 millim.

*Scalitis flaveola* (L.).

Les œufs trouvés à Tumbez à la fin de février et au commencement de mars ressemblent beaucoup aux œufs du friquet (*Passer montanus* (L.)). Ils ont la même forme, les mêmes dimensions, et varient aussi en coloration. Le fond est blanc pur, ou légèrement verdâtre ou jaunâtre, varié de taches irrégulières, de diverses grandeur, brunes pâles, et d'autres brunes ou d'un brun rougeâtre foncé, plus ou moins nombreuses sur toute la surface, et plus denses au gros bout, ou formant une couronne très-proche de l'extrémité même. Sur quelques-uns les taches sont très-nombreuses et couvrent la plus grande partie du fond. Dimensions: 20 x 15, 19·8 x 17·6, 22 x 17·6, 20·8 x 15·2 millim.

*Chloronerpès canipileus* (Lafr. et Orb.).

L'œuf trouvé à Tumbez dans les premiers jours de mars 1877 a les dimensions suivantes: 22·2 x 17 millim. L'éclat est à peu près comme dans les œufs du *Picus major*; la coque blanche pure en transparence.
COLUMBA MELODA, Tsch.

Les œufs trouvés à Tumbez au commencement de mars 1877 sont blancs, légèrement jaunâtres, à coque jaune en transparence. Dimensions: $31.8 \times 24$, $32 \times 23.8$, $31.2 \times 24$, $33.8 \times 23.5$ millim.


[Received February 14, 1879.]

(Plate XXIII.)

The great mountain of Kina Balu has always been a locality of interest to the student of Bornean ornithology; but I am not aware that any notes on the natural history of this part of northern Borneo have ever been published. It gives me great pleasure, therefore, to give a list of the specimens obtained by Mr. Treacher's collectors, and of a few others submitted to me by Mr. Burbidge and obtained during his recent expedition to this mountain. The latter gentleman is well known from his successful botanical researches on Kina Balu; and I shall shortly lay before the Society an account of some of his ornithological discoveries in the Sooloo archipelago.

The present collection, though small, is of some importance; and the character of some of the birds seems to show that the mountains of Borneo, when thoroughly explored, will produce many species akin to those found in the mountains of Java, Sumatra, and even of the Himalayas.

1. BUTASTUR INDICUS.

Butastur indicus (Gm.), Sharpe, Cat. B. i. p. 297.


A specimen in nearly full plumage, collected by Mr. Burbidge.

2. BUBO ORIENTALIS.

Bubo orientalis (Horsf.), Sharpe, Cat. B. ii. p. 39.


A fine adult specimen in Mr. Treacher's collection, agreeing with the diagnosis given by me (l. c.), and measuring 13 inches in the wing.

3. MEGALÆMA VERSICOLOR.

Megalema versicolor (Raffl.), Marsh. Mon. Capit. pl. 22.

Chotorea versicolor, Salvad. tom. cit. p. 33.

Three adult specimens, obtained by Mr. Burbidge.
4. Rhopodytes erythrognathus.


A specimen in Mr. Treacher's collection, having the two centre tail-feathers rufous at their ends.

5. Halcyon chloris.

*Halcyon chloris* (Bodd.), Sharpe, Monogr. Alced. pi. 87.

*Sauropatis chloris* (Bodd.), Salvad. tom. cit. p. 103.

One specimen, sent by Mr. Treacher.

6. Dendrochelidon longipennis.

*Dendrochelidon longipennis* (Rafin.), Salvad. tuai. cit. p. 122.

One specimen, collected by Mr. Burbidge.


*Corvus tenuirostris*, Tweed. Ibis, 1877, p. 320.

One specimen in Mr. Treacher's collection.

The constant character of the long thin bill in specimens from N.W. Borneo impresses me with the idea that Lord Tweeddale is right in keeping *C. tenuirostris* distinct from *C. enca*, with which I united it in my 'Catalogue of Birds' (vol. iii. p. 43).

8. Dicrurus annectens.

*Dicrurus annectens*, Hodgs.; Sharpe, Cat. B. iii. p. 231; id. Ibis, 1878, p. 414.

The first occurrence of this species in Borneo was recorded by me in my list of Governor Ussher's Sarawak collection; but it cannot be uncommon in North-western Borneo, to judge from numerous specimens which have been sent from Labuan and from the opposite coast by Governor Ussher and Mr. Treacher. Two specimens are contained in the collection made on Kina Balu by Mr. Burbidge.

9. Chibia borneensis, sp. n.

*C. similis C. pectorali ex insulis Sulaensibus, sed plumis lanceolatis
collis lateralis metallicae chalybeo-viridibus nec purpurascendibus,
et maculis jugularibus et praepectoralis valde minoribus et con-
spicue metallicis chalybeo-viridibus distinguenda. Long. tot. 10, 
culm. 1·3, alea 5·9, caudae 4·5, tarsi 0·85.

An adult and young bird in Mr. Treacher's collection.

This is an interesting addition to the avifauna of Borneo, and seems to indicate an entirely new species. It bears considerable resemblance to *C. bimaeensis* of Timor and Lombock, but differs in having the long silky plumes on each side of the lower back black instead of greyish white; while the Timor bird has not, like *C. borne-
ensis*, any long hair-like plumes on the head. On the other hand the latter character allies it to *C. pectoralis* of the Sula Islands; but
it may be recognized on comparison by the much smaller and more metalic spots on the throat and fore neck, which are steel-green, as also are the neck-hackles. In C. pectoralis the spangles are large, dull, and incline to purplish in tint. This species appears to me to be a thorough Chibia, and I do not at present see how naturalists can avoid recognizing the existence of Chibia in the Malay archipelago; nor do I understand how the Indian and Malayan species are to be separated, when such a perfect gradation is now offered by C. borneensis and C. pectoralis. Under these circumstances I believe that Salvadori’s genus Diornropsis, which I was lately inclined to admit (Mittheil. k. zool. Mus. Dresd. iii. p. 360), cannot be sustained; and I therefore revert to my old opinion concerning these birds (Cat. B. iii. p. 234). I have given this species the name of borneensis to celebrate the addition of a Chibia to the avifauna of Borneo. Mr. Treacher has also procured a single speci- men of it on the Lawas river.

The young bird from Kina Balu differs from the adult in being duller black, with fewer and less metallic chest-spots and hackles.

10. Buchanga Stigmatops, sp. n.

B. similis B. leucophaeae, sed macula lorali alba magna distinguenda. Long. tot. 10, culm. 0’9, alæ 5’3, caudæ 5’1, tarsi 0’7.
The presence of white on the facial region of a species of grey Buchanga would seem to ally it at once to B. leucogenys. In the Bornean bird, however, of which I have three specimens before me, the white is confined to a large loral spot in front of the eye, whereas in B. leucogenys the eyebrow and ear-coverts, as well as the feathers below the eye, are also white or whitish. The new species is also of the same dark grey as B. leucophaea (B. cineracea of my Catalogue, iii. p. 250), and not of the light pearly grey which is another character of B. leucogenys. One specimen was contained in Mr. Burbidge’s collection, and two in Mr. Treacher’s.

11. Pericrocetus igneus.

Pericrocetus igneus, Blyth; Salvad. tom. cit. p. 144; Sharpe, Cat. B. iv. p. 78.

An adult male, in Mr. Burbidge’s collection.

12. Trachycomus ochrocephalus.

Trachycomus ochrocephalus (Gm.), Salvad. tom. cit. p. 197.

One specimen, in Mr. Burbidge’s collection.

13. Rubigula montis, sp. n.

R. similis R. flaviventri, sed multo minor et gula flava nec nigra distinguenda. Long. totu 5’7, culminis 0’5, alæ 3’1, caudæ 2’8, tarsi 0’7.

General colour above olive-yellowish, the wing-coverts like the back; quills and tail dull blackish brown, externally washed with olive-yellow like the back, the greater coverts also brown washed with olive-yellow; tail-feathers paler brown at the tip of the inner
web; head crested, black, as also the sides of the face, ear-coverts, and cheeks; entire under surface of body yellow, slightly more olive-green on the sides; under wing-coverts yellow, the longer ones white washed with yellow; quills sepiabrown below, white along the edge of the inner webs.

This species is almost exactly the same as Rubigula atricapilla of Ceylon, but has not the white tips to the tail-feathers, while its long crest distinguishes it from the Ceylonese species, which is not crested. In the form of the crest and in general appearance it is almost precisely similar to R. flaviventris of Pegu and Tenasserim, but is smaller and has the throat yellow like the rest of the under surface. The single specimen obtained was in Mr. Treacher’s collection.

14. Criniger ruficrissus, sp. n.

C. similis C. gutturali, sed supra ubique sordidior, supracaudalibus caudaque saturate rufescenti-brunneis; toris et regione oculari cum gens et regione parotica sordide cinereis, gula alba, corpore reliquo subitus sordide olivoscente, subcaudalibus castaneis. Long. tot. 8, culm. 0'85, alae 4'0, caudae 4'0, tarsi 0'7.

This species is not very different from C. gutturalis, but differs in its much darker coloration, especially on its under surface, which is dull olivaceous, with a white throat and chestnut-red under tailcoverts. There is an entire absence of the pale-brown colour of the breast washed with yellow, and of the light-yellow abdomen and pale fawn-coloured under tail-coverts. The crest is very long in C. ruficrissus, and extends nearly to the mantle.

15. Ianthocincla treacheri, sp. n. (Plate XXIII.)

I. similis I. mitrata (S. Müll.) ex Sumatra, sed genus, mento et regione parotica sicut caput castaneis facile distinguenda. Long. tota 10, culminis 0'85, alae 4'15, caudae 4'5, tarsi 1'5.

Adult. General colour above dark ashy grey, with a very slight shade of ochraceous under certain lights; the wing-coverts slightly more bluish grey than the back; quills blackish, externally bluish grey, the primaries white along the basal part of the outer web, giving the wing a conspicuous white outer aspect; tail-feathers dark slaty grey, shading into blackish at the end of the feathers; entire crown and nape, as well as the sides of face, ear-coverts, and fore part of cheeks deep chestnut-red, the under cheek-feathers slightly tipped with ochraceous; frontal plumes with lanceolate tips of light ashy grey or hoary whitish; under surface of body dull ochraceous brown, with lighter shaft-lines of pale ochraceous, imparting a striped appearance to the throat and breast; the sides of the body more ashy grey; chin chestnut, like the sides of the face; thighs dark grey, with a few chestnut feathers near the tarsal bend; under tail-coverts chestnut; under wing-coverts ashy grey, slightly marked with ochraceous; quills sepiabrown below, paler along the edge of the inner web.

Four specimens are sent by Mr. Treacher, all adult, and exactly similar in plumage. On comparing them with Sumatran specimens
of *I. mitrata*, a very marked difference presents itself, which shows that the Kina-Balu bird belongs to a new species. Although similar to *I. mitrata* in its general coloration and white-edged quills, it is distinguished at once by its chestnut ear-coverts, while the chin and fore part of the cheeks are also chestnut.


An adult specimen sent by Mr. Treacher.

17. *Monticola solitarius*.

*Monticola solitaria* (P. L. S. Müller), Walden, Tr. Z. S. ix. p. 192.

A specimen sent by Mr. Treacher.

This is the second occurrence of the bird in Borneo, the first having been recorded by me under the name of *Monticola pandoo* (Ibis, 1877, p. 13), from Mr. Alfred Everett’s Bintulu collection. Mr. Treacher’s specimen is in full blue-and-red plumage, with the usual margins to the feathers found in the winter dress.


[Received February 18, 1879.]

In an examination of the specimens of *Echinoidea* in the British Museum I have had as my chief aids the ‘Catalogue of the Recent Echinoidea in the Collection of the British Museum,’ part i., by Dr. J. E. Gray (London 1855), and the ‘Revision of the Echini’ of Prof. Alexander Agassiz, published at the University Press, Cambridge, U. S., 1872–73. It has been a difficult matter at times to hold a balance between systematists of such widely different principles.

Agassiz recognizes three species of the genus *Brissus*—*B. obesus*, Verrill, *B. carinatus*, and *B. unicolor*. As the Museum collection does not contain any specimen of *B. obesus*, I shall confine what I have to say to the two latter, which are thus distinguished by Agassiz (p. 357):—“The only features by which I am able to separate the two undoubted species of *Brissus* (*B. carinatus* and *B. unicolor*) are the proportions of the anterior and posterior pair of ambulacra, and the striking difference in the course of the fasciole in the anterior part of the test. In *B. carinatus* the posterior ambulacra are much shorter than the anterior pair, while they are nearly equal in *B. unicolor*. There is but one reentering angle in anterior part of fasciole on the anterior interambulacra, while there are two in *B. carinatus*.”

Though Dr. Gray distinguishes a larger number of species (just the same, indeed as Agassiz and Desor), he seems to have had a better
acquaintance with his specimens; for he writes:—“The species of this section are most difficult to distinguish; they present several variations, which at first sight appear characters, . . . but these variations do not appear to be permanent in the specimens of the same habitat, but this fact requires verification with a larger series; the form of the fasciole is often different on the two sides of the same specimen” (p. 52).

It is this statement of Dr. Gray’s that gives a more accurate account of the real facts of the case, though he might have added, indeed, that the reentering angles vary greatly in depth. Of fifteen specimens which I have examined from the large series in the Museum, four have one reentering angle on either side in the anterior interambulacra; one has no angle on the left, and one on the right side; one has one angle on the left and a shallow one on the right side; four have one angle on the left and two on the right side; and five have two on both sides. With the series in my hands I am therefore unable to come to any conclusion from Agassiz’s second distinctive character.

With regard to the other point, the relative lengths of the anterior and posterior ambulacra, I have first to say that in no case that I know of are the anterior longer than the posterior ambulacra; and among such cases I reckon the representation given by Prof. Agassiz (pl. xxi. fig. 1); and, secondly, that of nine specimens selected, that in which the carinate character of the posterior odd interambulacrum was least well marked, had anterior ambulacra measuring 40 millims., and the posterior 43 millims., while in that in which the carination was most marked the anterior ambulacra measured 38 millims., and the posterior 40 millims.

The following Table gives some details as to the just-mentioned nine specimens, which are arranged in an increasing order of carination, as judged by the eye, and are all apparently well-grown specimens, since all are more than 100 millims. in length:—

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Length of specimen (millim.)</th>
<th>Length of ambulacra (millim.)</th>
<th>Breadth of anal plastron (millim.)</th>
<th>No. of interambulacral angles</th>
<th>Locality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Anterior</td>
<td>Posterior</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>117</td>
<td>40, 40</td>
<td>43, 43</td>
<td>37</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>120</td>
<td>35, 33</td>
<td>36, 34</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>116</td>
<td>34, 34</td>
<td>38, 38</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>116</td>
<td>32, 32</td>
<td>36, 36</td>
<td>29</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>116</td>
<td>33, 33</td>
<td>35, 35</td>
<td>28</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>109</td>
<td>39, 39</td>
<td>41, 39</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>106</td>
<td>32, 32</td>
<td>38, 38</td>
<td>29</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>115</td>
<td>34, 34</td>
<td>36-5, 35</td>
<td>29</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>118</td>
<td>38, 38</td>
<td>40, 40</td>
<td>31</td>
<td>2</td>
</tr>
</tbody>
</table>

In the next Table is given the proportions of five specimens from one locality, Naples; and it will fitly lead to the series of smaller forms.
The differences in the length of the ambulacra observed in the last specimen seem to point to this character, so far as it is one, being variable with age.

In the following Table four smaller specimens are compared, and seem to support this supposition:

Table III.

The first two of these specimens were undoubtedly regarded by Dr. Gray as belonging to the species *carinatus*.

From these two tables we may perhaps draw the following conclusions:—

1. Verrill's measurements of his species *B. obesus* bear out this conclusion; his largest specimen measured 2 inches, the anterior ambulacra '65, and the posterior '80, giving thus a proportion of \( \frac{4}{12} \) (and not, as by some curious slip, Verrill states of \( \frac{11}{12} \)).
tion within the limits allowed by inheritance, and the development of useful variations into fixed and definite differences. The only criteria which we can apply to problems of this character seem to be the observation (1) of what obtains in allied forms, and (2) of what obtains in forms living under somewhat similar conditions. The variations which appear to occur in *Metalia sternalis* during growth, and the varieties of *Diadema setosum*, are to be cited as supporting examples of the first, as are the Calcispongæ of the second of these criteria. The well-marked keel of some specimens of *B. carinatus* seems, then, to be the combined result of variability and of littoral existence; in other words, the species *carinatus* is not a good one, its sole character, the keel, not being a constant attribute of its organization, but a point which has been seized upon by a descriptive naturalist unacquainted from lack of material with both its history and its variations.

It now remains to settle which of the numerous names given to this species should be adopted. In commencing the systematic study of the Echini I hoped to find in the synonymy of Agassiz sufficient evidence of care to enable future workers “to simplify their work by getting rid, to a great extent at least, of the béte noire of zoologists, and apply their time to better things.” For the British naturalist, unfortunately, Prof. Agassiz’s method of nomenclature prevents this desirable result; nor does he, in his reference to pre-Linnæean authors, preserve his consistency: his ‘Chronological List,’ for example, ascribes the name *Brissus* to Aristotle, but his synonymy to Klein (1734), while *Echinus* falls to the Greek naturalist and to Rondeletius (1554). This difficulty might, however, be pretty easily eliminated; but the omission of synonyms is a more serious matter in a work of such pretensions: thus, in the synonymy of *B. unicolor* we find a reference to *B. ovatus*, Gmelin (1788), but no reference to the preceding species in Gmelin’s list, which is *B. unicolor* itself, as is quite distinctly shown by the reference of both Gmelin and Agassiz to pl. xxvi. of Klein’s ‘Dispositio Echinodermatum.’ The date of the specific term *unicolor* being then 1788, what is the date of *carinatus*? Agassiz, in his synonymy, ascribes it to Lamarck, and so places it in 1816; but a second reference to Gmelin shows that he recognized this species, his typographical error of 43 for 48 being corrected by his own reference to p. 249 of Klein’s (or rather Leske’s) work, where the variety is spoken of as *late-carinatus*. I propose, therefore, to retain the name *unicolor*.

Passing from the question of the identity of the species *B. unicolor* and *B. carinatus*, I come to the consideration of the forms *Meoma* and *Metalia*, which are reckoned as subgenera of *Brissus* by Prof. Alex. Agassiz. Under *Meoma* two species are included, one of which is found on either side the Isthmus of Panama—*M. grandis* and *M. ventricosa*. Whether a larger series than the Museum possesses at present will enable us to show the specific identity of these forms I do not know. The coarser and more distant tuberculation of *M. grandis* affords, as Agassiz has remarked, a ready mark of distinction; and it seems, from a comparison of the arrangement of the
tubercles in different species, to be a character of value. Thus, in *M. grandis* there are large and distant tubercles, not only within the peripetalous fasciole and in the anterior ambulacra, but also over very nearly the whole of the actinal surface. In *M. ventricosa* the large tubercles on the abactinal surface are much rarer, and there are, especially along the ambitus, smaller and more closely packed tubercles; the larger and more distant tubercles are confined more to the anterior end of the actinal surface than they are in *M. grandis*. In *Brissus* the large and distant tubercles are completely absent from the posterior end of the abactinal surface, while on the same surface in *Metalia* the large tubercles are confined within the peripetalous fasciole; and, further, in *Metalia sternalis* they only occupy the margins of the interambulacra.

The example of *M. ventricosa* in the Museum collection is particularly fine. Though obtained in April 1847, it does not figure in Dr. Gray's Catalogue (1855). It was registered under the name of *Amphidetes* (sic) *gigas*, and is reported to have come from Brazil. I found some difficulty in determining it until I lit on the elegant diagnosis given by Prof. Grube of *Brissus panis*¹. As to the identity of the British-Museum specimen with *B. panis* of Grube I have no doubt; the subjoined details will show some points of resemblance. I add some measurements of *Meoma grandis*:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(B.M.)</td>
<td>(Grube.)</td>
<td>(Gray's type.)</td>
</tr>
<tr>
<td>millim.</td>
<td>millim.</td>
<td>millim.</td>
</tr>
<tr>
<td>Long axis</td>
<td>177·5</td>
<td>162 (=6 German inches)</td>
</tr>
<tr>
<td>Transverse axis</td>
<td>152</td>
<td>135 (=5 G. i.) 103</td>
</tr>
<tr>
<td>Height</td>
<td>82</td>
<td>81 (=3 G. i.) 51</td>
</tr>
<tr>
<td>Anterior pair ambulacra</td>
<td>80·80</td>
<td>..             51·53</td>
</tr>
<tr>
<td>Posterior , ,</td>
<td>91·88</td>
<td>..             59·60</td>
</tr>
<tr>
<td>Length of anal system</td>
<td>21</td>
<td>..             17·5</td>
</tr>
<tr>
<td>Breadth , ,</td>
<td>17</td>
<td>..             15</td>
</tr>
</tbody>
</table>

I am not inclined to dispute Lütken's view of the identity of Grube's species with *Meoma ventricosa*, Lamarck. The number of spines preserved on the specimen is fairly good; of those on the abactinal surface I found the greatest length to be about 8 millims.; but I measured one on the actinal surface which reached 12 millims. (Grube's longest spine measured 3 lines). The spines on the ambulacra are somewhat longer and thicker than those on the interambulacra, and are so set horizontally as to bridge over the ambulacral grooves; they are in all cases of a whitish colour, and are not produced into sharp points. The madreporic plate is not less porous than in *M. grandis*. Grube had no information of the locality of his specimen; the most southern locality given by Agassiz is Honduras.

Before discussing the relation which *Meoma* and *Brissus* hold to one another, it is necessary to refer to the subgenus *Metalia*, under which are included the four species *africanus* (Verrill), *maculosa* (Gmelin), *pectoralis* (Lamk.), and *sternalis* (Lamk.).

Of this last-named species there are in the possession of the Museum three examples bearing Dr. Gray’s label of *Brissus sternalis*. Two of them are injured, and are apparently the specimens a and e of Gray’s Catalogue; they are about 160 millims. long, and have the vertex considerably elevated. The third specimen, which is well provided with spines, is not more than 100 millims. long; and no part of the abactinal surface is raised above the general level. Prof. Agassiz (p. 145) credits the Museum with specimens from Raine’s Inlet, Port Essington, Reef Attagor, Luzon, and Osmaga (*sic*); all these, with the exception of that from Luzon, are young examples of *Brissus unicolor*. The Luzon example seems, however, to belong to *Metalia*, and may well be the young of *M. sternalis*; were it not for the third of Gray’s specimens above mentioned it would be impossible to connect this young form with the large examples. Those in the possession of the Museum incline me to accept Agassiz’s account of the changes in this species during growth; but an anxious look-out must be kept for fresh specimens; none have yet been received from the collections made by the ‘Challenger’ Expedition.

Agassiz distinguishes *Metalia* as a subgenus thus:—“The subgenera *Plagionotus* and *Metalia* are united as a single subgenus of *Brissus* (*Metalia*), the slight difference in the course of the peripetalous fasciole and the presence of larger tubercles not being sufficient ground, with our present knowledge of the changes due to growth, to warrant retaining them both; and as *Plagionotus* is already in use among Coleoptera, the subgenus proposed by Gray has been adopted and amended to include Brissidae having a more or less broad, elliptical, or undulating re-entering peripetalous fasciole, and an anterior ambulacral groove.” I fear I must take exception to this lucid diagnosis; not only is the odd anterior ambulacrum of *M. maculosa* said (p. 599) to be “flush with the test, except towards the ambitus, as it approaches the fasciole, and below it when it is placed in a slight indentation of the test,” but a comparison of the “deep” groove of *M. sternalis* with the slight groove of *M. maculosa* and *M. pectoralis* on the one hand, and on the other a comparison of the anterior ambulacrum in *Brissus* and *Meoma*, in which at times there are slight indications of depressions, will be sufficient to show that this character is not of more than specific importance, at any rate. I have, indeed, some hopes of showing that this depression of the anterior ambulacrum is a characteristic of the more lately developed forms; but for the present I must be content to remark that in the Brissine series it is only found in forms which, by the elaborate character of their subanal fasciole, indicate their later appearance.

This subanal fasciole displays the following arrangements:—In *Meoma* it is a narrow band, which does not extend beyond the ac-
tinal boundary of the ambitus, and is never closed; in *M. grandis* it forms a slightly convex line, which bounds the posterior end of the actinal plastron, and then turns upwards at a very open angle; in *M. ventricosa* the horizontal line is straighter, the lateral bands longer and almost perpendicular to the former. In *Brissus* the same fasciole is a little broader, and is always closed, the resulting figure being cordiform, often more or less truncated at its base. In *Metalia* the fasciole around the subanal plastron is still broader; and there is, in addition, a narrower band on either side of the anus, which extends just beyond the ambitus, and is of the form of the fasciole in *Meoma ventricosa*; the result is, that we have the effect of the presence of the fascioles of both *Meoma* and *Brissus* in *Metalia*. Whatever value these characters have from a genetic point of view, there can be no doubt as to their ready accessibility and general constancy.

To resume. *Meoma* displays the simplest form of subanal fasciole, and the most general distribution of the primary tubercles; the anterior ambulacrum is but slightly depressed; and the anterior lateral ambulacra are to the posterior ones in the proportion of from $\frac{1000}{1051}$ to $\frac{1000}{1095}$. In *Brissus* the subanal fasciole is closed, and the larger tubercles are absent from the posterior portion of the abactinal surface; it is rarely that the anterior ambulacrum is depressed beyond the level of the test; and the lateral ambulacra stand to one another in the proportion of from $\frac{1000}{1250}$ to $\frac{1000}{1250}$ (in adult specimens the ratio barely exceeds $\frac{1000}{1100}$). The subanal plastron is provided with three or four pores on either side, but there are no radiating bands.

It is in *Metalia* only that the anterior ambulacrum is ever found in a deep and well-marked groove; the larger tubercles are confined within the peripetalous fasciole; the subanal fasciole gives off bands to either side of the anus; and the lateral ambulacra are to one another in ratios varying from $\frac{1000}{1250}$ to $\frac{1000}{1440}$. The subanal plastron may have as many as nine pores on either side; and well-marked radiating lines extend outwards to them from the more median region of the plastron.

<table>
<thead>
<tr>
<th>1 Species</th>
<th>Length of ant. amb.</th>
<th>Length of post. amb.</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Meoma grandis</em> (i.)</td>
<td>49, 49</td>
<td>53, 53</td>
<td>1000 to 1081</td>
</tr>
<tr>
<td>(ii.)</td>
<td>52, 52</td>
<td>59, 59</td>
<td>1000 to 1134</td>
</tr>
<tr>
<td><em>Metalia sternalis</em> (i.)</td>
<td>72, 72</td>
<td>80, 80</td>
<td>1000 to 1252</td>
</tr>
<tr>
<td>(ii.)</td>
<td>69, 69</td>
<td>87, 87</td>
<td>1000 to 1380</td>
</tr>
<tr>
<td><em>M. pectoralis</em> (i.)</td>
<td>65, 65</td>
<td>90, 90</td>
<td>1000 to 1584</td>
</tr>
<tr>
<td>(ii.)</td>
<td>68, 68</td>
<td>98, 98</td>
<td>1000 to 1441</td>
</tr>
</tbody>
</table>

(Received February 26, 1879.)

(Plates XXIV. & XXV.)

The genus *Myzomela* was instituted by Messrs. Vigors and Horsfield in their paper on Australian birds in the Linnean Society's 'Transactions' for 1826 (vol. xv. p. 316, note), *Myzomela sanguinolenta*, Lath. (for *M. cardinalis*, Gm. apud Vig. & Horsf. l.c., is clearly not that species, but the smaller Australian one), being the type.

Lesson (Traité d'Orn. p. 298) in 1831 established a "sous-genre" *Phylidonyris*, in which were included *Certhia sanguinolenta*, *Cinnyris rubrater*, and *Cinnyris eques*; but this name must be, as he himself observes, regarded as merely a synonym of *Myzomela*.

Reichenbach in 1851 (Handb. d. spec. Orn. p. 283) made *Cinnyris eques* the type of a new genus *Cosmeteira*, which he included amongst the Nectariniidae, its dull colours, with no metallic gloss, being apparently the chief reason for the separation. This species, however, in tongue, bill, feet, and, in fact, in all points is a true *Myzomela*, though it has been included amongst the Nectariniidae till within the last few years by most writers.

On similar grounds of divergent coloration, Bonaparte separated *M. pectoralis* under the name *Cissomela* (C. R. xxxviii. p. 264, 1854); but as no generic characters whatever are given, this name falls to the ground, even if any structural differences in the bird exist, which as yet I have been unable to discover.

*Myzomela* is characterized by its Meliphagine tongue, rather short, narrow, and slender curved bill, which is depressed and broadened at the base, rounded and compressed anteriorly, and there finely serrulated on its cutting margins. The nostrils are linear and curved, extending for almost one third of the length of the bill, and covered in by a conspicuous opercular membrane. The wings are moderately long, the "first" primary short, the 3rd to 5th longest

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2. Although Bonaparte expressly states " *Myzomela nigra*, Gould, est pour moi le type du nouveau genre *Cissomela,*" yet it is evident from his description, " *Subtus cum uropygio alba, torque pectorali nigro,*" that *M. pectoralis* was intended!

3. I have here adopted the system of notation for the remiges generally in use amongst ornithologists. But would it not be better, as is usually done in other cases of serially-repeated homologous organs, to begin counting from the proximal rather than from the distal end of the series? At present, if a bird, for instance a Passerine, be said to have a "long first primary," two things may be meant:—either that the bird has only nine primaries, the true "first" (or tenth) being absent, and the (morphologically) "second" (or ninth) being of the ordinary length (as, e.g., a Finch, or *Drepanis*); or that there are ten primaries, with the "first" (tenth) fully developed, as is the case in the "Formicarioid" Passeres of Wallace. This ambiguity would be avoided by counting the feathers from the end nearest the humerus; for any Passerine with a long "tenth" primary could then only be a "Formicarioid."
1. MYZOMELA CHLOROPTERA.
2. RUBROBRUNNEA.
3. ADOLPHINÆ.
1 MYZOMELA CHERMESINA
2. SCLATERI
and subequal, the 6th longer than the 7th, which about equals the 2nd. The tarsi are about as long as the bill, rather slender, and covered with 6-7 scales in front, the lower ones being the smallest and transverse. The 2nd and 4th toes are very slender, about equal in length, and shorter than the 3rd. The hallux is unusually stout for the size of the bird. The tail has 12 feathers, is short, and nearly square.

Most of the species have more or less red in their plumage; but this colour is altogether absent in some, and becomes only a slight tint, confined to the margins of the feathers, particularly of the head, wings, and tail, in others. As yet our knowledge of the phases and changes of plumage is by no means perfect. In one group (e.g. in *M. sanguinolenta* and its allies, including *M. nigrita*) the females seem to retain throughout life the brown plumage of immaturity, whilst in others (e.g. *M. nigriventris*, *obscura*, &c.) the adults of each sex are similar. In most cases the first plumage seems to be nearly uniform brown, lighter beneath, with the wing-coverts lighter at the edges, and the quills margined externally with olive-yellow. Throughout the group there is seen a great tendency to retain these markings on the wings, as likewise a white margin on the inner web of the primaries.

The eggs seem to be generally whitish or buff, spotted with darker, red or yellow. According to Gilbert (Gould, Handb. B. A. i. p. 558) *M. nigra*, like many other species of Meliphagidae, lays only two eggs. The nests are small and cup-shaped, rather flimsily constructed of grass-stems, hair, spiders’ webs, &c., and often placed in the fork of a tree or bush.

In their habits the *Myzomela* seem to resemble the other smaller Honeysuckers, frequenting flowering shrubs and trees, not apparently so much for the sake of the nectar of the flowers, as for the insects attracted thereby.

But one or two species of this genus, which is perhaps most nearly allied to *Acanthorhynchus*, but distinguishable by its longer beak and different coloration, were known to the older authors. Bonaparte, in his ‘Conspectus’ (p. 394, 1850), enumerates 9, one of which, however (*Certhia sanguinea*, Gmel.), is a Drepanis, whilst *M. eques* is omitted. Gray (Hand-l. B. i. p. 153, 1869) gives 17, though here again *M. eques* is omitted, being included as “*Cosmeteira eques*” amongst the Nectariniidæ (no. 1337). In the present paper 26 species, including two new ones, are recognized as distinct, besides one other which remains doubtful. Of these 26 species, 24 are known to me autoptically. Of the two which I have not seen, one (*M. lafargii*) is unique in the Paris Museum, the other (*M. rubrotincta*) has lately been described from specimens at Leyden by Count Salvadori.

The collection in the British Museum, that made by the ‘Challenger,’ and the specimens in the collections of Mr. Selater and Messrs. Salvin and Godman have formed the basis of my present paper. In addition to these I have to thank Canon Tristram, F.R.S., Dr. A. B. Meyer, and Count Salvadori for the very liberal way in which they have lent me valuable series of specimens. To the two

**Proc. Zool. Soc.—1879, No. XVII.** 17
latter, in particular, I am indebted for sending over to me the types of the species described by them from New Guinea and its islands, and several others which I should not otherwise have been able to examine, and for their kind permission to figure any of them. Count Salvadori, too, has sent me some very valuable notes as to the range &c. of the Papuan species; whilst to M. Oustalet I am much obliged for information on the type specimen of *M. lafargii* and on some other points.

The following table will assist in the determination of the 26 valid species. It, however, only holds good for adult birds, and in many cases only for the males, our present imperfect knowledge of many of the species making a table that would have included all stages alike an impossibility.

<table>
<thead>
<tr>
<th>A. Corpore rubro ornato, aut unicolori.</th>
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<tbody>
<tr>
<td>a. Corpore subtilis plus minusve olivaceo-griseo aut albicans.</td>
<td></td>
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<tr>
<td>b. Torque pectorali nullo.</td>
<td></td>
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<tr>
<td>c. Capite et dorso concoloribus.</td>
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<tr>
<td>{ Alis fusco-nigris; abdomine flavido-griseo...</td>
<td></td>
</tr>
<tr>
<td>{ Alis olivaceo-fusceis; abdomine griseo-flavido</td>
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<tr>
<td>c'. Capite rubro; dorso fusco</td>
<td></td>
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<tr>
<td>b'. Torque pectorali fusco.</td>
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<tr>
<td>{ Abdomine albicante</td>
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<tr>
<td>{ Abdomine fusceo-griseo</td>
<td></td>
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<tr>
<td>a'. Fronte nigra.</td>
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<tr>
<td>d. Capite supra maculâ rubra ornato.</td>
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<tr>
<td>e. Gula rubra.</td>
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<tr>
<td>{ Guttura summo nigricante</td>
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<tr>
<td>{ Guttura croceo-flavoa</td>
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<tr>
<td>e'. Gula nigra</td>
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<tr>
<td>b'. Capite suprâ omnino nigricante</td>
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<tr>
<td>β. Corpore subtilis dorso concolori.</td>
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<tr>
<td>a. Corpore nigro.</td>
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<tr>
<td>{ Subalaribus albis</td>
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<tr>
<td>{ Subalaribus nigris</td>
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<tr>
<td>a'. Corpore griseo-brunneo.</td>
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<tr>
<td>b. Stria gulari cocineâ</td>
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<tr>
<td>b'. Stria gulari nullâ.</td>
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<tr>
<td>{ Capite solûm rubro tincto</td>
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<tr>
<td>{ Alis et caudâ rubro tinctis</td>
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<tr>
<td>{ Corpore; alis et caudâ rubro tinctis</td>
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<tr>
<td>a'. Corpore rubro</td>
<td></td>
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<tr>
<td>γ. Corpore subtilis nigro et rubro vario.</td>
<td></td>
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<tr>
<td>a. Gulâ cocineâ.</td>
<td></td>
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<tr>
<td>b. Capite toto cocineo.</td>
<td></td>
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<tr>
<td>c. Abdomine rubro; crissio nigro</td>
<td></td>
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<tr>
<td>c'. Abdomine et crissio nigris.</td>
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<tr>
<td>d. Pectore cocineo</td>
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<tr>
<td>d'. Pectore nigro</td>
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<tr>
<td>b'. Capite suprâ nigro</td>
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<tr>
<td>a'. Capite toto nigro</td>
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<tr>
<td>B. Corpore nigro alboque vario.</td>
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<tr>
<td>{ Gulâ uropygioque nigris</td>
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<tr>
<td>{ Gulâ uropygioque albis</td>
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</table>
1. Myzomela sanguinolenta.

? Certhia rubra, Gmel. S. N. i. p. 479 (1788).

♀ ad. capite, dorso cum uropygio, pectore et lateribus abdominis coccineis; macula anteoculari, alis caudaque nigris; alarum tectricibus conspicue albido, remigibus olivaceo-griseo limbatis; abdomen sordide flavido; subcaudalibus grisceo alboque variis; rostro nigro, pedibus corneis. Long. al. 2'4, caud. 1'6, rostr. 0'45, tars. 0'3 (poll. Angl.).
♂ sordide griseo-brunneo, substus dilutior; dorso et uropygio rufescenti tinctis; alis caudaque fuscis, remigibus olivaceo, tectricibus alarum pallide brunneo marginatis.

Hab. in Australiā.

The phases of plumage in this species, the type of the genus (for M. cardinalis, apud Vig. & Horsf. l. s. c., is this bird), seem to have caused some confusion amongst the older authors. It seems to me that in all probability Latham’s “Scarlet Creeper,” on which Gmelin founded Certhia rubra in his edition of the ‘Systema Nature,’ really applies to this species, the description “lower part of belly and vent white,” together with the size (“of a Wren”) and the locality (“from some part of the South Seas”) quite coinciding with this bird, and not at all with M. cardinalis, of which, in his Ind. Orn. (i. p. 290, 1790), Latham treated it as being the female. Besides this, Latham bestowed at least three other Latin names (each with its equivalent vernacular) on this little bird.

Myzomela sanguinolenta is perhaps most nearly allied to M. chloroptera, which differs, however, as below pointed out. Only the males possess the beautiful red plumage; and in these, if not quite adult, the variegation of each breast-feather, which is grey at the base, then paler, and red only at the tip, produces the somewhat mottled appearance of the red underparts.

According to Mr. Gould, the irides are “dark brown.”

Myzomela sanguinolenta is the commonest species of Myzomela in Australia, and is familiarly known to the colonists as the “Little Soldier.” Mr. Ramsay, in his list of Australian Birds (Proc. Linn. Soc. N. S. W. ii. 1877), records it from Rockingham Bay, Port Denison, the Wide-Bay District, the Richmond- and Clarence-
River Districts, New S. Wales, the interior, Victoria, and S. Australia; so that it ranges over the greater part of Eastern Australia.

Mr. Ramsay has given us a good account of the habits and nesting of this species near Sydney, where it is a summer visitor, arriving in October and November, in 'The Ibis' for 1865 (p. 304).

2. Myzomela caledonica, n. sp.

Myzomela sanguinolenta (ex Novâ Caledoniâ) auct.

♂ precedentii similium, sed tectricibus alarum marginibus albidis carens.

Hab. in Novâ Caledoniâ.

Mus. H. B. Tristram.

The Myzomela from New Caledonia, although no doubt very closely allied to the preceding Australian species, is, I think, fairly entitled to rank as a distinct species; and I have therefore separated it under the above name. My attention was first directed to this form by a specimen kindly lent me by Canon Tristram, and shot by Mr. Layard near Noumea. This bird, a fully-plumaged male, differs from a considerable number of Australian specimens with which I have compared it, in the almost entire absence of the conspicuous greyish-white margins to the feathers of the wing-coverts, so that they are nearly entirely black, with only a trace of olive-colour at the margins. Besides this, the red colour of the body is hardly so bright, and extends a little further down on the abdomen, and the margins to the quills are more of an olive-yellow. The size is about the same (wing 2½), Australian specimens varying a little in this respect. Canon Tristram writes me that he has six specimens of the New-Caledonian bird, and that the differences which I pointed out to him are constant in the series. Mr. Layard gives the following notes as to the soft parts on the label of his specimen:—"Beak black, legs brown-black, iris brown."

Mr. Layard also met with a Myzomela, which he referred to M. sanguinolenta (Ibis, 1878, p. 280), in the New Hebrides, on the islands of Vatê, Api, and Mallikollo, and remarks that a specimen procured is identical with the New-Caledonian bird; so that it seems probable that M. caledonica may extend its range as far as these islands; but specimens to show this are as yet wanting.

3. Myzomela chloroptera. (Plate XXIV. fig. 1.)


♂ ad. capite, dorso uropygioque, cum pectore, coccineis; corpore subitus griseo-flavido; alis caudaque fuscis, remigibus et tectricibus alarum olivaceo limbatis, subalariis et margine interna remigum albis; alae flexura flavo-albida; macula anteoculari nigra; rostro nigrante, pedibus obscure corneis. Long. al. 2·2, caud. 1·5, rostr. ·35, tars. ·50 (poll. Angl.).

Hab. in insulâ Celebes.

This Myzomela, the westernmost of the whole genus, was described by the late Lord Tweeddale from imperfect specimens collected by
Dr. Meyer at Menado, where it has also been obtained by Bruijn's collectors; and from one of these specimens, kindly lent me by Count Salvadori, the figure is taken. As yet, I believe, it has only occurred near Menado; and the young and female remain unknown, or at least undescribed.

*Myzomela chloroptera* resembles the Australian *M. sanguinolenta*, but is a smaller bird, and also differs in the smaller extent of the red on the chest, and in that colour being more intense, the abdomen yellower, and the wings and tail not so black. The black anteoocular spot is less conspicuous.

In his original description Lord Tweeddale remarks that this bird nearly resembles plate 54 of the 'Oiseaux Dorés,' vol. ii., representing "L'Heorotaire écarlate" from the "South Seas," taken from a drawing of a bird in the Leverian Museum. The figure certainly corresponds very fairly with this species, but, from the locality given, is probably intended for the Australian one (*M. sanguinolenta*).

4. *Myzomela adolphinæ.* (Plate XXIV. fig. 3.)


♂ *pallio*, dorso superiore, alis caudaque olivaceo-fuscis, tectricibus alarum, remigibus et rectricibus externe subtiliter olivaceo lимbatis; capite uropygioque coccineis; macula antecoculari nigra; corpore subitus flavido-albido,pectore griseo-centri lavato; subalaribus et remigum margine interna albis; rostro nigrante, pedibus corneis. Long. tot. circa 3-5, al. 2-2, caud. 1-5, rostr. '45, tarsi '5 (poll. Angl.).

♀ *minor*, feminae *Myzomelæ boiæ similis.*

*Hab.* in montibus Arfak.

This is one of the numerous discoveries of Beccari and Bruijn in the Arfak Mountains, and only a few specimens have as yet been obtained. Count Salvadori writes (l. s. c.):—"This species resembles *M. erythrocephala* of Gould, but differs from it in its much smaller dimensions, by the very slight olive tint of the back, and by the lower parts being not grey-brown, but whitish, very slightly tinged with yellowish on the breast and abdomen." The female resembles that of the Banda species (*M. boiæ*), but differs as pointed out under that species (*vide infra*).

The figure (Pl. XXIV. fig. 3) represents an adult male, one of the types of this species, most obligingly lent me by Count Salvadori.

5. *Myzomela bolei.*


♂ *capite*, dorso uropygiisque coccineis, plumis ad basin nigris; macula antecoculari, alis caudaque, cum torque pectorali nigris; corpore subitus griseo-albo; subalaribus et remigum margine interna albis; rostro nigrro; pedibus corneis, plantis flavis. Long. al. 2-2, caud. 1-8, rostr. '5, tarsi '6 (poll. Angl.).

♀ *minor*, capite pectoreque sordide griseis olivaceo lavatis; dorso,
tectricibus alarum et uropygio brunneis; fronte anguste gulaque rubris; alis caudaque fuscis, pennis anguste flavido limbatis; abdomine et subcaudalis flavo-albidis; rostro pedibusque corneis. 

Hab. in insula Banda.

This species is confined to the island of Banda, where it is not uncommon, according to Müller, in the nutmeg-plantations. The male resembles M. erythrocephala (ex insulis Aru), but differs from it in the black and white colours being purer and more contrasted. The female is extremely like that of M. adolphinae, but is smaller, has the breast greyer, the forehead redder, and the yellowish-olive margins to the quills more conspicuous.

The iris is "brown" (S. Müller; Murray).

6. MYZOMELA ERYTHROCEPHALA.


♂ capite, dorso inferiori et uropygio intense cocceinis; pallio, dorso superiore, alis caudaque cum torque pectorali fuliginosis, remigibus subtilissime olivaceo limbatis; abdomen et subcaudalis sordide olivaceo-griseis; subalaribus et margine interna remigum albis; macula antecoculari nigra; rostro nigrante, pedibus nigro-corneis. Long. tota circa 4·0, al. 2·4, caud. 1·75, rostr. 0·55, tars. 0·55 (poll. Angl.).

Hab. in Australiâ septentrionali, insulis Aru, et Novâ Guineâ meridionali.

There is some doubt as to the exact range of this species, and as to whether one or more species have not been included by various writers under the same name. Unfortunately I have not been able to see a sufficient number of specimens to clear up the question, the solution of which must wait till a larger series from different parts becomes available for comparison.

Myzomela erythrocephala was first described by Mr. Gould from specimens from Port Essington, and was characterized as "intense fusca, capite et uropygio cocceinis." This description agrees well enough with the figures in his folio work, and with the skins in the British Museum from Aru collected by Wallace. In the text, however, as also in the 'Handbook,' the general colour of the plumage is described as "deep chocolate-brown," a term which can hardly be said to agree either with "intense fusca" or with the figures.

In one of his expeditions to Southern New Guinea, Signor D'Albertis obtained a single male (nearly or quite adult) of a Myzomela at Mon, Hall Bay, of which Count Salvadori, in the account of the collection (Ann. Mus. Civ. Gen. vii. p. 825, 1875), says that it in no way differs from one from Australia with which he has compared it, and further remarks that Gould's plate is inaccurate in representing the back &c. as almost black, instead of only slightly darker than the under surface. In a letter to me, however, he says that now he is "not quite satisfied as to this bird being the same as the Australian species; this and the Aru bird seem to me much
darker," and further proposes to separate it and the Aru form as a new species, *Myzomela infuscata*. But the bird from Mon, which Count Salvadori has most kindly lent me, differs from the Aru birds in its much lighter colours above, which are moderately dark greyish brown, not brownish black, and in the dark colour on the breast shading off more gradually into that of the flanks and abdomen, so that there is less appearance of a dark pectoral band. The antecocular spot is brown. The size is about the same as that of the bird described above (from a specimen in Mr. Godman's collection, collected by Cockerell, and agreeing with Wallace's Aru skin in the British Museum): Not having seen an authenticated adult Australian specimen, I cannot say whether the New-Guinea bird is or is not identical with that from Australia; but it certainly differs considerably from the Aru birds in colour. If on further investigation the Aru bird proves really distinct, it will have to stand as *Myzomela infuscata*, Salvad. in litt. On the other hand, if Mr. Gould's figure and description are correct, it would seem that the bird from Southern New Guinea is distinct. I have not seen the female of this species. Mr. Gould describes it as "uniform brown above, lighter beneath."

Count Salvadori describes the female of *M. infuscata* thus:—"*Brunneo-grisea, subitus pallidior, fronte et gula late rubris; remigibus exterius subtiliter olivaceo-marginatis*;" and this description closely agrees with a young male from the Aru Islands in the British Museum, in which, however, there are also some red feathers on the back.

Gould gives the irides as "reddish brown," D'Albertis as "black." In Australia, *Myzomela erythrocephala* is confined to the northern districts, having occurred at Port Essington (Gould), Port Darwin (Masters), and Cape York (Ramsay's list of Australian birds). It was included in Marie's list of New Caledonian birds (Ibis, 1877, p. 362), but is omitted by Verreaux and Desmurs, and Mr. Layard has as yet not found it. M. Oustalet, too, tells me that he has not seen it from the mainland of New Caledonia.

7. *Myzomela vulnerata*.


*Hab.* in insula Timor.

This very distinct species is confined to the island of Timor. It is somewhat allied to *M. boiei* and *erythrocephala*, but is at once distinguished from both by the red on the head being confined to the vertex and throat, and by the much darker tint of that colour. The female is similar to the male, but smaller, with the colours less distinct. The irides are reddish brown (*Sal. Müller*).

1 In the plate the forehead is shown as tinged with red.


Ad. fusco-nigricans, subitus flavescenti-albida, mento, gula, macula-que magna occipitali cum uropygio coecineis; gutturo crocco-flavo; remigibus, primis duobus exceptis, et tectricibus alarum majoribus flavido marginatis; tectricibus, duabus medii exceptis, tectricibus alae minoribus nonnullis ad apicem albis; rostro nigro, pedibus corneis. Long. al. 2·45, caud. 1·6, rostr. 6, tarsi 5·55 (pall. Angl.).

Jr. macula occipitali nulla, gutturo sordide flavo, et uropygio bruneo-olivaceo distinguenda.

Hab. in insulis Vitiensibus.

This *Myzomela* hardly admits of being mistaken for any other species. It is perhaps most nearly related to *M. lafargii* of the Solomon Islands, but is at once distinguishable from that species by the red throat and orange-yellow chest, besides other differences. The red of the throat is separated from the yellow of the chest by a distinct though narrow black line. The red on the back appears last, that on the chin first. In not fully plumaged birds the rump and lower back are olivaceous. The sexes when adult are nearly alike, the female being only distinguishable by the colours being less bright. Very often, too, though not always, the red occipital spot is absent in the female.

Mr. Murray records the iris as "black," Mr. Layard as "brown," the legs being "verditer" and "dark livid" in the living bird, with the soles of the feet yellow.

This bird is entirely confined to the Fijis, where, according to Mr. Layard's list (Ibis, 1876, p. 391), it is found in all the larger islands of that group; and in addition to the islands enumerated by him, specimens from Matuku are in the British Museum (Rayner). Its occurrence in the Samoan group has not yet been confirmed (cf. Whitmee, Ibis, 1875, p. 447). Hombrun & Jacquinot indicated their "Myzomèle solitaire" as being from the "Iles Salomon" with some doubt; and, relying on them, Mr. Sclater included "M. solitoria" in his list of Solomon-Island Birds (P. Z. S. 1869, p. 124), where, however, only *M. lafargii*, so far as is yet known, occurs.


Corpore supra cum capite, gutturo et pectore superiore nigris; occipite coccineo; abdomen flavido-olivaceo; alis caudaque nigris, See also P. Z. S. 1875, p. 431, for an interesting account of its habits.
remigibus olivaceo-limbatis, subalaribus albis; rostro nigro, pedibus plumbeis.

_Hab._ in insulis Salomonis.

This species was obtained by the French Expedition to the South Pole; and the type specimen in the Paris Museum remains, I believe, unique in Europe. M. Oustalet, to whom I wrote for information about it, kindly replies to me, on comparing it with the figure in the Atlas to the 'Voyage':—"Je trouve dans celle-ci quelques inexactitudes. Les proportions de l'oiseau ont été un peu exagérées: le noir de la gorge a été trop étendu et trop marqué. L'oiseau type est plus petit, et il a le haut de la gorge seulement noir, le bas, vers la poitrine, étant un peu mêlé de jaune verdâtre."

_M. lafargii_ is somewhat allied to _M. jugularis_ of the Fijis, but differs from the latter in having the red confined to the top of the head, and in the throat and chest being black.

10. **Myzomela sclateri**, sp. n. (Plate XXV. fig. 2.)

♂ corpore supra, alis caudaque fusco-nigrantibus, capite saturato, plumis dorsi inferioris apice flavidis; remigibus, alarum tectricibus et rectricibus externe olivaceo-flavio limbatis; gula splendide coccinea; corpore subitus griseo-flavido, gutturo sordido; subalaribus et margine interna remigum albis; rostro nigro, pedibus obscuris. Long. tot. circa 4'5, al. 3'65, caud. 1'7, rostr. 6, tars. '55 (poll. Angl.).

_Hab._ in Novā Britannia.

A few weeks ago Mr. Slater, after whom I propose to name this new species, lent me for examination a single specimen of it, marked male, which he had recently received in a letter together with two _Pachycephala_, from the Rev. G. Brown, C.M.Z.S., of the Wesleyan Mission at present established on the Duke-of-York Islands. The exact locality given on the label is "Palakūru Island, New-Britain coast." I have not been able to find Palakūru Island on any map; but it is probably only an islet lying close to the shores of the larger island.

At first I had some doubts as to this individual being adult; but now, from the absence of red feathers on any other part, and from the singularly bright and shining colour of those on the throat, I have little doubt that it has very nearly or quite attained its full plumage. *Myzomela sclateri* hardly admits of being compared with any other species of the group, the entirely dark upperside and the red being confined to the throat rendering it quite unlike any species yet known to us.

11. **Myzomela nigrita**.


♂ nitenti-niger, subalaribus et remigum margine interna albis; rostro nigro, pedibus cornesis.
♀ griseo-brunnea, subtus dilutior; fronte gulaque rubro lavatis; remigibus externe olivaceis.

Hab. in Nová Guineá occidentali et insulis vicinis.

This Myzomela, conspicuous for the almost entirely black plumage of the adult male, was first described by the late Mr. Gray from specimens collected in the Aru Islands by Wallace, where it was obtained again during the recent voyage of the 'Challenger.' It also occurs on the mainland of the north-western peninsula of New Guinea, at Dorey (Wallace) and Rubi (Meyer), and in the islands of Jobi and Miosnom (Meyer and Beccari), the birds from the mainland and these islands being considerably bigger than those from Aru. This is particularly the case with those from Jobi and Miosnom, so that Count Salvadori is inclined to separate them as a new species. But, as the following table will show, considerable differences in the measurements of this species occur in various localities; so that at present I consider it better to retain all forms under one name.

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<th>Wing</th>
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<td>1. ♂ Aru?</td>
<td>2-2</td>
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<td>2. ♂ Wokan</td>
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<td>3. ♂ Aru</td>
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<td>4. ♂ Rubi</td>
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<td>5. ♂ Dorey</td>
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<td>6. ♂ Miosnom</td>
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<td>7. ♂ Jobi</td>
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<td>8. ♂ jr. Miosnom</td>
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<td>11. ♀ Rubi</td>
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<td>12. ♀ Aru?</td>
<td>2-1</td>
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"M. pluto," Salvadori, in litt.

The male of this species resembles that of Myzomela pammelana from the Admiralty Islands, but differs as below specified. The female retains more of the normal colouring of the group, and approaches those of *M. boiei* and *M. adolphinae*. The young birds resemble the female, the red on the head in the young males being obtained before any indication of the black plumage. Dr. Meyer obtained only females and young of this bird, and referred these with considerable hesitation to *M. erythrocephala* of Gould, a very different species. Count Salvadori saw that this was a mistake, and proposed the name *meyeri* for the specimens collected by Dr. Meyer. But on subsequently examining the birds at Dresden, he found that in reality they were the young and females of the present species, the female having been only briefly indicated in Gray's original description.
Mr. Murray notes of a male from Wokan, Aru Islands, that the eyes are "hazel," the "bill and feet black."

12. Myzomela pammelæna.


Jun. precedenti similis, sed ommino sordidior, abdomine et sub-caudalibus rufo-tintitis, et subalaribus albis distincta.

_Hab._ in insulis Admiralitatis.

Two specimens, an adult male and a young bird, of this *Myzomela* were obtained during the stay of the 'Challenger' at Nares Harbour, Admiralty Islands. It is closely allied to _Myzomela nigrita_ of the Aru Islands and New Guinea; but the adult male of the new species differs from the more western one by its black under wing-coverts (although these are white in the young bird), dirty white margins to the remiges, and longer and stouter feet and tarsi. In size it exceeds any specimens I have seen of _M. nigrita_ from the Aru Islands, but is equalled in length of wing and tail by the larger birds from the islands and shores of Geelvink Bay.

Mr. Murray marks the irides of the adult bird as "hazel-brown."


_Cosmeteira minima_, Wald. Ibis, 1870, p. 50 (♀).

_Omnino cinnascenti-brunnea, subitas dilutior; strit gulari nitide coccinea; rostro pedibusque nigro-corneis. Long. al. 3, caud. 2-5, tarsi ’6 (poll. Angl.) (♀ ex Nová Guineá.)

_Hab._ in Nová Guineá et insulis vicinis.

Although generally placed amongst the Nectariniidae, this species in structure and coloration is a true *Myzomela*, allied to the Australian _M. obscura_, from which it is at once distinguished by its bright red gular streak. The sexes are similar; but the females are considerably smaller than the males; and on one of these from Mysol the late Lord Tweeddale founded its species _C. minima_.

Dr. Meyer describes (l. s. c.) the young as having the forehead and top of the head tinged with reddish—an interesting fact, as showing in the young bird a style of coloration not retained in the adult, but occurring in other members of the genus, and therefore probably a more primitive character.

This species is widely distributed over New Guinea, occurring at Dorey (Wallace and Meyer), Rubi, Passim (Meyer), Sorong (Mrs. Langd., fide Salvadori), and Wa Samson (Bercari); and D'Albertis found it on the Fly River. It also occurs in Waigion (Lesson, Wallace, and Bernstein) and Mysol (Wallace and Hoedt). Count Salvadori
has lent me specimens from Salwatti, and says that in the Leyden Museum there is one said to be from Ceram (Moens), but that this locality, as well as Gilolo (Forsten), are in all probability errors.

14. MYZOMELA OBScura.


Omnino griseo-brunnea, subitus pallidior, capite vinaceo tinto; remigibus externe subtilissime griseo limbatis; alis caudaque subtus griseis, remigum margine interna albida; rostro pedibusque nigro-corneis. Long. al. 2·7, caud. 2·2, rostr. 6, tars. 6 (poll. Angl.).

Hab. in Australia septentrionalis et Novâ Guineâ.

This plainly-coloured Honey-eater was first described by Mr. Gould from specimens obtained at Port Essington by Gilbert. It seems to have rather a wide range over the northern parts of Australia, occurring at Port Darwin (Masters), Cape York ('Challenger'), and in the north of Queensland ‘‘as far south as the Mary river’’ (Ramsay). D’Albertis found it at Naiabui and on the Fly River; and there are specimens from the river Utanata in the Leyden Museum—the originals of Bonaparte’s ‘‘Ptilotis funata’’ (cf. Salvadori, Ann. Mus. Civ. Gen. xii. p. 334, 1878).

The sexes are similar. I have not seen young birds.

The iris has been variously recorded as ‘‘red’’ (Gould), ‘‘brown’’ (Murray), and ‘‘black’’ (D’Albertis).

15. MYZOMELA SIMPLEX.


Sordide griseo-brunnea, subitus dilutior; remigibus et rectricibus rubido limbatis; margine interna remigum albida; rostro pedibusque corneis, his pallidioribus. Long. tot. 5·2, al. 2·3; caud. 2, rostr. 5, tarsi 6 (poll. Angl.).

Hab. in Halmaherâ et insulis adjacentibus.

This plainly-coloured Myzomela was first discovered by Wallace in the island of Batchian, and it also occurs in most of the other islands of the Halmahera group of the Moluccas, but is replaced on Obi by the nearly allied Myzomela rubrotincta. Count Salvadori informs me that he has seen ‘‘many specimens in the Leyden Museum from Gilolo (Bernstein), Tidore (Bernstein, Von Rosenberg), and Dammar (Bernstein). A specimen from Ternate (Bruijn) is in Turati’s collection. A single specimen from Morty in the Museum of Leyden is much darker than the others.’’

This species is allied to M. rubrobrunnea and M. rubrotincta, but differs from them in the less extent of the red colour, which is confined to the margins of the quills and tail-feathers. The sexes are probably similar in colour; I have not seen the young bird.
16. MYZOMELA RUBROTINCTA.


"Brunnea, dorso, alis et cauda pulcherrime rubro tinctis; pectore, abdomen et subcaudalibus obsolletius rubro tinctus. Long. tot. 120 m., alæ 0'067, caud. 0'048, rostri '020, tars. '020."

Hab. "in ins. Obi (Bernstein)," Salvad. l. c.

This species has recently been described by Count Salvadori from five specimens—two males and three females—the two sexes are similar—in the Leyden Museum. He says it "resembles M. simplex of Gray from Halmahera, in which only the remiges and rectrices (and not all the parts between the head and neck) are margined with red, and in which the red colour is very indistinct."

17. MYZOMELA RUBROBRUNNEA. (Plate XXIV. fig. 2.)


♂ grisescenti-brunneus, subtus dilutior, capite saturatiore, plumis plus minusve vinaceo limbatis; dorso inferiore et uropygio, cum marginibus externis remigum et rectricum vinaceo-rubris; alis caudâque subtus griseis; margine interna remigum albida; rostro pedibusque nigro-corneis. Long. tota circa 4, alæ 2'4, caud. 1'8, rostr. '6, tars. '55 (poll. Angl.).

♀ mari similis, sed coloribus minus intensis et paullo minor.

Hab. in insulâ Mysore.

Dr. Meyer first discovered this beautiful species of Myzomela, during his travels in and about New Guinea in 1873. He obtained only two specimens, both males, at Kordo, the chief settlement in the island of Mysore in Geelvink Bay. Beccari obtained others in the same island, to which it is apparently confined; and from one of his specimens, a fine male, kindly lent me by Count Salvadori, the figure is taken.

This species resembles M. simplex and M. rubrotincta of the Moluccas, but differs from both in the red margins to the feathers being continued over a larger part of the bird.

18. MYZOMELA CRUENTATA.


Myzomela coccinea, Ramsay, Proc. L. S. N. S. W. ii. p. 106 (1877)? (Ex insulis Ducis Eboraci.)

Myzomela erythrina, Ramsay, Proc. L. S. N. S. W. ii. p. 107 (1877)? (Ex Novâ Hiberniâ.)

♂ corpore omnino chermesino, uropygio splendidiore, plumis ad basin nigris; alis rubricautibus, plumis externe rubris; remigibus fuscis, primis duobus exceptis, rubro limbatis; rectricibus rubido-griseis, externe rubro marginatis; alis caudâque subtus
griseis; rostro pedibusque nigris. Long. tot. circa 4, al. 2·2, caud. 1·5, rostr. '55, tars. '75 (poll. Angl.)

_Hab._ in montibus Arfak Nove Guineae.

This very beautiful _Myzomela_, at once distinguished from all others of this group yet described by its uniformly red colour, was first obtained by Dr. Meyer, in the Arfak Mountains in 1873. Only one specimen, an adult male, was procured; and this and another specimen, likewise a male and nearly or quite adult, procured by Brujin’s collectors in the same locality, and now in the Genoa Museum, are, I believe, the only examples yet brought to Europe of this splendid little bird.

A short time ago Mr. E. P. Ramsay, of the Sydney Museum, described two new species of _Myzomela_, both remarkable for their nearly uniform red coloration. One is indicated as a female and from the Duke-of-York Islands (_M._ coccinea); the other, a young male, (_M._ erythrina) is from New Ireland. Of it Mr. Ramsay says:—

“This species is smaller than the preceding, and the bill is comparatively stronger and stouter; otherwise I should be inclined to consider it the young of the former.” From his description it is evidently a young bird; and after having carefully compared both it and that of the other species with Dr. Meyer’s and Count Salvadori’s specimens, I have come to the conclusion that both _M._ coccinea and _erythrina_ are probably referable to _M._ cruentata. If this is so, it would seem, provided Ramsay’s specimens are correctly sexed, that the adults of this species are nearly or quite similar in coloration. The species probably has a wide range through New Guinea eastward of the Arfak Mountains.

19. **Myzomela rubrata**.

_Cinnys rubrater_, Less. _Voy._ Coquille, Zool. p. 678 (1826); id. _Man._ ii. p. 55 (1828); Kittlitz, _Kupf._ Vög. t. 8. fig. 1 (1832).


Ad. coccinea, alis, cauda, crissos et subcaudalibus nigricantibus; alis caudaque subitas griseis, remigum margine interna albida; rostro nigricante, pedibus cornesis. _Long._ al. 2·95, caud. 2·3, rostr. '65, tars. '75, (poll. Angl.).

Jr. olivaceo-brunnea, remigibus externe olivaceis; subalaribus obscuris.

_Hab._ in insulis Pelewensibus, Marianis, et Carolinis.

This species belongs to the group of _M._ cardinalis, nigricantiris, and _chermesina_, but is at once distinguished from all of these by the greater extent of the red colour in the adult, only the vent and under tail-coverts being black.

_Myzomela major_ was founded by Bonaparte on specimens of this bird from the Caroline Islands, and characterized as “Similis M.
rubratre, sed major et percoccinea." But any such difference in size is not constant, and Dr. Hartlaub says (l. c.) that Pelew birds are as large as Caroline ones.

The young bird is nearly uniformly dark olive-brown, and gradually attains its full plumage by the gradual appearance of the red on various parts of its body.

*M. rubratre* is remarkable for its wide range over the archipelagos of the North-eastern Pacific. Lesson found it on the island of Ualan in the east of the Caroline group (his assertion that it was also found in the Philippines by M. Dussumier being of course erroneous), as did Kittlitz, who gives an interesting account of the habits of this species as observed by him on this island and the Marianne Island of Guam (Denkwürd. ein. Reise, i. pp. 364 and 381, 1858). Kubary found it on Ponapè in the east, and on Yap and the Mackenzie Islands in the west, of the Carolines; so that it is probably found all over that archipelago. Specimens from these islands are in the Goddefroy Museum; likewise examples from the Pelews (or Palaos). Gray, in his Catalogue of Pacific birds, gives "Island of Vanicoro" with a query; but in all probability this is a mistake, for as yet no *Myzomela* has been found there.

20. *Myzomela nigriventris*.

*Myzomela nigriventris*, Peale, U.S. Expl. Exped. p. 150, pl. 41. f. 2 (1848); Cassin, U.S. Expl. Exped. p. 175, pl. 12. f. i. (1858); H. & F. Orn. Centralpolyn. p. 56, t. 7. f. 3 and 4 (ad. and jr.).

*Myzomela rubratre* Hartl. (nec Lesson), Wiegm. Arch. 1852, p. 130 (ex Samoa).


Ad. capite, dorso uropygioque cum pectore fulgido-coccineis, plumis ad basin nigris; corpore subtus, macula anteocularii, alis caudaque nigris; remigibus interne albidiis; rostro pedibusque nigris. Long. al. 2'-75, caud. 1'-8, rostr. 6'-5, tars. 7'-7 (poll. Angl.).

Jr. olivaceo-fusca, subtus dilutior et flavido lavata; uropygio rubro tincto; remigibus olivaceo-limbatis; subalaribus et margine interna remigum albis.

Hab. in insulis Samoensibus.

This species is very closely allied to *M. cardinalis*, which it replaces in the Samoa group. The differences between the two I have pointed out under the last-named species.

From *M. rubratre*, with which it was at first confounded, both these species differ in the black flanks and belly, these in *M. rubratre* being red, only the vent and under tail-coverts being black, whilst the red on the chest in all three of these species easily separates them from *M. liuensis*.

*M. nigriventris* is confined to the Samoan Islands, its reported occurrence in the Fijis being erroneons (cf. Layard, *Ibis*, 1876, p. 391)
and founded on a mistake of Dr. Gräffe. It is apparently rather a common bird in the Samoan group, occurring both on Savaii and Upolu.


*Certhia cardinalis*, Gm. S. N. i. p. 472 (1788); Lath. Ind. Orn. i. p. 290 (1790).


Ad. capite, dorso uropygioque cum pectore superiore coccineis, plunis ad basin nigris; macula anteoculari, alis caudaque nigris, his nitore nonnullo metallico; corpore subtus fuliginoso-nigro; remigum margine interna albida; rostro pedibusque nigris. Long. al. 2-9, caud. 2-1, rostr. 7, tars. 75 (poll. Angl.).

Jr. Myz. nigriventris similis, sed supra magis brunea, et subtus diluitior; dorso uropygioque castaneo-brunneis, nec rubris. 

Hab. in Novis Hebridibus.

This Honey-eater, one of the few of this genus known to the older authors, is very nearly allied to *M. nigriventris* of the Samoan group, which it replaces in the New Hebrides.

The adult bird (I agree with Messrs. Hartlaub and Finsch in considering that in this section of the group the sexes are nearly similar) is distinguished from *M. nigriventris* by the scarlet of the upper parts and chest being duller, and extending not quite so far down on the chest. The black of the lower parts is less intense, being tinged with brownish; the white margin to the remiges internally is more distinct; and the bill is stouter. It is also a slightly larger bird.

The young bird is paler and browner above (not so much dark brown as greyish brown), and paler and yellower below; the rump and back are washed with chestnut-brown. Judging from the series of specimens I have seen, the red colour in this species seems to appear first on the head, and not on the back as in *M. nigriventris*. The remiges, as usual in the young of this genus, are externally lined with olive-yellow. From *M. lifuensis* this species may be distinguished by its larger size and by the red extending on to the breast. Latham's description and figure clearly apply to this bird, not to *M. lifuensis*.

The irides are marked "black" or "dark brown."

Latham describes this bird from the island of Tanna, where, he says, it is called "Kuyameta" and is common, sucking the juices of flowers; and I have seen specimens collected on that island by Mr. Layard. There are specimens in the British Museum from Erromango and Aneteoum (Cuming); and Canon Tristram has received it from the latter island, as well as from Tanna and Aniwa. It thus seems to be confined rather to the southern portion of the New-Hebridean archipelago, being replaced in the north by *M. caledonica*? and *M. chermesina.*
22. MYZOMELA LIFUENSIS.

♂ capite, dorso uroppigioque coccineis; alis, cauda et corpore subitus toto cum macula anteoculari fuliginoso-nigris; alis caudaque nitore nonnullo metallico; remigum margine interna albita; rostro nigro, pedibus nigro-corneis. Long. tota circa 4·2, al. 2·5, caud. 1·75, rostr. 3·5, tars. 68 (poll. Angl.).

Hab. in Lifu, ex insulis "Loyalty" dictis.

Canon Tristram having kindly submitted to me two skins (now in his collection, both marked "males" and adult) collected by the Messrs. Layard, who first indicated this species, I can give a more complete account of it, and say that it is certainly a very good species. It is nearly allied to M. nigriventris and M. cardinalis of the Samoas and New Hebrides respectively, more particularly to the last, but is at once distinguished from both by the red below not extending beyond the head, the breast being sooty-black like all the rest of the lower parts. It is also a considerably smaller bird; the bill is shorter and more slender; the tarsi are not so stout, and the claws smaller. From Myzomela erythrocephala it is easily distinguishable by the uniform black of the lower parts.

Mr. Layard notes the "beak black, legs very dark brown, iris dark brown," and food "insects." Both specimens were obtained at Hepenehe, the chief town in the island of Lifu, the largest of the Loyalty Islands.

Whether M. erythrocephala of Marie's list (Ibis, 1877, p. 362) is this bird, remains uncertain; as yet, M. caledonica is the only Myzomela certainly known to be found on New Caledonia itself.

23. MYZOMELA CHERMESA. (Plate XXV. fig. 1.)


♂ ad. fusco-nigricans, alis caudaque nitore nonnullo metallico; mento, gula, pectore lateribusque abdominis, cum dorso uropppo-
gioque nitide coccineis, plumis ad basin nigris; subalaribus nigris, remigum pagonio interno griseo; rostro nigro, pedibus brunneo-corneis. Long. tota circa 4½, al. 3, caud. 2, rostri ⅔, tarsi ⅔ (poll. Angl.).

Hab. in insulis Pacificis Rotumah et Mallikollo.

This species was first figured by Messrs. Gray and Mitchell in their 'Genera of Birds; ' but no description was given, the species being only mentioned in the list of the species of Myzomela; nor was any habitat indicated. Bonaparte, and Gray later on, in his 'Hand-
list' (vol. i. no. 1989), gave "New Guinea?" as the locality, without any apparent reason for so doing. The bird was never recognized again till last year, when Mr. Sclater received two specimens, an adult male and a nearly adult female1, from the Rev. G. Brown, C.M.Z.S., of the Wesleyan Mission, together with some other birds, from the small

1 These birds are now in the Paris Museum.

PROC. ZOOL. SOC.—1879, NO. XVIII. 18
island of Rotumah, north of the Fijis. Fortunately Gray’s type is still in existence in the gallery of the British Museum; and on comparing the birds from Rotumah with it, it was at once evident that they were of the same species, though Gray’s figure represents a bird with a uniformly scarlet underside. About the same time Mr. Sharpe got a specimen (from which the figure is taken) of the same bird, apparently identical in every respect, from the island of Mallikollo (in my paper, l. c., by a mistake I wrote Erromango) in the New Hebrides, where it was obtained by Mr. Wykeham Perry, H.M.S. ‘Pearl.’ The species thus has a wide range, though I believe the above-mentioned four specimens (which are all nearly or quite adult) are as yet the only ones of this bird ever brought to Europe. The female is similar to the male in colour, but a little duller (conf. l. c. p. 353).

24. **Myzomela rosenbergii**.


♀ ad. niger nitore nonnullo metallico; colla, dorso, uropygioaque, cum pectore splendide cocaineis; rostro nigro, pedibus cornesis. Long. al. 2-5, caud. 1-7, rostr. a culm. 4-65, tars. 5-55 (poll. Angl.).

♂ rufescenti-brunnea, plumis ad basin nigris, ad rhachin pallidiornibus; fronte, pectore uropygiiococci, mento gulaque nigricantibus; alis caudaque fuscis, remigibus externe olivaceolimbatis, tectricum alarum apicibus brunneis; pogonii internis remigum albis.

♀ jr. feminæ similis, sed fronte, pectore, uropygio, mento gulaque corpore concoloribus.

Hab. in Novâ Guineâ.

This beautiful and very distinct *Myzomela* was first described by Prof. Schlegel from two specimens, both males, collected by Von Rosenberg in the north-western peninsula of New Guinea. Dr. A. B. Meyer obtained five specimens from the Arfak Mountains near Hattam, at an elevation of about 3500 feet above the sea, during his expedition to New Guinea in 1873. Since then numerous specimens have been obtained by various travellers in the same district. That the species is not confined, however, to the Arfak Mountains is shown by the fact 1 that Signor D’Albertis obtained two skins of this same bird, identical with Arfak specimens, from the natives of the neighbourhood of Epa, near Hall Bay, S.E. New Guinea.

According to Dr. Meyer the adults of both sexes are similar, and the bird above described as the female (from two nearly identical specimens so sexed by Beeeari) is really the young assuming adult plumage. Count Salvadori, however, writes me that he has about 40 specimens of this species, and maintains the view he has already expressed (Ann. Mus. Civ. Gen. vii. p. 947, 1875), that Meyer’s “young” are in reality females. A very young bird (♂) in the

Genoa Museum, described above, has only a trace of red on the throat, and is probably a bird of the year. The varied colouring of each feather gives a somewhat flammulated appearance to the head, back, and chest of the young and females.

25. MYZOMELA NIGRA.


♂ capite, dorso, uropygioque cum pectore superiore et linea media abdominali nigris; lateribus abdominis, ventre et subcaudalibus albis; alis, subalaribus caudaque brunneis; rostro pedibusque nigris. Long. alae 2:7, caudae 1:7, rostri ·63, tarsi ·5 (pall. Angl.).

♀ supra brunnea, subtus albida, mento, gula et pectore fusco variegatis; stria superciliari et remigum margine interna albidis. 

Hab. in Australiâ.

This species, which differs somewhat in coloration from the other members of the group, has a wide range over Australia. Gould found it on the plains of the Namoi; and Gilbert met with it in Western Australia on the Swan River. Mr. Ramsay, in addition, marks it in his list from the Port-Darwin district, from the interior, Victoria, and S. Australia.

26. MYZOMELA PECTORALIS.


♂ ad. niger, uropygio, mento, gutture et corpore subtus albis, pectore fascia angusta nigra transversim notata; rostro pedibusque nigris.

♀ (ant jr.) dorso medio castaneo-brunneo diversa.

Long. tota 4·5, al. 2½, caud. 1¼, rostr. ¾, tars. ¼ (pall. Angl.).

Hab. in Australiâ septentrionali.

This *Myzomela*, which in its black-and-white coloration departs considerably from the general coloration of the group, is confined to the more northern parts of Australia. Gould’s original specimens were from the N.W. coast. Mr. Ramsay in his list records it from Ports Darwin and Essington, the Gulf of Carpentaria, Cape York, and Rockingham Bay.

It is not as yet ascertained with certainty whether the chestnut-backed birds are the adult females, or merely the young, of this species.

Besides the above 26 species, which are all founded on actual specimens, and which are here recognized as valid, there remains the following, based on a figure of one of the older authors, but never yet again met with, which may or may not be a real bird. This is
MYZOMELA PUSILLA.

_Le Kuyameta_, Vieill. Ois. Dor. ii. p. 92, t. 58 (1802). (Certhia cardinalis, Gm. in text.)


This extremely doubtfull species was founded by Gray on a drawing (from a bird once in the Leverian Museum) in Vieillot’s “Oiseaux Dorés.” This plate, as well as the description, indicates a black-and-red _Myzomela_, like _M. cardinalis_ or _M. rubrata_, but smaller (3½ inches in length), and with the abdomen, vent, &c. entirely red, only the wings, tail, and an antecocular spot being black. In the letterpress the bird is named _Certhia cardinalis_ of Gmelin; and the habitat assigned is “New Holland and Isle of Tanna,” evidently copied from Latham’s account of the last-named species.

**Geographical Distribution.**

The genus _Myzomela_ has rather a wide range, from Celebes on the west, to the Fiji and Samoan Islands on the east, and from Guam, in the Marianne group (in 13° N.) to S. Australia and Victoria (in 38° S.), but is strictly confined to the Australian region, in three out of the 5 subregions of which it occurs, being absent in New Zealand and in the Sandwich Islands.

The Papuan subregion is, as might naturally be expected, the richest in species, having 16, of which no less than 14 are peculiar. Australia proper has 5 species, of which three are peculiar, two occurring also in the Papuan subregion. In the Pacific subregion 7 species occur, of which all are peculiar.

Celebes has one species peculiar to itself (_M. chloroptera_), as likewise have Banda and Timor (_M. boiei_ and _M. vulnerata_ respectively).

The Halmahera group (Gilolo, Batchian, Morty, Ternate, &c.) have one (_M. simplex_), which on Obi is replaced by _M. rubrotincta_. Curiously enough, the genus, as far as we yet know, is absent from the Sula Islands, from the Ceram group, and from the islands between Timor and the Arns, though represented in all the islands around this area, and even in the little island of Banda.

In the western half of New Guinea six species occur, of which _M. adolphinæ_ is peculiar to the Arfak country. _M. rosenbergii_ reoccurs in the mountains of southern New Guinea; and _M. cruentata_ apparently extends to New Ireland. _M. nigrita_ occurs on the mainland, as well as in Jobi and Miosnun (where it is the only species), and in the Aru Islands. Mysol, Waigion, and Salwatti have only _M. eques_, which also occurs on the mainland both in the N.W. peninsula and on the south coast. _M. obscura_ occurs both in S.W. and S.E. New Guinea, and also in N. Australia. Mysore is tenanted by a single peculiar species (_M. rubrolbrunnea_); whilst the Aru Islands have two species, neither peculiar, one (_M. erythrocephala_) occurring in N. Australia and S. New Guinea, if specimens from all these three localities are really identical. New Guinea east of 140°
has four species, none of which is peculiar, three occurring on the mainland of the west part, whilst two are Australian (\textit{M. obscura} and \textit{M. erythrocephala}). In the Admiralty Islands there is a single peculiar species, \textit{M. pammelena}, replacing \textit{M. nigrita} of the further west. One species, also peculiar, is found in the Solomons (\textit{M. lafargii}); but on which islands has yet to be ascertained. On New Ireland and in the Duke-of-York group only one species, which is probably \textit{M. eruentata}, occurs; whilst \textit{M. selateri} alone represents the genus in New Britain, and is peculiar.

In N. Australia all five Australian species occur; and \textit{M. pectoralis} is confined to that district. \textit{M. obscura} and \textit{M. erythrocephala} are confined to this region in Australia, but range into the Papuan Islands. \textit{M. nigra} and \textit{M. sanguiroenta} have a wider range over Australia; and the former is the only representative of the genus in W. Australia: both are peculiar. No species occurs in Tasmania.

Proceeding to the Polynesian subregion, we find the Fijis inhabited by a single peculiar species (\textit{M. jugularis}); and the same is the case in the Samoas, where \textit{M. nigriventris} occurs, a representative form of \textit{M. cardinalis}. The New Hebrides have no less than three species, of which \textit{M. cardinalis} is peculiar and found on the more southerly islands of the group (Erromango, Aneiteum, Tanna, &c.), where it is the sole species. Mallikollo is inhabited (if the localities given can be trusted) by two species—\textit{M. caledonica}, which also occurs on Vaté and Api, and \textit{M. chermesina}, which has managed to extend its range to the isolated islet of Rotunah. New Caledonia has but one species, \textit{M. caledonica}; whilst on Lifu occurs \textit{M. lifuensis}. The Pelews, Mariannes, and Carolines are all inhabited by one species peculiar to these groups, \textit{M. rubrata}. It is rather remarkable that no species of the genus has yet been found on the Tonga Islands, although these are situated between the Fijis and Samoan Islands; but our present knowledge of the range of the Polynesian species is very imperfect.

Many other of these islands have no species of \textit{Myzomela} recorded from them; but I have little doubt that several new species remain to be discovered both here and further west in the islands east of New Guinea, as well as on the mainland of that great island itself.

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1. Mysol, Salwatti, &c.
Gasteracanthides.
Gasteracanthides.
P.S. Since the above has been in print, Mr. Sclater has received a further consignment of birds from Mr. Brown. Amongst these are three specimens of *Myzomela*, namely:—a female of *M. selateri*; one of an entirely red species, probably = Ramsay’s *M. coccinea* or *erythrina*, the receipt of which will enable the necessary comparisons of these species with *M. cuuentata* to be made; and one of a species new to science.


[Received February 27, 1879.]

(Plates XXVI., XXVII.)

The Spiders described in the present paper are chiefly of the genus *Gasteracantha*, a genus well known and remarkable for the hard, horny epidermis of the abdomen, which is also armed with two, four, or six prominent spines, varying in length, strength, and direction, and issuing from different points of the margin. The abdomen is also marked on the upperside, and occasionally underneath, with numerous symmetrically disposed cicatricose spots, varying a little in number, size, form, and position. To these markings I have given, in the following descriptions, the name of *sigilla*, looking, as they do, very like *seals* impressed upon the abdominal surface. These *sigilla* probably indicate the points of attachment of muscular fibres, and are often useful in the determination of the species.

The number of Spiders of this genus, described by various authors, up to the present time, is about 170; many, however, are already ascertained, and many more will in time probably prove to be, synonymous with others. At first sight it would seem to be an easier matter to distinguish the species of *Gasteracantha* than those of many other genera. They are for the most part of good size; and the corneous, spiny abdomen, varying very much in its relative proportions and spines, furnishes characters so tangible that the species have for the most part been distinguished by these characters alone. No doubt these will always remain important characters, and in many instances decisive ones; but in some, at all events, the reception of a series of examples from the same locality leads me to suspect that there is a very great, and hitherto not sufficiently recognized, difference in the absolute as well as relative length, strength, and direction of the abdominal spines in different individuals of the same species. *Gasteracantha formosa*, Vins. (infra, p. 285, Pl. XXVI. fig. 11), is one instance of this; and *G. curvispina*, Guér., is probably another. Of this latter Spider (if I am right in my determination of the species) I have received a considerable series from the west coast of Africa; but no two individuals preserve exactly the same length, strength, or direction of the abdominal
spines. This will be found, I think, to be the case also with some other species when collectors will take the trouble to collect a series of examples, instead of being satisfied with a few or even single specimens of those forms which appear to differ most from each other. At present, therefore, it seems rather hazardous to describe, without reservation, as new species, Spiders of this genus differing only, or mainly, from others already described in the relative length, strength, or direction of some, or all, of these spines, especially if the spiders come from the same locality, and even though the difference in the spines may be considerable.

Another, often valuable, specific character, but almost unavailable in this group of Spiders, is the colour, and pattern formed by its distribution. The greater number of known species of Gasteracantha have been described from specimens dried and pinned like Coleoptera and other insects; and very frequently dried after having been for some time immersed in spirit of wine. The process of desiccation, under such circumstances, not only destroys the colouring, but very often itself alters the natural direction of the spines. We are probably therefore, in nine cases out of ten, totally ignorant of the true colours and markings of the Gasteracanthides. It is worth while noting, in proof of this, a description, from life, of a Spider included in the genus Gasteracantha by Mr. A. G. Butler (but probably belonging to a nearly allied one, Peltosoma, Sim.). The description referred to may be found in an account of the British Expedition against the Ashantees in 1874, 'Through Fanteeland to Coomassie,' by Frederick Boyle, p. 202, and is shortly as follows:—

"The shell (of the abdomen) is about an inch across by half an inch in length, of the loveliest and most delicate yellow, scalloped at the edges, where occurs a dainty moulding of blue. Under the beautiful shell, protected by it on all sides, so that not even a claw projects beyond the cover, is the body and head, smooth and of a dark-red colour. Several were brought home. Captain Grant, 2nd W.I., has a handsome specimen." Thinking, from this account of its form and size, that this spider might possibly be identical with Mr. Butler's species (Gasteracantha cambridgii, Butl., Trans. Ent. Soc. Lond. 1873, p. 175, pl. iv. fig. 8), I sent a drawing of the latter to Captain Grant, who at once recognized it as the same species. Captain Grant's specimen was unfortunately lost on the way home; and I had therefore no opportunity of examining it; its identity, however, with the Spider above named may, I think, be taken as certain.

I have several dried examples of Gasteracantha cambridgii from the west coast of Africa, and have examined others in the Oxford University Museum, as well as in the British Museum. These are entirely of a uniform dull muddy-brown hue, and do not possess the slightest trace of the beauty described (and, I have no doubt, correctly described) by Mr. Boyle. It is very probable that preservation in spirit of wine might have retained something, if not all, of the original colours and markings of this Spider. I have in spirit numerous species of Gasteracantha; and many of them show great
vividness of colouring, as well as distinctness of markings. This is very seldom the case with dried specimens, of which I possess some similar in species to those preserved in spirit; but the former give no idea at all of the colours and pattern shown in the spirit-preserved examples.

Among the species of Gasteracantha described below is a very minute male adult (G. rogersi, sp. n., p. 292, pl. XXVII. fig. 23), from the river Coanza. This is as yet only the second male described in the genus. Few collections of Spiders come from exotic regions without containing (more or fewer) examples of the female sex; but, excepting in the two instances mentioned, the male sex appears to be nonexistent. This latter sex (as in those two cases) is probably always a pygmy compared with the female, and is very likely a good deal, if not altogether, different in respect of its abdominal armature. The females sit quite exposed in their orbicular snares, and so need a defensive armature, which the males do not require if they are, as I imagine, almost always, if not invariably, very minute, and live mostly in some kind of concealment or other—being also perhaps, compared with the female, very short lived. Two others of the Spiders here described are remarkable, and I believe quite novel, in their form—Gasteracantha crepidophora, sp. n. (p. 287, Pl. XXVII. fig. 14), from Dorey, New Guinea, and G. acrosomoides, sp. n. (p. 289, Pl. XXVII. fig. 19), from Madagascar. The two larger spines of the former very exactly resemble a pair of sharp-toed boots; and the latter is exceedingly like some spiders of the genus Acrosoma.